International Journal of
Environmental Research and Public Health

Life Satisfaction and Psychological and Physical Well-Being

Edited by
V. K. Kumar and Jasmin Tahmaseb-McConatha

Printed Edition of the Special Issue Published in
International Journal of Environmental Research and Public Health

www.mdpi.com/journal/ijerph

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This is a reprint of articles from the Special Issue published online in the open access journal *International Journal of Environmental Research and Public Health* (ISSN 1660-4601) (available at: https://www.mdpi.com/journal/ijerph/special_issues/emotional_creativity).

For citation purposes, cite each article independently as indicated on the article page online and as indicated below:

LastName, A.A.; LastName, B.B.; LastName, C.C. Article Title. *Journal Name* **Year**, *Volume Number*, Page Range.

ISBN 978-3-0365-6820-1 (Hbk)
ISBN 978-3-0365-6821-8 (PDF)

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About the Editors

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V. K. Kumar, PhD, is Professor Emeritus, at West Chester University of Pennsylvania. His areas of research interests include hypnosis, creativity, ageism, and life satisfaction. He has published over 120 scholarly works that include articles based on empirical research, book reviews, essays, blogs, book chapters, and edited books.

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Preface to "Life Satisfaction and Psychological and Physical Well-Being"

The literature has seen a tremendous upsurge of interest in concepts such as life satisfaction, happiness, subjective well-being, and quality of life. These concepts are not just of interest from an academic point of view, but there is great interest in tracking indices pertaining to happiness as indicated by the publication of The World Happiness Report annually since 2012, a publication of the "Sustainable Development Solutions Network, powered by the Gallup World Poll data" (https://worldhappiness.report/faq/).

In March 2021, we invited scholars from around the world to contribute to a Special Issue of the *International Journal of Environmental Research and Public Health* on life satisfaction and the related aspects of psychological and physical well-being. The effort resulted in 14 articles from various countries: China, Sweden, Norway, France, Peru, New Zealand, the USA, and Italy. All articles, except one, are based on empirical studies. One article is a systematic review of literature on adolescents and reviews literature from many countries. Only one article is based on an experimental study. The samples in these studies reflect wide diversity: university students and faculty, nurses, entrepreneurs, adolescents, national databases, refugees, and community samples recruited through social media. We hope that this collection of articles, being issued in a book form, will help stimulate work internationally.

V. K. Kumar and Jasmin Tahmaseb-McConatha
Editors

International Journal of
Environmental Research and Public Health

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Article

The Role of Stress Experience and Demographic Factors for Satisfaction with Life in Norwegian Adolescents: Cross-Sectional Trends over a Ten-Year Period

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Abstract: Background: The individual's perception of life satisfaction (LS) is regarded as a key indicator of one's overall experience of wellbeing, sensitive to the broad spectrum of functioning. Adolescence is particularly an important period for assessing LS and factors associating with LS. The present study investigated cross-sectional trends in adolescents' LS levels across three time points over a 10-year period, as well as the role of stress experience and socio-demographic differences in association with LS. Methods: The study used cross-sectional data from three time points: 2011 (n = 1239), 2016 (n = 1233), and 2022 (n =311), including adolescents from lower and upper secondary public schools, with an age range of 13–20 years. Results: There were relatively high and stable mean scores on LS across all time points; however, significant differences were found between 2011 and 2016. Results from the multivariate linear regression analysis showed that sex and age were moreover weakly associated with LS, where LS decreased slightly between the ages of 13 and 18 years and increased from 19 to 20 years. Of the stress domains, interpersonal and school-related stressors showed the strongest negative and significant association with LS; significant interaction effects of sex by stress domains were found, but not with sex by time. Conclusion: This study supports the relatively high and stable level of LS in adolescents across the investigated time points. Demographic factors were moreover weakly associated with LS. The findings also contribute by showing the significant role of interpersonal and school-related stressors in association with LS.

Keywords: wellbeing; life satisfaction; youth; adolescence; normative stressors; interpersonal stressors; school stressors

Citation: Moksnes, U.K.; Innstrand, S.T.; Lazarewicz, M.; Espnes, G.A. The Role of Stress Experience and Demographic Factors for Satisfaction with Life in Norwegian Adolescents: Cross-Sectional Trends over a Ten-Year Period. *IJERPH* **2023**, *20*, 1940. https://doi.org/10.3390/ijerph20031940

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 28 November 2022
Revised: 16 January 2023
Accepted: 18 January 2023
Published: 20 January 2023

1. Background

In today's society, it is acknowledged that assessments of the populations' quality of life (QoL) and subjective wellbeing (SWB) are essential for understanding the welfare of individuals and progress of society [1,2]. This is in addition to measuring welfare aspects such as access to education and work, freedom, and material resources [3,4]. The concept of SWB includes people's appraisals and evaluations of their own lives, including cognitive judgements, such as life satisfaction (LS) and experiences of positive and negative emotions [5,6]. LS represents the cognitive component of SWB and refers to an individual's cognitive, global appraisal of life as a whole [5,7]. Unlike emotional responses, which may fluctuate, overall appraisals of LS have been shown to be a more stable indicator of SWB and for examining adolescents' perceptions of their global life circumstances and functioning [6,7].

Questions about what factors contribute to change and variation in LS have been debated [1]. Adolescence is a distinct period related to understanding variations in LS

because of the significant changes, transitions, and adaptions in virtually every aspect of an individual's life (physical, social, and psychological). However, studies on LS have mainly been conducted on adults or young adults, with relatively limited research on the adolescent population [5,6]. The transition period from childhood to adulthood now occupies a greater portion of the life course than ever before, due to the earlier onset of puberty, paralleled with the delayed timing of adult responsibilities. The age range between 10 and 19 years has commonly been used to describe the age of adolescence [8]. However, recently, the age range of 10–24 years has been suggested to be more appropriate, reflecting the present understandings of this life phase and is used to define the sample of school students aged 13–20 years old in this study [8]. Consistent with findings reported in studies with adults, most studies with adolescents show that they report high LS, especially in high-income Western countries such as Norway [9]. Regarding trends in self-reports of mental health and wellbeing, an increase in LS was found in a study on the Norwegian adult population from 1984 to 2008, especially for the older age group (40–69 and 70+ years) [1]. A related study based on the same material showed that a significant proportion of the responders had a long-term within-person LS change over the 20-year period [2]. Norwegian studies have shown a strong increase in the prevalence of symptoms of depression and anxiety among young people, especially among adolescent girls [10–12]. A Nordic study (which included Norway) investigating the prevalence of high LS in adolescents aged 11–15 years old between 2002 and 2014 indicated large changes in the prevalence levels at the country level [9]. Norway showed an overall increasing prevalence of high LS over the 12-year period observed, especially in the youngest age group [9]. Studies in Western European countries have shown variations in the levels of LS and wellbeing in the younger age groups, showing stability or weak declines in LS and wellbeing over time [13–15]. The relationship between demographic factors (sex, age) and LS seems to be moderately strong [6]. A few studies have shown that LS and wellbeing decrease with age [9,16], whereas other international studies (European, Mexican, and Nordic) have shown that LS seems to be more stable [14,17], or even increases with age, during adolescence [18]. Moreover, girls seem to score lower on LS than boys [8,13,16] and show a larger decline in LS during the adolescent years [9,16].

An individual's perception of LS is regarded as a key indicator of one's overall experience of life circumstances, sensitive to a broad spectrum of functioning [7]. One important factor that may have an impact on LS during adolescence, based on the changes and transitions occurring during this life phase, is the experience of stress. In the present study, stress is defined as a subjective experience of the condition that results when person–environment interactions lead the individual to perceive a discrepancy—whether real or not—between the demands of a situation and the resources available to the person to cope adequately [19]. Stressors signify situations and pressures that cause stress. In addition to major life events that may affect adolescents more randomly, exposure to potential minor chronic or normative everyday stressors (family, peers, and school) increases during the adolescent years and may affect adolescents' ability to cope, consequently affecting wellbeing [14,20–22]. Relevant stressors during adolescence include increasing academic demands, school–leisure conflict, as well as interpersonal stressors including getting along with peers, parents, and romantic relationships [20–22]. In this context, boys seem to experience lower levels of stress than girls [23,24]. Research on the relation between experience of stressors and LS is limited. However, previous research has showed a negative association between LS and stress related to school [20], family [25], and general normative stressors [21,22]. LS has been found to be positively related to a broad spectrum of positive personal, psychological, behavioral, social, interpersonal, and intrapersonal outcomes [5,26]. Although few studies have used the term "stressors" in association with LS, young people's negative evaluations of academic/school variables and interpersonal variables could be perceived as potential stressors in adolescents' lives. Adolescents with higher LS also seem to report more positive psychosocial functioning, compared with those with lower LS [5,6,26].

Adolescence is a particularly important period for understanding levels and trends in LS due to the changes and transitions occurring during this life period, both personally and contextually. A study of changes and transitions may contribute with valuable information to understanding changes in LS [6]. Although the link between stress and health outcomes is well established, few studies have investigated the role of different stressor domains, including school, family, and peers, in association with positive outcomes such as LS. These aspects call for investigating (a) cross-sectional trends in levels of LS, as well as (b) the role of stress domains and socio-demographic differences in association with LS. This study investigated:

(1) Variations in the average level of LS among adolescents aged 13–20 years old including three cross-sectional samples from 2011, 2016, and 2022;
(2) The associations between LS and time, sex, age, and stress domains, controlled for self-rated health;
(3) The interaction of sex × time, and sex × stress domains in association with LS.

2. Methods

2.1. Procedure

The study was based on cross-sectional data from a study called 'Oppvekst i bygder' (Living in rural communities) where data have been collected every five years since 1996. This study used data from three time points (2011, 2016, and 2022), and included adolescents from lower and upper secondary public schools. The data from 2011 and 2016 included five municipalities, and the data from 2022 included four municipalities in Mid-Norway. Teachers administrated the questionnaires during a 45 min classroom session where the students could either choose to answer the questionnaire or do schoolwork. An information letter was sent to all students and parents of those under 16 years of age. Students ≥16 years old gave consent to participate by answering the questionnaire, whereas written parental consent and consent from students were obtained for students 13 to 15 years old. The study procedures were approved by the Regional Committee for Medical Research Ethics Mid-Norway.

2.2. Participants

2.2.1. 2011 Sample

In total, 1924 students (total number in the enrolled schools) were invited to participate in the study, and n= 1239 responded, with an age range of 13–18 years (response rate 64%). The sample included 634 (51.2%) girls and 603 (48.7%) boys; 2 respondents did not identify their sex (Table 1).

Table 1. Demographic characteristics for the adolescent sample aged 13–20 years.

	2011	2016	2022	Total
	n (%)	n (%)	n (%)	N (%)
Sex				
Girls	634 (51.2)	580 (47.0)	167 (53.7)	1381 (49.6)
Boys	603 (48.7)	644 (52.3)	141 (45.3)	1388 (49.9)
Not Specified	2 (0.2)	9 (0.7)	3 (1.0)	14 (0.5)
Age				
13–14	540 (43.6)	147 (11.9)	58 (18.6)	745 (26.8)
15–16	430 (34.7)	371 (30.1)	122 (39.3)	923 (33.2)
17–20	269 (21.7)	715 (58.0)	131 (42.1)	1115 (40.0)
Total	1239 (100)	1233 (100)	311 (100)	2783 (100)

2.2.2. 2016 Sample

In total, 1906 students (total number in the enrolled schools) were invited to participate in the study, and 1282 completed the questionnaire (response rate of 67%). The age range of the included sample was restricted to 13–20 years, reducing the sample size to n = 1233. In the sample, 580 (47%) were girls and 644 (52.2%) were boys; 9 respondents did not report their sex (Table 1).

2.2.3. 2022 Sample

In total, 1538 students (total number in the enrolled schools) were invited to participate in the study, and 311 completed the questionnaire (response rate 20.2%). The sample consisted of 167 (53.7%) girls and 141 (45.3%) boys; 3 respondents did not identify their sex (Table 1). The age range of the sample was 13–20 years.

2.3. Measures

Demographic Variables Included Sex and Age

Life Satisfaction (LS) was measured using the 5-item Satisfaction with Life Scale (SWLS) [7,27]. The SWLS assesses the cognitive dimension of subjective wellbeing rated on a seven-point Likert scale, ranging from (1) strongly disagree to (7) strongly agree. A higher total score indicates higher LS (min 5, max 35). The SWLS has been used extensively and found to be appropriate for assessing LS in both adults and adolescents [7]. The Cronbach's alpha value for the present study was 0.87.

Stress was assessed using the Norwegian 30-item version of the Adolescent Stress Questionnaire (ASQ-N) [28]. The ASQ is designed to measure normative stressors that adolescents may experience in their daily life and the extent to which the stressor experience has constituted a psychological challenge for them. Items are rated on a five-point Likert scale, ranging from (1) not at all stressful or is irrelevant to me to (5) very stressful; a higher score indicates a higher stress level. The scale consists of seven dimensions covering stress related to: school performance (e.g., item: Having to study things you do not understand), school/leisure conflict (e.g., item: Not enough time to have fun), peer pressure (e.g., item: Being hassled for not fitting in), home life (e.g., item: Abiding by petty rules at home), romantic relationships (e.g., item: Making the relationship work with your boyfriend/girlfriend), teacher/adult interactions (e.g., item: Not being listened to by teachers), and school attendance (e.g., item: Abiding by petty rules at school) [28,29]. The ASQ has been evaluated in different samples of European adolescents, indicating adequate psychometric properties [30,31]. Cronbach's alpha values for the sub-scales are presented in Table 2.

Self-rated health was assessed by one item, "How is your health at the moment?" The response options were: (1) very bad, (2) bad, (3) neither good nor bad, (4) good, and (5) very good. Measuring overall subjective health among adolescents using one item has previously been used in other studies on adolescents and found to be a valid indicator of overall health [32].

2.4. Statistical Analyses

Statistical analyses were conducted using SPSS 27.0 and Stata version 17. Descriptive statistics including means and standard deviations were calculated for the scales in the study. Multiple linear regression analysis was used to investigate associations between sex, age, time point, stressor domains, and the criterion variable LS, controlled for self-rated health. Self-rated health was included in the regression model because it is a potential confounder in association with both stress [33] and LS [34]. Differences in the levels of LS according to time point were investigated with dummy variables, where the year 2011 was used as the reference category. When looking at the stressor domains, each domain was investigated separately in association with LS in the unadjusted and adjusted multivariate regression model. Interaction effects were tested with interaction terms including sex × time and sex × each of the stress domains. Effect size for the multiple regression

model was calculated using Cohens' f^2 with values of 0.02, 0.15, and 0.35 indicating small, medium, and large effect sizes, respectively. The proportions of missing values for the variables of stress, self-rated health, and LS varied in the range of 2.3–5.2%. In the construction of scale sum scores, cases with missing responses at a proportion of 20% or less were included. Model assumptions for linear regression analysis were tested, with no indications of multicollinearity. The VIF values for the independent variables ranged between 1.02 and 2.93, and the average VIF was 1.80. VIF $\geq$ 5 to 10 indicate multicollinearity among the variables in the regression model [35]. The Breusch–Pagan test is used to test for heteroskedasticity in a linear regression model and assumes that the residuals are normally distributed. The test indicated heteroscedasticity; however, no serious violations were found because of the large sample size. The scatter plot showed a random pattern of residuals. Multivariate linear regression analysis was conducted with a listwise deletion of cases. *p*-values $\leq$ 0.05 were considered statistically significant.

Table 2. Mean scores on life satisfaction, stress, and self-rated health across time points.

	2011	2016	2022	Total		
	Mean (SD)				Min/ Max	Cronbach's α
Life satisfaction (total)	23.11 (6.19)	24.59 (6.20)	22.89 (7.37)	23.77 (6.38)	5–35	0.87
Girls	22.30 (6.06)	23.55 (6.51)	22.60 (7.83)			
Boys	24.04 (6.22)	25.52 (5.76)	23.21 (6.81)			
Age groups						
13–14	23.92 (6.01)	26.62 (5.47)	26.30 (6.31)			
15–16	22.39 (6.54)	24.47 (6.21)	22.66 (7.20)			
17–20	22.84 (6.19)	24.22 (6.27)	21.46 (7.53)			
Stress domains						
Teacher interaction	7.61 (4.12)	6.47 (3.57)	5.36 (2.54)	6.95 (3.85)	4–20	0.86
Peer pressure	11.00 (4.96)	9.57 (4.53)	8.72 (4.02)	10.23 (4.78)	5–25	0.82
Home life	9.97 (4.58)	8.77 (4.06)	7.74 (3.85)	9.29 (4.39	5–25	0.83
Romantic relationships	7.74 (4.73)	6.55 (4.05)	5.57 (3.43)	7.07 (4.43)	4–20	0.85
School attendance	8.45 (3.58)	8.12 (3.41)	7.58 (3.50)	8.24 (3.52)	4–20	0.70
School/leisure conflict	10.39 (4.38)	9.07 (4.06)	8.00 (3.89)	9.64 (4.30)	4–20	0.81
School performance	10.04 (4.05)	9.70 (4.02)	8.65 (3.96)	9.75 (4.05)	4–20	0.83
Self-rated health	3.79 (.97)	3.25 (1.36)	3.80 (1.04)	3.55 (1.20)	1–5	

3. Results

3.1. Variations in the Average Level of LS among Adolescents

Table 1 shows the distribution of demographic characteristics. The distribution of sex was quite equal across the three measurement points, whereas the distribution of age groups varied more across time points. When looking at the total mean scores on LS across time points (Table 2), the highest score was in 2016, followed by 2022, and the lowest was in 2011. When looking at the mean scores on LS for sex (Table 2), they were all above the neutral point of the scale ($\geq$20) at all time points, where boys reported higher scores than girls. When looking at the age groups, the highest mean scores on LS were in the age group of 13–14-year-olds at all time points, followed by the age groups 15–16 years old and 17–20 years old. The mean stress scores were moderately high across all three time points; however, the stressors related to school performance, school/leisure conflict, and peer pressure showed the highest scores. When looking at self-rated health, the mean scores were above the neutral point of the scale at all time points.

3.2. Associations between LS and Time, Sex, Age, and Stress Domains, Controlled for Self-Rated Health

Table 3 presents the results from the multiple linear regression analysis for associations between sex, age, time point and stress domains and the criterion variable LS. When looking

at time, those participating in 2016 reported significantly higher LS than those in 2011 in the unadjusted model (β = 0.12) and in the model adjusting for sex and age (β = 0.16). No significant difference in LS was found between 2011 and 2016 when controlling for self-rated health and stress domains (β = 0.04). No differences were found in LS between timepoint 2022 and 2011 in the unadjusted or adjusted results. Sex was significantly associated with LS in both the unadjusted model (β = 0.14) and when controlling for age (β = 0.14), where boys scored higher than girls. However, no sex differences were found when controlling for time, stress domains, and self-rated health (β = 0.03). Age showed a negative curvilinear association with LS in all the regression models, where levels of LS declined from 13 to 18 years and increased from the age of 19 to 20 years. The results showed that all stressor domains were significantly and negatively associated with LS in all the models; however, the strongest associations were found for stress of peer pressure (β = −0.27) and home life (β = −0.26), followed by school performance (β = −0.23) and school attendance (β = −0.23), controlled for sex, age, time, and self-rated health.

Table 3. Multiple linear regression analysis of associations between sex, age, time, stressor domains, and life satisfaction.

	Life Satisfaction					
	Unadjusted		**Adjusted Model [a]**		**Adjusted Model [b]**	
	B	**β**	**B**	**β**	**B [b]**	**β**
Sex—girls ref.cat	1.80	0.14 ***	1.83	0.14 ***	0.41	0.03
Age	−0.23	−0.06 ***	−0.25	−0.07 ***	−0.33	−0.09 ***
Age squared	0.08	0.70 *	0.08	0.74 *	0.08	0.04 *
Time dummy 2011 ref.cat						
2016	1.48	0.12 ***	2.07	0.16 ***	0.49	0.04
2022	−0.22	−0.01	0.32	0.02	−0.67	−0.04
Stress domains:						
Teacher interaction (TI)	−0.30	−0.18 ***	−0.30	−0.19 ***	−0.22	−0.14 ***
Peer pressure (PP)	−0.46	−0.34 ***	−0.45	−0.34 ***	−0.36	−0.27 ***
Home life (HL)	0.48	−0.33 ***	−0.47	−0.32 ***	−0.37	−0.26 ***
Romantic relations (RR)	−0.21	−0.14 ***	−0.20	−0.14 ***	−0.16	−0.11 ***
School attendance (SA)	−0.61	−0.34 ***	−0.59	−0.33 ***	−0.42	−0.23 ***
School/leisure conflict (SLC)	−0.32	−0.22 ***	−0.30	−0.20 ***	−0.24	−0.16 ***
School performance (SP)	−0.50	−0.32 ***	−0.48	−0.30 ***	−0.35	−0.23 ***
Sex × TI					0.08	0.05
Sex × PP					0.15	0.13 *
Sex × HL					0.16	0.13 ***
Sex × RR					−0.02	−0.01
Sex × SA					0.17	0.13 *
Sex × SLC					0.11	0.09
Sex × SP					0.13	0.11 ***
Sex × Time					0.01	1.84

Note. Unadjusted analyses present bivariate estimates. [a] Model: adjusted for sex/age. [b] Model: adjusted for sex, age, time, stress, and self-rated health. Sex: girls—0 and boys—1. Time dummy—2011 is the reference category. Age-squared test curve linearity of age. n = 1943, $R^2 = 0.32$; Cohen's $f^2 = 0.47$; * $p \leq 0.05$; *** $p \leq 0.001$.

3.3. Interaction Effects of Sex × Time, and Sex × Stress Domains in Association with LS

When looking at the interaction effects between sex × time and sex × stressor domains, there were significant interactions between sex × peer pressure, sex × home life, sex × school attendance, and sex × school performance, with stronger associations for girls (Table 3). The interaction between sex and time was not significant.

4. Discussion

This paper furthers our understanding of the mean levels and trends in adolescents' report of LS over three time points, as well as the association between sex, age, time, stress domains, and LS in adolescents. Three findings stand out in this study: (a) the generally

stable level of LS across the three time points investigated, although significant differences in LS scores were found between 2011 and 2016; (b) the significant but modest role of demographic factors in association with LS; and (c) the significant negative association between stress domains and LS with interaction effects of sex by stress domains found.

Similar to previous findings [5,6], the descriptive results presenting mean scores on LS were in the positive range, with scores above the neutral point of the scale (mean score ≥ 20) at all three time points; the highest score was in 2016. Multivariate results from the linear regression analysis showed that time was significantly associated with LS, with a significantly higher score found for adolescents in 2016 compared with those in 2011 when controlling for sex and age. However, no significant differences were found when controlling for self-rated health and stress domains, which is the main result to be interpreted. No differences in LS were found between 2022 and 2011. The findings are in line with previous studies on adolescents showing generally high mean scores on LS, varying between 23.0 and 25.0 [27]. The present findings contribute to the understanding that LS is perceived as stable by adolescents across time points investigated and are interesting to compare with the Nordic study [9], which showed high levels of LS, especially in Norwegian adolescents 11–15 years old from 2010 to 2014; however, variations in levels of LS were found among the different countries compared. The present findings correspond with studies among adolescents in high-income countries showing small declines or stable levels in LS [14,15]. However, the findings differ from trends in the adult population, showing increasing level of LS across time [1]. Regarding the demographic variables, a significant curvilinear association was found between age and LS, where LS decreased slightly with age between 13 and 18 and increased from the age of 19 to 20 years. Furthermore, boys scored significantly higher on LS than girls when controlled for age, but not when controlled for stress domains and self-rated health. The findings correspond with previous studies showing that socio-demographic factors contribute modestly to adolescents' reported LS, although variations are normal during adolescence [6,9]. The present study findings of the relatively stable levels of LS are interesting based on previous studies showing an increasing prevalence of self-reported mental health problems during the last decade, especially for girls [10,11], in addition to increasing levels of stress experience [24] and psychosomatic health problems during adolescence [12,36,37].

Of the variables investigated in the present study, all stressor domains were strongly negatively associated with LS; the most strongly related in the multivariate linear regression model were stress due to peer pressure and the home environment and stressors in the school context. Furthermore, significant interaction effects of sex by peer pressure, home life, school attendance, and school performance were found. The strength of the associations was especially strong for girls when controlling for age, time, and self-rated health, indicating that the interpersonal and school-related stressors impact girls' and boys' perceptions of LS differently. The present findings of a negative association between stressors and LS are in line with related studies showing that the experience of cumulative and simultaneous stressors, especially those in an interpersonal context, affects adolescents' mental health and wellbeing [24,38]. The findings are also in line with previous studies showing that stressors in the school context are relevant for adolescents' LS [14,24].

The present study findings extend prior research by providing insights into the relatively stable level of LS in the adolescent samples investigated across time points. The findings also contribute by showing the significant role of interpersonal and school-related stressors in association with LS when demographic variables and self-rated health are controlled. An implication of the study is to use the results as a knowledge base in strategies to facilitate positive coping in adolescents' daily life contexts (home/family, community, leisure time, and school). Implementing such strategies relies on cross-sectorial collaboration and integration into different developmental contexts in adolescents' lives. School is one important context for adolescents' positive development and wellbeing with the possibility to work on health-promoting approaches. In the school context, it is possible to work on the school climate and the learning environment as well as students' socio-

emotional skills through whole-school approaches, where school professionals and school health services are involved [39].

Strengths and Limitations

This study was based on three surveys conducted in 2011, 2016, and 2022 in public schools in Mid-Norway using the same previously validated instruments. This allowed us to investigate cross-sectional trends over a 10-year period. The sample size from 2022 was relatively small compared with 2016 and 2011, resulting from COVID-19-related restrictions. Although the same municipalities participated in the three samples, some of the participating schools differed across the sub-samples/study years. Adolescents' perceptions of LS are likely to be affected by a range of personal and contextual factors; therefore, it is plausible that other variables in addition to those included (e.g., socio-economic status, mental health distress, and personality factors) are equally important in accounting for variance in adolescents' perceptions of LS. This was a correlational study and causal conclusions cannot be drawn. A longitudinal design would have allowed the investigation of within-person changes in LS over time. Although self-reporting is a well-used method for assessing subjective phenomena in adolescents, it may also present potential challenges with reference to self-report bias (social desirability and over- and under-reporting). However, the large sample size may contribute to protecting from the influences of potential bias related to sample selection and self-report.

5. Conclusions

This study supports the relatively high and stable level of LS in adolescents across the time points investigated, although significant differences in LS scores were found between 2011 and 2016. LS decreased slightly between 13 and 18 years old and increased from 19 and 20 years old. Sex differences in LS were found when controlling for age, but not when controlling for time, stress domains, and self-rated health. All stressors were significantly negatively related to LS, with peer pressure and home life showing the strongest association. Significant interaction effects of sex by interpersonal and school-related stressors in association with LS were found, with stronger associations for girls. The results indicate that stressors affect boys' and girls' LS differently.

Author Contributions: Data collection was performed by U.K.M. and G.A.E. Analyses were performed by U.K.M. The first draft of the manuscript was written by U.K.M., and all co- authors G.A.E., S.T.I. and M.L. commented on previous versions of the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Regional Committee for Medical and Health Research Ethics Mid-Norway (2016/1165, date of approval 04.11.2022).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Lysberg, F.; Gjerstad, P.; Småstuen, M.C.; Innstrand, S.T.; Høie, M.M.; Espnes, G.A. Has life satisfaction in Norway increased over a 20-year period? Exploring age and gender differences in a prospective longitudinal study, HUNT. *Scand. J. Public Health* **2018**, *46*, 132–140. [CrossRef] [PubMed]
2. Lysberg, F.; Bertelsen, T.B.; Lysberg, C.; Høie, M.; Espnes, G.A.; Innstrand, S.T. Change and stability: Within-person life satisfaction over a 20-year period using data from the HUNT survey. *Scand. J. Public Health* **2021**, *49*, 851–856. [CrossRef] [PubMed]
3. Nes, R.B.; Nilsen, T.S.; Hauge, L.J.; Eilertsen, M.; Gustavson, K.; Aarø, L.E.; Røysamb, E. *Quality of Life in Norway. From North to South. Report*; Norwegian Institute of Public Health: Oslo, Norway, 2020.

4. Stiglitz, J.; Fitoussi, J.; Durand, M. *Beyond GDP: Measuring What Counts for Economic and Social Performance*; OECD Publishing: Paris, France, 2018. [CrossRef]
5. Proctor, C.; Linley, P.A. Life satisfaction in youth. In *Increasing Psychological Well-Being in Clinical and Educational Settings: Cross-Cultural Advancements in Positive Psychology*; Fava, G.A., Ruini, C., Eds.; Springer: Dordrecht, The Netherlands, 2014. [CrossRef]
6. Proctor, C.; Alex Linley, P.; Maltby, J. Life Satisfaction. In *Encyclopedia of Adolescence*; Levesque, R.J.R., Ed.; Springer: Cham, Switzerland, 2018. [CrossRef]
7. Proctor, C.P.; Linley, A.P.; Maltby, J. Youth life satisfaction measures: A review. *J. Posit. Psychol.* **2009**, *4*, 128–144. [CrossRef]
8. Sawyer, S.M.; Azzopardi, P.S.; Wickremarathne, D.; Patton, G.C. The age of adolescence. *Lancet Child Adolesc. Health* **2018**, *2*, 223–228. [CrossRef] [PubMed]
9. Due, P.; Eriksson, C.; Torsheim, T.; Potrebny, T.; Välimaa, R.; Suominen, S.; Rasmussen, M.; Currie, C.; Damgaard, M.T. Trends in high life satisfaction among adolescents in five Nordic countries 2002–2014. *Nord. Welf. Res.* **2019**, *2*, 54–66. [CrossRef]
10. Krokstad, S.; Weiss, D.A.; Krokstad, M.A.; Rangul, V.; Kvaløy, K.; Ingul, J.M.; Bjerkeset, O.; Twenge, J.; Sund, E.R. Divergent decennial trends in mental health according to age reveal poorer mental health for young people: Repeated cross-sectional population-based surveys from the HUNT Study, Norway. *BMJ Open* **2022**, *18*, 12. [CrossRef]
11. Myhr, A.; Anthun, K.S.; Lillefjell, M.; Sund, E.R. Trends in Socioeconomic Inequalities in Norwegian Adolescents' Mental Health From 2014 to 2018: A Repeated Cross-Sectional Study. *Front. Psychol.* **2020**, *11*, 1472. [CrossRef]
12. Potrebny, T.; Wiium, N.; Haugstvedt, A.; Sollesnes, R.; Torsheim, T.; Wold, B.; Thuen, F. Health complaints among adolescents in Norway: A twenty-year perspective on trends. *PLoS ONE* **2019**, *14*, e0210509. [CrossRef]
13. Cavallo, F.; Dalmasso, P.; Ottová-Jordan, V.; Brooks, F.; Mazur, J.; Välimaa, R.; Gobina, I.; Gaspar de Matos, M.; Raven-Sieberer, U. Trends in life satisfaction in European and North American adolescents from 2002 to 2010 in over 30 countries. *Eur. J. Public Health* **2015**, *25*, 80–82. [CrossRef]
14. Cosma, A.; Stevens, G.; Martin, G.; Duinhof, E.L.; Walsh, S.D.; Garcia-Moya, I.; Költő, A.; Gobina, I.; Canale, N.; Catunda, C.; et al. Cross-National Time Trends in Adolescent Mental Well-Being From 2002 to 2018 and the Explanatory Role of Schoolwork Pressure. *J. Adolesc. Health* **2020**, *66*, S50–S58. [CrossRef]
15. de Looze, M.E.; Cosma, A.P.; Vollebergh, W.A.M.; Duinhof, E.L.; de Roos, S.A.; van Dorsselaer, S.; van Bon-Martens, M.J.H.; Vonk, R.; Stevens, G.W.J.M. Trends over Time in Adolescent Emotional Wellbeing in the Netherlands, 2005-2017: Links with Perceived Schoolwork Pressure, Parent-Adolescent Communication and Bullying Victimization. *J. Youth Adolesc.* **2020**, *49*, 2124–2135. [CrossRef]
16. Daly, M. Cross-national and longitudinal evidence for a rapid decline in life satisfaction in adolescence. *J. Adolesc.* **2022**, *94*, 422–434. [CrossRef]
17. Willroth, E.C.; Atherton, O.E.; Robins, R.W. Life satisfaction trajectories during adolescence and the transition to young adulthood: Findings from a longitudinal study of Mexican-origin youth. *J. Personal. Soc. Psychol.* **2021**, *120*, 192–205. [CrossRef]
18. Salmela-Aro, K.; Tuominen-Soini, H. Adolescents' life satisfaction during the transition to post-comprehensive education: Antecedents and consequences. *J. Happiness Stud.* **2010**, *11*, 683–701. [CrossRef]
19. Lazarus, R.S.; Folkman, S. *Stress, Appraisal and Coping*; Springer Publication: New York, NY, USA, 1984.
20. Burger, K.; Samuel, R. The Role of Perceived Stress and Self-Efficacy in Young People's Life Satisfaction: A Longitudinal Study. *J. Youth Adolesc.* **2017**, *46*, 78–90. [CrossRef]
21. Milas, G.; Klarić, I.M.; Malnar, A.; Saftić, V.; Šupe-Domić, D.; Slavich, G.M. The impact of stress and coping strategies on life satisfaction in a national sample of adolescents: A structural equation modelling approach. *Stress Health* **2021**, *37*, 1026–1034. [CrossRef]
22. Moksnes, U.K.; Haugan, G. Stressor experience negatively affects life satisfaction in adolescents: The positive role of sense of coherence. *Qual. Life Res.* **2015**, *24*, 2473–2481. [CrossRef]
23. Östberg, V.; Almquist, Y.B.; Folkesson, L.; Låftman, S.B.; Modin, B. The Complexity of Stress in Mid-Adolescent Girls and Boys. *Child Indic. Res.* **2015**, *8*, 403–423. [CrossRef]
24. Anniko, M.K.; Boersma, K.L.; Tillfors, M. Sources of stress and worry in the development of stress-related mental health problems: A longitudinal investigation from early- to mid-adolescence. *Anxiety Stress Coping* **2019**, *32*, 155–167. [CrossRef]
25. Chappel, A.M.; Suldo, S.M.; Ogg, J.A. Associations Between Adolescents' Family Stressors and Life Satisfaction. *J. Child Fam. Stud.* **2014**, *23*, 76–84. [CrossRef]
26. Proctor, C.; Linley, P.A.; Maltby, J. Very happy youths: Benefits of very high life satisfaction among youths. *Soc. Indic. Res.* **2010**, *98*, 519–532. [CrossRef]
27. Pavot, W.; Diener, E. The Satisfaction With Life Scale and the emerging construct of life satisfaction. *J. Posit. Psychol.* **2008**, *3*, 137–152. [CrossRef]
28. Moksnes, U.K.; Espnes, G.A. Evaluation of the Norwegian version of the Adolescent Stress Questionnaire (ASQ-N) Factorial validity across samples. *Scand. J. Pychology* **2011**, *52*, 601–608. [CrossRef] [PubMed]
29. Byrne, D.G.; Davenport, S.C.; Mazanov, J. Profiles of adolescent stress: The development of the adolescent stress questionnaire (ASQ). *J. Adolesc.* **2007**, *30*, 393–416. [CrossRef] [PubMed]

30. Anniko, M.K.; Boersma, K.; van Wijk, N.P.L.; Byrne, D.; Tillfors, M. Development of a Shortened Version of the Adolescent Stress Questionnaire (ASQ-S): Construct validity and sex invariance in a large sample of Swedish adolescents. *Scand. J. Child Adolesc. Psychiatry Psychol.* **2018**, *10*, 4–15. [CrossRef]
31. Sotardi, V.A.; Watson, P. A sample validation of the Adolescent Stress Questionnaire (ASQ) in New Zealand. *Stress Health* **2019**, *35*, 3–14. [CrossRef]
32. Breidablik, H.J.; Meland, E.; Lydersen, S. Self-rated health in adolescence: A multifactorial composite. *Scand. J. Public Health* **2008**, *36*, 12–20. [CrossRef]
33. Moksnes, U.K.; Espnes, G.A. Stress, sense of coherence and subjective health in adolescents aged 13–18 years. *Scand. J. Public Health* **2017**, *45*, 397–403. [CrossRef]
34. Atienza-González, F.; Martínez, N.; Silva, C. Life Satisfaction and Self-rated Health in Adolescents: The Relationships between them and the Role of Gender and Age. *Span. J. Psychol.* **2020**, *23*, E4. [CrossRef]
35. Shrestha, N. Detecting Multicollinearity in Regression Analysis. *Am. J. Appl. Math. Stat.* **2020**, *8*, 39–42. [CrossRef]
36. Hagquist, C.; Due, P.; Torsheim, T.; Välimaa, R. Cross-country comparisons of trends in adolescent psychosomatic symptoms—A Rasch analysis of HBSC data from four Nordic countries. *Health Qual. Life Outcomes* **2019**, *17*, 27. [CrossRef]
37. Jahre, H.; Grotle, M.; Smedbråten, K.; Richardsen, K.R.; Bakken, A.; Øiestad, B.E. Neck and shoulder pain in adolescents seldom occur alone: Results from the Norwegian Ungdata Survey. *Eur. J. Pain* **2021**, *25*, 1751–1759. [CrossRef]
38. Bakker, M.; Ormel, J.; Verhulst, F.C.; Oldehinkel, A.J. Peer Stressors and Gender Differences in Adolescents' Mental Health: The TRAILS Study. *J. Adolesc. Health* **2010**, *46*, 444–450. [CrossRef]
39. Turunen, H.; Sormunen, M.; Jourdan, D.; von Seelen, J.; Buijs, G. Health Promoting Schools—A complex approach and a major means to health improvement. *Health Promot. Int.* **2017**, *32*, 177–184. [CrossRef]

International Journal of
Environmental Research and Public Health

MDPI

Article

Emotional Intelligence, Resilience, and Self-Esteem as Predictors of Satisfaction with Life in University Students

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Abstract: The present study examined if Emotional Intelligence (EI), resilience, and self-esteem predicted life satisfaction in university students. We computed correlations between the study variables, then, we compared the differences between men and women. Finally, a simultaneous multiple regression was performed. The sample was composed of 2574 university students (715 were men and 1859 were women), whose age ranged from 18 to 30 years with a mean (M) of 20.83 and a standard deviation (SD) of 2.45. The instruments used were the Wong and Law Emotional Intelligence Scale (WLEIS), the Wagnild and Young Resilience Scale (ER-25), the Rosenberg Self-Esteem Scale (RSES), and the Diener Satisfaction with Life Scale (SWLS). The results indicated that EI, self-esteem, and resilience correlated significantly and directly with satisfaction with life. Regarding sex differences, it was found that men had greater resilience, appraisal and recognition of emotion in others, and self-regulation of emotion. Women had greater appraisal and expression of emotion in self and self-esteem. The results showed that self-esteem, self-regulation of emotion, the use of emotion to facilitate performance, and acceptance of self and life as resilience factors predicted satisfaction with life. accounting for 48% of the variance. The variable that best predicted satisfaction with life was self-esteem.

Keywords: emotional intelligence; resilience; self-esteem; satisfaction with life; university students

Citation: Vilca-Pareja, V.; Luque Ruiz de Somocurcio, A.; Delgado-Morales, R.; Medina Zeballos, L. Emotional Intelligence, Resilience, and Self-Esteem as Predictors of Satisfaction with Life in University Students. *IJERPH* **2022**, *19*, 16548. https://doi.org/10.3390/ijerph192416548

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 21 September 2022
Accepted: 6 December 2022
Published: 9 December 2022

1. Introduction

There is a growing interest in investigating constructs framed within Positive Psychology as alternative solutions to promote mental health. Positive Psychology is an approach based on human strengths. This paradigm includes constructs such as emotional intelligence, resilience, self-esteem, subjective wellbeing, and optimism. Our study provides evidence about the predictive value of emotional intelligence, resilience, and self-esteem in life satisfaction in the Peruvian context. There is research on these variables in Europe and the USA; however, there is not enough evidence on how these variables predict satisfaction with life in the Peruvian and Latin American contexts.

Peru has its idiosyncrasies marked by maleness, a patriarchal culture, with high rates of family violence and violence against women, discrimination, and racism among other psychosocial problems. Therefore, it is important to investigate factors that could contribute to an increase psychological well-being in Peru.

1.1. Emotional Intelligence (EI)

EI, according to the Wong and Law model [1], uses Mayer and Salovey's [2] conceptualization but also incorporates Gross's model of emotional regulation [3]. EI is the ability to perceive, understand, and regulate one's emotions and others [4–6]. Wong and

Law [1] specify that EI is composed of four dimensions: (a) the ability to appraise and express emotions in self; (b) the ability to appraise and recognize emotion in others; (c) the ability to regulate one's own emotions, which allows faster recovery from psychological discomfort; and (d) the use of emotion to facilitate performance, which is the ability of individuals to use their emotions to orient themselves towards constructive activities and personal performance.

We found two models developed for the EI: a model that conceives EI as a personality trait [7], and another that conceptualizes it as a capacity [2]. The latter is defined as the cognitive ability to process emotional information to resolve conflicts adaptively [8], while for Petrides [9], the Trait Emotional Intelligence (Trait EI) refers to people's perceptions of their emotional abilities and is located at the lower levels of personality hierarchies.

EI is considered to moderate mental health's adverse effects [10,11]. A higher EI is associated with greater satisfaction, job success [12,13], and better health [14]. EI correlates positively with self-efficacy in university students [15–17]. In addition, people with higher EI possess more developed social skills, are prosocial, less conflictive, and are better at coping with emotional difficulties [11,18]; people with a low level of EI are more likely to experience interpersonal difficulties and significant psychological problems [19].

1.2. Resilience

Resilience is the ability to show courage and adaptability when facing life's misfortunes [20]. It is a positive trait that moderates the negative effects of stress and helps individuals adapt [21,22]. Wagnild and Young [22] mention that this variable comprises two factors: (a) personal competence and (b) acceptance of self and life. They also mention five characteristics of resilience: (a) meaningfulness, (b) existential aloneness, (c) self-reliance, (d) equanimity, and (e) perseverance.

1.3. Self-Esteem

Self-esteem is the attitude of acceptance or rejection of oneself [23,24]; it can be global or specific [25]. Global self-esteem is the individual's positive or negative attitude toward the self as a totality [26,27]. This study measured global self-esteem, which is related to subjective wellbeing. Self-esteem is one of the factors that influences social functioning [28]. It is paramount to people's success and wellbeing [29] and plays a protective role [30] against the effects of COVID-19 and contributes to one's perceptions of their quality of life [31].

1.4. Satisfaction with Life (SWL)

Subjective wellbeing is a broad concept that includes experiencing high levels of pleasant emotions, low levels of negative emotions, and high satisfaction with life [32,33]. Therefore, subjective wellbeing is defined as a person's global cognitive and affective assessments of their life [32,34,35]. Positive affects refers to pleasant emotions such as motivation, energy, desire for affiliation, achievement, or success; negative affects refers to unpleasant or uncomfortable emotions such as fear, inhibition, insecurity, frustration, and failure [36].

This study addressed the cognitive component of subjective wellbeing, i.e., SWL. SWL is a global judgment that people make about their life based on their unique criteria [37,38].

1.5. Emotional Intelligence, Resilience, Self-Esteem, and Satisfaction with Life

Meta-analytical studies, such as those performed by Sánchez-Álvarez et al. [39] and Xu et al. [40], showed that EI was associated with subjective wellbeing. There is research that shows that EI predicts SWL [6,18,41–48].

As for self-esteem, Liu and Fu [49], Pérez-Fuentes et al. [50], and Wang and Wu [51] showed that self-esteem correlated with SWL of university students. Self-esteem has been shown to predict SWL [52–59]. Moreover, Guasp et al. [60] used regression models to find that self-esteem and EI were significant predictors of SWL. Similarly, Arslan [61] found

that self-esteem and resilience influenced SWL. Lacomba-Trejo et al. [62] showed that EI and resilience were associated with subjective wellbeing in their cognitive and affective components. As for resilience, it contributed positively to subjective wellbeing [63–65]. Salavera et al. [36] found that EI and self-esteem played an important role in wellbeing. Another study has corroborated the predictive capacity of EI and resilience for SWL [66].

1.6. Comparisons between Men and Women

Studies have shown that men generally have a better ability to manage and regulate emotions [67,68]. Mikolajczak et al. [68] showed that men scored higher on self-regulation of emotion, and women scored higher on appraisal and expression of emotion in self. D'Amico and Geraci [69] used the multi-trait and multi-method tool IE-ACCME (Intelligenza Emotiva: Abilitá, Credenze e Concetto di Sé Meta-Emotivo). This research showed that women scored higher than men on the appraisal and expression of emotion in self, suggesting a tendency in women to think and ruminate more about their own emotions, which in turn may trigger stress [41]. Ye et al. [70] found that women scored higher on self-esteem and SWL scores than men. Regarding resilience, Flórez and Sánchez [71] showed that men scored higher than women. Kumar [72] and Xie et al. [73] found that self-esteem was higher in men than in women. Finally, Gavín-Chocano et al. [8] found that men had higher scores on life satisfaction than women. Studies on sex differences in EI, resilience, self-esteem, and SWL are needed in Peru, where gender perspectives are different from Western cultures. Such studies may help develop programs to meet the needs of men and women in Peru.

The objectives of the present research were to (a) correlate EI, resilience, and self-esteem with SWL; (b) examine the differences between men and women based on the study variables; and (c) determine whether EI, resilience, and self-esteem predict SWL.

2. Method

2.1. Participants

The sample consisted of 2574 Peruvian students, 715 men and 1859 women from Arequipa, Peru, with a mean age of 20.83 years. They were recruited from two universities, one public and one private. To be included in the study, the students had to be over 18 years old and enrolled in Education, Psychology, Communication Sciences, or Social Work. All students gave their consent to participate in the study.

2.2. Procedure

The participants completed a sociodemographic sheet, followed by four scales measuring EI, resilience, self-esteem, and SWL. Data were gathered online using Google Forms. The students were recruited through school principals who authorized the researchers to enter hybrid classes at private and public universities through the meet platform. All students were given information about the research before requesting their consent to participate in this study. It was stressed that the responses were anonymous. This research was authorized by the Institutional Research Ethics Committee of the Universidad Católica de Santa María through resolution 015-22.

2.3. Instruments

2.3.1. Wong and Law Emotional Intelligence Scale (WLEIS)

The Spanish version of WLEIS was validated by Extremera et al. [74] and adapted by Merino-Soto et al. [75] for studies in Peru. This instrument includes 4 dimensions and 16 items, with 4 items for each dimension [76]. The dimensions are: (a) appraisal and expression of emotion in self (item example: I have a good sense of why I have certain feelings most of the time); (b) appraisal and recognition of emotion in others (item example: I'm a good observer of others' emotions); (c) self-regulation of emotion (item example: I am able to control my temper and handle difficulties rationally); and (d) the use of emotion to facilitate performance (item example: I always set goals for myself and then try my best

to achieve them). It featured seven response alternatives on a Likert scale, ranging from 1 (completely disagree) to 7 (completely agree). Wong and Law [1] reported the Cronbach alpha reliability ranged from 0.83 to 0.90. In their research, Extremera et al. [75] reported the Cronbach alpha reliability: Self-Emotion Appraisal 0.79, Other's Emotion Appraisal 0.81, Use of Emotion 0.81, and Regulation of Emotion 0.84.

2.3.2. Resilience scale (ER-25)

The resilience scale is a self-report scale. It evaluates the degree of individual resilience through two factors: (a) Factor I, personal competence, composed of 17 items; (b) Factor II, acceptance of self and life, composed of 8 items. These factors represented the following characteristics of resilience: (a) meaningfulness, (b) existential aloneness, (c) self-reliance, (d) equanimity, and (e) perseverance [22]. This scale is composed of 25 items with a Likert scale of 7 points, ranging from 1 to 7. The sum of the scale scores is the total score, and the values range from 25 to 175. This scale was validated in Peru by Castilla et al. [77], and the Cronbach alpha reliability was 0.89. A representative item of this scale is "It's okay if there are people who don't like me". Cejudo et al. [43] reported the Cronbach alpha reliability of 0.81.

2.3.3. Rosenberg Self-Esteem Scale (RSES)

The RSES is a popular instrument used to evaluate perceived global self-esteem. This scale consists of 10 items, of which 5 are positively worded and 5 are negatively worded. In the rating of the scale, the negatively worded items are assigned an inverse score; for the overall score of self-esteem, the scores of all items are added together, allowing scores ranging between 10 and 40 points, where a higher score expresses high levels of self-esteem. It was adapted into Spanish by Martín-Albo et al. [78]. In Peru, it was adapted and validated by Ventura-León et al. [79], who reported the reliability of H >.80 (Index H is the measure of reliability, and it is interpreted in the same way as the Cronbach alpha reliability > 0.70). Ventura-León et al. [79] conducted a confirmatory factor analysis for validating RSES. In addition, for this study, we used the well-validated Spanish version. Pérez-Fuentes et al. [50] reported the Cronbach alpha reliability of 0.82. A representative item of this scale is "I believe that I have some good qualities".

2.3.4. Satisfaction with Life Scale (SWLS)

The SWLS measures the respondents' perceptions of their satisfaction with life [80]. It consists of five items rated on a seven-point Likert scale. It was adapted into Spanish by Vázquez et al. [38], who obtained a Cronbach's alpha of 0.87, and it was validated in Peru by Calderón de la Cruz et al. [81], who obtained a Cronbach's alpha of 0.90. A representative item of this scale is "I am satisfied with my life". Cejudo et al. [43] reported the Cronbach alpha reliability of 0.83.

2.4. Data Analysis

All data analyses were performed using the SPSS version 28 statistical program (IBM, 2016). The reliability of each instrument was examined by computing the Cronbach's alpha coefficients (α) and descriptive statistics (M = mean; SD = standard deviation). Pearson's r was computed between all variables. Then, independent sample *t*-tests were computed to examine sex differences, along with Cohen's d values, which were evaluated by the following guidelines: <0.50 (small), 0.50–0.79 (moderate), and $\geq$0.80 (large). In addition, simultaneous multiple regression was used to examine how well the EI dimensions (appraisal and expression of emotion in self, appraisal and recognition of emotion in others, self-regulation of emotion, and the use of emotion to facilitate performance), resilience, and self-esteem predicted life satisfaction.

3. Results

The sample size was 2574 for all analyses. Table 1 presents the means and standard deviations of the study variables, as well as the evidence for reliability. It was evident that the instruments were reliable (above the 0.70 value).

Table 1. Descriptive statistics and reliability.

	M	SD	α
Appraisal and expression of emotion in self	22.10	4.00	0.70
Appraisal and recognition of emotion in others	22.80	3.40	0.78
Self-regulation of emotion	20.50	4.40	0.78
Use of emotion to facilitate performance	21.80	4.10	0.71
Resilience	128.50	27.70	0.96
Self-esteem	2.80	0.50	0.86
Life satisfaction	23.50	6.50	0.89

M: mean; SD: standard deviation; α: Cronbach's alpha.

Table 2 presents the correlations between self-esteem, resilience, and the EI dimensions (appraisal and expression of emotion in self, appraisal and recognition of emotion in others, self-regulation of emotion, and use of emotion to facilitate performance) that had a significant and direct correlation with SWL.

Table 2. Correlation matrix of the study variables (n = 2574).

	1	2	3	4	5	6	7
1. Self-esteem	–						
2. Resilience	0.40 **	–					
3. Appraisal and expression of emotion in self	0.51 **	0.27 **	–				
4. Appraisal and recognition of emotion in others	0.26 **	0.18 **	0.54 **	–			
5. Use of emotion to facilitate performance	0.62 **	0.33 **	0.65 **	0.51 **	–		
6. Self-regulation of emotion	0.48 **	0.24 **	0.71 **	0.43 **	0.62 **	–	–
7. Life satisfaction	0.63 **	0.24 **	0.48 **	0.29 **	0.57 **	0.48 **	–

** $p < 0.001$.

Sex differences were tested using the independent sample *t*-tests (see Table 3). The results show statistically significant differences in favor of men on resilience, appraisal and recognition of emotion in others, and self-regulation of emotion. The mean scores were significantly higher for women than men on self-esteem and appraisal and expression of emotion in self.

Table 3. Sex differences.

	Men (715)		Women (1859)		*t*		
Variables	**M**	**SD**	**M**	**SD**	**(2572)**	***p***	**d**
Self-esteem	126.30	32.00	129.40	25.80	2.94	0.003	0.13
Resilience	22.70	3.90	21.90	4.00	−2.55	0.011	−0.11
Appraisal and expression of emotion in self	22.60	3.50	22.90	3.30	4.81	0.001	0.21
Appraisal and recognition of emotion in others	22.00	4.00	21.70	4.10	−1.99	0.046	−0.09
Self-regulation of emotion	2.90	0.50	2.80	0.50	5.56	0.001	0.24
Use of emotion to facilitate performance	21.30	4.30	20.20	4.40	1.42	0.155	0.06
Life satisfaction	23.90	6.60	23.40	6.40	1.65	0.098	0.07

M: mean; SD: standard deviation; *t*= independent samples *t*-test; d: effect size using Cohen d.

Simultaneous multiple regression analysis was performed. Self-esteem, resilience factors (personal competence and acceptance of self and life), and the EI dimensions

(appraisal and expression of emotion in self, appraisal and recognition of emotion in others, self-regulation of emotion and use of emotion to facilitate performance) were considered predictor variables, and SWL was considered a criterion variable.

Table 4 presents the results of simultaneous multiple regression. The results revealed a coefficient of multiple determination of 0.48 indicating that self-esteem, self-regulation of emotion, the use of emotion to facilitate performance, and acceptance of self and life accounted for 48% of the variance in life satisfaction, while personal competence inversely predicted SWL. The variables appraisal and expression of emotion in self, and appraisal and recognition of emotion in others were not significant in SWL. To ensure the absence of multicollinearity, the tolerance values and the Variance Inflation Factor (VIF) were verified. As a rule of thumb, tolerance values < 0.10 and VIF > 10.0 are a sign of multicollinearity [82,83], the predictor variables did not have tolerance values < 0.10 nor VIF > 10.0.

Table 4. Simultaneous multiple regression analysis to predict satisfaction with life.

Variables	Dimensions	Predictors				
		B	R^2	β	t	p
			0.48			
Self-esteem	Global self-esteem	5.08		0.41	21.04	0.001
Resilience	Personal competence	−0.11		−0.32	−9.41	0.001
	Acceptance of self and life	0.21		0.29	8.35	0.001
Emotional Intelligence	Appraisal and expression of emotion in self	0.05		0.03	1.43	0.154
	Appraisal and recognition of emotion in others	0.04		0.02	1.04	0.300
	Self-regulation of emotion	0.17		0.12	5.45	0.001
	Use of emotion to facilitate performance	0.35		0.22	9.80	0.001

B: non-standardized beta coefficient; β standardized beta coefficient.

4. Conclusions

The main objective of the present research was to determine whether EI, resilience, and self-esteem predicted SWL in the Peruvian context. We calculated the correlations between EI, resilience, self-esteem, and SWL. We also tested the differences between men and women.

All EI dimensions had significant and positive correlations with SWL. These results are consistent with Sánchez-Álvarez et al. [39] and Xu et al. [40], who also found these variables to be correlated. Resilience had a positive association with SWL, and these results were similar to those of Lacomba-Trejo et al. [62]. Self-esteem was positively associated with SWL. The studies by Holopainen et al. [55] and Rey et al. [58] support this result.

Differences in the mean scores between men and women were evident. Men scored higher on the appraisal and recognition of emotion, self-regulation of emotion, and resilience. We found that our results aligned with other research that found that men perceive themselves to be better at regulating their emotions. Women perceive themselves to be better at appraisal and expression of emotion (see [8,42,68]). We can interpret these results in light of the maleness and patriarchal culture implanted in Peru, where the social stereotypes established for men do not allow them to connect with their emotions; however, women are free to appraise and express their emotions.

The mean scores of self-esteem for women were higher than for men. The results were consistent with Ye et al. [70] who, in a study of college students, found that women had higher self-esteem scores than men. A possible explanation for the sex differences in self-esteem is that Peruvian women have had greater access to higher education in this millennium, giving them a higher sense of empowerment and self-confidence. Regarding the resilience variable, we found higher scores for men than for women; these results are similar to those in Flórez and Sánchez [71].

Self-regulation of emotion and use of emotion predicted SWL. It was not enough to evaluate, recognize, and express emotions to experience SWL. These results are consistent with Blasco-Belled et al. [41], Cejudo et al. [43], Extremera et al. [45], Kong et al. [46], Koydemir et al. [47], and Szcygiet and Mikolajczak [48]. Acceptance of self and life predicted SWL; these results coincide with those found by Hartson et al. [63], Rasheed et al. [64], and Zhao et al. [65]; however, personal competence negatively predicted SWL. Self-esteem was the best predictor of SWL, and these results were similar to those of other studies (see [50,52,57,59]). Self-esteem, self-regulation of emotion, use of emotion, and the acceptance of self and life jointly predicted 48% of the variance in SWL, a high percentage when explaining the factors that predict SWL. We postulate that when individuals have the ability to process emotions and feel good about themselves, they are more likely to experience wellbeing. On the contrary, individuals who do not adequately regulate their emotions and have difficulty properly using their emotions experiences unhappiness and probably generates discomfort around them.

The implications of the findings relate to the need to design and implement emotional education programs that involve issues such as self-esteem, resilience, and EI to increase SWL in university students. This study contributes to understanding possible predictors of SWL in the Peruvian-Latin American context in university students.

A limitation of this study was that we used a sample of university students, which do not allow us to generalize the results to other populations such as children, adolescents, and adults. In addition, the sample was primarily made up of women, which could affect the results. We suggest equating the numbers of men and women in the sample in future studies. It is necessary to replicate this research with students pursuing other professional careers to analyze the behavior of these variables. Finally, we suggest including the affective component of subjective wellbeing in future studies.

Author Contributions: Conceptualization, V.V.-P., A.L.R.d.S., R.D.-M. and L.M.Z.; methodology, V.V.-P., A.L.R.d.S., R.D.-M. and L.M.Z.; investigation, V.V.-P., A.L.R.d.S., R.D.-M. and L.M.Z.; writing—original draft preparation, V.V.-P., A.L.R.d.S., R.D.-M. and L.M.Z.; writing—review and editing, V.V.-P., A.L.R.d.S., R.D.-M. and L.M.Z.; supervision, V.V.-P.; funding acquisition, V.V.-P. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by competitive funds of the Vice-Rectorate for Research of the Universidad Católica de Santa María de Arequipa, Peru (resolution 28048-R-2021).

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Institutional Research Ethics Committee of the Universidad Católica de Santa María (protocol code 015-22).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to we also require the authorization of the Vice-Rectorate for Research of Universidad Católica de Santa María.

Acknowledgments: The authors appreciate the financial support of the Universidad Católica de Santa María de Arequipa, Peru.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Wong, C.S.; Law, K.S. The Effects of Leader and Follower Emotional Intelligence on Performance and Attitude: An Exploratory Study. *Leadersh. Q.* **2002**, *13*, 243–274. [CrossRef]
2. Mayer, J.D.; Salovey, P. What is Emotional Intelligence? In *Emotional Development and Emotional Intelligence: Implications for Educators*, 1st ed.; Salovey, P., Sluyter, D., Eds.; Basic Books: New York, NY, USA, 1997.
3. Gross, J. The Emerging Field of Emotion Regulation: An Integrative Review. *Rev. Gen. Psychol.* **1998**, *2*, 271–299. [CrossRef]
4. Mayer, J.D.; Caruso, D.R.; Salovey, P. The Ability Model of Emotional Intelligence: Principles and Updates. *Emot. Rev.* **2016**, *8*, 290–300. [CrossRef]
5. Salovey, P.; Mayer, J.D. Emotional Intelligence. *Imagin. Cogn. Personal.* **1990**, *9*, 185–211. [CrossRef]

6. Sha, J.; Tang, T.; Shu, H.; He, K.; Shen, S. Emotional Intelligence, Emotional Regulation Strategies, and Subjective Well-Being Among University Teachers: A Moderated Mediation Analysis. *Front. Psychol.* **2022**, *12*, 811260. [CrossRef] [PubMed]
7. Petrides, K.V.; Perazzo, M.F.; Pérez-Díaz, P.A.; Jeffrey, S.; Richardson, H.C.; Sevdalis, N.; Ahmad, N. Trait Emotional Intelligence in Surgeons. *Front. Psychol.* **2022**, *13*, 829084. [CrossRef]
8. Gavín-Chocano, O.; Molero, D.; Ubago-Jiménez, J.L.; García-Martínez, I. Emotions as Predictors of Life Satisfaction among University Students. *Int. J. Environ. Res. Public Health* **2020**, *17*, 9462. [CrossRef] [PubMed]
9. Petrides, K.V. Ability and Trait Emotional Intelligence. In *The Wiley-Blackwell Handbook of Individual Differences*; The Wiley Blackwell: Hoboken, NJ, USA, 2011; pp. 656–678. [CrossRef]
10. Grover, S.; Furnham, A. Does Emotional Intelligence and Resilience Moderate the Relationship between the Dark Triad and Personal and Work Burnout? *Personal. Individ. Differ.* **2020**, *169*, 109979. [CrossRef]
11. Skokou, M.; Sakellaropoulos, G.; Zairi, N.A.; Gourzis, P.; Ou, A. An Exploratory Study of Trait Emotional Intelligence and Mental Health in Freshmen Greek Medical Students. *Curr. Psychol.* **2021**, *40*, 6057–6066. [CrossRef]
12. Brasseur, S.; Grégoire, J.; Bourdu, R.; Mikolajczak, M. The Profile of Emotional Competence (PEC): Development and Validation of a Self-Reported Measure that Fits Dimensions of Emotional Competence Theory. *PLoS ONE* **2013**, *8*, e62635. [CrossRef]
13. Mayer, J.D.; Roberts, R.D.; Barsade, S.G. Human Abilities: Emotional Intelligence. *Annu. Rev. Psychol.* **2008**, *59*, 507–536. [CrossRef] [PubMed]
14. Martins, A.; Ramalho, N.; Morin, E. A Comprehensive Meta-Analysis of the Relationship between Emotional Intelligence and Health. *Personal. Individ. Differ.* **2010**, *49*, 554–564. [CrossRef]
15. Wang, K.; Yang, Y.; Zhang, T.; Ouyang, Y.; Liu, B.; Luo, J. The Relationship between Physical Activity and Emotional Intelligence in College Students: The Mediating Role of Self-Efficacy. *Front. Psychol.* **2020**, *11*, 967. [CrossRef] [PubMed]
16. Maalouf, E.; Hallit, S.; Obeid, S. Personality Traits and Quality of Life among Lebanese Medical Students: Any Mediating Effect of Emotional Intelligence? A Path Analysis Approach. *BMC Psychol.* **2022**, *10*, 28. [CrossRef]
17. Petrides, K.V.; Vernon, P.A.; Schermer, J.A.; Veselka, L. Trait Emotional Intelligence and the Dark Triad Traits of Personality. *Twin Res. Hum. Genet.* **2011**, *14*, 35–41. [CrossRef]
18. Wang, M.; Zhang, W.; Hou, K. Emotional Intelligence and Subjective Well-Being in Chinese University Students: The Role of Humor Styles. *J. Happiness Stud.* **2018**, *20*, 1163–1178. [CrossRef]
19. Petrides, K.; Mikolajczak, M.; Mavroveli, S.; Sanchez-Ruiz, M.J.; Furnham, A.; Pérez-González, J.C. Developments in Trait Emotional Intelligence Research. *Emot. Rev.* **2016**, *8*, 335–341. [CrossRef]
20. Wagnild, G.; Young, H.M. Resilience among Older Women. *Image-J. Nurs. Scholarsh.* **1990**, *22*, 252–255. [CrossRef]
21. Wagnild, G.M. Resilience, Coping and Posttraumatic Growth. The Resilience Scale. In *Tools for Strengths-Based Assessment and Evaluation*; Springer Publishing Company: New York, NY, USA, 2013; pp. 243–244.
22. Wagnild, G.M.; Young, H.M. Development and Psychometric Evaluation of the Resilience Scale. *J. Nurs. Meas.* **1993**, *1*, 165–178.
23. Alessandri, G.; Vecchione, M.; Eisenberg, N.; Łaguna, M. On the Factor Structure of the Rosenberg (1965) General Self-Esteem Scale. *Psychol. Assess.* **2015**, *27*, 621–635. [CrossRef]
24. Rosenberg, M. The Association between Self-Esteem and Anxiety. *J. Psychiatr. Res.* **1962**, *1*, 135–152. [CrossRef] [PubMed]
25. Rosenberg, F.R.; Rosenberg, M.; McCord, J. Self-Esteem and Delinquency. *J. Youth Adolesc.* **1978**, *7*, 279–294. [CrossRef] [PubMed]
26. Rosenberg, M.; Schooler, C.; Schoenbach, C.; Rosenberg, F. Global Self-Esteem and Specific Self-Esteem: Different Concepts, Different Outcomes. *JSTOR* **1995**, *60*, 141–156. [CrossRef]
27. Supple, A.J.; Su, J.; Plunkett, S.W.; Peterson, G.W.; Bush, K.R. Factor Structure of the Rosenberg Self-Esteem Scale. *J. Cross-Cult. Psychol.* **2012**, *44*, 748–764. [CrossRef]
28. Poudel, A.; Gurung, B.; Khanal, G.P. Perceived Social Support and Psychological Wellbeing among Nepalese Adolescents: The Mediating Role of Self-Esteem. *BMC Psychol.* **2020**, *8*, 43. [CrossRef]
29. Monteiro, R.P.; de Holanda Coelho, G.L.; Hanel, P.H.P.; de Medeiros, E.D.; da Silva, P.D.G. The Efficient Assessment of Self-Esteem: Proposing the Brief Rosenberg Self-Esteem Scale. *Appl. Res. Qual. Life* **2022**, *17*, 931–947. [CrossRef]
30. Xu, S.; Fan, L.; Su, C. Effect of Peer Attachment on Legal Emotion among Junior Middle School Students: The Mediation Role of Self-Esteem. *Front. Psychol.* **2022**, *13*, 923604. [CrossRef]
31. Kondratowicz, B.; Werner, D.; Połomski, P.; Khosla, M. Satisfaction with Job, Life and Remote Work in the Covid19 Pan- demic. The Role of Perceived Stress, Self-Efficacy and Self-Esteem. *Curr. Issues Personal. Psychol.* **2022**, *10*, 49–60. [CrossRef]
32. Diener, E.; Lucas, R.E.; Oishi, S. Sujective Well-Being: The Science of Happiness and Life Satisfaction. In *Oxford Handbook of Positive Psychology*; Oxford University Press: Oxford, UK, 2002; pp. 463–473.
33. Yıldırım, M.; Belen, H. The Role of Resilience in the Relationships between Externality of Happiness and Subjective Well-Being and Flourishing: A Structural Equation Model Approach. *J. Posit. Psychol. Wellbeing* **2019**, *3*, 62–76. [CrossRef]
34. Diener, E.; Ryan, K. Subjective Well-Being: A General Overview. *S. Afr. J. Psychol.* **2009**, *39*, 391–406. [CrossRef]
35. Pérez-Escoda, N. Variables Predictivas de la Satisfacción con la Vida en Estudiantes Universitarios. In Proceedings of the Comunicación Presentada al XVI Congreso Nacional/II Internacional Modelos de Investigación Educativa de AIDIPE, Alicante, Spain, 4–6 September 2013.
36. Salavera, C.; Usán, P.; Teruel, P. The Mediating Role of Positive and Negative Affects in the Relationship between Self-Esteem and Happiness. *Psychol. Res. Behav. Manag.* **2020**, *13*, 355–361. [CrossRef] [PubMed]

37. Pavot, W.; Diener, E. Review of the Satisfaction with Life Scale. In *Assessing Well-Being*; Springer: Dordrecht, The Netherlands, 2009; pp. 101–117. [CrossRef]
38. Vázquez, C.; Duque, A.; Hervás, G. Satisfaction with Life Scale in a Representative Sample of Spanish Adults: Validation and Normative Data. *Span. J. Psychol.* **2013**, *16*, E82. [CrossRef] [PubMed]
39. Sánchez-Álvarez, N.; Extremera, N.; Fernández-Berrocal, P. The Relation between Emotional Intelligence and Subjective Well-Being: A Meta-Analytic Investigation. *J. Posit. Psychol.* **2015**, *11*, 276–285. [CrossRef]
40. Xu, X.; Pang, W.; Xia, M. Are Emotionally Intelligent People Happier? A Meta-Analysis of the Relationship between Emotional Intelligence and Subjective Well-Being Using Chinese Samples. *Asian J. Soc. Psychol.* **2020**, *24*, 477–498. [CrossRef]
41. Blasco-Belled, A.; Rogoza, R.; Torrelles-Nadal, C.; Alsinet, C. Emotional Intelligence Structure and Its Relationship with Life Satisfaction and Happiness: New Findings from the Bifactor Model. *J. Happiness Stud.* **2020**, *21*, 2031–2049. [CrossRef]
42. Cañero, M.; Mónaco, E.; Montoya, I. Emotional Intelligence and Empathy as Predictors of Subjective Well-Being in University Students. *Eur. J. Investig. Health Psychol. Educ.* **2019**, *9*, 19–29. [CrossRef]
43. Cejudo, J.; Luz López-Delgado, M.; Jesús Rubio, M. Inteligencia Emocional y Resiliencia: Su Influencia en la Satisfacción con la Vida en Estudiantes Universitarios. *Anu. Psicol./UB J. Psychol.* **2016**, *46*, 51–57. [CrossRef]
44. Costa, H.; Saavedra, F.; Fernandes, H.M. Emotional Intelligence and Well-Being: Associations and Sex and Age Effects during Adolescence. *Work* **2021**, *69*, 275–282. [CrossRef]
45. Extremera, N.; Sánchez-Álvarez, N.; Rey, L. Pathways between Ability Emotional Intelligence and Subjective Well-Being: Bridging Links through Cognitive Emotion Regulation Strategies. *Sustainability* **2020**, *12*, 2111. [CrossRef]
46. Kong, F.; Gong, X.; Sajjad, S.; Yang, K.; Zhao, J. How is Emotional Intelligence Linked to Life Satisfaction? The Mediating Role of Social Support, Positive Affect and Negative Affect. *J. Happiness Stud.* **2019**, *20*, 2733–2745. [CrossRef]
47. Koydemir, S.; Simsek, O.F.; Schütz, A.; Tipandjan, A. Differences in How Trait Emotional Intelligence Predicts Life Satisfaction: The Role of Affect Balance versus Social Support in India and Germany. *J. Happiness Stud.* **2013**, *14*, 51–66. [CrossRef]
48. Szczygieł, D.; Mikolajczak, M. Why are People High in Emotional Intelligence Happier? They Make the Most of Their Positive Emotions. *Personal. Individ. Differ.* **2017**, *117*, 177–181. [CrossRef]
49. Liu, B.; Fu, S. Perceived Poverty and Life Satisfaction in College Students with Impoverished Backgrounds: The Mediating Role of Self-Esteem. *Psychol. Res. Behav. Manag.* **2022**, *15*, 327–337. [CrossRef] [PubMed]
50. Pérez-Fuentes, M.D.C.; Molero Jurado, M.D.M.; Gázquez Linares, J.J.; Oropesa Ruiz, N.F.; Simón Márquez, M.D.M.; Saracostti, M. Parenting Practices, Life Satisfaction, and the Role of Self-Esteem in Adolescents. *Int. J. Environ. Res. Public Health* **2019**, *16*, 4045. [CrossRef] [PubMed]
51. Wang, Q.; Wu, H. Associations between Maladaptive Perfectionism and Life Satisfaction among Chinese Undergraduate Medical Students: The Mediating Role of Academic Burnout and the Moderating Role of Self-Esteem. *Front. Psychol.* **2022**, *12*, 774622. [CrossRef] [PubMed]
52. Aziz, M.; Khan, W.; Amin, F.; Khan, M.F. Influence of Parenting Styles and Peer Attachment on Life Satisfaction among Adolescents: Mediating Role of Self-Esteem. *Fam. J.* **2021**. [CrossRef]
53. Butkovic, A.; Tomas, J.; Spanic, A.; Vukasovic Hlupic, T.; Bratko, D. Emerging Adults versus Middle-Aged Adults: Do they Differ in Psychological Needs, Self-Esteem and Life Satisfaction. *J. Happiness Stud.* **2020**, *21*, 779–798. [CrossRef]
54. Hart, W.; Richardson, K.; Breeden, C.J.; Kinrade, C. Self-Esteem Mediates Effects of Normal and Pathological Personality Traits on Subjective Well-Being. *Scand. J. Psychol.* **2021**, *62*, 735–745. [CrossRef]
55. Holopainen, L.; Waltzer, K.; Hoang, N.; Lappalainen, K. The Relationship between Students' Self-Esteem, Schoolwork Difficulties and Subjective School Well-being in Finnish Upper-Secondary Education. *Int. J. Educ. Res.* **2020**, *104*, 101688. [CrossRef]
56. Kaçay, Z.; Çutuk, S.; Çiris, V.; Akkus Çutuk, Z. Self-Esteem and Life Satisfaction in University Students: A Study Report. *Ambient Sci.* **2020**, *7*, 139–143. [CrossRef]
57. Liu, H.; Zhang, X.; Chang, R.; Wang, W. A Research Regarding the Relationship among Intensive Care Nurses' Self-Esteem, Job Satisfaction and Subjective Well-Being. *Int. J. Nurs. Sci.* **2017**, *4*, 291–295. [CrossRef] [PubMed]
58. Rey, L.; Extremera, N.; Pena, M. Perceived Emotional Intelligence, Self-Esteem and Life Satisfaction in Adolescents. *Psychosoc. Interv.* **2011**, *20*, 227–234. [CrossRef]
59. Rossi, A.; Panzeri, A.; Pietrabissa, G.; Manzoni, G.M.; Castelnuovo, G.; Mannarini, S. The Anxiety-Buffer Hypothesis in the Time of COVID-19: When Self-Esteem Protects from the Impact of Loneliness and Fear on Anxiety and Depression. *Front. Psychol.* **2020**, *11*, 2177. [CrossRef] [PubMed]
60. Guasp, M.; Navarro-Mateu, D.; Giménez-Espert, M.D.C.; Prado-Gascó, V. Emotional Intelligence, Empathy, Self-Esteem, and Life Satisfaction in Spanish Adolescents: Regression vs. QCA Models. *Front. Psychol.* **2020**, *11*, 1629. [CrossRef] [PubMed]
61. Arslan, G. Mediating Role of the Self–Esteem and Resilience in the Association between Social Exclusion and Life Satisfaction among Adolescents. *Personal. Individ. Differ.* **2019**, *151*, 109514. [CrossRef]
62. Lacomba-Trejo, L.; Mateu-Mollá, J.; Bellegarde-Nunes, M.D.; Delhom, I. Are Coping Strategies, Emotional Abilities, and Resilience Predictors of Well-Being? Comparison of Linear and Non-Linear Methodologies. *Int. J. Environ. Res. Public Health* **2022**, *19*, 7478. [CrossRef]
63. Hartson, K.R.; Hall, L.A.; Choate, S.A. Stressors and Resilience are Associated with Well-Being in Young Adult College Students. *J. Am. Coll. Health* **2021**, 1–9. [CrossRef]

64. Rasheed, N.; Fatima, I.; Tariq, O. University Students' Mental Well-Being during COVID-19 Pandemic: The Mediating Role of Resilience between Meaning in Life and Mental Well-Being. *Acta Psychol.* **2022**, *227*, 103618. [CrossRef]
65. Zhao, F.; Guo, Y.; Suhonen, R.; Leino-Kilpi, H. Subjective Well-Being and Its Association with Peer Caring and Resilience among Nursing Vs Medical Students: A Questionnaire Study. *Nurse Educ. Today* **2016**, *37*, 108–113. [CrossRef]
66. Olusoji, J.; Essien, S.; Onoriode, G. Psychological Capital and Work Engagement among Employees in the Nigerian Public Sector: The Mediating Role of Emotional Intelligence. *Int. J. Public Adm.* **2021**, 1–9. [CrossRef]
67. Brackett, M.A.; Rivers, S.E.; Shiffman, S.; Lerner, N.; Salovey, P. Relating Emotional Abilities to Social Functioning: A Comparison of Self-Report and Performance Measures of Emotional Intelligence. *J. Personal. Soc. Psychol.* **2006**, *91*, 780–795. [CrossRef] [PubMed]
68. Mikolajczak, M.; Luminet, O.; Leroy, C.; Roy, E. Psychometric Properties of the Trait Emotional Intelligence Questionnaire: Factor Structure, Reliability, Construct, and Incremental Validity in a French-Speaking Population. *J. Personal. Assess.* **2007**, *88*, 338–353. [CrossRef] [PubMed]
69. D'Amico, A.; Geraci, A. Sex Differences in Emotional and Meta-Emotional Intelligence in Pre-Adolescents and Adolescents. *Acta Psychol.* **2022**, *227*, 103594. [CrossRef] [PubMed]
70. Ye, S.; Yu, L.; Li, K.K. A Cross-Lagged Model of Self-Esteem and Life Satisfaction: Gender Differences among Chinese University Students. *Personal. Individ. Differ.* **2012**, *52*, 546–551. [CrossRef]
71. Flórez, N.; Sánchez, R. Optimismo, Resiliencia, Sentido del Humor y la Salud de Personas con Pareja. *Pensando Psicol.* **2019**, *15*, 1–24. [CrossRef]
72. Kumar, R. Arithmetical Analysis of Gender-Based Relative Behavior on Life Satisfaction and Self-Esteemed Mental Health. *Hum. Arenas* **2021**, *4*, 458–470. [CrossRef]
73. Xie, F.; Xin, Z.; Chen, X.; Zhang, L. Gender Difference of Chinese High School Students' Math Anxiety: The Effects of Self-Esteem, Test Anxiety and General Anxiety. *Sex Roles* **2019**, *81*, 235–244. [CrossRef]
74. Extremera, N.; Rey, L.; Sánchez-Álvarez, N. Validation of the Spanish Version of the Wong Law Emotional Intelligence Scale (WLEIS-S). *Psicothema* **2019**, *31*, 94–100. [CrossRef]
75. Merino-Soto, C.; Lunahuana-Rosales, M.; Kumar, R. Validación Estructural del Wong-Law Emotional Intelligence Scale (Wleis): Estudio Preliminar en Adultos. *Liberabit* **2016**, *22*, 103–110. [CrossRef]
76. Wong, C.S.; Law, K.S. Wong and Law Emotional Intelligence Scale (WLEIS). *APA PsycTests* 2002. [CrossRef]
77. Castilla, H.; Coronel, J.; Bonilla, A.; Mendoza, M.; Barboza, M. Validez y Confiabilidad de la Escala de Resiliencia (Scale Resilience) en una Muestra de Estudiantes y Adultos de la Ciudad de Lima. *Rev. Peru. Psicol. Trab. Soc.* **2016**, *4*, 121–136.
78. Martín-Albo, J.; Núñez, J.; Navarro, J.; Grijalvo, F. The Rosenberg Self-Esteem Scale: Translation and Validation in University Students. *Span. J. Psychol.* **2007**, *10*, 458–467. [CrossRef] [PubMed]
79. Ventura-León, J.; Caycho-Rodréguez, T.; Barboza-Palomino, M.; Salas, G. Evidencias Psicométricas de la Escala de Autoestima de Rosenberg en Adolescentes Limeños. *Rev. Interam. Psicol./Interam. J. Psychol.* **2018**, *52*, 44–60.
80. Diener, E.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The Satisfaction with Life Scale. *J. Personal. Assess.* **1985**, *49*, 71–75. [CrossRef] [PubMed]
81. Calderón de la Cruz, G.; Lozano, F.; Cantuarias, A.; Ibarra, L. Validación de la Escala +de Satisfacción con la Vida en Trabajadores Peruanos. *Liberabit* **2018**, *24*, 249–264. [CrossRef]
82. Keith, T.Z. *Multiple Regression and Beyond: An Introduction to Multiple Regression and Structural Equation Modeling*, 3rd ed.; Routledge: New York, NY, USA, 2019.
83. Kline, R.B. *Principles and Practice of Structural Equation Modeling*, 4th ed.; The Guilford Press: New York, NY, USA, 2016.

International Journal of
Environmental Research and Public Health

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Article

A Longitudinal Experimental Study Examining How and Whether Practicing Acts of Kindness Affects Materialism

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Abstract: (1) Background: Kindness interventions assist individuals in the pursuit of greater well-being. However, little is known about whether these interventions can decrease materialism. The current study tested how kindness interventions decrease materialism and external aspirations. Furthermore, we tested whether these interventions influence impulsive shopping. (2) Method: We randomly assigned 122 females to a three-week intervention of practicing acts of kindness or a neutral intervention (practicing acts related to studying). Before and after the interventions, all participants reported their life satisfaction, level of materialism, and internal and external aspirations. (3) Results: Among women practicing acts of kindness, materialism and life satisfaction did not change compared to the control group, but in both conditions, life satisfaction increased, and materialism decreased. However, we found that practicing kindness was associated with (a) an increase in aspiration affiliation, (b) a reduction in the intention to shop impulsively, (c) less focus on external aspirations, and (d) more focus on internal aspirations. (4) Conclusions: Although our results show that practicing kindness does not lead to a decrease in materialism, they suggest that focusing on increasing personal happiness might lead to such a decrease. Furthermore, our research contributes to the existing literature by demonstrating that kind women are less oriented toward materialistic values.

Keywords: kindness interventions; materialism; satisfaction with life; self-determination theory

Citation: Drążkowski, D.; Trepanowski, R. A Longitudinal Experimental Study Examining How and Whether Practicing Acts of Kindness Affects Materialism. *IJERPH* **2022**, *19*, 16339. https://doi.org/10.3390/ijerph192316339

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 15 October 2022
Accepted: 2 December 2022
Published: 6 December 2022

1. Introduction

Researchers have identified many negative consequences of materialism. Materialists, compared to non-materialists, are less happy [1,2], have less satisfying social and family relationships [3], are less satisfied with their health and physical condition [4], are more anti-environmental [5], and experience financial problems more often [6]. Since materialism can be a threat to psychological health, it can be considered a public health problem [7]. According to self-determination theory (SDT), materialism negatively affects well-being because it leads to the pursuit of external aspirations (e.g., financial success). These aspirations do not directly fulfill intrinsic aspirations (e.g., social affiliation), which are crucial for well-being [8]. Therefore, practicing activities aimed at fulfilling internal needs should weaken the focus on external, materialistic aspirations. Such activities can include acts of kindness, which guide an individual's actions to foster relationships [9] and increase life satisfaction [10]. In turn, an increase in life satisfaction can lead to a decrease in materialism [11,12]. Thus, we investigated whether practicing acts of kindness influences a decrease in materialism and external aspirations by enhancing affiliation aspirations and increasing life satisfaction. Our results may contribute to a better understanding of the relationship between kindness and materialistic attitudes and consumption behaviors. This study is of great practical importance, as a researchers should focus on developing evidence-based measures to reduce materialistic attitudes, which may yield many personal, social, and health benefits [1] and can improve public health [7].

1.1. Materialism and Well-Being

Richins and Dawson [13] highlighted three main dimensions of materialism: (1) material possessions as a definition of success, (2) material possessions as a source of happiness, and (3) the centrality of material possessions in one's life. Materialism is expressed, among other ways, in a higher frequency of impulsive purchases; that is, purchases made according to a powerful urge to make them immediately without careful consideration of the consequences [14,15].

A comprehensive meta-analysis by Dittmar et al. [3] demonstrated a clear, consistent negative association between materialism and personal well-being that was stable across different operationalizations of the construct and different personal and cultural characteristics. On average, materialists, compared to non-materialists, are less satisfied with their lives, relationships, friendships, and living standards [1,2,4,13,16,17]. Materialists, compared to non-materialists, are more depressed [18], feel less meaning in life [19], and experience greater anxiety [20]. Since high materialism may impair mental health and the social functioning of individuals, which are important in the perspective of public health, it can be perceived as a public health threat [7,21,22].

One theory that explains why materialists are less happy in comparison to non-materialists is SDT [23]. This broad theoretical framework systematically explains human motivation, needs, and well-being dynamics. SDT distinguishes between two basic types of motivation: intrinsic (the inherent tendency to seek out novelty, challenges, enjoyment, and the extension and exercise of one's capacities) and extrinsic (the performance of an activity for reasons other than inherent satisfaction). Kasser and Ryan [18,24] assumed that SDT links these two types of motivation with different aspiration types. According to them, internal aspirations are personal development, self-acceptance (a sense of competence and autonomy), relationships with others (satisfying relationships with family and friends), communality (the desire to actively and productively work for the global good), and health (the absence of illness or any health complaints). External aspirations include wealth (financial success and possession of material goods), fame or popularity (being famous, recognized, and admired), and attractiveness (fashionable clothes, an appealing face, and an attractive physique). The pursuit of external aspirations is closely linked to the possession of materialistic attitudes and values [19].

A person focused on external aspirations pursues activities related to earning rewards and being appreciated by others. In contrast, a person focused on intrinsic aspirations pursues activities that align with universal psychological needs, which provide satisfaction and lead to a greater sense of happiness than a focus on external aspirations. Past research has confirmed these assumptions by showing that people who predominantly adhere to extrinsic aspirations (relative to intrinsic aspirations) have a lower level of well-being [8,17,19,25]. Individuals who acquire material possessions to become happy are less concentrated on performing activities to achieve internal aspirations, and as a result, they experience a lower level of well-being [18,24]. Longitudinal studies have shown that people's well-being deteriorates as they place relatively more importance on materialistic, external aspirations and values [1]. Based on this reasoning, it can be expected that encouraging individuals to be more intrinsic aspiration–oriented will increase their happiness and make them less external aspiration–oriented, which is associated with a reduction in materialism.

1.2. Kindness, Materialism, and Life Satisfaction

Kindness refers to actions intended to benefit others [26,27]. No other study has directly examined the relationship between kindness and materialism. However, the relationships between materialism and constructs opposite to kindness, such as selfishness, are well documented [13,17]. For instance, previous research has found that materialists are less likely to be charitable and generous and to perform volunteer work [13,16,17]. In general, materialism harms relationships [17] and reduces cooperation [28].

Furthermore, materialism causes the erosion of friendships and prosocial behaviors by fostering the viewpoint that people, like items, exist for the benefit of others. Perhaps con-

centrating on material goods makes high materialists less open to the needs and problems of other people. Thus, it could be expected that kindness and materialism are negatively related. The above analysis indicates that there may be direct links between kindness and materialism, but mediating mechanisms can also be expected.

First, both kindness and materialism show relationships to life satisfaction. A recent systematic review and meta-analysis demonstrated that performing acts of kindness significantly improves well-being [10]. Performing daily acts of kindness can increase life satisfaction [29]. Different types of kindness can lead to increased well-being, e.g., being kind to others, being kind to yourself or actively observing the kindness happening around us [30]. Acts of kindness are likely to contribute to well-being when they are varied (not repeated) [31] and when they are autonomous (not forced) [32,33]. Performing acts of kindness can lead to an increase in well-being by satisfying the fundamental psychological needs from the SDT: autonomy, competence, and relatedness [34]. Evolutionary psychology, in addition, explains the relationship between kindness and life satisfaction [10] by positing that actions focused on survival and reproduction will produce an intrinsic reward in the form of increased happiness [30]. Several evolutionary theories explain why being kind, as expressed in helping others, can increase the chances of survival and reproduction [35]. Hence, evolution "rewards" kind individuals with an increase in happiness, to increase their chances of survival and reproduction. Thus, kindness may be at least partially genetically determined and innate [10]. These evolutionary roots of kindness have become the basis for diverse cultural norms that promote kindness between different peoples [36]. Therefore, kindness also depends on the culture and the historical time in which the individual lives. Regardless of the evolutionary and cultural determinants of kindness, research results on the intentional and conscious practice of acts of kindness shows that individuals can influence their own development of kindness [10].

Practicing acts of kindness, as described above, leads to an increase in life satisfaction. In addition, as other studies have shown, an increase in life satisfaction, e.g., through practicing gratitude (which arises when individuals receive acts of kindness from others) [26], can decrease materialism [11,12]. Thus, practicing kindness can increase life satisfaction, leading to a decrease in materialism. This leads to the following hypothesis:

H1: *Performing acts of kindness (vs. control activity) increases life satisfaction (**H1a**) and decreases materialism (**H1b**), external aspirations (**H1c**), and the intention to buy impulsively (**H1d**).*

H2: *Performing acts of kindness (vs. control activity) increases life satisfaction, which in turn decreases materialism (**H2a**), external aspirations (**H2b**), and the intention to buy impulsively (**H2c**).*

Second, SDT offers an alternative explanation for the effect of kindness on materialism. According to SDT [8,18,24], kindness can be considered as strongly related to intrinsic aspirations, especially affiliation aspirations. As previous research has shown, kindness may protect against the degradation of close social bonds, as it relates to feeling connected with other people [37] and can foster relationships [9]. Assuming that an increase in focus on internal aspirations decreases focus on external aspirations, practicing acts of kindness through an increased focus on affiliative aspirations can be expected to contribute to a reduction in emphasis on external aspirations, which will be associated with a decline in materialism. Building on the above reasoning, the following hypothesis is offered:

H3: *Performing acts of kindness (vs. control activity) increases affiliation aspirations.*

H4: *Performing acts of kindness (vs. control activity) increases affiliation aspirations, which in turn decreases materialism (**H4a**), external aspirations (**H4b**), and the intention to buy impulsively (**H4c**).*

1.3. The Current Study

The primary objective of our research was to explore the links between kindness and materialism. More specifically, we examined whether practicing acts of kindness decreases materialism, external aspirations, and the intention to buy impulsively. We expected

these relationships to be mediated by increased life satisfaction and a focus on affiliation aspirations. Thus we applied a mediation approach, which allowed us to understand the psychological processes through which the independent variable (i.e., practicing acts of kindness) affects dependent variables (i.e., materialism, external aspirations, and the intention to buy impulsively) [38]. As we have described, the theoretical basis for the relationship between practicing acts of kindness and life satisfaction, as well as life satisfaction and materialism, can predict the presence of an indirect effect. We employed a method of the practice of acts of kindness developed within the paradigm of positive interventions, whose effectiveness in enhancing life satisfaction has been confirmed in previous studies [10]. Using the positive intervention paradigm, it is possible to apply the practice of kindness to reduce materialism in everyday life. To verify our hypotheses, we designed an experimental study with two conditions: an experimental (practicing acts of kindness) and a control (practicing neutral activity) condition. We assessed levels of materialism, life satisfaction, and intrinsic and extrinsic aspirations before and after the experimental manipulation. However, we measured kindness only at the pretest to ensure that there were no differences in its level between the intervention and control conditions. In addition, we used a vignette to measure the propensity to make an impulsive, unnecessary purchase in the post-test only.

2. Materials and Methods

2.1. Participants and Procedure

We conducted a longitudinal intervention study. As the study was conducted in a social sciences faculty with a low percentage of male students, it was decided to include only females. In this way, a non-proportional sex distribution among participants was avoided at the cost of limiting the representativeness of the results to only females. In the pretest, 156 female students aged 18–39 (M = 20.95, SD = 2.70) participated. All participants had completed secondary education and were in the process of acquiring higher education credentials. Of the participants, 122 (79%) remained in the study and participated in the post-test. To recruit prospective participants, we sent study invitations to the first- and second-year female students of the Faculty of Social Science at Adam Mickiewicz University in Poznan, Poland. The data are freely available in the Open Science Framework: https://osf.io/bc67z/?view_only=bf4933a3537c4fb3be29baec43a5b761, accessed on 6 October 2020. All procedures performed in the study followed the ethical standards of the Ethical Committee of the Faculty of Psychology and Cognitive Science, Adam Mickiewicz University in Poznań. All participants provided written informed consent. Participants were informed that the study aimed to investigate the factors influencing the effectiveness of exercises in increasing happiness. The participants who finished the study received a cinema voucher as promised. The voucher was used as an incentive to participate in the study.

There were six steps to the study: (1) pretest + first intervention (counting acts of kindness), (2–5) interventions (practicing and counting acts of kindness), and (6) post-test. The pretest was carried out during lectures at the university. After the pretest and before the first intervention, participants were randomly assigned to either the kindness intervention or active-placebo control activities and were emailed a link to a dedicated website with further instructions. The instructions for each condition that the participants were presented with are available in the supplementary file.

The participants received a message every three days inviting them to participate in the next step of the study. The participants were asked to complete the intervention (perform up to five acts of kindness or perform up to five activities related to studying) on the day they received the message or the day after. As a result, we collected data from most of the participants' activities in both conditions every 3–4 days. Reminders prompting the completion of the exercises were sent the day after the beginning of each step. On average, it took 21 days to complete the intervention. Verifications of whether interventions were implemented were made by analyzing the content of activities described in both conditions

on a dedicated website. After omitting two interventions, participants were removed from the study. At the end of the study, all participants were debriefed.

To increase the effectiveness of the kindness intervention, the participants were encouraged to perform a diverse range of acts of kindness and, along with a link to each subsequent step of the study, support messages from fictional participants of previous studies were sent. This method for enhancing the intervention and the created messages were based on the research of Nelson et al. [32], where the authors developed a six-week-long intervention. Performing acts of kindness has been shown to increase happiness in participants in interventions lasting from one day [39] to 10 weeks [40]. In general, positive interventions are more effective if they last longer [41,42]. Because the recruitment process of the study participants (students) was stretched over several weeks, we were able to design a 3-week intervention so that the last recruited participant completed participation in the study before the start of the examination session. At each step, we provided the participants with a different message, for example:

Kindness condition: Hey! You can study anywhere and anytime! You'll surely have plenty of opportunities!

Control condition: Hey! You can do acts of kindness anywhere and anytime! You'll surely have plenty of opportunities!

2.2. Measures

Material Values Scale—Short Form [43,44]. The scale consists of 15 items that measure "the importance ascribed to the ownership and acquisition of material goods" [43] (p. 210). The items are rated from 1 (strongly disagree) to 5 (strongly agree): for example, "I admire people who own expensive homes, cars, and clothes" (current Cronbach $\alpha = 0.85$).

Satisfaction with Life Scale (SWLS) [45,46]. The SWLS is a five-item scale that measures general life satisfaction. The items are rated from 1 (strongly disagree) to 7 (strongly agree) (current Cronbach $\alpha = 0.84$).

Kindness [26]. The scale of three items refers to the motivation, recognition, and behavior components of kindness, e.g., "I am always thinking that I wish to be kind and help other people in daily life". The items are rated from 1 (not at all) to 5 (a great deal) (Cronbach $\alpha = 0.73$). This scale was used only in the pretest.

Aspiration Index [24,47]. The Aspiration Index is a 35-item scale. Each subscale (current Cronbach alphas: self-acceptance, $\alpha = 0.70$; affiliation, $\alpha = 0.91$; community feeling, $\alpha = 0.80$; social recognition, $\alpha = 0.90$; appealing appearance, $\alpha = 0.78$; financial success, $\alpha = 0.90$; physical fitness, subscale omitted) consisted of five items. We calculated an extrinsic aspiration index (the relative centrality of extrinsic values, with a high score reflecting increased materialism) by subtracting the importance a subject placed on all six aspirations from the importance that the individual placed on the three extrinsic domains [20].

Intention to make an impulsive purchase. A self-designed four-item scale (e.g., "I would buy those shoes") rated on a 7-point Likert scale, with different anchors in each question used to measure the intention to purchase an item (current Cronbach $\alpha = 0.92$). The item in question could be exchanged for a different one if needed. The current study measured the probability of shoe purchases in an imagined situation. To describe this situation, we used the following vignette created by Peifer, Chugani, and Roos [48]:

Imagine you are walking past a store and happen to see an attractive pair of casual shoes in the window. They cost about as much as you'd expect them to. You already own a good pair that you are happy with, but you love the style of the new ones you see.

Demographic questionnaire. The participants were asked about their age and education level.

3. Results

The results demonstrated that before the intervention, the level of kindness was comparable in the kindness condition ($M = 3.83$, $SD = 0.60$) and the control ($M = 3.85$,

$SD = 0.66$), $t(120) = -0.14$, $p > 0.05$. There were also no significant differences in the pretest measurements of other study variables, all $p \geq 0.10$.

We conducted correlation analysis of the relationships of kindness traits measured at the pretest with the other variables measured at the post-test in order to explore the predictive value of kindness (see Table 1). For simplicity of the data presentation and due to the lack of hypotheses regarding the effect of the experimental manipulation on the relationships between kindness and the other variables, we present the combined data for both conditions in Table 1. Kindness had significant positive correlations with life satisfaction ($r = 0.30$, $p < 0.001$), internal aspirations ($r = 0.30$, $p < 0.001$), and affiliative aspirations ($r = 0.37$, $p < 0.001$) and significant negative correlations with materialism ($r = -0.21$, $p < 0.05$), external aspirations ($r = -0.21$, $p < 0.05$), and intention to shop impulsively ($r = -0.23$, $p < 0.01$). Tables presenting correlations between all study variables separately for each condition can be found in the supplementary materials (see Tables S1 and S2).

Table 1. Correlations between the variables used in the study.

	1	2	3	4	5	6	7
1. Kindness (T1)	—						
2. Life satisfaction (T2)	0.299 ***	—					
3. Materialism (T2)	−0.205 *	−0.238 **	—				
4. Intention to shop impulsively (T2)	−0.234 **	0.222 *	0.339 ***	—			
5. Affiliative aspirations (T2)	0.369 ***	0.168	−0.339 ***	−0.296 ***	—		
6. External aspirations (T2)	−0.212 *	−0.233 **	−0.022	−0.063	−0.638 ***	—	
7. Internal aspirations (T2)	0.298 ***	0.268 **	−0.270 **	−0.117	0.821 ***	−0.814 ***	—

Note: T1—pretest; T2—post-test; * $p \leq 0.05$; ** $p < 0.01$; *** $p < 0.001$; $n = 122$.

We used repeated measures ANOVA to examine hypotheses 1 and 3 for dependent variables (life satisfaction, materialism, external aspirations, affiliative aspirations) with one between-subject factor (practicing acts of kindness group vs. active placebo control group), and one within-subject factor (before and after the intervention). Furthermore, for exploratory purposes, we included components of internal (self-acceptance, community feeling) and external aspirations (social recognition, appearance, financial success) as dependent variables. The results of these analyses are presented in Table 2. We examined hypothesis 1d using the Student's t-test due to the lack of a pretest for the intention to buy impulsively.

Table 2. Testing the kindness intervention on life satisfaction, materialism and aspirations.

Measure	Pre-Test				Post-Test				Time	Time × Group
	Kindness (N = 61)		Control (N = 61)		Kindness (N = 61)		Control (N = 61)			
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(1, 120)	*F*(1, 120)
Life satisfaction	4.10	1.12	3.77	1.20	4.54	1.26	4.34	1.18	45.13 ***	0.70
Materialism	2.77	0.61	2.71	0.65	2.68	0.63	2.61	0.68	13.26 ***	0.66
Internal aspirations	6.20	0.45	6.12	0.58	6.35	0.38	6.22	0.62	2.09	0.45
Self-acceptance	6.37	0.52	6.51	0.45	6.41	0.54	6.57	0.55	1.56	0.84
Affiliation	6.50	0.59	6.54	0.74	6.66	0.51	6.50	0.76	1.66	5.69 *
Community feeling	5.76	0.82	5.47	1.12	5.90	0.70	5.65	1.09	5.70 *	0.76
External aspirations	−7.31	0.56	−7.13	0.80	−7.44	0.52	−7.26	0.82	2.64	0.05
Social recognition	3.35	1.22	3.14	1.31	3.29	1.15	3.22	1.25	0.07	0.22
Appearance	4.26	1.19	3.93	1.10	4.12	1.13	4.04	1.02	0.05	3.77 *
Financial success	4.33	1.18	4.32	1.21	4.18	1.23	4.18	1.16	4.15 *	0.01

Note: * $p \leq 0.05$, *** $p < 0.001$.

We found a significant main effect of time on life satisfaction, $p < 0.001$, $\eta_p^2 = 0.27$ (large effect); materialism, $p < 0.001$, $\eta_p^2 = 0.10$ (medium effect); community feeling, $p < 0.05$,

$\eta_p^2 = 0.05$ (small effect); and financial success, $p < 0.05$, $\eta_p^2 = 0.03$ (small effect). Specifically, the intervention recipients in both groups showed increased life satisfaction and community feeling and decreased materialism and financial success over time. All other main effects of time were nonsignificant, $p > 0.05$.

There was a significant interaction between time and kindness intervention on (1) affiliation, $p < 0.05$, $\eta_p^2 = 0.05$ (small effect); and (2) appealing appearance, $p = 0.05$, $\eta_p^2 = 0.03$ (small effect). Participants who performed the kindness intervention had higher affiliation on the post-test than on the pretest (supporting H3). The level of appealing appearance did not significantly change over time in the experimental group. All other interactions of time and kindness intervention were nonsignificant, $p > 0.05$ (contrary to H1a,b,c). There were no significant differences in the declared level of intention of impulse shopping, $t(120) = 0.14$; $p > 0.05$, between participants in the experimental group ($M = 3.68$, $SD = 1.46$) and participants in the control group ($M = 3.64$, $SD = 1.45$) (contrary to H1d).

To examine hypotheses 2 and 4, three mediation analyses (Model 4) were performed using the PROCESS macro v.4.1 [49]. We chose mediation analysis, as it allows testing of how a causal antecedent directly affects a variable; when the mediating variable is causally located in-between them, the indirect effects are tested [49]. The indirect effects were tested with bias-corrected bootstrapping ($n = 5000$) and 95% confidence intervals (CIs). The partially standardized indirect effects estimated the effect size of the mediated relationship. We introduced type of intervention (practicing acts of kindness group vs. active placebo control group) as the independent variable, two mediators (changes between the pretest and post-test in life satisfaction and affiliative aspirations) and one covariate (age) into each of the three models for the dependent variables (changes between the pretest and post-test in materialism and external aspirations, intention to buy impulsively). The results of the analyses showed that models exploring changes between the pretest and post-test in materialism, $F(4, 117) = 0.94$, $p > 0.05$, $R^2 = 0.03$, and intention to buy impulsively, $F(4, 117) = 1.15$, $p > 0.05$, $R^2 = 0.04$, were nonsignificant (contrary to H2a,c, H4a,c). The model for changes between the pretest and post-test in external aspirations was significant, $F(4, 117) = 31.06$, $p < 0.001$, $R^2 = 0.52$. The partially standardized indirect effects of kindness intervention on changes in external aspirations via changes in affiliative aspirations ($\beta = 0.031$, $SE = 0.132$, 95% $CI = [-0.226, 0.291]$) and changes in life satisfaction were nonsignificant ($\beta = 0.005$, $SE = 0.014$, 95% $CI = [-0.025, 0.035]$) (contrary to H2b, H4b).

4. Discussion

The present study examined whether and how practicing acts of kindness influences materialism. The study results showed that practicing acts of kindness does not affect materialism, external aspirations, impulsive shopping, and life satisfaction to a greater extent than practicing neutral acts. We found that the women participating in the kindness intervention reported more affiliation values than did the controls (according to H3). However, we found that the intervention recipients, after the intervention and regardless of study condition, exhibited increased life satisfaction and community feeling aspiration and decreased materialism and financial success aspiration. This result suggests that the neutral activity in the control condition—practicing studying-related activities—and practicing kindness had similar effects on the study variables, which does not allow us to reject our hypotheses (H1, H2, and H4) entirely. Finally, we found that kind women focus less on external aspirations and more on internal aspirations. Kindness also predicted a lower intention to shop impulsively three weeks later. Overall, although our study was not conclusive as to whether practicing kindness led to a decrease in materialism, it did indicate that kind women are less oriented toward external materialistic aspirations and more toward internal aspirations, especially those related to maintaining good relationships with other people.

We hypothesized that practicing kindness could increase life satisfaction and affiliative aspirations, which would lead to a decrease in materialism, external aspirations, and a willingness to make an impulsive purchase. On one hand, our study's results did not

directly support these hypotheses. On the other hand, our findings indicated that the practice of kindness is comparable with the practice of neutral acts (such as studying) in increasing life satisfaction and decreasing materialism and financial success aspirations (an example of external aspirations). Indeed, in both conditions after the intervention, a significant increase in life satisfaction (+27%; large effect size), as well as a significant decrease in materialism (−10%; medium effect size) and financial success aspirations (−5%; small effect size), when compared to the initial measurement, were observed. The changes mentioned above may be an effect of factors unrelated to the study (e.g., changes in the weather). However, their strength (expressed in effect sizes) and consistent direction suggest that some of these changes were caused by the exercises performed by the participants in both conditions. We designed activities in the kindness and control groups based on the research methodology of Nelson et al. [32], where intervention resulted in a greater increase in well-being in the kindness condition compared to the control. Thus, perhaps engaging in internally motivated activities aimed at increasing personal happiness (the aim of the study as presented to participants), regardless of whether they consist of performing acts of kindness or taking neutral actions (performing activities related to studying), caused an increase in life satisfaction and a decrease in materialism and financial success aspirations. Moreover, a recent study demonstrated that motivating individuals to initiate value-related behavior enhances their well-being [50]. If education was an important value for our study participants, then motivating them to study harder may have contributed to an increase in their happiness. Finally, the intervention we developed differed quantitatively from that used by Nelson et al. [32]. In their study, a six-week intervention was implemented, during which participants were instructed to perform five acts of kindness every seven days (30 in total). We designed a three-week intervention, during which participants had to perform five acts of kindness every three days (20 in total). It may be that the duration of our intervention was too short; thus, the total number of acts of kindness might have been insufficient, or the greater intensity of our intervention influenced the fact that we did not observe an effect of the kindness intervention on life satisfaction.

This explanation suggests that practicing acts of kindness could eventually affect life satisfaction, materialism, and some external aspirations (financial success), but we were unable to statistically demonstrate this effect because the placebo intervention was not a completely neutral activity. This line of reasoning does not allow us to reject our hypotheses entirely, but it suggests that practicing kindness is no different from any other activity aimed at increasing personal well-being. Thus, practicing acts of kindness is likely to have the properties to increase public health by increasing life satisfaction and decreasing materialism. Future studies should examine this possibility by designing other types of neutral activities in control conditions. This is important because as research extends our knowledge about the relationship between kindness and materialism, practitioners become better equipped to help people reduce their materialism and improve the satisfaction of their lives.

Although, in general, the kindness intervention did not lead to changes in external aspirations, significant changes were observed in one of the six types of aspirations examined: we found a small effect size of practicing kindness on affiliation aspirations. As expected, participants practicing kindness showed an increase in aspirations focused on affiliation, i.e., an improvement in loving and caring for others [24]. Performing almost 20 acts of kindness within three weeks increased the importance of the aspiration of having satisfactory relations with friends and family. This relationship is consistent with our hypotheses. Following the assumptions that the realization of intrinsic aspirations (which are affiliative aspirations) leads to an increase in life satisfaction [1,8,17,19] and that an increase in life satisfaction, in turn, leads to a decrease in materialism [11,12], it can still be expected that the practicing of kindness will lead to a decrease in materialism.

Our correlational analyses of kindness as a trait measured at the pretest also confirmed this line of reasoning. We found that kindness (measured at the pretest) correlated negatively with materialism and the intention to engage in impulsive shopping (measured at

the post-test). These relationships expand prior findings showing that the current level of kindness may be related to intentions to engage in impulsive shopping. From another perspective, these findings show that kinder women are less inclined toward materialistic behaviors, such as impulsively buying unnecessary items. We also found that kind women focus less on external aspirations and more on internal aspirations. The directions of the relationship with these types of aspirations are in line with our SDT-based assumptions. Being kind to other people represents an intrinsic aspiration from the SDT perspective, as confirmed by our results showing positive relationships between kindness and other intrinsic aspirations. Furthermore, kind women are less oriented toward external aspirations that do not lead to happiness. Since we have shown that there is negative correlation between kindness traits and materialism and assuming that materialism can be described in terms of the strength of extrinsic aspirations relative to intrinsic aspirations [18,24], our results suggest that kind women have fewer materialistic aspirations and values.

Since kindness interventions did not affect materialism, but kindness traits were negatively related to materialistic aspirations and values, it is possible that materialism influences kindness, but not vice versa. In line with this interpretation, a greater focus on material values may lead to a decrease in kindness toward others. Conversely, being kind to other people may not lead to a reduced focus on material things. Future research using experimental or longitudinal methodology may aim to clarify the direction of the interaction between materialism and kindness.

Despite the inconclusive results, our study was the first to test whether practicing kindness leads to a decrease in materialism and to support this hypothesis. Our line of hypotheses is supported by (1) a decrease in materialism and financial success–oriented aspirations following the use of the kindness and control interventions; (2) a significant increase in affiliation aspirations following the kindness intervention; and (3) a positive association of the trait of kindness with intrinsic aspirations and a negative association of the trait of kindness with extrinsic aspirations and with the intention to make an impulsive purchase. Thus, beyond calling for further research to test the effects of practicing kindness on materialism, initial practical recommendations can be initiated. In the modern world, many people struggle with their materialistic desires, which leads not only to a decrease in their well-being [1,3] but also to a deterioration of their social relationships [13,16,17,28], and therefore poses a threat to public health [22]. Moreover, materialistic attitudes toward buying lead to the overconsumption of goods and services, which contributes to the destruction of the environment [51]. Therefore, practitioners, especially mental health therapists, need techniques to decrease materialism. Kindness interventions, although not proven effective at this point, are a promising tool for practitioners to reduce materialism. They can be another piece in the effort to reduce the materialism of individuals for the growth of personal and social well-being and even for the improvement of public health and environmental protection.

Limitations

There are several limitations of this study. A sample of only women was used in the study. To determine whether the same effects occur in men, additional research should be conducted to examine whether practicing acts of kindness can affect materialism by improving life satisfaction. A similar concern applies to age and education: given the high homogeneity of our sample, future research should be designed to replicate this study with participants of different ages and educational backgrounds to generalize our results to more heterogeneous populations. Second, the control task in the study seemed to increase the participants' life satisfaction; for this reason, it may not be neutral. Future studies should consider the use of a control condition in which the participants do not perform any activity (the so-called passive placebo), with changes in well-being over time simply monitored. Third, since some of the significant results of this study had small effect sizes (e.g., the effect of kindness on affiliations), caution is needed in their interpretation as well as replication in future studies. Furthermore, future studies could control for whether practicing acts of

kindness contributes to an increase in kindness—in our study, we only measured kindness as a trait at pretest to check if there were differences between study conditions. Finally, our study results could be affected by specifics of culture and economic status of the country where the study was conducted (i.e., Poland).

5. Conclusions

Our findings shown that practicing acts of kindness decreased materialism and external aspirations aimed at financial success. However, we observed the same effect in the control condition. Although our study is not conclusive as to whether practicing kindness leads to a decrease in materialism, it does indicate that kind women are less oriented toward external materialistic aspirations and more toward internal aspirations, especially those related to maintaining good relationships with other people, and are less willing to buy impulsively. Overall, kindness interventions are a promising tool for practitioners to reduce materialism and therefore have the potential to improve public health. We believe that our pioneering research will initiate further research to examine the impact of practicing kindness on materialism and consumption behavior.

Supplementary Materials: The following supporting information can be downloaded at: https://www.mdpi.com/article/10.3390/ijerph192316339/s1.

Author Contributions: Conceptualization, D.D. and R.T.; methodology, D.D. and R.T.; formal analysis, D.D. and R.T.; investigation, R.T.; resources, D.D. and R.T.; data curation, R.T.; writing—original draft preparation, D.D.; writing—review and editing, D.D. and R.T.; project administration, R.T.; funding acquisition, D.D. All authors have read and agreed to the published version of the manuscript.

Funding: The study was funded by the Faculty of Psychology and Cognitive Science, Adam Mickiewicz University in Poznań.

Institutional Review Board Statement: The study was conducted in accordance with the ethical standards of the Institutional Research Committee (Ethical Committee of Faculty of Psychology and Cognitive Science, Adam Mickiewicz University in Poznań) and with the rules of the Helsinki Declaration of 1975, as revised in 2013. The Institutional Research Committee in 2019, when the study was conducted, did not require submission of the study procedure for approval if the study did not raise ethical concerns.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The dataset is available for free download from the Open Science Framework (https://osf.io/bc67z/?view_only=bf4933a3537c4fb3be29baec43a5b761, accessed on 6 October 2020).

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Kasser, T.; Rosenblum, K.L.; Sameroff, A.J.; Deci, E.L.; Niemiec, C.P.; Ryan, R.M.; Arnadottir, O.; Bond, R.; Dittmar, H.; Dungan, N.; et al. Changes in materialism, Changes in Psychological Well-Being: Evidence from Three Longitudinal Studies and an Intervention Experiment. *Motiv. Emot.* **2014**, *38*, 1–22. [CrossRef]
2. Moldes, O.; Ku, L. Materialistic Cues Make Us Miserable: A Meta-Analysis of the Experimental Evidence for the Effects of Materialism on Individual and Societal Well-Being. *Psychol. Mark.* **2020**, *37*, 1396–1419. [CrossRef]
3. Dittmar, H.; Bond, R.; Hurst, M.; Kasser, T. The Relationship between Materialism and Personal Well-Being: A Meta-Analysis. *J. Pers. Soc. Psychol.* **2014**, *107*, 879–924. [CrossRef] [PubMed]
4. Ryan, L.; Dziurawiec, S. Materialism and Its Relationship to Life Satisfaction. *Soc. Indic. Res.* **2001**, *55*, 185–197. [CrossRef]
5. Gu, D.; Gao, S.; Wang, R.; Jiang, J.; Xu, Y. The Negative Associations between Materialism and Pro-Environmental Attitudes and Behaviors: Individual and Regional Evidence from China. *Environ. Behav.* **2020**, *52*, 611–638. [CrossRef]
6. Dean, L.R.; Carroll, J.S.; Yang, C. Materialism, Perceived Financial Problems, and Marital Satisfaction. *Fam. Consum. Sci. Res. J.* **2007**, *35*, 260–281. [CrossRef]
7. Stone, D.N.; Wier, B.; Bryant, S.M. Reducing materialism through financial literacy. *CPA J.* **2020**, *78*, 12–14.
8. Deci, E.L.; Ryan, R.M. The "What" and "Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychol. Inq.* **2000**, *11*, 227–268. [CrossRef]

9. O'Connell, B.H.; O'Shea, D.; Gallagher, S. Enhancing Social Relationships through Positive Psychology Activities: A Randomised Controlled Trial. *J. Posit. Psychol.* **2016**, *11*, 149–162. [CrossRef]
10. Curry, O.S.; Rowland, L.A.; Van Lissa, C.J.; Zlotowitz, S.; McAlaney, J.; Whitehouse, H. Happy to Help? A Systematic Review and Meta-Analysis of the Effects of Performing Acts of Kindness on the Well-Being of the Actor. *J. Exp. Soc. Psychol.* **2018**, *76*, 320–329. [CrossRef]
11. Chaplin, L.N.; John, D.R.; Rindfleisch, A.; Froh, J.J. The Impact of Gratitude on Adolescent Materialism and Generosity. *J. Posit. Psychol.* **2019**, *14*, 502–511. [CrossRef]
12. Lambert, N.M.; Fincham, F.D.; Stillman, T.F.; Dean, L.R. More Gratitude, Less Materialism: The Mediating Role of Life Satisfaction. *J. Posit. Psychol.* **2009**, *4*, 32–42. [CrossRef]
13. Richins, M.; Dawson, S.A. Consumer Values Orientation for Materialism and Its Measurement: Scale Development and Validation. *J. Consum. Res.* **1992**, *19*, 303–316. [CrossRef]
14. Mukhtar, K.; Abid, G.; Rehmat, M.; Butt, T.H.; Farooqi, S. Influence of Materialism in Impulse Buying. Moderated Mediation Model. *Elem. Educ. Online* **2021**, *20*, 6104–6117. [CrossRef]
15. Podoshen, J.S.; Andrzejewski, S.A. An Examination of the Relationships between Materialism, Conspicuous Consumption, Impulse Buying, and Brand Loyalty. *Eur. J. Mark.* **2012**, *20*, 319–334. [CrossRef]
16. Belk, R.W. Materialism: Trait Aspects of Living in the Material World. *J. Consum. Res.* **1985**, *12*, 265–280. [CrossRef]
17. Kasser, T. *The High Price of Materialism*; MIT Press: Cambridge, MA, USA, 2002.
18. Kasser, T.; Ryan, R.M. A Dark Side of the American Dream: Correlates of Financial Success as a Central Life Aspiration. *J. Pers. Soc. Psychol.* **1993**, *65*, 410–422. [CrossRef]
19. Kashdan, T.B.; Breen, W.E. Materialism and Diminished Well-Being: Experiential Avoidance as a Mediating Mechanism. *J. Soc. Clin. Psychol.* **2007**, *26*, 521–539. [CrossRef]
20. Kasser, T.; Ahuvia, A. Materialistic Values and Well-Being in Business Students. *Eur. J. Soc. Psychol.* **2001**, *32*, 137–146. [CrossRef]
21. Leigh-Hunt, N.; Bagguley, D.; Bash, K.; Turner, V.; Turnbull, S.; Valtorta, N.; Caan, W. An overview of systematic reviews on the public health consequences of social isolation and loneliness. *Public Health* **2017**, *152*, 157–171. [CrossRef]
22. Cassano, P.; Fava, M. Depression and public health: An overview. *J. Psychosom. Res.* **2002**, *53*, 849–857. [CrossRef] [PubMed]
23. Ryan, R.M.; Deci, E.L. Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemp. Educ. Psychol.* **2000**, *25*, 54–67. [CrossRef] [PubMed]
24. Kasser, T.; Ryan, R.M. Further Examining the American Dream: Differential Correlates of Intrinsic and Extrinsic Goals. *Pers. Soc. Psychol. Bull.* **1996**, *22*, 280–287. [CrossRef]
25. Kasser, T.; Ryan, R.M. Be Careful What You Wish For: Optimal Functioning and the Relative Attainment of Intrinsic and Extrinsic Goals. In *Life Goals and Well-Being: Towards a Positive Psychology of Human Striving*; Schmuck, P., Sheldon, K.M., Eds.; Hogrefe & Huber Publishers: Boston, MA, USA, 2001; pp. 116–131.
26. Boothby, E.J.; Bohns, V.K. Why a simple act of kindness is not as simple as it seems: Underestimating the positive impact of our compliments on others. *Pers. Soc. Psychol. B* **2021**, *47*, 826–840. [CrossRef] [PubMed]
27. Otake, K.; Shimai, S.; Tanaka-Matsumi, J.; Otsui, K.; Fredrickson, B.L. Happy People Become Happier through Kindness: A Counting Kindnesses Intervention. *J. Happiness Stud.* **2006**, *7*, 361–375. [CrossRef]
28. Bauer, M.A.; Wilkie, J.E.B.; Kim, J.K.; Bodenhausen, G.V. Cuing Consumerism. *Psychol. Sci.* **2012**, *23*, 517–523. [CrossRef]
29. Buchanan, K.E.; Bardi, A. Acts of Kindness and Acts of Novelty Affect Life Satisfaction. *J. Soc. Psychol.* **2010**, *150*, 235–237. [CrossRef]
30. Rowland, L.; Curry, O.S. A range of kindness activities boost happiness. *J. Soc. Psychol.* **2019**, *159*, 340–343. [CrossRef]
31. Sheldon, K.M.; Boehm, J.K.; Lyubomirsky, S. Variety is the spice of happiness: The hedonic adaptation prevention (HAP) model. In *Oxford Handbook of Happiness*; Boniwell, I., David, S., Eds.; Oxford University Press: Oxford, UK, 2014.
32. Nelson, S.K.; Della Porta, M.D.; Jacobs Bao, K.; Lee, H.C.; Choi, I.; Lyubomirsky, S. 'It's up to you': Experimentally manipulated autonomy support for prosocial behavior improves well-being in two cultures over six weeks. *J. Posit. Psychol.* **2015**, *10*, 463–476. [CrossRef]
33. Chancellor, J.; Margolis, S.; Jacobs Bao, K.; Lyubomirsky, S. Everyday prosociality in the workplace: The reinforcing benefits of giving, getting, and glimpsing. *Emotion* **2018**, *18*, 507. [CrossRef]
34. Li, H.L.; Chang, L. An Evolutionary Psychological Perspective of Happiness. *Adv. Psychol. Sci.* **2010**, *18*, 1046.
35. Jaeger, B.; van Vugt, M. Psychological Barriers to Effective Altruism: An Evolutionary Perspective. *Curr. Opin. Psychol.* **2022**, *44*, 130–134. [CrossRef] [PubMed]
36. Hammerstein, P. *Genetic and Cultural Evolution of Cooperation*; MIT Press: Cambridge, MA, USA, 2003.
37. Kerr, S.L.; O'Donovan, A.; Pepping, C.A. Can Gratitude and Kindness Interventions Enhance Well-Being in a Clinical Sample? *J. Happiness Stud.* **2014**, *16*, 17–36. [CrossRef]
38. Rucker, D.D.; Preacher, K.J.; Tormala, Z.L.; Petty, R.E. Mediation analysis in social psychology: Current practices and new recommendations. *Soc. Pers. Psychol. Compass* **2011**, *5*, 359–371. [CrossRef]
39. Dunn, E.W.; Aknin, L.B.; Norton, M.I. Spending money on others promotes happiness. *Science* **2008**, *319*, 1687–1688. [CrossRef] [PubMed]
40. Sheldon, K.M.; Lucas, R.E. (Eds.) *Stability of Happiness: Theories and Evidence on Whether Happiness Can Change*; Elsevier: Amsterdam, The Netherlands, 2014.

41. Bolier, L.; Haverman, M.; Westerhof, G.J.; Riper, H.; Smit, F.; Bohlmeijer, E. Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health* **2013**, *13*, 119. [CrossRef]
42. Carr, A.; Cullen, K.; Keeney, C.; Canning, C.; Mooney, O.; Chinseallaigh, E.; O'Dowd, A. Effectiveness of positive psychology interventions: A systematic review and meta-analysis. *J. Posit. Psychol.* **2021**, *16*, 749–769. [CrossRef]
43. Richins, M.L. The Material Values Scale: Measurement Properties and Development of a Short Form. *J. Consum. Res.* **2004**, *31*, 209–219. [CrossRef]
44. Górnik-Durose, M. A Polish adaptation of the Material Values Scale—Measurement properties of the full and short forms. *Psychol. Ekon.* **2016**, *9*, 5–21. [CrossRef]
45. Diener, E.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The Satisfaction with Life Scale. *J. Pers. Assess.* **1985**, *49*, 71–75. [CrossRef]
46. Juczyński, Z. *Measures Used to Promote Psychology of Health. Satisfaction with Life Scale (SWLS)*; Pracownia Testów Psychologicznych PTP: Warsaw, Poland, 2001.
47. Zawadzka, A.M.; Duda, J.; Rymkiewicz, R.; Kondratowicz-Nowak, B. Seven-dimensional model of life aspirations by Kasser and Ryan: Analysis of validity and reliability of the instrument. *Psychol. Społeczna* **2015**, *10*, 100–111. [CrossRef]
48. Peifer, J.L.; Chugani, S.; Roos, J.M. The Ethical Underpinnings of Nonmaterialistic Values and Voluntary Simplicity Behavior in the United States. *Psychol. Mark.* **2020**, *37*, 232–249. [CrossRef]
49. Hayes, A.F. *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*, 3rd ed.; The Guilford Press: New York, NY, USA, 2022.
50. Bojanowska, A.; Kaczmarek, L.D.; Urbanska, B.; Puchalska, M. Acting on Values: A Novel Intervention Enhancing Hedonic and Eudaimonic Well-Being. *J. Happiness Stud.* **2022**, *23*, 3889–3908. [CrossRef] [PubMed]
51. Lee, M.S.W.; Ahn, C.S.Y. Anti-Consumption, Materialism, and Consumer Well-being. *J. Consum. Aff.* **2016**, *50*, 18–47. [CrossRef]

International Journal of
Environmental Research and Public Health

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Article

Do Community Home-Based Elderly Care Services Improve Life Satisfaction of Chinese Older Adults? An Empirical Analysis Based on the 2018 CLHLS Dataset

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Abstract: Population aging has become a major challenge for the Chinese government. Based on the Chinese Longitudinal Healthy Longevity Survey (CLHLS) in 2018, this study adopts the propensity score matching (PSM) method to assess the effect of community home-based elderly care services (CHECS) on the life satisfaction of the elderly in China. The results demonstrate that CHECS can improve their life satisfaction. Compared with life care services (LCS) and medical care services (MCS), the positive effect of spiritual and cultural services (SCS) and reconciliation and legal services (RLS) is more obvious. Moreover, the heterogeneity test demonstrates that the effect is more significant for the elderly who live with their families, whose activities of daily living are unrestricted, and whose depression levels are lower. The results obtained indicate that CHECS need precise policies for different elderly groups, attention to the positive impact of SCS and RLS on the life satisfaction of the elderly, and the substantive effectiveness of LCS and MCS.

Keywords: community home-based elderly care; life satisfaction; Chinese older adults

Citation: Zhang, Z.; Mao, Y.; Shui, Y.; Deng, R.; Hu, Y. Do Community Home-Based Elderly Care Services Improve Life Satisfaction of Chinese Older Adults? An Empirical Analysis Based on the 2018 CLHLS Dataset. *IJERPH* **2022**, *19*, 15462. https://doi.org/10.3390/ijerph192315462

Academic Editors: V. K. Kumar, Jasmin Tahmaseb-McConatha and Antonio G. Oliveira

Received: 18 October 2022
Accepted: 21 November 2022
Published: 22 November 2022

1. Introduction

Life satisfaction, an overall assessment of an individual's quality of life based on predefined criteria [1], is a subjective cognitive process of comparing the current situation with pre-defined criteria [2]. A specific heterogeneity in the criteria of life satisfaction exists for people in different life cycles [3]. Under the trend of accelerated population aging, on the one hand, the transformation of social roles and the decline of physical functions of the elderly enable them to begin to reassess their own values. Psychological problems such as low self-esteem, loneliness, loss, depression, and paranoia gradually emerge and bring about a reduction in mobility and the deterioration of the physical health of the elderly [4,5]. On the other hand, with the change in social structure and the weakening of family functions, it is increasingly difficult to satisfy the physical and mental needs of the elderly by depending solely on care provided by children and relatives. The intergenerational support from children to parents in a family with fewer children may also increase the psychological burden of the elderly on hampering their children's work [6,7]. A deterioration of physiological functions and an increase in psychological burdens negatively affect the daily lives of the elderly and reduce their life satisfaction. In this context, numerous researchers have explored the influencing factors for the life satisfaction of the elderly and investigated effective ways to improve their quality of life from different perspectives [8,9].

The seventh census indicates that 13.5% of China's population is over 65 years old, and the country has fully entered an aging society [10]. Therefore, it is urgent to promote a senior care service system in line with China's national conditions. From the perspective of the existing elderly care model in China, the family elderly care model is still the main

one, and the institutional elderly care model is supplementary. However, these two models are gradually showing shortages and weaknesses, and the community home-based elderly care model has been put forward. The differences and connections between three kinds of elderly care models are summarized in Table 1.

Table 1. Differences and connections between three kinds of elderly care models.

	Where to Live	Services Provider	Cost
Family elderly care model	Home	Family members	Low
Institutional elderly care model	Institutions	Professional nursing staff	High
Community home-based elderly care model	Home	Family members and professional nursing staff	Relatively low

From the perspective of the institutional model, unlike the elderly in developed countries and regions, the Chinese elderly generally have a strong affection for family retirement. Moreover, because economic development and social welfare are still at a preliminary stage, the limited development and management capacity of institutional elderly care has led to various problems of "bullying the elderly" [11]. This has caused the public to question the institutional elderly care model. From the perspective of the family elderly care model, although this type of model can meet the home sentiment of Chinese older people, the "4-2-1" or "4-2-2" family form has led to the need for children to balance family elderly care, child-rearing, and work. Therefore, their children are under too much pressure from elderly care, and the weakness of the family elderly care model has gradually emerged [12].

Combined with the experience of mature elderly care models in developed countries, community home-based elderly care can meet the psychology of the elderly aging at home, relieve the pressure on their children, and allow the elderly to receive medical and elderly care services provided by relevant service institutions and professionals. This can combine the advantages of family and institutional elderly care to the greatest extent and become a novel idea for the development of the elderly care model integrated with Chinese characteristics [13]. Therefore, it is important to investigate the effectiveness of community home-based elderly care services (CHECS) and analyze the impact of CHECS on their life satisfaction to promote their healthy aging and improve the "home-based, community-depended, institutional-supplemented, medical combined elderly care service system" [14].

Previous studies have investigated the effects of CHECS on the quality of life of the elderly from different aspects [15,16]. At least three aspects need improvement. The first is in terms of research methods. Most prior studies employed traditional linear regression methods such as Logit, Probit, and Tobit and investigated whether they received CHECS as a dummy variable in the regression equation. This allowed for the comparison of the differences in quality of life between older adults who received CHECS and those who did not [17,18]. However, such methods overlook the heterogeneity of the two types of older adults and cannot overcome the biased estimation and sample selectivity deviation caused by sample "self-selection", thus resulting in invalid results. The second aspect is in terms of research content. The majority of studies examined the impact of CHECS on the quality of life of older adults from the perspective of both physical and mental health [19,20]. However, only a few studies explored the impact on life satisfaction. The third aspect is in terms of the selection of control variables. Most studies only selected the individual characteristics and living habits of the elderly as control variables [21,22]. However, in China, which is still dominated by family retirement, financial, health, and emotional support from family has a significant impact on the elderly [23]. Only a few studies include these as relevant control variables, such as Chen and Hao's study on the mental health of the elderly [24] and Yao et al.'s study on the physical and mental health of the elderly [25]. In addition, based on Maslow's needs theory, human life needs five

levels, namely, physiological, security, love/belonging, respect, and self-actualization [26]. Among them, physiological and safety are primary needs, love/belonging and respect are intermediate needs, and self-actualization is a high need. When the lower-level needs are satisfied, the higher-level needs will subsequently be created [27]. Compared with physiological and psychological health, life satisfaction is a higher-level need. Therefore, the level of physiological and psychological health of the elderly affects their life satisfaction. However, only a few relevant studies include them as control variables.

In order to investigate the effect of different kinds of CHECS on the life satisfaction of Chinese older adults, this work employs propensity score matching (PSM), a quasi-natural experimental research method, to establish a counterfactual research framework based on data from the Chinese Longitudinal Healthy Longevity Survey (CLHLS) in 2018. We also empirically analyzed the effect of CHECS on their life satisfaction in different groups, with different activities of daily living (ADL), depression levels, and living conditions. The findings obtained are useful for broadening the research scope of CHECS on the quality of life of Chinese older adults. We aim to provide an important practical reference to further optimize CHECS supply, promote the development of a senior care service system in line with China's national conditions, and contribute to active and healthy aging.

2. Materials and Methods

2.1. Participants

The data used in this study were derived from the cross-sectional data of the Chinese Longitudinal Healthy Longevity Survey (CLHLS) by the PKU Center for Healthy Aging and Development in 2018. The survey primarily covers the basic condition, evaluation of the current situation, personality and emotional characteristics, lifestyle, ADL, personal background, family structure, and physical health level of the elderly. In addition, the survey covers 85% of the regional scope of the country, involving a total of 500 sample areas in 22 provinces, municipalities, and autonomous regions, including Beijing. All study participants had the same conditions for the analysis. CLHLS data have the advantages of strong authority, wide coverage, and a relatively high number of survey participants. According to the definition of the elderly population and the age distribution of the data, the primary research object is the elderly population aged 60 years and above. Sample data of those under 60 years old were excluded, and the missing values and unanswerable values in all sample data were also excluded. The final number of valid samples obtained was 3796.

2.2. Variable Description

2.2.1. Dependent Variable

This study measures the life satisfaction of the elderly by the "evaluation of the current situation." According to the question "How do you think your life is now?" in the CLHLS questionnaire, the variable of life satisfaction of the elderly was assigned as 1 for very bad, 2 for bad, 3 for average, 4 for good, and 5 for very good.

2.2.2. Independent Variables

CHECS refer to the provision of various services and assistance to the elderly in the community. This includes daily care, medical care, and spiritual comfort. According to the question "What social services are available for the elderly in your community?", there are eight categories: "daily care, visiting the doctor (medicine delivery), spiritual comfort (chatting and relieving boredom), daily shopping, organizing social and recreational activities, providing legal aid (protection of rights), providing health care knowledge, dealing with family and neighborhood disputes," and the options are "yes" and "no". Taking into account the differences in service contents, CHECS were subdivided into four categories [28]: medical care services (MCS), including home visits to the doctor (delivery of medicine), and the provision of health care knowledge, both of which were not available and were assigned a value of 0. Those with one or two of these services represented a

community with MCS and were assigned a value of 1. The following three categories of services were similarly handled: life care services (LCS), including personal care and daily shopping; spiritual and cultural services (SCS), including spiritual comfort (chatting to relieve boredom) and organization of social and recreational activities, including social entertainment; and reconciliation and legal services (RLS), including the provision of legal aid (rights protection) and handling family and neighborhood disputes.

2.2.3. Control Variables

Drawing on existing studies on the factors influencing the life satisfaction of Chinese older adults, 21 variables in four areas—personal characteristics [22], lifestyle habits [22], physical and mental health level [29], and family support status of older adults [23]—were selected as control variables.

In terms of personal characteristics, two types of control variables—natural attributes and socioeconomic status—were introduced in this study. Age and years of education were continuous variables. Gender, household registration, whether living with a spouse, whether living with family, and whether having commercial insurance or social security were dichotomous variables, with values of 1 for male and 0 for female, 1 for urban and 0 for rural, 1 for living with their spouse and 0 for not, 1 for living with family and 0 for not, and 1 for having commercial insurance or social security and 0 for not. The relative economic level was divided into "very rich, relatively rich, average, relatively poor, and poor", with values from 5 to 1.

With regard to lifestyle habits, prior studies have demonstrated that people can improve their physical and mental health by forming and maintaining healthy habits [30]. The more positive attitudes older people have toward life in old age, the more stable their health behaviors are, and the higher their quality of life will be. We chose the questions "Do you smoke regularly?", "Do you drink alcohol regularly?", "Do you exercise regularly?", and "Do you have annual medical examinations?", with values of 1 for yes and 0 for no, as well as the variable "sleep quality", which was assigned 5 for very good, 4 for good, 3 for average, 2 for bad, and 1 for very bad to indicate lifestyle habits.

In terms of physical and mental health levels, the multidimensional character of health determines the diversity of health measurement indicators. This work measures the health level of the elderly from two dimensions: physical health and mental health, based on the study by Tao et al. [31]. First, for physical health, this work selects three indicators for multidimensional measurement, namely, self-rated health, activities of daily living (ADL), and illness from the perspectives of subjective evaluation and objective assessment. Self-rated health is a subjective indicator that can comprehensively reflect the individual health status and plays a positive predictive role in the risk of morbidity and mortality of the elderly [32]. In this work, the self-rated health variables were defined as 5 for very good, 4 for good, 3 for fair, 2 for bad, and 1 for very bad. ADL, the most basic measure of the health of the elderly, including "dressing, bathing, eating, getting in and out of bed, going to the toilet, and bowel control", is defined as the ability to perform activities of daily living during the last six months. In addition, it is also an effective approach to evaluating the health level of the elderly by examining their disease status. Twenty-four common diseases of the elderly, including heart disease and diabetes, were considered in the CLHLS, and the disease status of the elderly was defined as 1 if they have a certain disease, and 0 if they did not. The total score was derived by summing up the 24 diseases. Secondly, the mental health of the elderly was evaluated based on two aspects: the depression level and personality and emotion. The CES-D scale has been widely employed to measure mental health, as it has been well-documented to have high validity, internal consistency, and acceptable retest stability [33]. CES-D has been widely applied to measure mental depression and has good validity in studies on Chinese samples [34]. The scale has the same four options for all six questions on depression in CLHLS, five of which are negative statements and one positive. In this study, the five negative statement questions were transformed into positive statements, and the response options of six were summed to

obtain the CES-D score. Respondents' depression scores were taken as integer values of [6,30], with lower scores indicating more severe depression. Similarly, the respondent's personality–emotional score was given a value of [7,35], with lower scores indicating more severe negative emotions.

Finally, in terms of family support, the three primary dimensions of financial support, health support, and emotional support from the family were considered. Among them, financial support mainly refers to the material exchange between families. Based on the question "How much cash did your children (including all grandchildren and their spouses who live with you and not living with you) give you in the past year?", the variable "family financial support" was constructed and assigned the value of 1 for provided and 0 for not. The variable "family emotional support" was constructed based on the question "Who do you tell first if you have something in your mind?". If the elderly person confides in their spouse and children (including all grandchildren and their spouses who live together), the family was considered to provide emotional support and was assigned a value of 1. Otherwise, it was assigned a value of 0. The variable "family health support" was constructed based on the question "Who takes care of you when you are not feeling well or when you are sick?". If the elderly were taken care of by their spouses and children (including all grandchildren and their spouses living together or not living together), then the family was considered to provide health support and was assigned a value of 1. Otherwise, it was assigned a value of 0.

2.3. Methodology

Compared with traditional linear regression methods, the PSM method can effectively overcome the "selection bias" caused by biased estimation and sample "self-selection" [35]. Since PSM does not require prior assumptions about the functional form, parameter constraints, and error term distribution, nor does it require the explanatory variables to be strictly exogenous, it has advantages in addressing the endogeneity of the treatment variables. Therefore, this work adopts this method for model estimation and empirical analysis, which is performed in the following four steps.

In the first step, covariates were selected. Drawing on the relevant literature, the factors affecting the life satisfaction of Chinese older adults and the supply of CHECS were included in the model, namely, personal characteristics, lifestyle habits, physical and mental health levels, and family support status, to ensure that the negligibility assumption was met.

In the second step, the propensity scores were calculated. In this study, we applied the Logit model to compute the propensity score value for the individual to receive CHECS.

In the third step, PSM was performed. (1) The matching method was selected. It is well known that there is no superiority or inferiority in matching methods, but various matching methods have particular measurement biases. Therefore, even when processing the same sample data, different measurement results may be generated. No consensus was reported by the academic community on which matching method should be employed to optimize the results. However, if the results after applying multiple matching methods were similar or consistent, the matching results were robust and the sample validity was good [36]. Therefore, to enhance the reliability of the research findings, k-nearest neighbor matching, radius matching, and kernel matching were used for matching. (2) The balance was tested. If the propensity scores were estimated more accurately, a standardized deviation could be employed to assess whether the matched distribution between the treatment and control groups achieved statistical data balance.

In the fourth step, the average treatment effect was computed. The average treatment impact comprises three categories. The first is the average treatment effect (ATT) of the treatment group, which is the average change in the life satisfaction of the elderly who received the community elderly home care service. The second is the average treatment effect (ATU) of the control group, which is the average change in the life satisfaction of the elderly who did not receive the community elderly home care service. The third is

the average treatment effect (ATE) of the total sample, which is the mean of the change in the life satisfaction of the random sample of the elderly. Since this study explores the contribution of community home care services to the life satisfaction of the elderly, focusing on those who received community home care services, ATT is more appropriate for the analysis.

3. Results

3.1. Descriptive Statistics

The minimum, maximum, mean, and standard deviation statistics of each variable were computed (Table 2). The mean value of life satisfaction, self-rated health, and depression level among the survey respondents was 3.946, 3.495, and 22.718, respectively. This indicates that the overall life satisfaction, physical health level, and mental health level of the elderly were all high. Further analysis of the CHECS provided for the elderly revealed that the coverage of elderly services was narrow, and some of the services were low in content and accessibility, which could not effectively meet their needs. The statistics from the questionnaire indicate that nearly half of the communities where the elderly resided provide MCS. Other CHECS were rarely provided, with only 14.1% of senior communities providing LCS, 26.2% providing SCS, and 34.6% providing RLS. In terms of lifestyle habits, Chinese older adults have fewer smoking and drinking habits, and sleep well, while nearly 70% of Chinese older adults have annual medical examinations but rarely participate in positive aging behaviors that require high physical mobility, such as exercising. Finally, it is worth noting that most children still live with the elderly and offer them health, financial, and emotional support under the traditional family concept of "filial piety" culture. Family aging is still an important way of aging for the elderly in China.

Table 2. Descriptive statistics of variables.

Variable Category	Variable	Min.	Max.	Mean	S.D.
Dependent variable	Life satisfaction	1	5	3.946	0.804
Independent variables	Life care services (LCS)	0	1	0.141	0.348
	Medical care services (MCS)	0	1	0.523	0.500
	Spiritual and cultural services (SCS)	0	1	0.262	0.440
	Reconciliation and legal services (RLS)	0	1	0.346	0.476
Personal characteristics	Gender	0	1	0.471	0.499
	Age	60	117	83.212	11.299
	Household registration	0	1	0.179	0.383
	Years of education	0	18	3.796	4.364
	Relative economic level	1	5	3.135	0.652
	Whether to live with spouse	0	1	0.463	0.499
	Whether to live with family	0	1	0.835	0.371
	Availability of commercial insurance and social security	0	1	0.074	0.261
Living habits	Sleep quality	1	5	3.552	1.004
	Smoking or not	0	1	0.166	0.372
	Drinking or not	0	1	0.162	0.369
	Whether to exercise regularly	0	1	0.382	0.486
	Whether annual medical examination	0	1	0.693	0.462
Level of physical and mental health	Self-assessed health level	1	5	3.495	0.913
	ADL	1	3	2.611	0.632
	Illness	0	24	1.490	1.598
	Depression level	6	30	22.718	3.929
	Personality–emotion	13	35	27.078	3.435
Family support	Family financial support	0	1	0.621	0.485
	Family health support	0	1	0.933	0.250
	Family emotional support	0	1	0.916	0.277

3.2. Overlap Test

The common support hypothesis requires that the propensity scores of the treatment and control groups have a common range of values. To ensure the matching quality of the sample data, the kernel density function plots were further plotted after deriving the propensity scores to assess the common support domain after matching, as shown in Figures 1–4. The propensity scores of the sample receiving the CHECS and the sample not receiving these services have an extensive range of overlap. Most of the observed values were within the common range of values. Therefore, it can be assumed that the matching effect is ideal, and the common support hypothesis was satisfied.

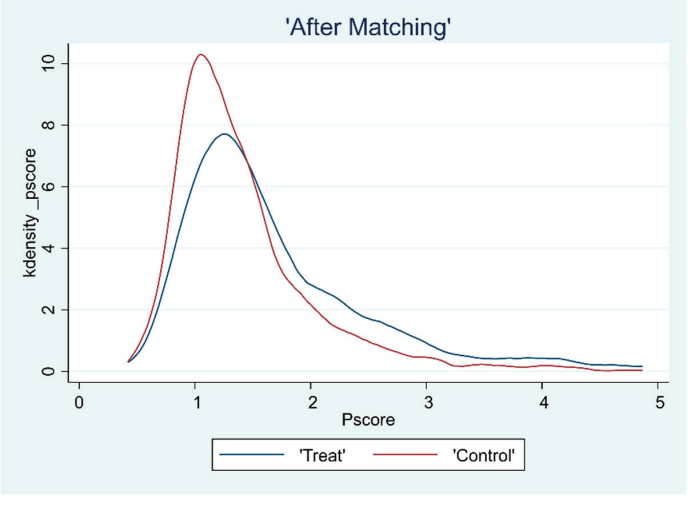

Figure 1. Kernel density function plot (LCS).

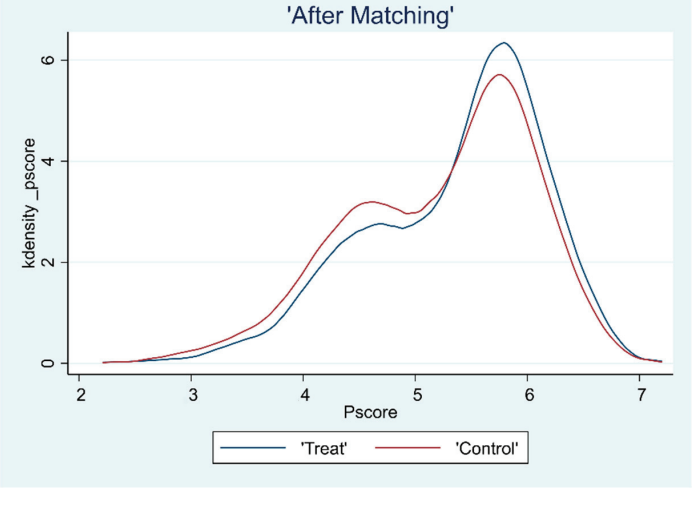

Figure 2. Kernel density function plot (MCS).

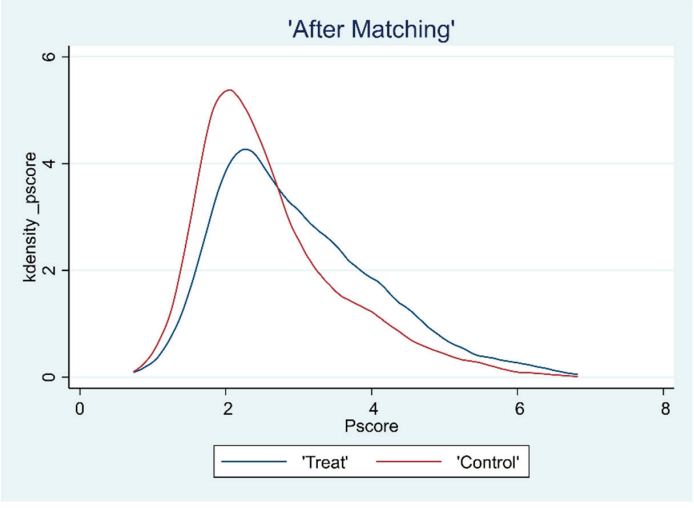

Figure 3. Kernel density function plot (SCS).

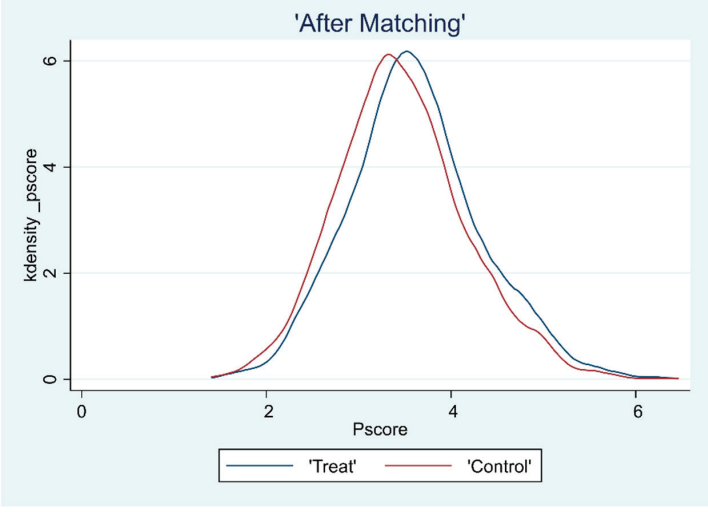

Figure 4. Kernel density function plot (RLS).

3.3. Balance Test

To ensure the reliability of the propensity score matching results, this work draws on Lian et al.'s work [37] and adopts the mean examination balance hypothesis. Table 3 lists the mean *t*-tests of the matched variables for the four CHECS types. Based on the *t*-values, after matching, no significant systematic difference in the covariates was reported between the control and treatment group, except for the difference in life satisfaction.

Table 3. Results of balance test.

Variables	Sample Matching	LCS		MCS		SCS		RLS	
		Deviation	*t*-Value	Deviation	*t*-Value	Deviation	*t*-Value	Deviation	*t*-Value
Gender	Unmatched	−0.005	−0.20	0.014	0.84	0.010	0.56	0.003	0.15
	Matched	0.001	0.04	0.006	0.38	−0.001	−0.07	0.004	0.22
Age	Unmatched	0.014	0.03	−0.161	−0.44	−0.596	−1.43	−0.644	−1.67 *
	Matched	−0.095	−0.14	0.031	0.09	−0.004	−0.01	−0.043	−0.10
Household registration	Unmatched	0.103	5.78 ***	0.010	0.77	0.124	8.83 ***	0.056	4.26 ***
	Matched	0.020	0.74	0.002	0.18	0.015	0.75	0.013	0.83
Years of education	Unmatched	1.045	5.15 ***	0.203	1.43	1.447	9.09 ***	0.668	4.50 ***
	Matched	0.239	0.81	0.039	0.28	0.133	0.62	0.138	0.78
Relative economic level	Unmatched	0.172	5.68 ***	0.080	3.79 ***	0.152	6.37 ***	0.093	4.19 ***
	Matched	0.027	0.64	0.027	1.31	0.020	0.67	0.017	0.66
Whether to live with spouse	Unmatched	−0.010	−0.43	0.021	1.28	0.034	1.85 *	0.038	2.21 **
	Matched	0.001	0.03	−0.000	−0.01	−0.001	−0.04	0.004	0.21
Whether to live with family	Unmatched	0.016	0.91	0.027	2.21 **	0.032	2.31	0.012	0.91
	Matched	0.008	0.35	0.001	0.11	0.003	0.17	−0.001	−0.09
Availability of commercial insurance and social security	Unmatched	0.010	0.81	−0.027	−3.15 ***	−0.001	−0.07	−0.016	−1.83 *
	Matched	0.002	0.15	−0.001	−0.12	−0.001	−0.04	0.000	0.03
Sleep quality	Unmatched	0.036	0.77	0.031	0.96	0.090	2.43 **	0.031	0.91
	Matched	0.003	0.04	0.013	0.40	−0.006	−0.14	0.006	0.16
Smoking or not	Unmatched	−0.010	−0.58	−0.029	−2.43 **	−0.040	−2.88 ***	−0.031	−2.47 **
	Matched	−0.004	−0.16	−0.002	−0.13	−0.004	−0.23	0.001	0.06
Drinking or not	Unmatched	0.003	0.17	0.010	0.84	0.010	0.76	0.006	0.46
	Matched	0.002	0.07	0.005	0.47	0.002	0.10	0.002	0.15
Whether to exercise regularly	Unmatched	0.095	4.18 ***	0.012	0.78	0.109	6.12	0.052	3.12 ***
	Matched	0.020	0.64	0.001	0.04	−0.002	−0.09	0.005	0.26
Whether receiving an annual medical examination	Unmatched	0.049	2.27 **	0.114	7.66 ***	0.023	1.38	0.053	3.35 ***
	Matched	0.007	0.26	0.001	0.05	−0.002	−0.11	0.003	0.16
Self-assessed health level	Unmatched	0.113	2.66 **	0.064	2.15 **	0.084	2.50 **	0.078	2.50 **
	Matched	0.009	0.16	0.020	0.70	−0.015	−0.38	0.006	0.17
ADL	Unmatched	−0.002	−0.08	−0.010	−0.47	−0.014	−0.58	0.022	1.02
	Matched	−0.003	−0.07	−0.012	−0.61	−0.004	−0.14	−0.002	−0.07
Illness	Unmatched	0.192	2.57 **	0.082	1.58	0.372	6.35 ***	0.211	3.88 ***
	Matched	0.047	0.46	0.023	0.45	0.019	0.24	0.045	0.70
Depression level	Unmatched	0.426	2.32 **	0.083	0.65	0.141	0.97	0.055	0.41
	Matched	0.074	0.31	−0.020	−0.16	−0.021	−0.12	0.000	0.00
Personality–emotion	Unmatched	0.490	3.06 ***	0.120	1.08	0.533	4.22 ***	0.225	1.93 *
	Matched	0.072	0.35	0.027	0.24	−0.014	−0.09	0.002	0.01
Family financial support	Unmatched	−0.044	−1.96	0.026	1.65 *	−0.031	−1.73 **	0.029	1.77 *
	Matched	−0.006	−0.21	0.007	0.42	−0.002	−0.07	0.000	0.00
Family health Support	Unmatched	−0.077	−6.61 ***	0.008	1.01	−0.025	−2.71 **	0.008	0.95
	Matched	−0.013	−0.66	−0.004	−0.51	−0.005	−0.37	−0.001	−0.11
Family emotional support	Unmatched	−0.037	−2.90	0.027	2.96 ***	0.002	0.19	0.022	2.36 **
	Matched	−0.003	−0.13	−0.002	−0.27	0.000	0.02	0.001	0.07

Note: ***, **, and * indicate that the estimation results are significant at the 1%, 5%, and 10% levels.

3.4. Average Effect Analysis

This study measured the average treatment effect of four types of CHECS provision on the life satisfaction of the elderly. The estimation results after matching with three different methods (Table 4) were consistent, indicating that the sample data have good robustness. Therefore, the arithmetic mean of the effects was chosen to characterize the effects for the subsequent empirical analysis.

After the counterfactual estimation of PSM, the impact of LCS on Chinese older adults' life satisfaction was insignificant for all three matching methods. MCS significantly affected Chinese older adults' life satisfaction only in the kernel match, with a net effect of 0.046. This indicates that access to MCS contributes to a significant increase in Chinese older adults' life satisfaction of 0.046, after accounting for Chinese older adults' selectivity bias. SCS and RLS significantly affect the life satisfaction of Chinese older adults in all three matches. The ATT for the treatment group of SCS was 0.060, indicating that access to SCS significantly increased life satisfaction by 0.060 when other factors were excluded. The ATT for the treatment group of RLS was 0.080, indicating that access to RLS significantly increased life satisfaction by 0.080 when other factors were excluded. The model results indicated that the three types of CHECS, namely, MCS, SCS, and RLS, could significantly improve the life satisfaction of the elderly, in the order of: RLS (ATT = 0.080) > SCS (ATT = 0.060) > MCS (0.046). LCS had no significant effect on the life satisfaction of Chinese older adults.

Table 4. Results of average effect analysis.

Service Category	Matching Method	Treatment Group	Control Group	ATT	S.D.	*t*-Value
LCS	K-nearest neighbor matching	4.062	4.055	0.007	0.043	0.15
	Radius matching	4.058	4.030	0.028	0.039	0.74
	Kernel matching	4.062	4.017	0.045	0.038	1.17
	Mean	4.061	4.034	0.027	0.040	
MCS	K-nearest neighbor matching	3.992	3.945	0.047	0.029	1.63
	Radius matching	3.992	3.953	0.039	0.027	1.43
	Kernel matching	3.992	3.946	0.046	0.027	1.72 *
	Mean	3.992	3.948	0.044	0.028	
SCS	K-nearest neighbor matching	4.076	4.016	0.060	0.034	1.79 *
	Radius matching	4.076	4.019	0.057	0.031	1.88 **
	Kernel matching	4.076	4.012	0.064	0.030	2.13 **
	Mean	4.076	4.016	0.060	0.032	
RLS	K-nearest neighbor matching	4.039	3.948	0.091	0.030	2.99 ***
	Radius matching	4.039	3.966	0.068	0.028	2.66 **
	Kernel matching	4.039	3.962	0.077	0.028	2.79 ***
	Mean	4.039	3.959	0.080	0.029	

Note: ***, **, and * indicate that the estimation results are significant at the 1%, 5%, and 10% levels.

3.5. Heterogeneous Effect Analysis

Due to the different levels of physical health, mental health, and living conditions, the needs of various types of CHECS vary considerably [38]. In the prior study, the ATT of the treatment group was chosen to measure the net effect of CHECS on the life satisfaction of the elderly. However, the ATT can only reflect the mean value of the change in life satisfaction of the elderly who received CHECS but cannot reflect the structural differences in the effect of the elderly sample. Thus, exploring the heterogeneous effect of various types of older adults can enrich the existing literature on the welfare effects of CHECS on Chinese older adults. In this work, the sample was grouped and processed by using the ADL, the depression level, and whether the elderly lived with their families as markers to assess the group differences of the effect of four types of CHECS on their life satisfaction. The comparison results are shown in Table 5.

Heterogeneity tests demonstrate that, for Chinese older adults with restricted ADL, higher levels of depression, and those living on their own, the effects of all four types of CHECS on their life satisfaction were not significant under all three matching methods. For the elderly with unrestricted ADL, all three types of services, except for LCS, significantly increased their life satisfaction under the three matching methods, in the order of RLS (ATT = 0.116) > SCS (ATT = 0.088) > MCS (ATT = 0.064). SCS and RLS significantly improved the life satisfaction of Chinese older adults with low depression levels, with the degree of impact being SCS (ATT = 0.082) > RLS (ATT = 0.062). For Chinese older adults living with their families, all three types of services, except for MCS, significantly increased their life satisfaction, with the degree of impact being RLS (ATT = 0.084) > SCS (ATT = 0.075) > MCS (ATT = 0.071).

Table 5. Results of heterogeneous effect analysis.

Service Category	Matching Method	ADL		Depression Level		Whether to Live with Families	
		Restricted	Unrestricted	CES-D > 20	CES-D ≤ 20	Yes	No
LCS	K-nearest neighbor matching	0.027	0.049	0.004	0.030	−0.059	0.043
		(0.34)	(0.99)	(0.08)	(0.34)	(−0.51)	(0.95)
	Radius matching	0.010	0.042	0.013	0.080	−0.074	0.051
		(0.14)	(0.91)	(0.30)	(1.02)	(−0.70)	(1.23)
	Kernel matching	0.013	0.053	0.026	0.083	−0.058	0.071 *
		(0.17)	(1.16)	(0.62)	(1.06)	(−0.54)	(1.74)
	Mean	0.016	0.048	0.014	0.065	−0.064	0.055
MCS	K-nearest neighbor matching	−0.042	0.064 *	0.041	0.040	0.047	0.033
		(−0.76)	(1.86)	(1.28)	(0.69)	(0.58)	(1.05)
	Radius matching	−0.028	0.062 **	0.037	0.057	0.025	0.041
		(−0.54)	(1.98)	(1.26)	(1.06)	(0.35)	(1.42)
	Kernel matching	−0.015	0.067 **	0.039	0.060	0.033	0.045
		(−0.30)	(2.12)	(1.31)	(1.12)	(0.45)	(1.54)
	Mean	−0.028	0.064	0.039	0.053	0.035	0.040
SCS	K-nearest neighbor matching	0.013	0.080 **	0.083 **	−0.028	−0.06	0.065 *
		(0.21)	(2.05)	(2.32)	(−0.40)	(−0.66)	(1.82)
	Radius matching	−0.003	0.090 **	0.080 **	0.004	−0.06	0.079 **
		(−0.05)	(2.55)	(2.46)	(0.05)	(−0.69)	(2.41)
	Kernel matching	−0.000	0.095 **	0.084 **	0.003	−0.06	0.083 **
		(−0.00)	(2.72)	(2.60)	(0.05)	(−0.72)	(2.55)
	Mean	0.004	0.088	0.082	−0.007	−0.06	0.075
RLS	K-nearest neighbor matching	−0.050	0.1153 ***	0.052	0.050	−0.023	0.078 **
		(−0.87)	(3.24)	(1.56)	(0.82)	(−0.28)	(2.41)
	Radius matching	−0.023	0.114 ***	0.064 **	0.066	0.037	0.085 ***
		(−0.43)	(3.50)	(2.11)	(1.19)	(0.50)	(2.86)
	Kernel matching	−0.014	0.120 ***	0.070 **	0.073	4.072	0.089 ***
		(−0.26)	(3.70)	(2.31)	(1.34)	(−0.03)	(3.03)
	Mean	−0.029	0.116	0.062	0.063	0.004	0.084

Note: ***, **, and * indicate that the estimates are significant at the 1%, 5%, and 10% levels, with significant *t*-values in parentheses.

4. Discussion

Based on the analysis of the average effect, LCS could not improve the life satisfaction of Chinese older adults. This may be because the companionship and care by community workers can improve the physical and mental health of the elderly [39] but cannot replace the care and concern from their families [40]. Compared with older adults in developed countries, Chinese older adults care more about the "feeling of home" and look forward to sharing the joy of family with their offspring. The sense of belonging that family brings to Chinese older adults is stronger, which also reflects the vital need for affection in later life [41]. Additionally, due to the high workforce and professional requirements inherent in LCS, the current supply level and service quality of LCS are low and cannot meet the needs of the elderly in their daily lives.

The significant and low impact of MCS on Chinese older adults' life satisfaction only in the kernel match may be related to the lower quality of MCS. Although a proportion of Chinese older adults with milder chronic diseases choose and receive community home-based MCS, when Chinese older adults have significant illnesses or are more limited in their daily living activities the majority still prefer to receive more specialized medical treatment in hospitals or elderly services, while only a few of them will choose community-provided MCS [42].

SCS and RLS significantly increased the life satisfaction of Chinese older adults in all three matching approaches, with a high degree of impact. This may be due to the fact that, on the one hand, with the rapid socioeconomic development, the family space has been extended and children are away from their parents for various reasons [43]. Meanwhile, retirement has removed the elderly from their original work environments, and changing social roles have brought an unprecedented sense of isolation [5]. Additionally, due to the difference in cognitive level and social adaptability, Chinese older adults are more likely to suffer from legal incidents such as fraud [44]. Therefore, their demands can easily be satisfied with SCS and RLS. On the other hand, both services require less energy and

professionalism from community workers. Based on the existing community management foundation of "neighborhood committees" in China, these two services are more easily developed.

Based on the analysis of the heterogeneous effect, the four types of CHECS did not have a significant impact on the life satisfaction of the elderly with restricted ADL. MCS, SCS, and RLS had a significant impact on the life satisfaction of the elderly with unrestricted ADL. Based on Maslow's theory of needs, only when the lower-level needs are satisfied can the higher-level needs subsequently arise [27]. For the elderly with restricted ADL, they need LCS the most, and other services do not help much to improve their life satisfaction. The current quantity and quality of LCS provided by the community are a little bit lower and cannot meet the needs of the elderly in their daily lives. This also indicates that LCS in China needs to be improved to better achieve the expected goal of promoting CHECS. Regarding depression levels, the four types of CHECS had no significant effect on the life satisfaction of Chinese older adults with higher depression levels. SCS and RLS had a significant impact on the life satisfaction of Chinese older adults with lower levels of depression. The degree of impact of SCS was higher than that of RLS. This may be because Chinese older adults with higher levels of depression are prone to the idea that "the elderly are useless" and tend to fall into self-denial [45], close themselves off, and limit their participation in community activities. Their families should offer more care and attention to the elderly and actively seek help from professional counselors to ensure that they become happier as they age. Conversely, Chinese older adults with unrestricted ADL and lower levels of depression were able to participate more actively in community-provided recreational activities, health talks, and other activities since they were more capable of taking care of themselves, and these activities enriched their spiritual life and enhance their life satisfaction.

In terms of living conditions, the four types of CHECS had no significant effect on the life satisfaction of the elderly living alone. LCS, SCS, and RLS had a significant impact on the life satisfaction of Chinese older adults living with their families. The elderly living alone, lacking a warm family atmosphere, felt helpless and lonely, and their emotions could not be satisfied. Although CHECS improve the living conditions of the elderly in all aspects, they cannot replace the companionship and comfort of family members [40] and thus do not have a significant effect on the life satisfaction of Chinese older adults living alone. In contrast, elderly people who do not live alone have the company of their spouses or children and spend their old age in a familiar environment, which is in line with their expectations. Additionally, frequent contact with family members has a protective effect on their psychological health [46]. After satisfying the need for children's companionship, the services provided by the community further enrich the lives of the elderly and enhance their life satisfaction.

5. Conclusions

This study explored the impact of four types of CHECS on the life satisfaction of Chinese older adults, namely, LCS, MCS, SCS, and RLS. The results indicate that MCS, SCS, and RLS had varying degrees of improvement in their life satisfaction. However, the effect of LCS on their life satisfaction was insignificant. Next, using cohort difference analysis, this work then explored the heterogeneous impact of the four types of CHECS on the life satisfaction of the elderly in three categories: whether the ADL were limited, the level of depression, and whether they lived with their families. The four types of CHECS had a more prominent effect on the life satisfaction of Chinese older adults who lived with their children, whose daily living activities were not limited, and whose depression level was generally lower. The findings offer an essential reference for the Chinese government that CHECS need precise policies for different elderly groups, attention to the positive impact of SCS and RLS on the life satisfaction of the elderly, and the substantive effectiveness of LCS and MCS.

However, several limitations in our study could be improved in future research. First of all, due to the limitations of cross-sectional data, we could not discuss the long-term effect of CHECS on the life satisfaction of the elderly. Secondly, we attenuated the endogeneity problems caused by sample self-selection by PSM and adding control variables. However, endogeneity brought by missing variables is still unavoidable in our study. Therefore, a further collection of panel data for two-stage least squares (2SLS) or difference in difference (DID) analysis is a direction worth paying attention to in follow-up research.

Author Contributions: Methodology, Y.M.; formal analysis, Z.Z.; data curation, Y.S. and R.D.; writing—original draft preparation, Z.Z.; writing—review and editing, Z.Z. and Y.M.; project administration, Y.H.; funding acquisition, Y.M. All authors have read and agreed to the published version of the manuscript.

Funding: This work is funded by the Center for Balance Architecture, Zhejiang University (Project No. 20203512-28C) and the MOE Youth Funded Project of Humanities and Social Sciences (Project No. 20YJC840008).

Institutional Review Board Statement: This study was performed in compliance with the Helsinki Declaration guidelines and approved by the Ethical Review Committee of Peking University (IRB00001052–13074).

Informed Consent Statement: Each participant was a volunteer, who was informed of the study objective and context and provided their written informed consent regarding privacy and information management policies.

Data Availability Statement: Chinese Longitudinal Healthy Longevity Survey (CLHLS) belongs to public database (https://opendata.pku.edu.cn/dataverse/CHADS (accessed on 17 October 2022)). Users can download relevant data for free for research and publish relevant articles. Our study is based on open source data, so there are no ethical issues or other conflicts of interest.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Shin, D.C.; Johnson, D.M. Avowed Happiness as an Overall Assessment of the Quality of Life. *Soc. Indic. Res.* **1978**, *5*, 475–492. [CrossRef]
2. Diener, E.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The Satisfaction with Life Scale. *J. Personal. Assess.* **1985**, *49*, 71–75. [CrossRef] [PubMed]
3. Blanchflower, D.G. Unhappiness and Age. *J. Econ. Behav. Organ.* **2020**, *176*, 461–488. [CrossRef]
4. Barnay, T.; Juin, S. Does Home Care for Dependent Elderly People Improve Their Mental Health? *J. Health Econ.* **2016**, *45*, 149–160. [CrossRef] [PubMed]
5. Macbride, A. Retirement as a Life Crisis: Myth or Reality? A Review. *Can. Psychiatr. Assoc. J.* **1976**, *21*, 547–556. [CrossRef] [PubMed]
6. Fast, J.E.; Williamson, D.L.; Keating, N.C. The Hidden Costs of Informal Elder Care. *J. Fam. Econ. Issues* **1999**, *20*, 301–326. [CrossRef]
7. Rakowski, W.; Clark, N.M. Future Outlook, Caregiving, and Care-Receiving in the Family Context. *The Gerontologist* **1985**, *25*, 618–623. [CrossRef]
8. Han, J.; Lee, S.; Kwon, Y. Can Social Capital Improve the Quality of Life Satisfaction for Older Adults? Focusing on the 2016 Quality of Life Survey in Gyeonggi Province, Korea. *Cities* **2022**, *130*, 103853. [CrossRef]
9. Zapata-Lamana, R.; Poblete-Valderrama, F.; Ledezma-Dames, A.; Pavón-León, P.; Leiva, A.M.; Fuentes-Alvarez, M.T.; Cigarroa, I.; Parra-Rizo, M.A. Health, Functional Ability, and Environmental Quality as Predictors of Life Satisfaction in Physically Active Older Adults. *Soc. Sci.* **2022**, *11*, 265. [CrossRef]
10. Akimov, A.V.; Gemueva, K.A.; Semenova, N.K. The Seventh Population Census in the PRC: Results and Prospects of the Country's Demographic Development. *Her. Russ. Acad. Sci.* **2021**, *91*, 724–735. [CrossRef]
11. Chu, L.-W.; Chi, I. Nursing Homes in China. *J. Am. Med. Dir. Assoc.* **2008**, *9*, 237–243. [CrossRef] [PubMed]
12. Ouyang, P.; Sun, W.; Wang, C. Well-Being Loss in Informal Care for the Elderly People: Empirical Study from China National Baseline CHARLS. *Asia Pac. Psychiatry* **2019**, *11*, e12336. [CrossRef] [PubMed]
13. Xu, Q.; Chow, J.C. Exploring the Community-Based Service Delivery Model: Elderly Care in China. *Int. Soc. Work* **2011**, *54*, 374–387. [CrossRef]
14. Gao, Y. Problems and Countermeasures in Building an Age-Friendly Society in China. *Chin. Public Adm. Nistration* **2022**, *9*, 74–79. [CrossRef]
15. Bilgili, N.; Arpacı, F. Quality of Life of Older Adults in Turkey. *Arch. Gerontol. Geriatr.* **2014**, *59*, 415–421. [CrossRef]

16. Cheung, J.C.K.; Kwan, A.Y.H.; Chan, S.S.C.; Ngan, R.M.H.; Ng, S.H.; Leung, E.M.F.; Lau, A. Quality of Life in Older Adults: Benefits from Caring Services in Hong Kong. *Soc. Indic. Res.* **2005**, *71*, 291–334. [CrossRef]
17. Zhou, H.; Chen, X.; Dong, Y. The Impact of Community Home-based Elderly Care Services on the Health of Urban Elderly. *Stat. Decis.* **2018**, *34*, 98–101. [CrossRef]
18. Shen, Y.; Yeatts, D.E. Social Support and Life Satisfaction among Older Adults in China: Family-Based Support versus Community-Based Support. *Int. J. Aging Hum. Dev.* **2013**, *77*, 189–209. [CrossRef]
19. Su, S.-W.; Wang, D. Health-Related Quality of Life and Related Factors among Elderly Persons under Different Aged Care Models in Guangzhou, China: A Cross-Sectional Study. *Qual. Life Res.* **2019**, *28*, 1293–1303. [CrossRef]
20. Hellström, Y.; Persson, G.; Hallberg, I.R. Quality of Life and Symptoms among Older People Living at Home. *J. Adv. Nurs.* **2004**, *48*, 584–593. [CrossRef]
21. Gu, L.; Cheng, Y.; Phillips, D.R.; Rosenberg, M. Understanding the Wellbeing of the Oldest-Old in China: A Study of Socio-Economic and Geographical Variations Based on CLHLS Data. *Int. J. Environ. Res. Public Health* **2019**, *16*, 601. [CrossRef] [PubMed]
22. Dai, H.; Jia, G.; Liu, K. Health-Related Quality of Life and Related Factors among Elderly People in Jinzhou, China: A Cross-Sectional Study. *Public Health* **2015**, *129*, 667–673. [CrossRef] [PubMed]
23. Cheng, W.; Song, W.; Ye, C.; Wang, Z. Family Networks, Social Networks, and Life Satisfaction of Older Adults in China. *Healthcare* **2022**, *10*, 1568. [CrossRef] [PubMed]
24. Chen, Q.; Hao, Y. A Study on the Effect of Community Old-age Service on the Mental Health Improvement of the Elderly. *Northwest Popul. J.* **2020**, *41*, 79–91. [CrossRef]
25. Yao, X.; Su, Q.; Zhu, M.; Ji, L. The Adoption of Smart Senior Care Services and Health of the Elderly under the "Silver Wave". *J. Soc. Dev.* **2021**, *8*, 181–195 + 242–243.
26. Thielke, S.; Harniss, M.; Thompson, H.; Patel, S.; Demiris, G.; Johnson, K. Maslow's Hierarchy of Human Needs and the Adoption of Health-Related Technologies for Older Adults. *Ageing Int* **2012**, *37*, 470–488. [CrossRef]
27. Taormina, R.J.; Gao, J.H. Maslow and the Motivation Hierarchy: Measuring Satisfaction of the Needs. *Am. J. Psychol.* **2013**, *126*, 155–177. [CrossRef]
28. Zhang, C.; Lan, X. Community Support and Elderly Health Promotion. *World Surv. Res.* **2021**, *1*, 74–81. [CrossRef]
29. Pinto, J.M.; Fontaine, A.M.; Neri, A.L. The Influence of Physical and Mental Health on Life Satisfaction Is Mediated by Self-Rated Health: A Study with Brazilian Elderly. *Arch. Gerontol. Geriatr.* **2016**, *65*, 104–110. [CrossRef]
30. Xu, J.; Qiu, J.; Chen, J.; Zou, L.; Feng, L.; Lu, Y.; Wei, Q.; Zhang, J. Lifestyle and Health-Related Quality of Life: A Cross-Sectional Study among Civil Servants in China. *BMC Public Health* **2012**, *12*, 330. [CrossRef]
31. Tao, Y.; Shen, Y. The Influence of Social Support on the Physical and Mental Health of the Rural Elderly. *Popul. Econ.* **2014**, *3*, 3–14.
32. Idler, E.L.; Benyamini, Y. Self-Rated Health and Mortality: A Review of Twenty-Seven Community Studies. *J. Health Soc. Behav.* **1997**, *38*, 21–37. [CrossRef] [PubMed]
33. Radloff, L.S. The CES-D Scale: A Self-Report Depression Scale for Research in the General Population. *Appl. Psychol. Meas.* **1977**, *1*, 385–401. [CrossRef]
34. Wang, X.; Zheng, C. The Impact of Health Insurance on Medical Expenditure and Health of the Elderly. *J. Financ. Econ.* **2014**, *40*, 65–75. [CrossRef]
35. Steiner, P.M.; Cook, T.D.; Shadish, W.R. On the Importance of Reliable Covariate Measurement in Selection Bias Adjustments Using Propensity Scores. *J. Educ. Behav. Stat.* **2011**, *36*, 213–236. [CrossRef]
36. Caliendo, M.; Kopeinig, S. Some Practical Guidance for the Implementation of Propensity Score Matching. *J. Econ. Surv.* **2008**, *22*, 31–72. [CrossRef]
37. Lian, Y.; Su, Z.; Gu, Y. Evaluating the Effects of Equity Incentives Using PSM: Evidence from China. *Front. Bus. Res. China* **2011**, *2*, 266–290. [CrossRef]
38. Gu, T.; Yuan, J.; Li, L.; Shao, Q.; Zheng, C. Demand for Community-Based Care Services and Its Influencing Factors among the Elderly in Affordable Housing Communities: A Case Study in Nanjing City. *BMC Health Serv. Res.* **2020**, *20*, 241. [CrossRef]
39. Lv, X.; Zhang, X. The Influence of Community Home-based Elderly Care on the Health of the Elderly Population. *Chin. J. Popul. Sci.* **2022**, *3*, 111–125+128.
40. Lin, W. The Relationship between Formal and Informal Care among Chinese Older Adults: Based on the 2014 CLHLS Dataset. *BMC Health Serv. Res.* **2019**, *19*, 323. [CrossRef]
41. Zimmer, Z.; Kwong, J. Family Size and Support of Older Adults in Urban and Rural China: Current Effects and Future Implications. *Demography* **2003**, *40*, 23–44. [CrossRef] [PubMed]
42. Duan, H.; Zhang, Y.; Hou, Y.; Ma, L. Research on the Influence of the Policy of Medical Alliance on the Service Ability of Primary Community Medical and Health Institutions—A Quasi Experimental Study from the Perspective of Organizational Alliance Theory. *J. Gansu Adm. Inst.* **2020**, *4*, 4–16+124.
43. Fang, E.F.; Xie, C.; Schenkel, J.A.; Wu, C.; Long, Q.; Cui, H.; Aman, Y.; Frank, J.; Liao, J.; Zou, H.; et al. A Research Agenda for Ageing in China in the 21st Century (2nd Edition): Focusing on Basic and Translational Research, Long-Term Care, Policy and Social Networks. *Ageing Res. Rev.* **2020**, *64*, 101174. [CrossRef] [PubMed]
44. Lu, H.; Wei, X. Analysis Framework, Concept, and Pathways of Digital Divide Governance for Older Adults: From the Perspective of Digital Divide and Knowledge Gap Theory. *Popul. Res.* **2021**, *45*, 17–30.

45. Su, H.; Zhou, Y.; Sun, Y.; Cai, Y. The Relationship between Depression and Subjective Cognitive Decline in Older Adults of China: The Mediating Role of General Self-Efficacy. *Psychol. Health Med.* **2022**, 1–11. [CrossRef]
46. Tsai, F.J.; Motamed, S.; Rougemont, A. The Protective Effect of Taking Care of Grandchildren on Elders' Mental Health? Associations between Changing Patterns of Intergenerational Exchanges and the Reduction of Elders' Loneliness and Depression between 1993 and 2007 in Taiwan. *BMC Public Health* **2013**, *13*, 567. [CrossRef]

International Journal of
Environmental Research and Public Health

MDPI

Article

Perceived Consequences of Post-COVID-19 and Factors Associated with Low Life Satisfaction

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Abstract: A significant number of individuals experience post-COVID-19 symptoms, but knowledge of perceived consequences and life satisfaction is lacking. Here, we investigate perceived consequences regarding everyday life, health, physical activity and work post-COVID-19 and factors associated with low life satisfaction. A total of 766 people (mean age 48; 672 women) experiencing post-COVID-19 symptoms at least two months after infection (mean 13 months) responded to an online survey. A majority (≥77%) perceived physical fatigue, mental fatigue, dizziness, reduced work ability, low life satisfaction and a reduced level of aerobic capacity. In the final logistic regression model (Nagelkerke R Square 0.296, $p < 0.001$), poor work ability was the most important factor for perceiving low satisfaction with life (Odds ratio 3.369, 95% CI 2.040–5.565, $p < 0.001$, Nagelkerke R Square 0.177). Reduced aerobic capacity, fatigue and living in a city also increased the odds of low life satisfaction. As people with post-COVID-19 report several long-term consequences, this suggests that there is a need for targeted care for this group. The results of this study can serve as guidance for healthcare authorities regarding important long-term consequences that should be considered in rehabilitation programs directed toward post-COVID-19.

Keywords: activities of daily living; COVID-19; health; life satisfaction; physical activity; post-COVID-19 condition; work

Citation: Ekstrand, E.; Brogårdh, C.; Axen, I.; Fänge, A.M.; Stigmar, K.; Hansson, E.E. Perceived Consequences of Post-COVID-19 and Factors Associated with Low Life Satisfaction. *IJERPH* **2022**, *19*, 15309. https://doi.org/10.3390/ijerph192215309

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 13 October 2022
Accepted: 17 November 2022
Published: 19 November 2022

1. Introduction

According to the World Health Organization (WHO) there have now been about 600 million confirmed cases of COVID-19 worldwide [1], and the virus still continues to infect people. A feature of COVID-19 that differs from other respiratory infections is the multi-system symptomatology and long-term sequelae [2]. Most persons who develop COVID-19 fully recover, but current research suggests that approximately 10 to 20% experience a variety of mid- and long-term symptoms after their initial illness, known as post-COVID-19 condition [1].

Post-COVID-19 is defined as a condition that occurs in individuals with a history of probable or confirmed SARS-CoV-2 infection, with symptoms that last for at least two months and cannot be explained by an alternative diagnosis [3]. The mechanisms behind post-COVID-19 are not fully understood, but it has been suggested that they are associated with dysregulation of the immune and autonomic nervous systems due to viral injury, oxidative stress, immunologic abnormalities and inflammatory damage [4]. Post-COVID-19 can involve a range of symptoms, such as fatigue and muscle weakness, chest and muscle pain, shortness of breath, anosmia/ageusia, fever, cognitive dysfunction/brain

fog, headache, tachycardia and intestinal disorders [5–7]. The symptoms can persist from the acute COVID-19 infection, but new symptoms may also occur after initial recovery and can fluctuate or relapse over time [3].

The severity of the acute COVID-19 infection, comorbidities and advanced age have been identified as risk factors for post-COVID-19 [5,8,9]. However, it has been shown that it also affects younger persons with a mild acute illness that did not need hospital or intensive care [8,10–12]. Studies, including mostly younger (<60 years) and non-hospitalized persons, have reported fatigue as the most common post-COVID-19 symptom [13–16]. A longitudinal online survey investigating post-COVID-19 in mostly non-hospitalized persons from 56 countries showed that over 90% experienced symptoms seven months after the acute infection, and about 70% of unrecovered persons had not returned to previous levels of work due to their illness [13]. Cross-sectional studies have reported reduced physical activity levels, cognitive impairments and limitations in daily activities after milder COVID-19 infections [14–16]. Thus, COVID-19 can lead to long-term disability, which may have a significant impact on physical and mental health and on the ability to manage everyday activities and work.

As long-term disability can impact life satisfaction negatively [17], it is important to study how persons with post-COVID-19 perceive the consequences of the disease and how it affects their life satisfaction. Perceived life satisfaction is related to concepts such as well-being, contentment and happiness and is also affected by expectations and aspirations as well as the subjective appraisal of the extent to which these are being met [18,19]. The level of life satisfaction can be assessed as the perceived overall life satisfaction and also in relation to different aspects of life such as provision, leisure, close relations and health [20,21]. Previous studies have shown that various factors such as age, family situation, educational level, employment situation, residential area and comorbidities can affect the level of perceived life satisfaction [21–26].

Currently, there is a lack of knowledge of perceived consequences and life satisfaction with post-COVID-19. Increased knowledge can improve the ability of welfare authorities and the healthcare system to support these people. The aim of the study was, therefore, to investigate perceived consequences regarding everyday life, health, physical activity and work post-COVID-19 and the factors associated with low life satisfaction.

2. Materials and Methods

2.1. Study Design

This study had a cross-sectional design and was part of a larger project on life after COVID-19 (The LAC project) investigating different aspects of the long-term consequences of COVID-19 and their impact on life.

2.2. Recruitment and Participants

Recruitment of participants was conducted by means of an announcement on social media, posted between the 21 October and the 13 November 2021. Persons 18 years or older, able to read and understand Swedish and having had a COVID-19 infection with remaining symptoms, were invited to participate. The current study included people with remaining symptoms for at least 2 months after the acute infection.

A Facebook page with information about the project was targeted to persons in the three most populated regions of Sweden (Stockholm, Gothenburg and Skåne) but could also be shared with users outside these areas. The link to the invitation was also posted on Instagram and Twitter. The project webpage was hosted at Lund University and included general project information, a participant information sheet, and a link to the survey. The survey was open until 12 February 2022, which resulted in a total of 867 persons participating in the survey. Of those, 52 persons did not meet the inclusion criteria on remaining post-COVID-19 symptoms for at least 2 months, and 49 persons were excluded due to not completing the mandatory background questions, giving a total of 766 participants who were included in the study.

2.3. Data Collection

Data collection was completed using REDCap (Research Electronic Data Capture), a secure, web-based application designed to support data capture for research studies [27,28]. Outcome measures were chosen based on recent descriptions of symptoms and potential consequences of post-COVID-19 [29].

The online survey included sociodemographic questions regarding age, sex (man or woman), family situation (single, married/cohabiting or partner but not cohabiting), residential community characteristics (city, town or village) and level of education (primary school, secondary school or higher education), provision (work, student grants, benefits due to sickness, unemployment or social security issues or other sources of income) and comorbidities (yes or no). The participants answered questions on the acute COVID-19 infection (onset, symptoms and need for hospital care) and post-COVID-19 condition (duration and symptoms). They also responded to questionnaires on the perceived consequences of COVID-19.

2.4. Questionnaires on Perceived Consequences of COVID-19

Physical fatigue was assessed with the Fatigue Severity Scale (FSS) [30], which has demonstrated adequate validity and reliability (Cronbach's alpha 0.93–0.96; intraclass correlation coefficient (ICC) 0.84; Kappa coefficient 0.75) in various diagnoses [31–33]. The FSS consists of 9 statements concerning the impact of fatigue on daily life that are scored from 1 (strongly disagree) to 7 (strongly agree). The total score of the FSS ranges from 1 to 7 (mean of the 9 statements), where a greater score indicates more fatigue and a cut-off score of $\geq$4 signifies physical fatigue [34].

Mental fatigue was assessed with the Mental Fatigue Scale (MFS) [35]. The MFS was developed to capture mental fatigue regardless of illness and has demonstrated high internal consistency (Cronbach's alpha 0.94) [35]. It includes 15 items scored from 0 (normal function) to 3 (maximal symptoms). The total score is calculated as the sum of items 1–14, and item 15 provides additional information on daytime variation of symptoms. A sum score $\geq$10.5 indicates mental fatigue [36].

Perceived dizziness and balance impairment related to COVID-19 were assessed by a single question (yes or no) that has been used in previous studies of dizziness [37].

Level of dependence on another person in daily activities (ADL) was assessed by the ADL Staircase [38] that has shown acceptable construct validity and internal consistency (Cronbach's alpha 0.88) in various age groups [39]. The ADL Staircase comprises 5 personal (P-ADL) and 5 instrumental daily activities (I-ADL) that are rated on a 4-graded scale as independent without difficulties (0), independent with difficulties (1), partly dependent (2) or dependent (3). The subscores of P-ADL and I-ADL range from 0 to 15, and the total score ranges from 0 to 30.

Current perceived aerobic capacity was assessed by the Rating of Perceived Capacity scale (RPC) [40]. RPC is valid and considered a valuable tool for the estimation of aerobic capacity in research studies [40,41]. The RPC is based on metabolic equivalents (METs) that are linked to physical activities on a progressive scale. The most strenuous activity that can be sustained for at least 30 min is rated from 1 (sit) to 20 (elite aerobic training). The maximal value (elite aerobic training) is different for the two genders, 18 for women and 20 for men.

Work ability was measured with the Work Ability Score (WAS) [42]. The WAS has been proven valid and reliable (ICC 0.89) for assessing work ability in research [42,43]. The WAS is based on the perceived current work ability in relation to lifetime best, ranges from 0 to 10 and can be categorized as poor (0–5 points), moderate (6–7 points), good (8–9 points) or excellent (10 points) [44].

Life satisfaction was rated using the Life Satisfaction Questionnaire (LiSat-11) [21,22]. The LiSat-11 is valid and reliable (Kappa coefficient 0.59–0.97), and reference values are available based on ratings of 2533 Swedish individuals aged 18 to 65 years [22,45,46]. The questionnaire includes 11 items and assesses how satisfied an individual is with overall

life satisfaction, Life as a whole (item 1) and with 10 domain-specific items regarding vocation, economy, leisure, contacts with friends and acquaintances, intimacy, activities of daily living (ADL), family life, partnership/relationship, physical health and psychological health. The items are rated as very dissatisfying (score 1), dissatisfying (score 2), rather dissatisfying (score 3), rather satisfying (score 4), satisfying (score 5) and very satisfying (score 6). The score can be dichotomized into low life satisfaction (score 1–4) and high life satisfaction (score 5–6) [22]. In the current study, the participants also reported if they experienced Life as a whole as deteriorated, unchanged or improved compared to before the COVID-19 infection and if they felt that the change was due to COVID-19.

2.5. Statistical Analyses

Statistical analyses were performed with SPSS version 28.0 (IBM Corporation, Armonk, New York, NY, USA). Probability values less than 0.05 were considered statistically significant. For descriptive data, means (standard deviations, SD), frequencies and medians (interquartile ranges, IQR and maximum and minimum values) were calculated.

The proportion of participants with low life satisfaction (LiSat-11 score 1–4) was presented for each item of LiSat-11 and compared to the proportion of satisfied persons in the Swedish reference sample [22] by means of the One Sample Proportion Test.

The association of potential explanatory factors with life satisfaction was investigated with logistic regression analyses. Life as a whole (item 1 in LiSat-11) was used as an overall measure of perceived life satisfaction (dependent variable) and dichotomized into low and high life satisfaction. Potential explanatory independent variables added in the regression building were sociodemographic factors that, in previous studies, have been shown to impact life satisfaction [21–26] and potential explanatory factors of consequences related to post-COVID-19. The sociodemographic factors included in the model building were: age, sex (man vs. woman), family situation (single vs. married/partner), educational level (lower vs. higher education), provision (not working vs. working), residential community (city vs. town/village) and comorbidities (no vs. yes). Consequences related to post-COVID-19 were: physical fatigue (no vs. yes), mental fatigue (no vs. yes), dizziness (no vs. yes), balance impairment (no vs. yes), ADL (ADL staircase score), aerobic capacity (RPC score) and work ability (moderate–excellent ability vs. poor ability).

The associations with overall life satisfaction (i.e., Life as a whole) were evaluated for each explanatory factor separately using univariate logistic regression analyses. The odds ratio, 95% confidence interval (CI), explanatory value (Nagelkerke R Square) and p-value were calculated. A generous inclusion criterion ($p \leq 0.20$) was used to ensure that no potential variable was omitted in the following multivariate regression analysis. The variable with the lowest p-value (if ≤ 0.20) from the univariate analysis was included in the model. Thereafter, the other factors were tentatively added, one at a time. The model with the highest explanatory value and the two independent variables with the lowest p-values (if both $p \leq 0.20$) were kept. Thereafter, the remaining factors were again added, one at a time, and the model with the highest explanatory value and variables with the lowest p-values (if $p \leq 0.20$) were retained. Thus, in each step, one variable was added to the model. This procedure was continued as long as the p-value of all the included variables in the model was $p \leq 0.20$ and the explanatory value increased.

2.6. Ethics

All participants gave their consent to participate in the study by clicking on a link that directed them to the online survey. The study was approved by the Swedish Ethical Review Authority (Dnr 2020-02776), and the principles of the Declaration of Helsinki were followed.

3. Results

There were 766 persons who completed the survey, but as the participants could choose not to answer a question/questionnaire, the number of answers varies (see detailed information for each variable in the tables).

3.1. Characteristics of the Participants

Most participants were middle-aged (mean 48 years, SD 10), women (89%), highly educated (72%), working (69%) and approximately equally distributed in terms of their residential community (living in a city, town or village), see Table 1.

Table 1. Characteristics of the study sample (n = 766).

Variable	Values
Age (n = 766)	
Mean (SD; range)	48 (10; 18–80)
Age groups (n = 766)	
<30, % (n)	4 (33)
30–45, % (n)	38 (287)
46–60, % (n)	48 (364)
60+, % (n)	11 (82)
Sex (n = 757)	
Men, % (n)	11 (83)
Women, % (n)	89 (672)
Family situation (n = 758)	
Single, % (n)	21 (160)
Married/cohabiting, % (n)	74 (567)
Partner, not cohabiting, % (n)	5 (39)
Residential community (n = 763)	
City, % (n)	32 (242)
Town, % (n)	30 (228)
Village, % (n)	38 (293)
Educational level (n = 764)	
Primary (8–9 years), % (n)	1 (9)
Secondary (10–12 years), % (n)	27 (203)
Higher education (college/university), % (n)	72 (552)
Provision (n = 765)	
Work, % (n)	69 (526)
Student grants, % (n)	3 (23)
Sickness benefit, % (n)	17 (132)
Unemployment benefit, % (n)	1.5 (12)
Social security benefit, % (n)	0.5 (3)
Other sources of income, % (n)	9 (69)
Comorbidities (n = 764)	
Yes, % (n)	39 (301)
Duration of post-COVID-19 (n = 766)	
Mean months (SD; range)	13 (SD 5; 2–25)

Thirty-nine percent reported comorbidities such as asthma (27%), thyroid dysfunction (19%), allergies (12%) and hypertension (11%). A majority developed their acute COVID-19 infection during the second wave (autumn and winter of 2020–2021), and most persons were not in need of hospital care (89%). The most commonly reported acute COVID-19 symptoms were fatigue (88%), fever (74%), headache (73%) and anosmia/ageusia (67%). The remaining COVID-19 symptoms (for at least two months) were fatigue (79%), joint and muscle pain (45%), anosmia/ageusia (42%), dyspnea (39%), chest pain (35%) and cough (18%). The mean duration of post-COVID-19 was 13 months (SD 5), Table 1.

3.2. Perceived Consequences of COVID-19

According to the questionnaires on perceived consequences of COVID-19, a majority of the participants experienced physical fatigue (85%), mental fatigue (84%), dizziness (84%) and balance impairments (56%); see Table 2. The median perceived aerobic capacity measured by the RPC was 5 (IQR 3–7), i.e., walking or cycling slowly was the most strenuous activity that could be sustained for at least 30 min. Most persons perceived no difficulties in ADL, but 78% perceived reduced work ability (WAS) (poor or moderate) compared to their lifetime best.

Table 2. Perceived consequences of post-COVID-19.

Variable	Values
Physical fatigue (FFS) (n = 732)	
Total score (0–7), median (IQR)	6.0 (4.9–6.7)
Score $\geq$ 4, % (n)	85 (624)
Mental Fatigue (MFS) (n = 699)	
Total score (0–42), median (IQR)	18 (12–22.5)
Score $\geq$ 10.5, % (n)	84 (586)
Aerobic capacity (RPC) (n = 676)	
Score (1–20), median (IQR)	5 (3–7)
Dizziness (n = 691)	
Yes, % (n)	84 (578)
Balance impairment (n = 699)	
Yes, % (n)	56 (391)
Daily activities (ADL Staircase) (n = 665)	
P-ADL score (0–15), median (IQR)	0 (0–0)
I-ADL score (0–15), median (IQR)	1 (0–5)
Total score (0–30), median (IQR)	2 (0–5)
Work ability (WAS) (n = 625)	
Score (0–10), median (IQR)	5 (2–7)
Poor (0–5 points), % (n)	52 (324)
Moderate (6–7 points), % (n)	26 (164)
Good (8–9 points), % (n)	18 (114)
Excellent (10 points), % (n)	4 (23)

Overall life satisfaction (i.e., Life as a whole) showed a median of 4 (IQR 3–4), whereof 77% of the participants perceived low satisfaction with Life as a whole (Table 3). For 87%, Life as a whole was experienced as deteriorated compared to before COVID-19, and almost all persons (98%) answered that the deterioration was due to or partly due to COVID-19.

Table 3. Life satisfaction and LiSat-11 scores in persons with post-COVID-19.

Items of LiSat-11	Median (IQR)	Low Satisfaction, % (n)	Reference Value (%)	p-Value *
1. Life as a whole (n = 650)	4 (3–4)	77 (502)	30	<0.001
2. Vocation (n = 643)	4 (2–5)	72 (463)	46	<0.001
3. Economy (n = 647)	4 (3–5)	58 (378)	61	0.096
4. Leisure (n = 645)	3 (2–4)	89 (534)	43	<0.001
5. Contacts with friends (n = 646)	4 (2–5)	75 (481)	35	<0.001
6. Intimacy (n = 628)	3 (1–4)	79 (495)	44	<0.001
7. ADL (n = 643)	5 (4–6)	33 (214)	5	<0.001
8. Family life (n = 628)	4 (4–5)	51 (318)	19	<0.001
9. Partnership (n = 556)	5 (4–5)	48 (265)	18	<0.001

Table 3. *Cont.*

Items of LiSat-11	Median (IQR)	Low Satisfaction, % (*n*)	Reference Value (%)	*p*-Value *
10. Physical health (*n* = 647)	3 (2–4)	91 (587)	28	<0.001
11. Psychological health (*n* = 648)	4 (3–4)	75 (489)	19	<0.001
Perceived change in Life as a whole (*n* = 646)				
Improved, % (*n*)		1 (6)		
Unchanged, % (*n*)		12 (78)		
Deteriorated, % (*n*)		87 (562)		
Perceived deterioration in Life as a whole related to COVID-19 (*n* = 562)				
Yes, % (*n*)		82 (462)		
Partly, % (*n*)		16 (89)		

IQR: Inter Quartile Range. Reference value: proportion of persons with low satisfaction with Life as a whole in the Swedish reference sample (based on ratings of 2533 individuals aged 18 to 65 years) according to Fugl-Meyer et al. [22]. * Comparison to reference sample by One Sample Proportion Test.

For the domain-specific items (2–11), a large proportion of the participants perceived low satisfaction with Physical health (91%) and Leisure (89%), and a majority experienced low satisfaction with the other items (51–79%) except for ADL (33%) and Partner relationship (48%). Compared to the Swedish reference values [22], a significantly higher proportion of persons in our sample perceived low satisfaction with Life as a whole and all domain-specific items ($p < 0.001$) except for Economy ($p = 0.096$); see Table 3.

3.3. Factors Associated with Life as a Whole

Work ability had the strongest univariate association with low satisfaction of Life as a whole (Odds ratio 6.255, 95% CI 3.978–9.837, $p < 0.001$) (see Table 4), and the factors of aerobic capacity, physical fatigue, mental fatigue, balance impairment, dizziness, ADL, provision, residential community and family situation also fulfilled the criteria ($p \leq 0.20$) for being included in the multivariate model building.

Table 4. Univariate logistic regression analyses of factors associated with low satisfaction with Life as a whole in persons with post-COVID-19.

Variables	Odds Ratio (95% CI)	Nagelkerke R Square	*p*-Value
Sociodemographic factors			
Age	0.990 (0.973–1.008)	0.003	0.280
Sex (men vs. ref women)	1.182 (0.649–2.152)	0.001	0.585
Family situation (single vs. ref married/partner)	2.294 (1.345–3.911)	0.025	0.002
Educational level (lower vs. ref higher education)	1.290 (0.842–1.974)	0.003	0.242
Provision (not working vs. ref working)	2.396 (1.528–3.757)	0.037	<0.001
Residential community (city vs. ref town/village)	2.329 (1.484–3.655)	0.035	<0.001
Comorbidities (ref no)	1.207 (0.825–1.766)	0.002	0.333
Perceived consequences of COVID-19			
Physical fatigue, FSS (fatigue vs. ref no fatigue)	6.608 (4.103–10.641)	0.135	<0.001
Mental fatigue, MFS (fatigue vs. ref no fatigue)	5.791 (3.717–9.921)	0.134	<0.001
Dizziness (dizziness vs. ref no dizziness)	2.063 (1.322–3.220)	0.022	<0.001
Balance impairment (impairment vs. ref no impairment)	1.949 (1.450–2.825)	0.029	<0.001
Daily activity, ADL staircase score	1.223 (1.140–1.312)	0.003	<0.001
Aerobic capacity, RPC score	0.769 (0.719–0.823)	0.153	<0.001
Work ability, WAS (poor vs. ref moderate–excellent ability)	6.255 (3.978–9.837)	0.177	<0.001

Life as a whole obtained by item 1 in LiSat-11. CI: confidence interval. Nagelkerke R Square: pseudo R-square value that demonstrates how well the model explains the dependent variable (from 0 to 1). Ref: reference in the logistic regression analysis for nominal variables.

In the final multivariate regression model (Table 5), work ability showed the highest odds ratio (3.369, 95% CI 2.040–5.565, $p < 0.001$) and had an explanatory value, Nagelkerke R Square, of 0.177. The Nagelkerke R Square value is a pseudo R-square value that demonstrates how well the model explains the dependent variable from 0 to 1. Aerobic capacity added 0.063 to the Nagelkerke R Square value of the total model, mental fatigue added another 0.028, residential community added 0.021 and physical fatigue added 0.007. The final model had a total Nagelkerke R Square value of 0.296 ($p < 0.001$) ($n = 619$).

Table 5. Multivariate logistic regression analyses of factors associated with low satisfaction with Life as a whole in persons with post-COVID-19 ($n = 619$).

Variables	Odds Ratio (95% CI)	*p*-Value
Work ability, WAS (poor vs. ref moderate–excellent ability)	3.369 (2.040–5.565)	<0.001
Aerobic capacity, RPC score	0.860 (0.796–0.929)	<0.001
Mental fatigue, MFS (fatigue vs. ref no fatigue)	2.049 (1.148–3.657)	0.015
Residential community (city vs. ref town/village)	2.208 (1.334–3.657)	0.002
Physical fatigue, FSS (fatigue vs. ref no fatigue)	1.844 (0.982–3.461)	0.057
Total model: Nagelkerke R Square 0.296 (*p*-value < 0.001)		

4. Discussion

The aim of this study was to investigate perceived consequences regarding everyday life, health, physical activity and work post-COVID-19 and factors associated with low life satisfaction. We found that a majority of our sample with post-COVID-19 experienced physical fatigue, mental fatigue, dizziness, balance impairments, reduced aerobic capacity and work ability. In addition, most perceived low satisfaction with Life as a whole, and all but one of the domain-specific items of LiSat-11 showed a higher proportion with low satisfaction relative to reference values. Poor work ability was the most important factor for perceiving low overall life satisfaction. Reduced aerobic capacity, mental fatigue, living in a city and physical fatigue were factors that also increased the odds of experiencing low life satisfaction in post-COVID-19.

The results of the present study showed that post-COVID-19 may persist long after recovery from the acute COVID-19 infection, even in this sample of younger patients with milder initial infection. The most commonly reported consequence of post-COVID-19 was fatigue (both physical and mental fatigue), which is in accordance with previous studies [13–16]. In addition, dizziness was commonly experienced as well as balance impairments which also have been reported in previous studies, probably due to the involvement of vestibular and visual systems in SARS-CoV-2 infections [13,14,47].

The most strenuous activity that could be sustained for at least 30 min was walking or cycling slowly (median RPC = 5), which is considerably lower compared to levels of physical activity reported in a Swedish study among adults during the first wave of the pandemic [48]. In that study, the mean RPC was 11.5, i.e., being able to run for at least 30 min. Reduced levels of physical activity have been found in previous studies of post-COVID-19 [14,15]. It was also found that physical exertion can cause a worsening or relapse of symptoms [13,14]. In contrast, it has been suggested that physical exercise may alleviate the sequelae of COVID-19 through the release of circulating factors that mediate the anti-inflammatory response and support brain homeostasis [49]. Long-term sequelae and difficulties in regaining required levels of physical activity in this relatively young population may lead to longer-term health risks of inactivity. Therefore, more research is needed to recommend and pace rehabilitation interventions regarding physical activity for persons with post-COVID-19.

Furthermore, our results showed that many of the participants perceived reduced work ability. This is in line with a previous study where a majority of the respondents with remaining COVID-19 symptoms reported working fewer hours or were in need of a reduced work schedule. In addition, many perceived that the worsening of COVID-19

symptoms could be triggered by stress and mental exertion at work [13]. This emphasizes the importance of work capacity assessments, workplace adjustments and consideration of returning to work in relation to recovery from COVID-19.

A majority (77%) of our participants perceived low satisfaction with Life as a whole, and almost all responded that they perceived a deterioration in life satisfaction due to COVID-19. The percentage of low satisfaction in the present study was considerably higher than in the Swedish reference sample [22] and in community-dwelling persons during the first wave of the COVID-19 pandemic in Sweden [26] and also compared to people with chronic conditions such as stroke [17], traumatic brain injuries [50] and Parkinson's disease [51]. For the domain-specific items in the current study, all but one showed a significantly higher proportion of persons perceiving low satisfaction with life compared to the Swedish reference sample [22]. Many of our participants (>70%) experienced low satisfaction with Physical health, Leisure, Intimacy, Psychological health, Contacts with friends and Vocation. For items of close relations, such as Family life and Partner relationship, half of the participants perceived low satisfaction. Our results suggest that the participants perceived more difficulties in engaging in activities and social contexts outside the family, which is reasonable to expect as many of the participants perceived fatigue and had difficulties managing their work. In addition, the pandemic restrictions might also have contributed to more difficulties in being able to participate in usual leisure activities and social events.

Economy was the only domain-specific item of LiSat-11 that did not differ significantly in the proportion of persons with low satisfaction in comparison with the reference values [22]. This might be due to the fact that most persons were working and that the social security system in Sweden provides for persons on sick leave. Thus, the participants might not have been economically affected in this stage, but in a longer perspective, the financial situation may be a more important issue.

In the multivariate regression model, poor work ability showed the highest odds of perceiving low satisfaction with Life as a whole. This result demonstrates the importance of work for well-being. In a recent cohort study, workplace modifications have been found to be the most important factor in supporting the return to work for persons with post-COVID-19 [52]. Therefore, in the future, focus should be given to how a return to work and stay at work can be supported after COVID-19.

Aerobic capacity and mental and physical fatigue were also included in our final logistic model. Those who reported lower aerobic capacity and a high level of fatigue generally had higher odds of perceiving low satisfaction with Life as a whole. However, the explanatory values of these variables were relatively low, probably due to their relation to work ability. Adapted rehabilitation interventions focusing on increasing physical activity levels and reducing fatigue may have a positive effect on life satisfaction post-COVID-19.

The logistic regression model also showed that persons living in cities compared to less densely populated areas in towns and villages had higher odds of perceiving low life satisfaction. In previous studies, similar findings have demonstrated that a higher population density can affect life satisfaction negatively [24,25]. The reason may be that larger cities are associated with anonymity and poorer neighborhood quality, as well as less support from family and contact with friends [25].

Interestingly, comorbidity was not significantly associated with low life satisfaction, despite the fact that comorbidity is a risk factor for developing post-COVID-19 and that comorbidity might increase post-COVID-19 [9]. An explanation for this may be that persons with chronic conditions are used to adapting life to fluctuations in their disease [53], while healthy persons might not expect long-term sequelae and have less experience in handling such situations. As there is little information and resources in the healthcare system to support people with post-COVID-19, there is also a risk that their symptoms have been diminished or ignored [54]. Such psychological aspects might contribute to the perception of low life satisfaction in people with post-COVID-19. More knowledge is thus needed to

further understand the patient experience of post-COVID-19 in order to be able to address these issues in rehabilitation programs.

4.1. Strengths and Limitations

A strength of the current study was that validated questionnaires were used to assess the perceived consequences of post-COVID-19, and the large sample size allowed for the use of multivariate regression analyses. However, the study has some limitations that should be regarded when interpreting the results. By recruiting via social media, the study attracted a selected group of mostly well-educated women that are more frequent on Facebook, Instagram, etc. Nevertheless, the fact that more women participated may partly be because post-COVID-19 is twice as common in women younger than 60 [55,56]. Furthermore, there is a possibility of recall bias and subjective rating of symptoms in this type of survey. Moreover, the participants in the current study did not have to prove a test-verified COVID-19 infection. However, it has been shown that symptoms do not differ between persons who have tested positive for COVID-19 infection and those who have not been tested but show suggested symptoms [13]. Moreover, it cannot be excluded that other factors may be of importance for life satisfaction, such as cognitive and emotional functions, support from healthcare and social services, as well as socioeconomic status and cultural background.

4.2. Study Implications

This study has important healthcare implications. As people with post-COVID-19 report a wide range of long-term consequences, this may have a large impact on their return to normal life, including previous levels of physical activity and work. Recovery may also be negatively affected by stress and exertion that can worsen or cause a relapse of symptoms. In addition, our findings imply that post-COVID-19 has a major negative impact on general well-being. Post-COVID-19 may, therefore, increase the burden on the healthcare system and also have a wider economic impact on society. Thus, people with long-term consequences post-COVID-19 may need comprehensive assessments of their physical and cognitive function, ability to manage daily life, work and quality of life. Person-centered multidisciplinary rehabilitation ought to be provided by healthcare professionals that have a thorough understanding of the post-COVID-19 condition and knowledge of how to optimize recovery.

5. Conclusions

This study has shown that physical and mental fatigue, dizziness, balance impairments, reduced aerobic capacity, poor work ability and low life satisfaction are commonly perceived consequences of post-COVID-19. Work ability, aerobic capacity and fatigue are factors associated with low life satisfaction. The results of this study can serve as guidance for healthcare authorities regarding important long-term consequences that should be considered in rehabilitation programs directed toward post-COVID-19. Future studies should focus on how post-COVID-19 consequences change over time and evaluate the efficacy of rehabilitation protocols for persons with post-COVID-19.

Author Contributions: All authors were involved in planning and designing the study. E.E.H. performed the data collection, and E.E. performed the data management and analyses. E.E. and C.B. drafted the manuscript. All authors participated in the interpretation of the results, contributed with input, and revised the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: The research was supported by the Faculty of Medicine at Lund University, Lund, Sweden.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Swedish Ethical Authority (Dnr 2020-02776, 21 June 2021).

Informed Consent Statement: Informed consent was obtained from all individuals who participated in this study before starting the survey.

Data Availability Statement: The data used in this study contain sensitive information about the study participants, and they did not provide consent for public data sharing. The current approval by the Swedish Ethical Review Authority (Dnr 2020-02776) does not include data sharing. A minimal data set could be shared by request from a qualified academic investigator for the sole purpose of replicating the present study, provided the data transfer is in agreement with EU legislation on the general data protection regulation and approval by the Swedish Ethical Review Authority.

Acknowledgments: The authors are grateful to the individuals who volunteered to participate, and to Michael Miller for language editing.

Conflicts of Interest: The authors report no conflict of interest.

References

1. World Health Organization. World Health Organization (WHO) Coronavirus (COVID-19) Dashboard. Available online: https://covid19.who.int/ (accessed on 12 September 2022).
2. Lopez-Leon, S.; Wegman-Ostrosky, T.; Perelman, C.; Sepulveda, R.; Rebolledo, P.A.; Cuapio, A.; Villapol, S. More than 50 long-term effects of COVID-19: A systematic review and meta-analysis. *Sci. Rep.* **2021**, *11*, 16144. [CrossRef]
3. Soriano, J.B.; Murthy, S.; Marshall, J.C.; Relan, P.; Diaz, J.V. A clinical case definition of post-COVID-19 condition by a Delphi consensus. *Lancet Infect. Dis.* **2022**, *22*, e102–e107. [CrossRef]
4. Pierce, J.D.; Shen, Q.; Cintron, S.A.; Hiebert, J.B. Post-COVID-19 Syndrome. *Nurs. Res.* **2022**, *71*, 164–174. [CrossRef]
5. Fernandez-de-Las-Penas, C.; Pellicer-Valero, O.J.; Navarro-Pardo, E.; Palacios-Cena, D.; Florencio, L.L.; Guijarro, C.; Martin-Guerrero, J.D. Symptoms Experienced at the Acute Phase of SARS-CoV-2 Infection as Risk Factor of Long-term Post-COVID Symptoms: The LONG-COVID-EXP-CM Multicenter Study. *Int. J. Infect. Dis.* **2022**, *116*, 241–244. [CrossRef] [PubMed]
6. Sudre, C.H.; Murray, B.; Varsavsky, T.; Graham, M.S.; Penfold, R.S.; Bowyer, R.C.; Pujol, J.C.; Klaser, K.; Antonelli, M.; Canas, L.S.; et al. Attributes and predictors of long COVID. *Nat. Med.* **2021**, *27*, 626–631. [CrossRef]
7. Sivan, M.; Rayner, C.; Delaney, B. Fresh evidence of the scale and scope of long covid. *BMJ* **2021**, *373*, n853. [CrossRef] [PubMed]
8. Yong, S.J. Long COVID or post-COVID-19 syndrome: Putative pathophysiology, risk factors, and treatments. *Infect. Dis.* **2021**, *53*, 737–754. [CrossRef]
9. Boaventura, P.; Macedo, S.; Ribeiro, F.; Jaconiano, S.; Soares, P. Post-COVID-19 Condition: Where Are We Now? *Life* **2022**, *12*, 517. [CrossRef] [PubMed]
10. Glynne, P.; Tahmasebi, N.; Gant, V.; Gupta, R. Long COVID following mild SARS-CoV-2 infection: Characteristic T cell alterations and response to antihistamines. *J. Investig. Med.* **2022**, *70*, 61–67. [CrossRef]
11. Augustin, M.; Schommers, P.; Stecher, M.; Dewald, F.; Gieselmann, L.; Gruell, H.; Horn, C.; Vanshylla, K.; Cristanziano, V.D.; Osebold, L.; et al. Post-COVID syndrome in non-hospitalised patients with COVID-19: A longitudinal prospective cohort study. *Lancet Reg. Health Eur.* **2021**, *6*, 100122. [CrossRef] [PubMed]
12. Kashif, A.; Chaudhry, M.; Fayyaz, T.; Abdullah, M.; Malik, A.; Anwer, J.M.A.; Inam, S.H.A.; Fatima, T.; Iqbal, N.; Shoaib, K. Follow-up of COVID-19 recovered patients with mild disease. *Sci. Rep.* **2021**, *11*, 13414. [CrossRef] [PubMed]
13. Davis, H.E.; Assaf, G.S.; McCorkell, L.; Wei, H.; Low, R.J.; Re'em, Y.; Redfield, S.; Austin, J.P.; Akrami, A. Characterizing long COVID in an international cohort: 7 months of symptoms and their impact. *EClinicalMedicine* **2021**, *38*, 101019. [CrossRef] [PubMed]
14. Tabacof, L.; Tosto-Mancuso, J.; Wood, J.; Cortes, M.; Kontorovich, A.; McCarthy, D.; Rizk, D.; Rozanski, G.; Breyman, E.; Nasr, L.; et al. Post-acute COVID-19 Syndrome Negatively Impacts Physical Function, Cognitive Function, Health-Related Quality of Life, and Participation. *Am. J. Phys. Med. Rehabil.* **2022**, *101*, 48–52. [CrossRef] [PubMed]
15. Vanichkachorn, G.; Newcomb, R.; Cowl, C.T.; Murad, M.H.; Breeher, L.; Miller, S.; Trenary, M.; Neveau, D.; Higgins, S. Post-COVID-19 Syndrome (Long Haul Syndrome): Description of a Multidisciplinary Clinic at Mayo Clinic and Characteristics of the Initial Patient Cohort. *Mayo Clin. Proc.* **2021**, *96*, 1782–1791. [CrossRef] [PubMed]
16. Norrefalk, J.R.; Borg, K.; Bileviciute-Ljungar, I. Self-scored impairments in functioning and disability in post-COVID syndrome following mild COVID-19 infection. *J. Rehabil. Med.* **2021**, *53*, jrm00239. [CrossRef]
17. Ekstrand, E.; Brogardh, C. Life satisfaction after stroke and the association with upper extremity disability, sociodemographics, and participation. *PM R* **2021**, *14*, 922–930. [CrossRef]
18. Melin, R. On Life Satisfaction and Vocational Rehabilitation Outcome in Sweden. Ph.D. Thesis, Uppsala University, Uppsala, Sweden, 2003.
19. Pavot, W.; Diener, E. Review of the satisfaction with life scale. *Psychol. Assess.* **1993**, *5*, 164. [CrossRef]
20. OECD Better Life Index. Available online: http://www.oecdbetterlifeindex.org/topics/life-satisfaction/ (accessed on 15 June 2022).
21. Fugl-Meyer, A.R.; Bränholm, I.-B.; Fugl-Meyer, K.S. Happiness and domain-specific life satisfaction in adult northern Swedes. *Clin. Rehabil.* **1991**, *5*, 25–33. [CrossRef]
22. Fugl-Meyer, A.R.; Melin, R.; Fugl-Meyer, K.S. Life satisfaction in 18- to 64-year-old Swedes: In relation to gender, age, partner and immigrant status. *J. Rehabil. Med.* **2002**, *34*, 239–246. [CrossRef] [PubMed]

23. Melin, R.; Fugl-Meyer, K.S.; Fugl-Meyer, A.R. Life satisfaction in 18- to 64-year-old Swedes: In relation to education, employment situation, health and physical activity. *J. Rehabil. Med.* **2003**, *35*, 84–90. [CrossRef]
24. Prezza, M.; Costantini, S. Sense of community and life satisfaction: Investigation in three different territorial contexts. *J. Community Appl. Soc. Psychol.* **1998**, *8*, 181–194. [CrossRef]
25. Cramer, V.; Torgersen, S.; Kringlen, E. Quality of life in a city: The effect of population density. *Soc. Indic. Res.* **2004**, *69*, 103–116. [CrossRef]
26. Brogardh, C.; Hammarlund, C.S.; Eek, F.; Stigmar, K.; Lindgren, I.; Schouenborg, A.T.; Hansson, E.E. Self-Perceived Life Satisfaction during the First Wave of the COVID-19 Pandemic in Sweden: A Cross-Sectional Study. *Int. J. Environ. Res. Public Health* **2021**, *18*, 6243. [CrossRef]
27. Harris, P.A.; Taylor, R.; Thielke, R.; Payne, J.; Gonzalez, N.; Conde, J.G. Research electronic data capture (REDCap)—A metadata-driven methodology and workflow process for providing translational research informatics support. *J. Biomed. Inform.* **2009**, *42*, 377–381. [CrossRef] [PubMed]
28. Harris, P.A.; Taylor, R.; Minor, B.L.; Elliott, V.; Fernandez, M.; O'Neal, L.; McLeod, L.; Delacqua, G.; Delacqua, F.; Kirby, J.; et al. The REDCap consortium: Building an international community of software platform partners. *J. Biomed. Inform.* **2019**, *95*, 103208. [CrossRef]
29. Wade, D.T. Rehabilitation after COVID-19: An evidence-based approach. *Clin. Med.* **2020**, *20*, 359–365. [CrossRef] [PubMed]
30. Krupp, L.B.; LaRocca, N.G.; Muir-Nash, J.; Steinberg, A.D. The fatigue severity scale. Application to patients with multiple sclerosis and systemic lupus erythematosus. *Arch. Neurol.* **1989**, *46*, 1121–1123. [CrossRef]
31. Mattsson, M.; Moller, B.; Lundberg, I.; Gard, G.; Bostrom, C. Reliability and validity of the Fatigue Severity Scale in Swedish for patients with systemic lupus erythematosus. *Scand. J. Rheumatol.* **2008**, *37*, 269–277. [CrossRef] [PubMed]
32. Lexell, J.; Jonasson, S.B.; Brogardh, C. Psychometric Properties of Three Fatigue Rating Scales in Individuals with Late Effects of Polio. *Ann. Rehabil. Med.* **2018**, *42*, 702–712. [CrossRef] [PubMed]
33. Valko, P.O.; Bassetti, C.L.; Bloch, K.E.; Held, U.; Baumann, C.R. Validation of the fatigue severity scale in a Swiss cohort. *Sleep* **2008**, *31*, 1601–1607. [CrossRef] [PubMed]
34. Cumming, T.B.; Packer, M.; Kramer, S.F.; English, C. The prevalence of fatigue after stroke: A systematic review and meta-analysis. *Int. J. Stroke* **2016**, *11*, 968–977. [CrossRef] [PubMed]
35. Johansson, B.; Starmark, A.; Berglund, P.; Rodholm, M.; Ronnback, L. A self-assessment questionnaire for mental fatigue and related symptoms after neurological disorders and injuries. *Brain Inj.* **2010**, *24*, 2–12. [CrossRef] [PubMed]
36. Johansson, B.; Ronnback, L. Evaluation of the mental fatigue scale and its relation to cognitive and emotional functioning after traumatic brain injury or stroke. *Int. J. Phys. Med. Rehabil.* **2014**, *2*, 1000182. [CrossRef]
37. Gopinath, B.; McMahon, C.; Rochtchina, E.; Mitchell, P. Dizziness and vertigo in an older population: The Blue Mountains prospective cross-sectional study. *Clin. Otolaryngol.* **2009**, *34*, 552–556. [CrossRef]
38. Axmon, A.; Ekstam, L.; Slaug, B.; Schmidt, S.M.; Fänge, A.M. Detecting longitudinal changes in activities of daily living (ADL) dependence: Optimizing ADL staircase response choices. *Br. J. Occup. Ther.* **2019**, *82*, 646–652. [CrossRef]
39. Jakobsson, U. The ADL-staircase: Further validation. *Int. J. Rehabil. Res.* **2008**, *31*, 85–88. [CrossRef] [PubMed]
40. Wisén, A.G.; Farazdaghi, R.G.; Wohlfart, B. A novel rating scale to predict maximal exercise capacity. *Eur. J. Appl. Physiol.* **2002**, *87*, 350–357. [CrossRef] [PubMed]
41. Gjestvang, C.; Stensrud, T.; Haakstad, L.A. How is rating of perceived capacity related to VO2max and what is VO2max at onset of training? *BMJ Open Sport Exerc. Med.* **2017**, *3*, e000232. [CrossRef] [PubMed]
42. El Fassi, M.; Bocquet, V.; Majery, N.; Lair, M.L.; Couffignal, S.; Mairiaux, P. Work ability assessment in a worker population: Comparison and determinants of Work Ability Index and Work Ability score. *BMC Public Health* **2013**, *13*, 305. [CrossRef]
43. Stienstra, M.; Edelaar, M.; Fritz, B.; Reneman, M. Measurement properties of the work ability score in sick-listed workers with chronic musculoskeletal pain. *J. Occup. Rehabil.* **2022**, *32*, 103–113. [CrossRef]
44. Kinnunen, U.; Nätti, J. Work ability score and future work ability as predictors of register-based disability pension and long-term sickness absence: A three-year follow-up study. *Scand. J. Public Health* **2018**, *46*, 321–330. [CrossRef] [PubMed]
45. Ekstrand, E.; Lexell, J.; Brogardh, C. Test-retest reliability of the Life Satisfaction Questionnaire (LiSat-11) and association between items in individuals with chronic stroke. *J. Rehabil. Med.* **2018**, *50*, 713–718. [CrossRef]
46. Ekstrand, E.; Lexell, J.; Brogardh, C. Life Satisfaction in Persons With Late Effects of Polio: A Test-Retest Reliability Study. *PM R* **2020**, *12*, 997–1002. [CrossRef] [PubMed]
47. Yilmaz, O.; Mutlu, B.O.; Yaman, H.; Bayazit, D.; Demirhan, H.; Bayazit, Y.A. Assessment of balance after recovery from COVID-19 disease. *Auris Nasus Larynx* **2022**, *49*, 291–298. [CrossRef] [PubMed]
48. Eek, F.; Larsson, C.; Wisen, A.; Ekvall Hansson, E. Self-Perceived Changes in Physical Activity and the Relation to Life Satisfaction and Rated Physical Capacity in Swedish Adults during the COVID-19 Pandemic-A Cross Sectional Study. *Int. J. Environ. Res. Public Health* **2021**, *18*, 671. [CrossRef]
49. Rebello, C.J.; Axelrod, C.L.; Reynolds, C.F., 3rd; Greenway, F.L.; Kirwan, J.P. Exercise as a Moderator of Persistent Neuroendocrine Symptoms of COVID-19. *Exerc. Sport Sci. Rev.* **2022**, *50*, 65–72. [CrossRef]
50. Jacobsson, L.; Lexell, J. Life satisfaction after traumatic brain injury: Comparison of ratings with the Life Satisfaction Questionnaire (LiSat-11) and the Satisfaction With Life Scale (SWLS). *Health Qual. Life Outcomes* **2016**, *14*, 10. [CrossRef] [PubMed]

51. Rosqvist, K.; Hagell, P.; Odin, P.; Ekstrom, H.; Iwarsson, S.; Nilsson, M.H. Factors associated with life satisfaction in Parkinson's disease. *Acta. Neurol. Scand.* **2017**, *136*, 64–71. [CrossRef]
52. Brehon, K.; Niemelainen, R.; Hall, M.; Bostick, G.P.; Brown, C.A.; Wieler, M.; Gross, D.P. Return-to-Work Following Occupational Rehabilitation for Long COVID: Descriptive Cohort Study. *JMIR Rehabil. Assist. Technol.* **2022**, *9*, e39883. [CrossRef]
53. Vanier, A.; Oort, F.J.; McClimans, L.; Ow, N.; Gulek, B.G.; Böhnke, J.R.; Sprangers, M.; Sébille, V.; Mayo, N. Response shift in patient-reported outcomes: Definition, theory, and a revised model. *Qual. Life Res.* **2021**, *30*, 3309–3322. [CrossRef]
54. Sancak, B.; Kilic, C. A Psychiatrist's Own Experience of Long Covid: Looking beyond the Psychosomatic Perspective. *Psychiatr. Danub.* **2021**, *33*, 250. [CrossRef] [PubMed]
55. Ortona, E.; Malorni, W. Long COVID: To investigate immunological mechanisms and sex/gender related aspects as fundamental steps for tailored therapy. *Eur. Respir. J.* **2022**, *59*, 2102245. [CrossRef] [PubMed]
56. Fernandez-de-Las-Penas, C.; Martin-Guerrero, J.D.; Pellicer-Valero, O.J.; Navarro-Pardo, E.; Gomez-Mayordomo, V.; Cuadrado, M.L.; Arias-Navalon, J.A.; Cigaran-Mendez, M.; Hernandez-Barrera, V.; Arendt-Nielsen, L. Female Sex Is a Risk Factor Associated with Long-Term Post-COVID Related-Symptoms but Not with COVID-19 Symptoms: The LONG-COVID-EXP-CM Multicenter Study. *J. Clin. Med.* **2022**, *11*, 413. [CrossRef] [PubMed]

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The Relationship between Conscientiousness and Well-Being among Chinese Undergraduate Students: A Cross-Lagged Study

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Abstract: Chinese culture attaches great importance to the education and cultivation of youth conscientiousness, however in the context of Chinese culture, little is known about the relationship between conscientiousness and mental and physical health. The present study aimed to investigate whether there is a reciprocal relationship between conscientiousness and well-being (subjective and physical well-being) among Chinese undergraduate students. A series of self-reported questionnaires were administered to 365 undergraduate students in 2 waves, separated by 1 year. Cross-lagged regression analyses were applied to examine the reciprocal relationships. Results indicated that conscientiousness positively predicted subsequent levels of positive affect and life satisfaction, while negatively predicted subsequent levels of negative affect and physical symptoms, controlling for the effects of gender, age, body-mass index, socioeconomic status, and the prior level of conscientiousness. Whereas, positive and negative affect, life satisfaction, and physical symptoms did not significantly predict subsequent levels of conscientiousness. This study suggests that conscientiousness is a robust and prospective predictor of subjective and physical well-being. The reciprocal relationship between conscientiousness and well-being was not confirmed in the current sample of Chinese undergraduate students.

Keywords: conscientiousness; physical well-being; subjective well-being

Citation: Hu, Y.; Wang, Z.; Fan, Q. The Relationship between Conscientiousness and Well-Being among Chinese Undergraduate Students: A Cross-Lagged Study. *IJERPH* **2022**, *19*, 13565. https://doi.org/10.3390/ijerph192013565

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 1 August 2022
Accepted: 14 October 2022
Published: 19 October 2022

1. Introduction

Over the past few decades, a great number of studies have linked personality traits with well-being [1–3]. Among the Big Five personality traits, conscientiousness reflects a set of characteristics describing industriousness, orderliness, goal-directed, planning, impulse control, delayed gratification, active coping, and the propensity to adhere to societal rules and norms [4], which is related to a serial of social adaptive outcomes, such as better work performance [5], higher career self-efficacy [6], positive interpersonal relationships [7] and higher academic effort [8] or achievement [9]. Notably, conscientiousness was found to be closely linked with an individual's mental and physical health [10]. Some studies have also proposed and preliminarily found a reciprocal relationship between conscientiousness and subjective and physical well-being [11,12]. However, existing studies provide only limited evidence on the reciprocal relationship. The present study sought to test whether there is a reciprocal relationship between conscientiousness and subjective and physical well-being among Chinese undergraduate students.

1.1. Relation between Conscientiousness and Subjective Well-Being

Subjective well-being refers to the personal evaluations of positive affect, negative affect, and life satisfaction [13]. A large number of cross-sectional studies have shown that conscientious individuals tend to experience more frequent positive affect, greater life satisfaction, and less frequent negative affect as compared to less conscientious individuals [14–17]. Individuals high in conscientiousness are more effective at regulating

negative affect [18], and are less likely to suffer from depression and anxiety disorders [19]. Recently, a longitudinal study observed that individuals who were initially conscientious subsequently report increased subjective well-being, and those with high initial levels of subjective well-being subsequently become more conscientious [12]. In addition, a longitudinal study from Specht et al. [20] suggested that life satisfaction prospectively predicted improvements in conscientiousness. These research findings indicate that there is a reciprocal relationship between conscientiousness and subjective well-being.

1.2. Relation between Conscientiousness and Physical Well-Being

Moreover, studies have investigated the relationship between conscientiousness and physical well-being, conceptualized as the absence of illness or physical symptoms, and maintaining normal physical functioning [3,21]. Conscientiousness was observed to be negatively associated with inflammation [22] and risks of chronic illness, such as sciatica, stroke, hypertension, and diabetes [23–25]. Accumulating evidence has consistently suggested that conscientiousness is a protective factor against physical health problems [26–28]. Recent findings from empirical studies have shown that individuals high in conscientiousness tend to report better physical health status [10,29,30]. A small number of longitudinal studies on the influence of conscientiousness on physical well-being have suggested that an increase in conscientiousness predicts improved self-reported health [31–34]. Roberts et al. [11] proposed that, similar to subjective well-being, there is a reciprocal relationship between conscientiousness and physical health. That is, favorable health behaviors and life paths that contribute to physical health resulting partially from being conscientious, may conversely facilitate increased conscientiousness. However, few empirical studies have examined the influence of physical well-being on conscientiousness, and thus, the reciprocal relationship between conscientiousness and physical well-being remains unclear.

1.3. Cultural Influences

Examining relationships between conscientiousness and subjective and physical well-being in the context of Chinese culture, which attaches great importance to the cultivation of youth conscientiousness, can help to provide us with a more in-depth understanding of the relationship between conscientiousness and mental and physical health. Cultural differences in the links between personality traits and health-related outcomes can be explained by differences in behaviors and lifestyles [35], in other words, there are multiple pathways to achieve or maintain happiness and health, and they are somewhat different across the internalized cultural values, which have permeated and influenced individuals' subjective well-being [36] and health-seeking decisions [37]. For example, recent research has shown that conscientiousness is likely to have a stronger protective effect on stress perception in an eastern culture than in a western culture [38]. Additionally, the core factor in the process of personality development is the individual's self-concepts formed in a certain cultural environment [39]. Chinese youth acquire values, norms, and beliefs from traditional cultures that emphasize individual obligations and the needs of others [40].

1.4. The Present Study

Taken together, extant cross-sectional studies have demonstrated that conscientiousness is a robust predictor of subjective and physical well-being. Some longitudinal studies also revealed a reciprocal relationship between conscientiousness and subjective well-being. In addition, some researchers believe there is a reciprocal relationship between conscientiousness and physical health [11,12]. Given the limited research available, reciprocal relationships between conscientiousness and subjective and physical well-being need to be further examined. Particularly in the Chinese culture, the relationships between conscientiousness and aspects of well-being have received scant attention from investigators, even though conscientiousness is a highly valued personality trait. Therefore, the present study adopted a cross-lagged design to examine the reciprocal influence pattern of conscientiousness with subjective well-being (indexed by positive affect, negative affect, and life

satisfaction) and physical well-being (indexed by self-reported physical symptoms) among Chinese undergraduate students. The cross-lagged design is useful in assessing reciprocal relationships by examining the asymmetry of the predicted association between each variable at one point and another variable at a later point in time [41]. Based on preceding research findings [11,12], we hypothesized that there would be reciprocal relationships between conscientiousness and subjective and physical well-being over time.

2. Methods

2.1. Participants and Procedure

Undergraduates from a university in northwest China were recruited by posting flyers around the campus and online. All participants were informed that the purpose of this longitudinal study was to investigate undergraduate students' subjective and physical well-being via questionnaires. They reported voluntary participation and provided informed consent prior to the study, following which they were asked to complete a series of questionnaires in 2 waves during the period of the investigation. A total of 420 valid questionnaires were collected in the first wave (at T1: 16 September 2018 to 28 September 2018) from 282 females and 138 males. The mean age of the sample was 18.98 years (SD = 0.96) ranging from 17 to 25 years. After 1 year (at T2: 13 September 2019 to 27 September 2019), follow-up telephone or e-mail invitations were sent to the 420 participants inviting them to participate in the second survey wave. Data from 55 participants were excluded due to incomplete responses, academic interruption, internship search, or other matters. Ultimately, a total of 365 valid respondents (M_{age} = 19.95 years, SD = 0.93, range = 18–26 years old; 67.95% females) participated in the two waves. There were no age differences between males and females, $t_{(363)} = 0.174$, $p > 0.05$, Cohen's $d = 0.02$. The participants who did not participate in the second wave were not significantly different from those who participated in the two waves in terms of any T1 measures (for age and the main study variables: all t values were less than 1.31, ps > 0.05; for gender and other ordinal demographic characteristics, all χ^2 values were less than 6.44, ps > 0.05).

2.2. Measures

2.2.1. Demographic and Socioeconomic Background

Two waves of demographic data were collected, including gender, age, body-mass index (BMI), household monthly income, and parents' education levels. BMI was calculated from weight and height (kg/m^2). Household monthly income was categorized into four levels: (1) *<3000 RMB*; (2) *3000–7000 RMB*; (3) *7000–10,000 RMB*; and (4) *>10,000 RMB*. Parents' educational levels were coded as 1 = *never attended any school*, 2 = *primary school*, 3 = *junior high school*, 4 = *high school*, 5 = *junior college or undergraduate*, and 6 = *graduate* (*master or doctor*). According to recommendations in the literature [42], socioeconomic status (SES) scores were calculated by summing standardized scores of the household monthly income level and the parents' education level, whereby high scores indicated high SES. Gender, age, BMI, and SES were utilized as control variables in the analyses described below.

2.2.2. Conscientiousness

Conscientiousness was assessed using a 12-item scale selected from the shortened Chinese version of the NEO Five-Factor Inventory (NEO-FFI) [43]. All items (e.g., "I try to be the best at anything I do") were rated on a 5-point Likert scale, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). This scale showed good reliability and validity in the Chinese sample [44]. In the present study, Cronbach's alphas for conscientiousness were 0.84 at T1 and 0.87 at T2.

2.2.3. Positive and Negative Affect

Emotional well-being was evaluated using the Positive and Negative Affect Schedule (PANAS) [45], which is a self-rated measure of positive affect (PA) and negative affect

(NA). Huang et al. [46] have verified that the PANAS is appropriate for use with Chinese populations, and shows good reliability and validity. The scale consists of 10 affective adjectives for PA (e.g., "attentive", "excited", and "inspired") and 10 affective adjectives for NA (e.g., "ashamed", "guilty", and "irritable"). Each participant rated how they felt in general from 1 (*very slightly or not at all*) to 5 (*extremely*). Cronbach's alpha coefficients were 0.85 for PA at T1, 0.84 for NA at T1, 0.86 for PA at T2, and 0.87 for NA at T2.

2.2.4. Life Satisfaction

The Satisfaction with Life Scale (SWLS) [47] is widely used to assess the cognitive component of subjective well-being. The standardized Chinese version of the SWLS was adopted in the present study [48]. Respondents were asked to indicate the degree to which each item was true for them on the 5-item scale (e.g., "in most ways, my life is close to ideal") from 1 (*disagree strongly*) to 7 (*agree strongly*). Cronbach's alphas for the scale were 0.90 at T1 and 0.89 at T2.

2.2.5. Physical Symptoms

The Cohen–Hoberman Inventory of Physical Symptoms (CHIPS) [49,50] was designed to assess general physical symptoms. The Chinese version of the CHIPS was proved to have good reliability and validity in the Chinese sample [51]. This scale comprises a list of 33 common symptoms (e.g., "acne", "back pain", and "heart pounding or racing"). Respondents were required to rate "how much that problem has bothered or distressed you during the past 2 weeks?" on a 5-point Likert scale ranging from 0 (*not been bothered by the problem*) to 4 (*extremely bothered by the problem*), with higher total scores indicating lower levels of physical well-being. Cronbach's alphas in this study were good in the two waves (T1: $\alpha = 0.94$; T2: $\alpha = 0.93$).

2.3. Data Analytical Strategies

Descriptive analysis and partial correlation analysis were conducted on the key variables at T1 and T2. Paired *t* tests were then performed to detect differences in these key variables between the two waves. Finally, a set of cross-lagged regression analyses were adopted to assess the reciprocal relationship between conscientiousness and well-being. All statistical analyses were conducted using IBM SPSS Statistics 25.0.

2.4. Assessment of Common Method Biases

Since all study variables utilized self-rating measures, a Harman single factor test was employed to assess the common method bias [52]. A total of 70 items from the questionnaires at T1 were subjected to the exploratory factor analysis without rotation. The analysis produced 17 common factors, with the first explaining the 19.17% variance, and the analysis of 70 items at T2 yielded 17 factors, with the first explaining the 19.40% variance, both of which were lower than the critical standard of 40% [53]. The results indicated that the correlation between the studied variables in this study was not driven purely by method bias.

3. Results

3.1. Demographic Characteristics

The distribution of all sociodemographic variables at T1 is shown in Table 1. On average, participants were 19 years of age, and approximately 67.95% were females. Almost 93.42% of the participants reported that their family monthly income was less than 10,000 RMB (approximately $1426). With respect to parents' education levels, 83.29% of the fathers and 72.33% of the mothers had at least a junior high school degree. In addition, 1.92% of the fathers and 0.55% of the mothers were either masters or doctorates.

Table 1. Sample characteristics for sociodemographic variables at Time 1 (N = 365).

	%/*M* (*SD*)	Range
Gender (% female)	67.95	
Age (in years)	18.95 (0.93)	17–25
BMI	20.89 (2.64)	15.80–32.40
SES	0.00 (2.39)	−4.73–6.92
Family monthly income		1–4
<3000 RMB	23.01	
3000–7000 RMB	51.78	
7000–10,000 RMB	18.63	
>10,000 RMB	6.58	
Father's education level		1–6
never attended any school	0.82	
primary school	15.89	
junior high school	36.16	
high school	21.64	
junior college or undergraduate	23.56	
graduate (master or doctor)	1.92	
Mother's education level		1–6
never attended any school	5.48	
primary school	22.19	
junior high school	34.79	
high school	18.63	
junior college or undergraduate	18.36	
graduate (master or doctor)	0.55	

Note. *M*: means; *SD*: standard deviations; BMI: body-mass index; SES: socioeconomic status.

3.2. Descriptive and Bivariate Analyses

Descriptive statistics for the main variables at T1 and T2 are presented in Table 2. Next, a partial correlation analysis was performed with gender, age, BMI, and SES as control variables. As expected, conscientiousness, positive affect, negative affect, life satisfaction, and physical symptoms at T1 were significantly correlated with those at T2 (r = 0.65, $p < 0.001$; r = 0.50, $p < 0.001$; r = 0.46, $p < 0.001$; r = 0.55, $p < 0.001$; r = 0.51, $p < 0.001$), indicating a certain degree of temporal stability separated by 1 year.

Table 2. Means and standard deviations for the key variables (N = 365).

	T1 (Pre-Test)		T2 (Post-Test)	
	M	*SD*	*M*	*SD*
Conscientiousness	41.17	5.93	40.74	5.11
Positive Affect	29.43	6.08	28.58	5.90
Negative Affect	20.59	5.17	20.78	5.69
Life Satisfaction	21.08	5.44	19.45	5.98
Physical Symptoms	18.39	15.56	17.91	14.46

Note. *M*: means; *SD*: standard deviations.

T1 conscientiousness was significantly correlated with positive affect (r = 0.37, $p < 0.001$; r = 0.33, $p < 0.001$), negative affect (r = −0.21, $p < 0.001$; r = −0.21, $p < 0.001$), life satisfaction (r = 0.34, $p < 0.001$; r = 0.28, $p < 0.001$), and physical symptoms (r = −0.23, $p < 0.001$; r = −0.22, $p < 0.001$) at T1 and T2. Additionally, T2 conscientiousness was significantly correlated with positive affect (r = 0.26, $p < 0.001$; r = 0.27, $p < 0.001$), negative affect (r = −0.14, p = 0.008; r = −0.27, $p < 0.001$), life satisfaction (r = 0.28, $p < 0.001$; r = 0.29, $p < 0.001$), and physical symptoms (r = −0.16, p = 0.002; r = −0.19, $p < 0.001$) at T1 and T2. These findings suggested that both simultaneous and sequential correlations between conscientiousness and well-being were significant, which satisfied the prior assumption of the cross-lagged panel correlation paradigm.

Further results from a set of paired *t* tests showed that: T2 positive affect was significantly lower than T1 positive affect, $t_{(364)} = 2.76$, $p = 0.006$, Cohen's $d = 0.14$ (small effect size); T2 life satisfaction was significantly lower than T1 life satisfaction, $t_{(364)} = 5.81$, $p < 0.001$, Cohen's $d = 0.30$ (small effect size); conscientiousness, negative affect and physical symptoms did not differ significantly in the two waves ($t_{(364)} = 1.79$, $p = 0.075$, Cohen's $d = 0.09$; $t_{(364)} = -0.643$, $p = 0.521$, Cohen's $d = 0.03$; $t_{(364)} = 0.621$, $p = 0.535$, Cohen's $d = 0.03$).

3.3. Cross-Lagged Regression Analyses

A set of multivariate hierarchical regressions for cross-lagged panel analyses were conducted to examine the mutual predictive relationship between conscientiousness and each aspect of well-being across time. Specifically, variables were entered at 2 steps: (1) gender, age, BMI, SES, and the T1 measure of the outcome variable were entered simultaneously as control variables, and (2) T1 conscientiousness was entered as the predictor variable, along with T2 well-being as the outcome variable (Additional analysis: T1 well-being was entered as the predictor variable, along with T2 conscientiousness as the outcome variable). All continuous variables were standardized before entering the equation. Each regression included a collinearity diagnosis test, indicating no overlap among control variables and predictors (tolerance values were 0.83–0.99). The regression analysis results for T1 conscientiousness predicting subjective and physical well-being at T2 are shown in Table 3.

Table 3. Separate regression models for T1 conscientiousness predicting subjective and physical well-being at T2.

Predictor	PA-T2				NA-T2			
	Model 1		Model 2		Model 1		Model 2	
	β	*t*	β	*t*	β	*t*	β	*t*
Step 1								
Gender	−0.06	−0.57	−0.08	−0.80	0.01	0.07	0.01	0.11
Age	0.02	0.47	0.02	0.32	−0.01	−0.13	0.01	0.14
BMI	0.01	0.27	0.02	0.47	0.07	1.33	0.06	1.27
SES	0.01	0.11	−0.01	−0.10	−0.06	−1.27	−0.05	−1.01
T1 measure	0.51	11.04 ***	0.45	9.19 ***	0.46	9.76 ***	0.43	9.10 ***
Step 2								
C-T1			0.16	3.40 **			−0.12	−2.57 *
	Total $R^2 = 0.29$, F (6, 358) = 24.31 ***, $\Delta R^2 = 0.023$				Total $R^2 = 0.24$, F (6, 358) = 18.93 ***, $\Delta R^2 = 0.014$			
	LS-T2				**PS-T2**			
	Model 1		Model 2		Model 1		Model 2	
	β	*t*	β	*t*	β	*t*	β	*t*
Step 1								
Gender	−0.05	−0.52	−0.05	−0.54	−0.03	−0.26	−0.02	−0.22
Age	0.02	0.50	0.02	0.32	−0.05	−1.04	−0.04	−0.86
BMI	0.00	−0.00	0.01	0.14	−0.03	−0.68	−0.04	−0.78
SES	0.07	1.44	0.07	1.39	−0.09	−1.90	−0.08	−1.68
T1 measure	0.55	12.33 ***	0.51	10.84 ***	0.49	11.37 ***	0.49	10.59 ***
Step 2								
C-T1			0.11	2.34 *			−0.10	−2.24 *
	Total $R^2 = 0.33$, F (6, 358) = 29.68 ***, $\Delta R^2 = 0.010$				Total $R^2 = 0.23$, F (6, 358) = 23.57 ***, $\Delta R^2 = 0.010$			

Note. T1: time 1; T2: time 2; C: conscientiousness; PA: positive affect; NA: negative affect; LS: life satisfaction; PS: physical symptoms; BMI: body-mass index; SES: socioeconomic status. T1 measure corresponds to PA, NA, LS and PS at T1 in each equation, respectively. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

With T2 positive affect as the outcome variable, all predictors in the model accounted for 29.00% of the variance. In addition to the contribution of control variables (26.70%), the inclusion of T1 conscientiousness explained an additional 2.30% of the variance, ΔF (1,

358) = 11.53, $p = 0.001$. In the other models, likewise, the inclusion of T1 conscientiousness explained 1.40% of the variance in T2 negative affect (ΔF (1, 358) = 6.61, $p = 0.011$), 1.00% of the variance in T2 life satisfaction (ΔF (1, 358) = 5.49, $p = 0.020$), and 1.00% of the variance in T2 physical symptoms (ΔF (1, 358) = 5.01, $p = 0.026$), respectively. These findings suggested that after controlling for the effects of gender, age, BMI, SES and baseline values, T1 conscientiousness significantly predicted T2 positive affect, T2 negative affect, T2 life satisfaction, and T2 physical symptoms, respectively.

Additionally, the regression analysis results for T1 well-being predicting T2 conscientiousness are shown in Table 4. These findings suggested that the predictive effects of subjective and physical well-being at T1 on T2 conscientiousness were not statistically significant. In addition to the contribution of control variables, the contributions of subjective and physical well-being at T1 to the variance of T2 conscientiousness were not statistically significant, respectively (positive affect: $\Delta R^2 = 0.001$, ΔF (1, 358) = 0.48, $p > 0.05$; negative affect: $\Delta R^2 = 0.000$, ΔF (1, 358) = 0.02, $p > 0.05$; life satisfaction: $\Delta R^2 = 0.004$, ΔF (1, 358) = 2.28, $p > 0.05$; physical symptoms: $\Delta R^2 = 0.000$, ΔF (1, 358) = 0.03, $p > 0.05$).

Table 4. Separate regression models for subjective and physical well-being at T1 predicting T2 conscientiousness.

Predictor	C-T2				Predictor	C-T2			
	Model 1		Model 2			Model 1		Model 2	
	β	*t*	β	*t*		β	*t*	β	*t*
Step 1					**Step 1**				
Gender	−0.15	−1.61	−0.14	−1.48	Gender	−0.15	−1.61	−0.15	−1.60
Age	0.02	0.49	0.02	0.43	Age	0.02	0.49	0.02	0.51
BMI	−0.03	−0.76	−0.03	−0.77	BMI	−0.03	−0.76	−0.03	−0.73
SES	0.07	1.76	0.07	1.68	SES	0.07	1.76	0.07	1.75
C-T1	0.65	16.39 ***	0.64	15.00 ***	C-T1	0.65	16.39 ***	0.65	15.99 ***
Step 2					**Step 2**				
PA-T1			0.03	0.69	NA-T1			−0.01	−0.14
	Total $R^2 = 0.44$, F (6, 358) = 47.40 ***, $\Delta R^2 = 0.001$					Total $R^2 = 0.44$, F (6, 358) = 47.26 ***, $\Delta R^2 = 0.000$			
	C-T2					C-T2			
	Model 1		Model 2			Model 1		Model 2	
	β	*t*	β	*t*		β	*t*	β	*t*
Step 1					**Step 1**				
Gender	−0.15	−1.61	−0.15	−1.61	Gender	−0.15	−1.61	−0.15	−1.60
Age	0.02	0.49	0.02	0.49	Age	0.02	0.49	0.02	0.49
BMI	−0.03	−0.76	−0.03	−0.80	BMI	−0.03	−0.76	−0.03	−0.75
SES	0.07	1.76	0.06	1.42	SES	0.07	1.76	0.07	1.75
C-T1	0.65	16.39 ***	0.63	14.89 ***	C-T1	0.65	16.39 ***	0.65	15.87 ***
Step 2					**Step 2**				
LS-T1			0.07	1.51	PS-T1			−0.01	−0.18
	Total $R^2 = 0.45$, F (6, 358) = 47.94 ***, $\Delta R^2 = 0.004$					Total $R^2 = 0.44$, F (6, 358) = 47.27 ***, $\Delta R^2 = 0.000$			

Note. T1: time 1; T2: time 2; C: conscientiousness; PA: positive affect; NA: negative affect; LS: life satisfaction; PS: physical symptoms; BMI: body-mass index; SES: socioeconomic status. T1 measure corresponds to PA, NA, LS and PS at T1 in each equation, respectively. *** $p < 0.001$.

As depicted in Figure 1, conscientiousness prospectively predicted subjective and physical well-being, but subjective and physical well-being did not prospectively predict conscientiousness. Based on the recommendations of Orth et al. [54], 0.03 (small effect), 0.07 (medium effect), and 0.12 (large effect) can be used as benchmark values to interpret the size of cross-lagged effects. Thus, the cross-lagged effects (C-T1→PA-T2, C-T1→NA-T2, C-T1→LS-T2, C-T1→PS-T2) found in this study were statistically significant and above the medium effect size level. Consequently, it can be inferred that there may not be a

reciprocal relationship between conscientiousness and subjective and physical well-being in the current sample.

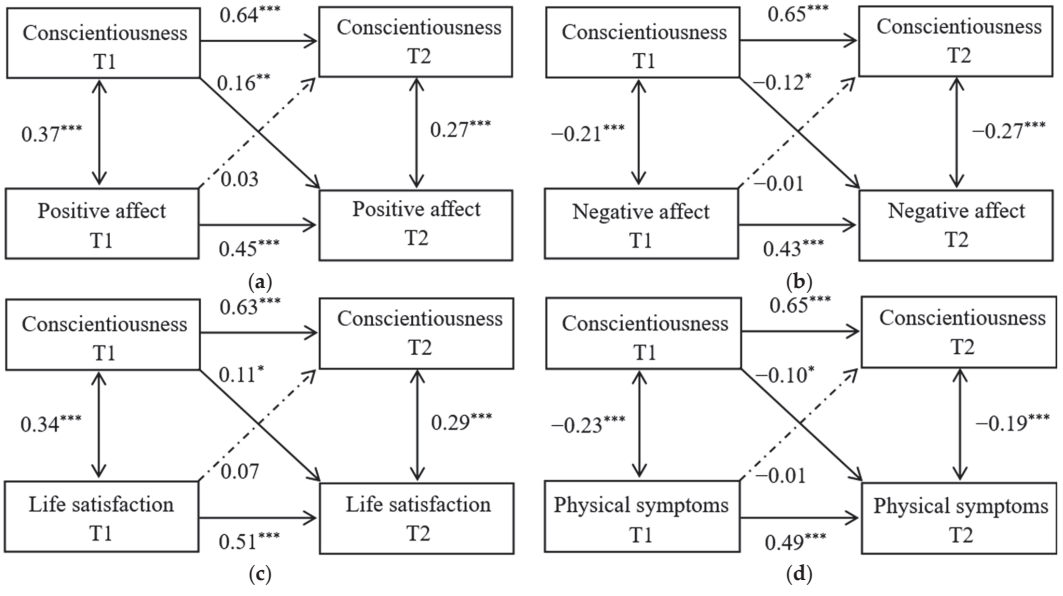

Figure 1. Multivariable cross-lagged panel models of (**a**) conscientiousness and positive affect, (**b**) conscientiousness and negative affect, (**c**) conscientiousness and life satisfaction, and (**d**) conscientiousness and physical symptoms. Note: The coefficients beside double arrows are partial correlations and the coefficients beside single arrows are standardized beta coefficients. Solid arrows represent significant paths and dotted arrows represent insignificant paths. The effects of demographic variables (gender, age, body-mass index [BMI], and socioeconomic status [SES]) on predicted variables were not shown for ease of presentation. T1: time 1, T2: time 2 (1 year later), * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

4. Discussion

The present study aimed to extend research on the link between conscientiousness and health by examining whether there is a reciprocal relationship between conscientiousness and well-being (subjective and physical well-being) using a cross-lagged design in a sample of Chinese undergraduate students. The results indicated that after controlling for the effects of gender, age, BMI, SES, and the prior level of conscientiousness, conscientiousness prospectively predicted subjective well-being (indexed by positive affect, negative affect, and life satisfaction) and physical well-being (indexed by self-reported physical symptoms). However, subjective and physical well-being didn't prospectively predict conscientiousness. Therefore, the reciprocal relationship between conscientiousness and well-being was not confirmed in the current sample of Chinese undergraduate students.

We found that conscientiousness prospectively predicted subjective well-being indexed by positive affect, negative affect, and life satisfaction among Chinese undergraduates. These findings replicated previous evidence that individuals with high conscientiousness reported more frequent positive affect, greater life satisfaction, and less frequent negative affect [12,14,16], revealing that conscientiousness is a robust and prospective predictor of subjective well-being. On the one hand, individuals high in conscientiousness are likely to be more effective at regulating negative affect [18] and may experience less daily stress [27,32]. On the other hand, individuals high in conscientiousness are more likely to be self-disciplined, goal-directed, industrious, and rule-abiding [4], and their efficient

and reliable performance may promote success in school or the workplace [5,6,8,9]. Such success can help to enhance their subjective well-being [12]. Additionally, individuals high in conscientiousness may be more successful in building stable and satisfying interpersonal relationships, which in turn may contribute to enhanced feelings of subjective well-being. In contrast, individuals low in conscientiousness may have difficulty developing or maintaining adaptive interpersonal relationships, which in turn may contribute to decreased feelings of subjective well-being over time [7].

Similarly, our study found that conscientiousness prospectively predicted physical well-being indexed by self-reported physical symptoms. This finding is the preliminary evidence to demonstrate the predictive effect of conscientiousness on physical well-being in the sample of Chinese undergraduates, which is consistent with the results found in the samples from Western countries [10,29,55,56]. Individuals low in conscientiousness reported more physical symptoms and negative health outcomes as compared to individuals high in conscientiousness. Researchers have proposed that conscientiousness may protect physical health by promoting favorable health behaviors and avoiding detrimental health behaviors [11,57]. Conscientious individuals tend to pursue higher quality of life and healthier life paths, such as engaging in more physical exercise and outdoor activities, and adhering to treatment and medication because of being self-disciplined and responsible [58,59], which is more conducive to physical health. While less conscientious individuals tend to be characterized by poor self-control and self-discipline and often have unhealthy lifestyles, such as poor diet and lack of exercise, which increases the risk of chronic diseases [60–62]. Personality is a determining factor for key outcomes across the lifespan, with the similar predictive validity to socioeconomic status and cognitive ability [57]. Therefore, it is of great significance to identify conscientiousness as a personality indicator of physical well-being.

Contrary to our hypothesis, this preliminary exploration into the reciprocal relation between conscientiousness and well-being among Chinese undergraduate students did not find prospective predictive effects of subjective well-being and physical well-being on conscientiousness. In other words, individual differences in conscientiousness can explain differences in subjective and physical well-being, but are less likely to be explained by differences in subjective and physical well-being. In the context of Chinese culture, conscientiousness is a highly valued trait shaped by collectivist cultural values. School and family education in China especially pay attention to the cultivation of culturally valued traits among children and adolescents [63]. From childhood, students are guided to develop the right values, a proactive view of themselves, and culturally valued traits, especially conscientiousness. Individual personality traits do change after adolescence and most change for the better; the changes that occur in adulthood, while clearly for the better, are smaller in magnitude than during childhood and adolescence [64]. Thus, individual differences in conscientiousness are less likely to be affected by differences in well-being during emerging adulthood than during childhood and adolescence. At least in the sample of this study, we did not demonstrate that subjective and physical well-being were prospective predictors of conscientiousness over a one-year interval. Future research could explore the reciprocal relationships between conscientiousness and subjective and physical well-being in children and adolescents.

4.1. Practical Implications

Not only can personality change, it can substantially change with the general maturation process and personal circumstances [64,65]. The findings of this study suggest that cultivating conscientiousness may help to improve physical and mental health, in addition to other interventions specifically designed to improve physical and mental well-being. Education policymakers and educators may wish to consider the following recommendations for interventions related to promoting conscientiousness, particularly for undergraduate students with low conscientiousness. First, create a safe, supportive, orderly, and minimally distracting environment that fosters students' sense of belonging. Second, help

students to internalize relevant social norms (e.g., rule compliance) to form internalized values. Third, cultivate developmentally appropriate skills related to conscientiousness, such as goal setting, time management, progress monitoring, and self-regulation. Finally, support students to work toward long-term goals that are achievable, challenging, and personally meaningful.

4.2. Limitations and Future Directions

Several limitations of the present study should be considered. First, the present study relied on a sample of undergraduates and thus the conclusions need to be further tested in a more general population in the future. Second, the present study used only a two-wave cross-lagged design with a one-year interval, a longitudinal design with more waves and longer time intervals should be adopted to establish the causal relationships between conscientiousness and well-being more reliably and accurately in future studies. Third, the lack of attention to balancing male and female participants in the study design limited the interpretation of the current findings, and future research should address this issue. Finally, this study included only self-reported physical symptoms as a measure of physical well-being. Future research could employ more objective indicators of physical well-being.

5. Conclusions

This study extended extant research by probing into whether there is a reciprocal relation between conscientiousness and well-being (subjective and physical well-being) using a two-wave cross-lagged design in a sample of Chinese undergraduate students. Our findings suggest that conscientiousness is a robust and prospective predictor of subjective and physical well-being, but subjective and physical well-being were not prospective predictors of conscientiousness. The present study contributes to an in-depth understanding of the conscientiousness-health relation. Promoting conscientiousness in future health-related interventions may help to foster better physical and mental health for undergraduate students, especially for those with low conscientiousness.

Author Contributions: Conceptualization, Z.W.; methodology, Z.W. and Y.H.; investigation, Y.H.; resources, Z.W.; data curation, Z.W.; writing—original draft preparation, Y.H.; writing—review and editing, Z.W., Y.H. and Q.F.; supervision, Z.W. and Q.F.; project administration, Z.W.; funding acquisition, Z.W. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by National Natural Science Foundation Grant of China (31971004), and the Research Program Funds of the Collaborative Innovation Center of Assessment toward Basic Education Quality at Beijing Normal University (2022-05-004-BZPK01) awarded to Zhenhong Wang.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the Academic Committee of Shaanxi Normal University (202002018).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available upon reasonable request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Bhullar, N.; Schutte, N.S.; Malouff, J.M. The nature of well-being: The roles of hedonic and eudaimonic processes and trait emotional intelligence. *J. Psychol.* **2013**, *147*, 1–16. [CrossRef] [PubMed]
2. Gaygisiz, E. Economic and cultural correlates of subjective well-being in countries using data from the Organisation for Economic Co-Operation and Development (OECD). *Psychol. Rep.* **2010**, *106*, 949–963. [CrossRef] [PubMed]
3. McKee-Ryan, F.M.; Song, Z.; Wanberg, C.R.; Kinicki, A.J. Psychological and physical well-being during unemployment: A meta-analytic study. *J. Appl. Psychol.* **2005**, *90*, 53–76. [CrossRef] [PubMed]
4. Roberts, B.W.; Lejuez, C.; Krueger, R.F.; Richards, J.M.; Hill, P.L. What is conscientiousness and how can it be assessed? *Dev. Psychol.* **2014**, *50*, 1315–1330. [CrossRef]

5. Barrick, M.R.; Mount, M.K.; Gupta, R. Meta-analysis of the relationship between the five-factor model of personality and holland's occupational types. *Pers. Psychol.* **2003**, *56*, 45–74. [CrossRef]
6. Sui, L.; Qin, H.; Ned, J.; Sun, L. Personality traits and job exploration among Latino business students: An exploratory investigation. *Psychol. Schools* **2021**, *58*, 18–32. [CrossRef]
7. Hill, P.L.; Nickel, L.B.; Roberts, B.W. Are you in a healthy relationship? Linking conscientiousness to health via implementing and immunizing behaviors. *J. Pers.* **2013**, *82*, 485–492. [CrossRef]
8. Rieger, S.; Göllner, R.; Spengler, M.; Trautwein, U.; Nagengast, B.; Roberts, B.W. The persistence of students' academic effort: The unique and combined effects of conscientiousness and individual interest. *Learn Instr.* **2022**, *80*, 101613. [CrossRef]
9. Janošević, M.; Petrović, B. Effects of personality traits and social status on academic achievement: Gender differences. *Psychol. Schools* **2019**, *56*, 497–509. [CrossRef]
10. Nickel, L.B.; Roberts, B.W.; Chernyshenko, O.S. No evidence of a curvilinear relation between conscientiousness and relationship, work, and health outcomes. *J. Abnorm. Soc. Psychol.* **2019**, *116*, 296–312. [CrossRef]
11. Roberts, B.W.; Walton, K.E.; Bogg, T. Conscientiousness and health across the life course. *Rev. Gen. Psychol.* **2005**, *9*, 156–168. [CrossRef]
12. Soto, C.J. Is happiness good for your personality? Concurrent and prospective relations of the big five with subjective well-being. *J. Pers.* **2015**, *83*, 45–55. [CrossRef] [PubMed]
13. Diener, E.; Suh, E.M.; Lucas, R.E.; Smith, H.L. Subjective well-being: Three decades of progress. *Psychol. Bull.* **1999**, *125*, 276–302. [CrossRef]
14. Chen, Z.; Li, Q. The relation between Big Five traits and well-being across the life span. *Stud. Psychol. Behav.* **2014**, *12*, 633–638.
15. Smith, J.; Ryan, L.H.; Röcke, C. The day-to-day effects of conscientiousness on well-being. *Res. Hum. Dev.* **2013**, *10*, 9–25. [CrossRef]
16. Steel, P.; Schmidt, J.; Shultz, J. Refining the relationship between personality and subjective well-being. *Psychol. Bull.* **2008**, *134*, 138–161. [CrossRef] [PubMed]
17. Wang, L.; Shi, Z.; Zhang, J.; He, L. Couples' subjective well-being and personality. *Chin. Ment. Health J.* **2014**, *28*, 690–694.
18. Javaras, K.N.; Schaefer, S.M.; Van Reekum, C.M.; Lapate, R.C.; Greischar, L.L.; Bachhuber, D.R.; Love, G.; Ryff, C.D.; Davidson, R.J. Conscientiousness predicts greater recovery from negative emotion. *Emotion* **2012**, *12*, 875–881. [CrossRef] [PubMed]
19. Kotov, R.; Gamez, W.; Schmidt, F.; Watson, D. Linking "Big" personality traits to anxiety, depressive, and substance use disorders: A meta-analysis. *Psychol. Bull.* **2010**, *136*, 768–821. [CrossRef] [PubMed]
20. Specht, J.; Egloff, B.; Schmukle, S.C. Examining mechanisms of personality maturation: The impact of life satisfaction on the development of the Big Five personality traits. *Soc. Psychol. Personal Sci.* **2013**, *4*, 181–189. [CrossRef]
21. Feeney, B.C.; Collins, N.L. A new look at social support: A theoretical perspective on thriving through relationships. *Pers. Soc. Psychol. Rev.* **2015**, *19*, 113–147. [CrossRef] [PubMed]
22. Steptoe, A.; Easterlin, E.; Kirschbaum, C. Conscientiousness, hair cortisol concentration, and health behaviour in older men and women. *Psychoneuroendocrinology* **2017**, *86*, 122–127. [CrossRef] [PubMed]
23. Cheng, H.; Montgomery, S.; Treglown, L.; Furnham, A. Emotional stability, conscientiousness, and self-reported hypertension in adulthood. *Pers. Individ. Differ.* **2017**, *115*, 159–163. [CrossRef]
24. Goodwin, R.D.; Friedman, H.S. Health status and the five-factor personality traits in a nationally representative sample. *J. Health Psychol.* **2006**, *11*, 643–654. [CrossRef]
25. Sutin, A.R.; Zonderman, A.B.; Ferrucci, L.; Terracciano, A. Personality traits and chronic disease: Implications for adult personality development. *J. Gerontol. Ser. B-Psychol. Sci. Soc. Sci.* **2013**, *68*, 912–920. [CrossRef] [PubMed]
26. Gartland, N.; O'Connor, D.B.; Lawton, R.; Ferguson, E. Investigating the effects of conscientiousness on daily stress, affect and physical symptom processes: A daily diary study. *Br. J. Health Psychol.* **2014**, *19*, 311–328. [CrossRef] [PubMed]
27. Hu, Y.; Wang, Z.; Lü, W. Conscientiousness and perceived physical symptoms: Mediating effect of life events stress and moderating role of resting respiratory sinus arrhythmia. *J. Health Psychol.* **2022**, *27*, 1819–1832. [CrossRef]
28. Strickhouser, J.E.; Zell, E.; Krizan, Z. Does personality predict health and well-being? A metasynthesis. *Health Psychol.* **2017**, *36*, 797–810. [CrossRef]
29. Atherton, O.E.; Robins, R.W.; Rentfrow, P.J.; Lamb, M.E. Personality correlates of risky health outcomes: Findings from a large Internet study. *J. Res. Pers.* **2014**, *50*, 56–60. [CrossRef] [PubMed]
30. Lodi-Smith, J.; Jackson, J.; Bogg, T.; Walton, K.; Wood, D.; Harms, P.; Roberts, B.W. Mechanisms of health: Education and health-related behaviours partially mediate the relationship between conscientiousness and self-reported physical health. *Psychol. Health* **2010**, *25*, 305–319. [CrossRef] [PubMed]
31. Letzring, T.D.; Edmonds, G.W.; Hampson, S.E. Personality change at mid-life is associated with changes in self-rated health: Evidence from the Hawaii Personality and Health Cohort. *Pers. Individ. Differ.* **2014**, *58*, 60–64. [CrossRef] [PubMed]
32. Luo, J.; Roberts, B.W. Concurrent and longitudinal relations among conscientiousness, stress, and self-perceived physical health. *J. Res. Pers.* **2015**, *59*, 93–103. [CrossRef]
33. Magee, C.A.; Heaven, P.C.; Miller, L.M. Personality change predicts self-reported mental and physical health. *J. Pers.* **2013**, *81*, 324–334. [CrossRef] [PubMed]
34. Takahashi, Y.; Edmonds, G.W.; Jackson, J.J.; Roberts, B.W. Longitudinal correlated changes in conscientiousness, preventative health-related behaviors, and self-perceived physical health. *J. Pers.* **2013**, *81*, 417–427. [CrossRef] [PubMed]

35. Kitayama, S.; Park, J. Is conscientiousness always associated with better health? A US–Japan cross-cultural examination of biological health risk. *Pers. Soc. Psychol. Bull.* **2021**, *47*, 486–498. [CrossRef] [PubMed]
36. Dunn, D.S. Teaching about the good life: Culture and subjective well-being. *J. Soc. Clin. Psychol.* **2002**, *21*, 218–220. [CrossRef]
37. Hernandez, L.M.; Blazer, D.G. *Genes, Behavior, and the Social Environment: Moving Beyond the Nature/Nurture Debate*; National Academies Press: Washington, DC, USA, 2006.
38. Luo, J.; Zhang, B.; Cao, M.; Roberts, B.W. The stressful personality: A meta-analytical review of the relation between personality and stress. *Pers. Soc. Psychol. Rev.* **2022**. [CrossRef]
39. Del Prado, A.M.; Church, A.T.; Katigbak, M.S.; Miramontes, L.G.; Whitty, M.; Curtis, G.J.; De Jesús Vargas-Flores, J.; Ibáñez-Reyes, J.; Ortiz, F.A.; Reyes, J.A.S. Culture, method, and the content of self-concepts: Testing trait, individual–self-primacy, and cultural psychology perspectives. *J. Res. Pers.* **2007**, *41*, 1119–1160. [CrossRef] [PubMed]
40. Liu, C.; Wang, F. The influence of goal orientation of the Confucian Culture on formation of Chinese personality. *Psychol. Res.* **2014**, *7*, 19–24.
41. Finkel, S.E. *Causal Analysis with Panel Data*; Sage Publications: Beverly Hills, CA, USA, 1995.
42. Cohen, S.; Doyle, W.J.; Baum, A. Socioeconomic status is associated with stress hormones. *Psychosom. Med.* **2006**, *68*, 414–420. [CrossRef] [PubMed]
43. Costa, P.T.; McCrae, R.R. Four ways five factors are basic. *Pers. Individ. Differ.* **1992**, *13*, 653–665. [CrossRef]
44. Leung, K.; Cheung, F.M.; Zhang, J.X. The five-factor model of personality in China. In *Progress in Asian Social Psychology*; Leung, K., Kashima, Y., Kim, U., Yamaguchi, S., Eds.; John Wiley & Sons: New York, NY, USA, 1997; Volume 1, pp. 231–244.
45. Watson, D.; Clark, L.A.; Tellegen, A. Development and validation of brief measures of positive and negative affect: The PANAS Scales. *J. Pers. Soc. Psychol.* **1988**, *54*, 1063–1070. [CrossRef] [PubMed]
46. Huang, L.; Yang, T.; Ji, Z. Applicability of the Positive and Negative Affect Scale in Chinese. *Chin. Ment. Health J.* **2003**, *17*, 54–56.
47. Diener, E.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The Satisfaction with Life Scale. *J. Pers. Assess.* **1985**, *49*, 71–75. [CrossRef]
48. Liu, W.; Shi, Z.; Zhang, X.; Wang, J.; Xie, S.; Zhang, J. Relationships of job characteristics, work engagement and subjective well-being in psychiatric clinical staff. *Chin. J. Clin. Psychol.* **2014**, *22*, 315–318. [CrossRef]
49. Allen, S.F.; Wetherell, M.A.; Smith, M.A. The Cohen–Hoberman inventory of physical symptoms: Factor structure, and preliminary tests of reliability and validity in the general population. *Psychol. Health* **2017**, *32*, 567–587. [CrossRef]
50. Cohen, S.; Hoberman, H.M. Positive events and social supports as buffers of life change stress. *J. Appl. Soc. Psychol.* **1983**, *13*, 99–125. [CrossRef]
51. Lü, W. *Personality Traits, Stress, and Physical and Mental Health*; Shaanxi Normal University Press: Xi'an, China, 2017.
52. Podsakoff, P.M.; MacKenzie, S.B.; Lee, J.Y.; Podsakoff, N.P. Common method biases in behavioral research: A critical review of the literature and recommended remedies. *J. Appl. Psychol.* **2003**, *88*, 879–903. [CrossRef]
53. Zhou, H.; Long, L. Statistical remedies for common method biases. *Adv. Psychol. Sci.* **2004**, *12*, 942–950.
54. Orth, U.; Meier, L.L.; Bühler, J.L.; Dapp, L.C.; Krauss, S.; Messerli, D.; Robins, R.W. Effect size guidelines for cross-lagged effects. *Psychol. Methods* **2022**, *in press*. [CrossRef]
55. Israel, S.; Moffitt, T.E. Assessing conscientious personality in primary care: An opportunity for prevention and health promotion. *Dev. Psychol.* **2014**, *50*, 1475–1477. [CrossRef] [PubMed]
56. Weston, S.J.; Jackson, J.J. Identification of the healthy neurotic: Personality traits predict smoking after disease onset. *J. Res. Pers.* **2015**, *54*, 61–69. [CrossRef]
57. Roberts, B.W.; Kuncel, N.R.; Shiner, R.; Caspi, A.; Goldberg, L.R. The power of personality: The comparative validity of personality traits, socioeconomic status, and cognitive ability for predicting important life outcomes. *Perspect. Psychol. Sci.* **2007**, *2*, 313–345. [CrossRef] [PubMed]
58. Artese, A.; Ehley, D.; Sutin, A.R.; Terracciano, A. Personality and actigraphy-measured physical activity in older adults. *Psychol. Aging* **2017**, *32*, 131–138. [CrossRef]
59. Molloy, G.J.; O'Carroll, R.E.; Ferguson, E. Conscientiousness and medication adherence: A meta-analysis. *Ann. Behav. Med.* **2014**, *47*, 92–101. [CrossRef]
60. Allen, M.S.; Walter, E.E.; McDermott, M.S. Personality and sedentary behavior: A systematic review and meta-analysis. *Health Psychol.* **2017**, *36*, 255–263. [CrossRef]
61. Lunn, T.E.; Nowson, C.A.; Worsley, A.; Torres, S.J. Does personality affect dietary intake? *Nutrition* **2014**, *30*, 403–409. [CrossRef]
62. Jokela, M.; Batty, G.D.; Nyberg, S.T.; Virtanen, M.; Nabi, H.; Singh-Manoux, A.; Kivimaki, M. Personality and all-cause mortality: Individual-participant meta-analysis of 3947 deaths in 76150 adults. *Am. J. Epidemiol.* **2013**, *178*, 667–675. [CrossRef]
63. Huang, X. Thinking on Chinanization of personality research. *J. Psychol. Sci.* **2017**, *40*, 1518–1523.
64. Edmonds, G.W.; Jackson, J.J.; Fayard, J.V.; Roberts, B.W. Is character fate, or is there hope to change my personality yet? *Soc. Personal. Psychol. Compass* **2008**, *2*, 399–413. [CrossRef]
65. Roberts, B.W.; Walton, K.E.; Viechtbauer, W. Personality traits change in adulthood: Reply to Costa and McCrae (2006). *Psychol. Bull.* **2006**, *132*, 29–32. [CrossRef] [PubMed]

International Journal of
Environmental Research and Public Health

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Article

Ageism, Job Engagement, Negative Stereotypes, Intergenerational Climate, and Life Satisfaction among Middle-Aged and Older Employees in a University Setting

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Abstract: This study examined whether age-related discrimination, negative age-related stereotypes about declining abilities due to age, job engagement (cognitive, physical, and emotional), and workplace intergenerational climate in terms of positive intergenerational affect (PIA) and workplace intergenerational inclusiveness (WIG) correlated with life satisfaction in a university setting. The analysis was based on 115–117 faculty and staff, 50 years or older. A Principal Axis factor analysis with Promax rotation on the job-related variable revealed three factors: Experiencing Ageism (discrimination and negative stereotypes), Work Climate (PIA and WIG), and Job Engagement (physical, emotional, and cognitive). The factor-based regression scores on the three-factor-based scores were correlated with life satisfaction and also subjected to hierarchical regression analyses with age, sex, and education entered on the first step and the three factors on the second step. The results of both the correlational and hierarchical regression analysis indicated that experiencing ageism was significantly predictive of life satisfaction, and that ageism may play a more primary role than job engagement and work climate-related variables in accounting for life satisfaction.

Keywords: ageism; life satisfaction; stereotypes; discrimination; work engagement

Citation: McConatha, J.T.; Kumar, V.K.; Magnarelli, J. Ageism, Job Engagement, Negative Stereotypes, Intergenerational Climate, and Life Satisfaction among Middle-Aged and Older Employees in a University Setting. *IJERPH* **2022**, *19*, 7554. https://doi.org/10.3390/ijerph19137554

Academic Editor: Paul B. Tchounwou

Received: 16 May 2022
Accepted: 18 June 2022
Published: 21 June 2022

1. Introduction

Life satisfaction, the perceptions of one's quality of life, is an important psychological variable shaping overall wellbeing. Important variables in work environments that may be related to life satisfaction are experiencing age-based discrimination, perceiving discrimination as prevalent (how often one receives maltreatment or disrespect [1]), knowing that popular age-related negative stereotypes exist in the workplace, and an intergenerational work climate, as well as job engagement. In the university setting, life satisfaction has been related to job satisfaction, mobbing, time pressures, academic performance, and relative income [2].

Ageism in the academic setting is both overt and covert [3]. For example, studies of ageism in academia have found that younger colleagues may patronize older faculty, particularly women [4]. Older women faculty are also more likely to be excluded or subjected to "mom-ism," while younger women faculty are more likely to be viewed as more committed, productive, and energetic [5–7]. However, studies that have examined life satisfaction and ageism-related variables in a university setting are rare.

Discrimination against older workers, like other forms of discrimination, is a serious social and human rights concern. Ageism, a widespread form of prejudice, is a devastating social phenomenon that has not been widely acknowledged and researched. Ageism is defined as holding stereotypical, prejudicial, and discriminatory attitudes against individuals or groups simply because of their age [8]. Unlike racism and sexism, ageism is often seen as "normal", particularly in the workplace [8], something that is taken for granted. It is a form of discrimination not often discussed in the workplace or elsewhere. As people live

longer, healthier lives, they also remain in the workplace longer [9]; however, a majority (64%) of older workers, particularly female workers, report experiencing or witnessing age discrimination in the workplace [10,11], with some studies indicating that over 80% of women over 50 report having experienced age-related discrimination [3].

The number of Age Discrimination in Employment Act (ADEA) complaints filed by those older than age 55 has steadily increased since 2000, during which their numbers have grown in the workplace [12,13]. Older workers report feeling that their contributions are unacknowledged, and they feel left out of decision-making and planning functions [14]. Ageist attitudes result in fewer work opportunities, training, promotions, and retention [15–17]. An AARP [15] survey revealed that older respondents who reported age-related discrimination reported having experienced negative remarks concerning their older age from a colleague or supervisor, not being hired for a job, being passed over for a promotion or another advancement opportunity, and being laid off, fired, or forced out of a job. This especially seems to be the case for women. The Bureau of Labor Statistics [18] predicted that by 2024, there will be twice as many women workers over the age of 55 in the labor force as those women between the ages of 16 and 24. In addition, as the number of older women in the workforce has increased, the number of age discrimination complaints filed has increased. In 1990, men filed nearly twice as many ADEA complaints as women; however, in 2010, more women filed complaints about experiencing age bias than men for the first time [12]. This trend seems to be continuing, with more women filing age discrimination complaints each year. Moreover, most reports of age bias in 1990 were from workers between the ages of 40 and 54, but in 2017, workers between the ages of 55 and 64 filed the most age discrimination complaints. The percentage of charges filed by workers aged 65 and older in 2017 was twice what it was in 1990 [11,12]. Often struggling silently, older workers tend not to discuss their mistreatment [19]. An AARP [15] survey revealed that only 3% of respondents who experienced age discrimination made an official complaint—indicating that the problem is significantly more widespread than documented.

Ageist treatment has numerous significant negative social and psychological implications for older workers. It increases stress, negatively impacts self-worth, and can lead to the alienation and isolation of older workers. Fernandez-Ballesteros et al. [20], reviewing the literature on the effects of ageism, indicated that older adults tend to suffer many negative (physical, social, mental) outcomes because of ageism—perceiving age-related discrimination and negative age-related stereotypes and prejudices. In their large sample study in three countries: Mexico, Germany, and Spain, they found that perceived discrimination correlated significantly with life satisfaction in Spain ($r = -0.324$, $p < 0.01$) and Mexico ($r = -0.319$, $p < 0.01$), but not in Germany ($r = -0.091$).

Firzly et al. [21] observed that workplaces free of age-based stereotypes are associated with higher levels of worker satisfaction and decreased intention to retire. The perception that coworkers and colleagues hold negative attitudes about older workers may have important consequences for both younger and older workers and the organization. Perceived ageism, discrimination, and age-based stereotypes are associated with reduced self-esteem, employment opportunities because of biases in hiring decisions [22], job satisfaction [23,24], and work engagement [25].

The results of a meta-analysis [26] indicate that age-based negative stereotype threats about competence held by older workers can negatively impact their memory ($d = 0.21$) and cognitive performance ($d = 0.68$), and these effects remain over different sex and age groups. Furthermore, there is evidence for greater vulnerability when induced by stereotype threats ($d = 0.52$) than when induced by facts ($d = 0.09$). Jang et al. [1] argued that perceived discrimination is unpleasant and stressful and leads to reduced feelings of wellbeing. Using a large sample of 45–74-year-old adults, they found evidence for not only the direct effects of perceived discrimination on feelings of wellbeing, but also for indirect effects through reducing a sense of control for both positive and negative affect. Yao et al. [27] found that perceived discrimination has a direct negative impact on the life satisfaction of older adults and an indirect impact that occurs through identity and community sense. Redman and

Snape [28] found, in a sample of police officers, that perceived age discrimination was negatively associated with their job and life satisfaction, power and prestige associated with their jobs, and commitment. In their study, job involvement did not have a significant correlation with life satisfaction. They concluded that discrimination is a significant stressor with severe psychological consequences.

Levy [29,30] formulated the Stereotype Embodiment Theory (SET), which holds that age-based discrimination, popular negative stereotypes about older people, and negative self-perceptions held by older people about their aging can have serious effects on the health and wellbeing of older individuals. Levy et al. [30] noted that there has been extensive research across five continents that yielded findings consistent with predictions from the SET theory that ageism negatively impacts the health of older individuals. Levy et al. [30] found that the health care costs associated with negative self-perceptions of aging were much higher than those associated with negative age stereotypes, followed by those associated with age discrimination; adjusted for age and sex, the "excess cost was $11.1 billion for age discrimination, $28.5 billion for negative age stereotypes, and $33.7 billion for negative self-perceptions of aging" [30] (p. 178).

A variable of interest to the present study was intergenerational contact. Hanrahan et al. [22] concluded, from a review of studies (e.g., [23]), that positive intergenerational contact can help ameliorate the negative impact of ageism, which in turn can promote intergroup harmony among older and younger workers. King and Bryant [31] found a correlation (r = 0.58) between intergenerational climate at work and job satisfaction in their Study 2. A recent Canadian study by Firzly et al. [21] found, contrary to their expectations, that perceiving that the workplace intergenerational climate was positive was associated with decreased awareness of ageist practices; they explained this unexpected finding by suggesting that if things are going well for them, then it is also good for the older workers. However, consistent with their expectations, the intergenerational climate was associated with increased job satisfaction, and sharing and donating knowledge behaviors. Such behaviors were, in turn, associated with greater awareness of ageism against older workers and greater job satisfaction.

Job engagement or work engagement has also been explored as a work-related motivational construct. Rich et al. [32] developed an instrument to measure the three dimensions proposed by Kahn [33]: physical (intensity of effort), cognitive (mindfulness, vigilance, attention to work), and emotional (affect associated with work) energies devoted to their work. They found their scale to be significantly correlated with measures of job involvement, job satisfaction, value congruence (meaningfulness of work), intrinsic motivation, task performance, and other variables. Although Rich et al. [32] did not examine the relationship of their job engagement scale with life satisfaction, there are prior studies that suggest that the two constructs are significantly correlated (e.g., [34–36]).

Given that work and the work environment constitute a major portion of one's life, age-based discrimination, perceiving age discrimination, and knowing that popular negative stereotypes about an age-related decline in abilities exist should have a bearing on how satisfied older people feel about their lives. Few studies seem to have addressed the association of ageism-related variables of discrimination and negative stereotypes with life satisfaction. Thus, the present study was designed to examine whether experiencing age-related discrimination, negative age-related stereotypes regarding declining abilities due to age, job engagement (cognitive, physical, and emotional), and workplace intergenerational climate in terms of positive intergenerational affect and workplace intergenerational inclusiveness correlated with life satisfaction in a university setting.

Based on the studies discussed previously, it was expected that faculty and staff in middle and later adulthood (age 50 plus) who (a) have experienced lower levels of discrimination are more likely to report experiencing higher levels of life satisfaction, (b) perceive a lower prevalence of negative stereotypes about aging in the workplace are more likely to report higher levels of life satisfaction, (c) perceive higher levels of intergenerational positive affect and inclusiveness are more likely to report higher levels of life satisfaction,

and (d) are more physically (effortful working), emotionally (enjoyment), and cognitively engaged in their work are more likely to report higher levels of life satisfaction. On an exploratory basis, the incremental and unique variance accounted for by these selected job-related variables beyond the demographic variables of age, sex, and education through hierarchical regression analysis was also explored.

2. Materials and Methods

2.1. Participants and Procedures

An email containing a link to an online survey was sent to 1015 instructional faculty members and 805 staff and administrators at a mid-sized university in southeast Pennsylvania. The participants were informed that their participation was voluntary and there was no penalty for not completing the survey, and that their responses were being recorded anonymously. After the participants read the informed consent form approved by the university's Institutional Board, they were able to continue to the questionnaires, if they consented.

Although 364 individuals responded to the survey, because of omissions and/or declining to answer some items, the numbers of respondents varied for different questions. Analysis was restricted to 115–117 midlife and older employees ($\geq$50 years of age) who responded to the questionnaire. The respondents ranged in age from 50 to 79 (M = 59.57), with 77 females and 40 males, 78 instructional faculty, four administrators, and 35 staff members. Level of Education was coded in five ordinal categories: High School Graduate (including some college, but no degree) (n = 9), Associate Degree (n = 6), Bachelors (n = 15), Master's (n = 23), and Doctoral/Professional (including JD, MD) (n = 64). Most respondents identified themselves as White, non-Hispanic (n = 93). Few identified as African American/Black (n = 5), Asian (n = 2), Hispanic or Latino (n = 3), More than one ethnicity (n = 2), Middle Eastern (n = 1), and declined/omitted (n = 11)

2.2. Instruments

The Satisfaction with Life Scale (SWLS) [37] is a five-item scale used to measure one's satisfaction with life. The scale uses a seven-point Likert scale, with 1 = "*strongly disagree*" and 7 = "*strongly agree*". Examples of items include "*In most ways, my life is close to my ideal*", and "*The conditions of my life are excellent*". The Cronbach α for the scale in the present study was 0.90.

The Workplace Age Discrimination Scale (WADS) [38] is a 26-item scale used to assess the prevalence of age discrimination experienced by workers; however, it was modified to a 23-item scale for this study to make the items more relevant to the intended participants (faculty members). The three removed items were not relevant for the university sample in this study because they pertained to promotions, salaries, and responsibilities that are specified by Union Policies. A five-point Likert scale (1 = "*never*", 5 = "*very often*") was used to assess discrimination frequency. Higher scores on the scale reflect a higher prevalence of age discrimination experienced by workers. Examples of items include *"I have been passed over for a work role/task due to my age"*, and *"My contributions are not valued as much due to my age"*. The Cronbach α for the scale in the present study was 0.96.

The Workplace Intergenerational Climate Scale (WICS) [31] is a 20-item scale to evaluate the relationship between younger and older co-workers. The original scale contained five subscales with four items each: lack of generational stereotypes, positive intergenerational affect, intergenerational contact, workplace generational inclusiveness, and workplace intergenerational retention. However, for this study, only the *Positive Intergenerational Affect* and the *Workplace Generational Inclusiveness* subscales, with four items each, were included. The participants rated each of the items on a four-point Likert scale (1 = "*strongly disagree*", 4 = "*strongly agree*"). The Positive Intergenerational Affect items include: "*I feel comfortable when co-workers outside my generation try to make conversation with me*", *"I enjoy interacting with co-workers that are outside may generation"*, *"My coworkers outside my generation are interesting and unique individuals"*, and *"People work best when they work with others of different ages"*. The

Workplace Generational Inclusiveness items include: *"I believe that my work environment is a healthy one for all ages", "Workers of all ages are respected in my workplace", "I am able to communicate effectively with workers of different generations", and "Working with co-workers from different generations enhances the quality of my work life".* Higher scores on the scale indicate more positive intergenerational feelings and perceptions of more inclusiveness of all age groups in the workplace. The Cronbach's α for the PIA and WGS subscales were 0.78 and 0.80, respectively. The Cronbach's α for the sum of two scales (Workplace Intergenerational Climate) in the present study was 0.85.

The Negative Aging Meta-Stereotypes scale [39] is a seven-item scale designed to measure how people believe other people will stereotype them because of age. However, only four items were used in this study because they were most relevant in a university setting. The items were rated on a five-point Likert scale (1 = "*totally agree*" to 5 = "*totally disagree*"). The scale was reverse-scored so that higher scores reflect higher beliefs in the prevalence of negative aging stereotypes. The items included were "*I believe the majority of my colleagues think that performance declines with age", "I believe the majority of my colleagues believe that older co-workers resist change", I believe the majority of my colleagues believe that older co-workers are not interested in learning new skills", and "I believe the majority of my colleagues feel negative about older workers".* The Cronbach α for the scale in the present study was 0.85.

The Job Engagement Scale [32] is an 18-item scale used to measure three dimensions of job engagement, with six items each: physical, emotional, and cognitive engagement. Items are rated on a seven-point Likert scale (1 = "*Strongly Disagree*" to 7 = "*Strongly Agree*"). The *Physical Engagement* subscale includes such items as "I work with intensity on my job" and "I exert my full effort to my job". The *Emotional Engagement* subscale includes such items as "I am enthusiastic in my job", and "I feel energetic at my job". The *Cognitive Engagement* subscale included such items as "At work, my mind is focused on my job", and "At work, I pay a lot of attention to my job". On these scales, higher scores reflect higher engagement. The Cronbach's α for the three subscales Physical, Emotional, and Cognitive Engagement were 0.93, 93, and 0.94, respectively. The reliability of the Job Engagement total score of the three subscales was 0.96.

*Demographic Variables***.** Participants were also asked to respond to demographic questions about their sex (male, female), job category (staff, administrator, and instructional faculty), age (to the nearest year), education (high school diploma or equivalent, some college but no degree, an associate degree in college—2 years, Bachelor's degree in college—4 years, Master's degree, doctoral degree, professional degree (MD, JD)), and ethnicity (White Caucasian—Non Hispanic, African American/Black, Hispanic or Latino, Asian, Middle-Eastern, and more than one ethnicity). All questions allowed the option "decline to answer".

3. Results

3.1. Demographics and Life Satisfaction

None of the demographic variables examined (age, sex, education, and employee status) had a significant association with life satisfaction. Age had a correlation of −0.082, $p = 0.380$. The analysis of variance on sex yielded an $F < 1.0$; education, $F = 1.21$, $p = 0.309$; and employee status, $F = 1.28$, $p = 0.275$ in all cases.

3.2. Preliminary Analyses

Given that the sample consisted of 78 instructional faculty, four administrators, and 35 staff members, an initial analysis was conducted to see whether the data could be combined across these groups for various analyses. Additionally, because there were only four administrators, their data were combined with 35 staff members to form one group (administrators and staff). A multivariate analysis on the eight variables (life satisfaction, work discrimination, negative stereotypes, climate—PIA, climate—WGI, physical engagement, emotional engagement, and cognitive engagement) revealed that the mean score for the two groups did not differ significantly (Mult $F(8, 107) < 1.0$) on these variables. A further

univariate analysis also showed that the mean scores did not differ significantly on any of the variables and all effect sizes (η^2) lower than 0.024 for all variables. Thus, the rest of the analyses were performed on all participants.

3.3. Correlations among Variables

Table 1 provides Pearson correlation coefficients between each of the job-related variables and life satisfaction and also among the job-related variables. As expected, (a) experiencing discrimination in the workplace had a negative significant correlation with life satisfaction ($r = -0.205$, $p < 0.028$), indicating that those who reported higher levels of discrimination at work were more likely to report lower levels of life satisfaction, (b) agreeing more strongly that negative stereotypes exist at the workplace correlated significantly and negatively with life satisfaction ($r = -0.259$, $p < 0.008$), indicating that those who reported a lower prevalence of negative stereotypes were more likely to report higher levels of life satisfaction, (c) contrary to expectations, neither of the climate variables nor the total climate score correlated with life satisfaction, and (d) neither physical nor cognitive engagement had significant correlations with life satisfaction, but emotional engagement had significant positive correlation ($r = 0.249$, $p < 0.008$).

Table 1. Correlations among the variables (numbers vary between 115 and 117).

Variable	1	2	3	4	5	6	7	8
1. Life Satisfaction	0.90							
2. Work Discrimination	−0.205 *	0.97						
3. Neg. Stereotypes	−0.259 **	0.543 **	0.86					
4. Climate—PIA	−0.070	−0.141	−0.044	0.80				
5. Climate—WGI	0.121	−0.556 **	−0.365 **	0.594 **	0.82			
6. Physical Engagement	0.036	−0.095	−0.098	−0.009	0.059	0.93		
7. Emotional Engagement	0.249 **	−0.139	−0.129	0.088	0.252 **	0.695 **	0.93	
8. Cognitive Engagement	−0.012	0.020	−0.027	−0.038	0.048	0.830 **	0.673 **	0.95

* $p < 0.028$; ** $p < 0.008$; diagonal values = Cronbach α; PIA = positive intergenerational affect, WGI = workplace generational inclusiveness.

An examination of Table 1 suggests that Work Discrimination and Negative Stereotypes had a significant strong positive correlation ($r = 0.543$, $p < 0.008$). Furthermore, the two climate variables had strong significant positive correlations with each other ($r = 0.594$, $p < 0.008$) and the three job engagement scales had strong significant positive correlations with each other (0.673 to 0.830).

Given these strong correlations among the predictor scales, we conducted a Principal Axis Factor Analysis (PFA) with Promax rotation (kappa = 4) to allow for correlated factors and to reduce the number of variables to avoid issues of multicollinearity among the predictor variables in a hierarchical multiple regression analysis. The Promax rotation yields two matrices: pattern and structure, and the former matrix is most often interpreted. The PFA yielded three factors, which accounted for 82.420% of the total variance, with eigenvalues of 2.604 (37.196%), 2.086 (29.508%), and 1.100 (15.716%), respectively. The Kaiser–Meyer–Olkin measure of sampling adequacy was 0.63, suggesting adequate sampling.

Table 2 provides a summary of the PAF analysis rotated pattern matrix. The results suggested three factors to underlie the seven variables: Job Engagement (combination of physical, emotional, and cognitive aspects), Experience of Ageism (combination of work discrimination and negative stereotypes), and Work Intergeneration Climate (combination of the two climate variables).

Table 2. Rotated pattern matrix loading of the predictor variables.

Variable	Factor 1	Factor 2	Factor 3
Work Discrimination	0.026	**0.860**	0.040
Negative Stereotypes	−0.016	**0.714**	0.129
Climate—PIA	−0.022	0.231	**0.798**
Climate—WGI	0.036	−0.270	**0.779**
Physical Engagement	**0.919**	−0.036	−0.063
Emotional Engagement	**0.748**	−0.049	0.104
Cognitive Engagement	**0.914**	0.086	−0.036

Regression-based factor scores were then computed for each of the factors and correlated with Life Satisfaction, which were as follows: Job Engagement $r = 0.057$ ($p = 0.544$), Experience of Ageism = $r = -0.245$ ($p = 0.008$), and Work Intergenerational Climate $r = 0.070$ ($p = 457$), respectively. Factors 1 and 2 correlated = −0.147, $p = 0.118$, factors 1 and 3 correlated = 0.066, $p = 0.482$, and factors 2 and 3 correlated = −0.649, $p = 0.000$, suggesting that higher levels of ageist experiences and attitudes are significantly associated with lower levels of expressed positive intergenerational affect and inclusiveness climate.

3.4. Regression Analysis: Predicting Life Satisfaction

A hierarchical regression analysis was conducted to examine the additional variance accounted for in the prediction of Life Satisfaction by the job-related factor variables Ageism, Work Intergenerational Climate, and Job Engagement, beyond that accounted for by the demographic variables of age, sex, and education. The regression analysis permitted examining the relative variance accounted for by each of the job-related variables. There was no evidence of heteroskedasticity in either model; however, as per Hayes and Cai's [40] recommendation, we employed robust standard errors (HC3) that do not assume heteroskedasticity.

The three demographic (Sex, Age, Education) variables were included in the first step, and three job-related variables (Ageism, Work Intergenerational Climate, and Job Engagement) were included in the second step.

Per Table 3, prediction with demographic variables alone (Model 1) was not significant ($R^2 = 0.023$, $p = 0.458$); they collectively accounted for about 2.3% of the variance, but when the factor-based variables were added in the second step (Model 2), an additional 6.4% of the variance ($R^2 = 0.087$, $p = 0.060$) was accounted for. Table 3 shows the results of the regression analysis for predicting life satisfaction in Models 1 and 2.

Table 3. R and R^2 change from Models 1 and 2.

Model	*R*	R^2	R^2 Change	*F* Change	df_1	df_2	*p* (R^2 Change)
1	0.152	0.023	0.023	0.872	3	111	0.458
2	0.296	0.087	0.064	2.540	3	108	0.060

Model 1: Demographic Variables: age, sex, Education; Model 2: Job-Related Factor-Based Variables. Adjusted R^2 for models 1 and 2 were 0.003 and 0.037, respectively.

Per Table 4, in Model 2, only Ageism had a significant beta weight ($b = -2.386$, $t = -2.545$, $p = 0.0120$, suggesting that ageism is a significant predictor of life satisfaction with other variables partialled out; the negative regression coefficient indicates that people who experienced a higher degree of ageism expressed lower levels of life satisfaction. The tolerance values ranged between 0.519 and 0.985, all greater than 0.10, suggesting acceptable levels for the absence of multicollinearity.

Table 4. Regression analysis: *t*-test based on robust standard errors (SE).

Variables		*B*	*β*	Robust SE	*t*	*p*
Model 1						
Constant	28.265					
Sex *		0.429	0.032	1.240	0.345	0.731
Age		−0.099	−0.094	0.107	−0.926	0.356
Education		0.615	0.121	0.392	1.567	0.120
Model 2						
Constant	24.478					
Sex		−0.341	−0.025	1.313	−0.260	0.795
Age		−0.018	−0.017	0.118	−0.150	0.881
Education		0.603	0.118	0.391	1.542	0.126
Job Engagement		−0.039	−0.006	0.590	−0.066	0.947
Ageism		−2.386	−0.338	0.938	−2.545	0.012
Climate		−0.916	−0.135	1.031	−0.888	0.376

* Female = 1, Male = 2.

4. Discussion

Considering the results of the correlational analysis, as expected given prior studies [20,21], individuals who reported more age-related discrimination and age-related meta-stereotypes expressed lower life satisfaction. Moreover, respondents who were more emotionally engaged with their jobs were more likely to express greater life satisfaction. None of the other correlations reached significance. Almost all correlations were small, suggesting that these variables probably play a small role in accounting for life satisfaction. The rather low, but significant, correlation between age-related discrimination and life satisfaction seems surprising given that the work environment tends to be a major part of life, and experiencing discrimination would seem to be associated with life satisfaction to a higher degree. This result can perhaps be explained by the lower variability of the work-discrimination variable. An examination of the frequency distribution suggests our sample reported experiencing rather low levels of discrimination. The scores ranged between 23 and 103, and 23 was the model score with 25.86% (n = 30 out of 116) of the participants responding 1 = Never experiencing any discrimination on any of the items; another 26 (22% reported two scores of 24–29), and only 19 respondents reported total scores of 70–103 and above (corresponding to the average rating between Sometimes (3) and Very Often (5)). It is possible that the occurrence of age-related discrimination may be low in this research setting. However, despite guarantees of the anonymity of responses, it is possible that many respondents were not fully open because of the fear that their responses on such sensitive matters can be tracked online.

Given the significant correlations among the subscales of the included job-related variables, the decision was made to conduct a factor analysis to reduce the number of variables for multiple regression analysis to predict life satisfaction. The factor analysis revealed three factors: Job Engagement (combination of physical, emotional, and cognitive), Experiencing Ageism (combination of age discrimination and stereotypes), and Work Climate (combination of intergenerational affect and inclusiveness). When factor-based correlations for the three factors were correlated with life satisfaction, ageism was the only variable that correlated significantly. The result that climate and job engagement were not predictive of life satisfaction was contrary to our expectation based on earlier studies [21,31,34–36]. Furthermore, when life satisfaction was regressed on demographic variables, R^2 was not significant, but when the three factors were added in the second step, the change in R^2 reached marginal significance. Additionally, controlling for other factors,

ageism was the only significant predictor of life satisfaction. The results taken together suggest the relatively greater importance of ageism in the prediction of life satisfaction compared with job engagement and work intergenerational affect and inclusiveness climate. These results are supportive of the results of Yao et al. [27], Redman and Snape [28], and others, but they also add to the previous work that suggests ageism may play a more primary role than job engagement and work climate-related variables. The rather high and significant correlation ($r = -0.649$) between ageism and climate suggests that these factors may go hand in hand, but job engagement may stay independent of both ageism and climate, perhaps because of the high social desirability of the job engagement construct that resulted in a negatively skewed distribution even on the combined variable based on factor analysis.

5. Conclusions

Although the respondents reported low levels of workplace discrimination, ageism was significantly predictive of life satisfaction. In addition, the results suggest that ageism may play a more primary role in accounting for life satisfaction than job engagement and climate-related variables in accounting for life satisfaction. These results suggest that institutions should intensify efforts to reduce ageism via policies, procedures, and educational efforts. The present study findings are limited by a large number of individuals choosing not to respond to the survey and, thus, the findings are to be considered preliminary. All of the zero-order correlations are small, even though some of them were found to be significant. The results of the study need to be replicated with a much larger sample through which it will be possible to obtain greater variability on these variables. Given the changing global demographics and the increase in the number of older workers, an exploration of factors that influence satisfaction with work and life are important areas that warrant further investigation.

Author Contributions: Conceptualization, J.T.M., V.K.K., J.M.; methodology, J.T.M., V.K.K., J.M.; software, J.T.M., V.K.K., J.M.; validation, J.T.M., V.K.K., J.M.; formal analysis, J.T.M., V.K.K., J.M.; investigation, J.T.M., V.K.K., J.M.; resources, J.T.M., V.K.K., J.M.; data curation, J.T.M., V.K.K., J.M.; writing—original draft preparation, J.T.M., V.K.K., J.M.; writing—review and editing, J.T.M., V.K.K., J.M.; visualization, J.T.M., V.K.K., J.M.; supervision, J.T.M., V.K.K., J.M.; project administration, J.T.M., V.K.K., J.M.; funding acquisition, J.T.M., V.K.K., J.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of West Chester University of Pennsylvania (protocol code 20191009A and 5 April 2009).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Jang, Y.; Chiriboga, D.A.; Small, B.J. Perceived discrimination and psychological wellbeing: The mediating and moderating role of sense of control. *Int. J. Aging Hum. Dev.* **2008**, *66*, 213–227. [CrossRef]
2. Cerci, P.A.; Dumludag, D. Life satisfaction and job satisfaction among university faculty: The impact of working conditions, academic performance, and relative income. *Soc. Indic. Res.* **2019**, *144*, 785–806. [CrossRef]
3. McGuire, S.L.; Klein, D.A.; Chen, S. Ageism revisited: A study measuring ageism in East Tennessee, USA. *J. Nurs. Health Sci.* **2008**, *10*, 11–16. [CrossRef]
4. Harris, K.; Krygsman, S.; Waschenko, J.; Laliberte Rudman, D.; Pruchno, R. Ageism and the older worker: A scoping review. *Gerontologist* **2018**, *58*, E1–E14. [CrossRef]
5. Castaneda, M.; Isgro, K. *Mothers in Academia*; Columbia University Press: New York, NY, USA, 2013; pp. 1–188.
6. El-Alayli, A.; Hansen-Brown, A.; Ceynar, A. Dancing backwards in high heels: Female professors experience more work demands and special favor requests, particularly from academically entitled students. *Sex Roles* **2018**, *79*, 136–150. [CrossRef]

7. Trepal, H.C.; Stinchfield, T.A. Experiences of motherhood in counselor education. *Couns. Edu. Super* **2012**, *51*, 112–126. [CrossRef]
8. World Health Organization. Available online: https://www.who.int/news-room/questions-and-answers/item/ageing-ageism (accessed on 28 April 2022).
9. Bureau of Labor Statistics. Employment–Population Ratio and Labor Force Participation Rate by Age. Available online: https://www.bls.gov/opub/ted/2017/employment-population-ratio-and-labor-force-participation-rate-by-age.htm (accessed on 28 April 2022).
10. AARP. Available online: https://www.aarp.org/content/dam/aarp/research/surveys_statistics/general/2014/Staying-Ahead-of-the-Curve-2013-The-Work-and-Career-Study-AARP-res-gen.pdf (accessed on 29 April 2022).
11. AARP. Available online: https://www.aarp.org/work/working-at-50-plus/info-2018/age-discrimination-increases-women-minorities.html (accessed on 28 April 2022).
12. U.S. Equal Employment Opportunity Commission. Available online: https://www.eeoc.gov/eeoc/history/adea50th/upload/report.pdf (accessed on 24 April 2022).
13. Barrington, L. Ageism and bias in the American workplace. *Gener. J. Am. Soc. Aging* **2015**, *39*, 34–38.
14. Blackstone, A. Harassment of Older Adults in the Workplace. In *Ageism and Mistreatment of Older Workers*, 1st ed.; Brownell, P., Kelly, J., Eds.; Springer: Dordrecht, The Netherlands, 2013; pp. 31–47.
15. AARP. Available online: https://www.aarp.org/research/topics/economics/info-2018/multicultural-work-jobs.html (accessed on 28 April 2022).
16. Boone James, J.; McKechnie, S.; Swanberg, J.; Besen, E. Exploring the workplace impact of intentional/unintentional age discrimination. *J. Manag. Psych.* **2013**, *28*, 907–927. [CrossRef]
17. Chiu, W.C.K.; Chan, A.W.; Snape, E.; Redman, T. Age stereotypes and discriminatory attitudes towards older workers: An East-West comparision. *Hum. Relat.* **2001**, *54*, 629–661. [CrossRef]
18. Bureau of Labor Statistics. Women in the Workforce before, during, and after the Great Recession. Available online: https://www.bls.gov/spotlight/2017/women-in-the-workforce-before-during-and-after-the-great-recession/pdf/women-in-the-workforce-before-during-and-after-the-great-recession.pdf (accessed on 26 April 2022).
19. Brownell, P.; Kelly, J. *Ageism and Mistreatment of Older Workers: Current Reality, Future Solutions*, 1st ed.; Springer: Dordrecht, The Netherlands, 2013; pp. 181–184.
20. Fernandez-Ballesteros, R.; Olmos, R.; Santacreu, M.; Bustillos, A.; Molina, M.A. The role of perceived discrimination on active aging. *Arch. Geront. Geri.* **2017**, *71*, 14–20. [CrossRef]
21. Firzly, N.; Van de Beeck, L.; Martine Lagacé, M. Let's work together: Assessing the impact of intergenerational dynamics on young workers' ageism awareness and job satisfaction. *Can. J. Aging/La Rev. Can. du Vieill.* **2021**, *40*, 489–499. [CrossRef] [PubMed]
22. Hanrahan, E.A.; Lindeman, M.I.H.; Finkelstein, L.M. Discounting seniors: Implications of age stereotypes at work. *Trans. Issues Psychol. Sci.* **2017**, *3*, 370–377. [CrossRef]
23. Iweins, C.; Desmette, D.; Yzerbyt, V.; Stinglhamber, F. Ageism at work: The impact of intergenerational contact and organizational multi-age perspective. *Eur. J. Work. Organ. Psychol.* **2013**, *22*, 331–346. [CrossRef]
24. Hassell, B.L.; Perrewè, P.L. An examination of beliefs about older workers: Do stereotypes still exist? *J. Organ. Behav.* **1995**, *16*, 457–468. [CrossRef]
25. Bayl-Smith, P.H.; Griffin, B. Age discrimination in the workplace: Identifying as late career worker and its relationship with engagement and intended retirement age. *J. Appl. Soc. Psychol.* **2014**, *44*, 588–599. [CrossRef]
26. Lamont, R.A.; Swift, H.J.; Abrams, D. A review and meta-analysis of age-based stereotype threat: Negative Stereotypes, not facts do the damage. *Psychol. Aging* **2015**, *30*, 180–193. [CrossRef]
27. Yao, J.; Yang, L.; Han, X.; Li, Y. Perceived discrimination and life satisfaction of elderly Chinese People: The chain mediating effects of national identity and sense of Community. *Front. Psychol.* **2018**, *9*, 2572. [CrossRef]
28. Redman, T.; Snape, E. The consequences of perceived age discrimination amongst older police officers: Is social support a buffer? *Br. J. Manag.* **2006**, *17*, 167–175. [CrossRef]
29. Levy, B. Stereotype embodiment: A psychosocial approach to aging. *Curr. Direct. Psychol. Sci.* **2009**, *18*, 332–336. [CrossRef]
30. Levy, B.R.; Slade, M.D.; Chang, E.-S.; Kannoth, S.; Wang, S.-Y. Ageism amplifies cost and prevalence of health conditions. *Gerontologist* **2020**, *60*, 174–181. [CrossRef]
31. King, S.P.; Bryant, F.B. The Workplace Intergenerational Climate Scale (WICS): A self-report instrument measuring ageism in the workplace. *J. Organ. Behav.* **2017**, *38*, 124–151. [CrossRef]
32. Rich, B.L.; Lepine, J.A.; Crawford, E.R. Job engagement: Antecedents and effects on job performance. *Acad. Manag. J.* **2010**, *53*, 617–635. [CrossRef]
33. Kahn, W.A. Psychological conditions of personal engagement and disengagement at work. *Acad. Manag. J.* **1990**, *33*, 692–724.
34. Blatný, M.; Květon, P.; Jelínek, M.; Šolcová, I.; Zábrodská, K.; Mudrák, J.; Machovcová, K. The influence of personality traits on life satisfaction through work engagement and job satisfaction among academic faculty members. *Studia Psychol.* **2018**, *60*, 274–286. [CrossRef]
35. Liu, T.; Zeng, X.; Chen, M.; Lan, T. The harder you work, the higher the satisfaction with your life? The influence of police work on life satisfaction: A moderation mediation model. *Front. Psychol.* **2019**, *10*, 826. [CrossRef]
36. Vorina, A. The relationship between satisfaction with life and employee engagement. *J. Process Manag. New Technol. Inter.* **2013**, *1*, 77–81. [CrossRef]

37. Diener, E.D.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The satisfaction with life scale. *J. Person. Assess.* **1985**, *49*, 71–75. [CrossRef]
38. Marchiondo, L.A.; Gonzales, E.; Ran, S. Development and validation of the workplace age discrimination scale. *J. Bus. Psychol.* **2016**, *31*, 493–513. [CrossRef]
39. Bal, P.M.; De Lange, A.H.; Van Der Heijden, B.; Zacher, H.; Oderkerk, F.A.; Otten, S. Young at heart, old at work? Relations between age, (meta) stereotypes, self-categorization, and retirement attitudes. *J. Vocat. Behav.* **2015**, *91*, 35–45. [CrossRef]
40. Hayes, A.F.; Cai, L. Using heteroskedasticity-consistent standard errors in OLS regression: An introduction and software implementation. *Behav. Res. Methods* **2007**, *39*, 709–722. [CrossRef]

International Journal of
Environmental Research and Public Health

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Protective Factors and Coping Styles Associated with Quality of Life during the COVID-19 Pandemic: A Comparison of Hospital or Care Institution and Private Practice Nurses

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Abstract: In France, nurses work either in hospitals and care institutions or in private practice, following physicians' prescriptions and taking care of patients at their homes. During the COVID-19 pandemic, these populations of nurses were exposed to numerous sources of stress. The main objective of the present study was to identify the protective factors they mobilized to face the crisis and how these factors contributed to sustaining their quality of life (QoL). A cross-sectional study was conducted to answer these questions. Overall, 9898 French nurses participated in the study, providing demographic information and filling out QoL (WHOQOL-BREF), perceived stress (PSS-14), resilience (CD-RISC), social support (MSPSS), and coping style (BRIEF-COPE) questionnaires. The results revealed very few differences between the two groups of nurses, which is surprising given the drastically different contexts in which they practice. Social support and two coping strategies (positive reframing and acceptance) were associated with a high QoL, whereas perceived stress and four coping strategies (denial, blaming self, substance use, and behavioral disengagement) were associated with poor QoL. In the light of these results, we recommended promoting social support and coping strategies to help nurses cope during the pandemic.

Keywords: nurses; quality of life; protective factors; coping strategies; type of practice; COVID-19

Citation: Jubin, J.; Delmas, P.; Gilles, I.; Oulevey Bachmann, A.; Ortoleva Bucher, C. Protective Factors and Coping Styles Associated with Quality of Life during the COVID-19 Pandemic: A Comparison of Hospital or Care Institution and Private Practice Nurses. *IJERPH* **2022**, *19*, 7112. https://doi.org/10.3390/ijerph19127112

Academic Editors: V. K. Kumar, Jasmin Tahmaseb-McConatha and Paul B. Tchounwou

Received: 13 April 2022
Accepted: 8 June 2022
Published: 10 June 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

The COVID-19 pandemic appeared in China in the fall of 2019 and has since spread worldwide [1]. In February 2021, when the third wave occurred, the virus had infected hundreds of millions of people and millions had died [2,3]. Moreover, numerous severe cases led to hospitalizations, putting the healthcare system and professionals under heavy pressure over a prolonged period of time [4].

Nurses have been among the most sought-after healthcare workers during the pandemic. During the different waves of COVID-19, they faced death, uncertainty, and work overload every day [4]. Such circumstances are likely to elicit stress, depressive symptoms, insomnia, and anxiety [5,6]. In turn, stress can lead to cognitive overload that can result in errors at work [7,8] and feelings of a lower quality of life (QoL), which is a strong correlate of nurses' engagement in dire contexts [9–11]. QoL is defined by the World Health Organization as 'an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards, and concerns [12]. This definition highlights the multi-dimensionality of the QoL concept that articulates four broad domains: physical health, psychological wellbeing,

social relationships, and environment. During the COVID-19 crisis, QoL was found to be associated with the use of adaptive strategies, particularly, resilience and coping [13,14]. QoL is thus a key indicator of an individual's well-being or life experiences during crises and it allows us to understand how nurses adapt to crises [15].

Nurses' QoL has been extensively explored during the COVID-19 pandemic [16]. However, most researchers have adopted a 'pathogenic' perspective [17], focusing on risk factors that impair health [18,19]. Such a pathogenic approach is limited because it tends to categorize individuals as sick or healthy and considers that disease prevention consists solely in avoiding or minimizing risk factors [20]. Hence, this approach does not necessarily provide nurses with tools to anticipate or cope with crises such as a pandemic. Thus, identifying protective factors seems to be a more efficient strategy to allow crisis anticipation and provide nurses with actionable resources, particularly when the sources of stress cannot be avoided. Thus, in the present study, we adopted a salutogenic approach, which aims at identifying factors that protect one's QoL and health [17]. In the context of the COVID-19 pandemic and its duration, investigating which protective factors might reinforce nurses' ability to deal with stress is of paramount importance. Salutogenic-oriented studies could help us understand how to maintain or improve nurses' QoL and health. Protective factors are relevant to guiding the development of interventions aimed at educating nurses to help them cope with prolonged a crisis [17,21,22].

Nevertheless, investigators have taken little interest in identifying protective factors. We identified three key resources to help nurses cope with stress during the pandemic. First is resilience, which reflects the ability of an individual to face the difficulties of life and bounce back after a traumatic event [23,24]. Resilience has been found to mediate the association between sources of stress and psychological distress during COVID-19, and several studies recommend training nurses to become resilient to prepare them for crises [5,25,26]. The second is social support, which measures the psychological and material support provided by an individual's entourage [27,28]. Lastly, the third, is coping strategies that individuals use to react and adapt to stressful situations [29]. Maladaptive coping during the pandemic has been shown to be associated with poor outcomes [6]. On the other hand, several studies point to the conjoint effect of resilience, social support, and coping strategies [26]. For example, resilience combined with other adaptive coping strategies has been shown to help manage stress and sustain personal growth [30]. To our knowledge, no study has explored the role of these factors in maintaining nurses' QoL. Therefore, the main objective of this study was to identify which protective factors were most helpful in maintaining the nurses' QoL during the pandemic in France.

Studying the protective role of resilience, social support, and coping strategies is important in France because nurses can work as employees at hospitals or care institutions (NHCIs) (e.g., retirement homes, care homes) or have a private independent practice (NPPs) where they provide care prescribed by a physician at patients' homes [31]. Both categories of nurses had to adapt to multiple sources of stress during the pandemic. A survey of French NPPs in 2020 found that around a third of the respondents did not have sufficient medical supplies to do their work, and half of them reported having to reorganize their work schedules and feeling stressed by their work during the pandemic [32]. However, to our knowledge, no study has investigated the similarities and differences in how these two groups reacted to the pandemic. Such knowledge would allow us to provide nurses with the necessary support to help them adapt to the specific sources of stress in their practice during crisis times. Thus, the second objective of the current study was to investigate the role of different protective factors in determining QoL specific to the two types of practice (NHCI and NPP) and across both groups.

2. Materials and Methods

2.1. Design and Population

This cross-sectional survey was conducted in France between February and March 2021 during the third COVID-19 wave. An invitation to participate in the study accompanied

by a link to the online self-administered questionnaire was sent to all registered nurses through the Ordre National des Infirmiers (French National Order of Nurses), followed by three weekly reminders. About 400,000 nurses are registered at the Ordre National des Infirmiers. Participation was anonymous and voluntary. The questionnaire was developed with Sphinx iQ2 v7.4.5.1. The data used in this study were part of a larger study focused on nurses' QoL and health-protecting factors in European countries [33].

2.2. Measures

All instruments used in the larger European study have been previously validated in English and French. The instruments were administered in French.

World Health Organization Quality of Life brief version (WHOQOL-BREF) [34]. It includes 26 items measuring physical, psychological, social, and environmental aspects of QoL using 5-points Likert scales. It also includes two items measuring overall QoL and state of health, respectively. The questionnaire, as well as its French translation, have proven to be reliable and valid [34,35]. As recommended by the authors of the questionnaire, mean scores were transformed to range from 0 (poor QoL) to 100 (good QoL). As we were interested in measuring QoL as a global construct, we used the mean score of all items. Cronbach's α revealed good internal consistency (.91) for the total QoL score.

Perceived Stress Scale (PSS-14) [36]. The French translation of this scale has been shown to have good psychometric properties [37]. It includes 14 items rated from 1 (low perceived stress) to 5 (high perceived stress) that we averaged to compute the perceived stress score. Cronbach's α revealed good internal consistency (.90) for the total stress score.

Connor-Davidson Resilience Scale (CD-RISC) [24]. It contains 10 items rated from 1 (low resilience) to 5 (high resilience) and has been translated and validated in French [38]. Cronbach's α revealed good internal consistency (.88) for the total resilience score.

Multidimensional Scale of Perceived Social Support (MSPSS) [28]. It measures perceived social support from family, friends, and significant other (i.e., any one person to whom the individual feels especially close) and consists of 12 items rated from 1 (low social support) to 7 (high support). The French translation exhibited good psychometric properties [39]. Cronbach's α revealed good internal consistency (.94) for the total social support score.

Coping Orientation to Problems Experienced Inventory (Brief-COPE) [40]. This scale measures individuals' favored coping strategies. It includes 14 dimensions, each measured by two items, that represent a coping strategy. The items are rated from 1 (rare use of that coping strategy) to 4 (frequent use). We calculated the mean of the two items for each dimension, and as Cronbach's alpha may underestimate the reliability of two-items scales, we evaluated their reliability by using the Spearman-Brown coefficient rs as recommended by Eisinga et al. [41].

The 14 dimensions and their brief descriptions are as follows: Active coping refers to individuals actively attempting to suppress their problems or their effects (rs = 0.56); Planning consists of devising steps to best manage problems (rs = 0.69); Seeking instrumental support refers to seeking advice or help (rs = 0.78); Seeking emotional support refers to seeking moral support or sympathy (rs = 0.73); Venting refers to expressing emotions about problems (rs = 0.71); Positive reframing involves reassessing problem situations as positive (rs = 0.77); Acceptance is acknowledging the existence of problems (rs = 0.69); Denial is refusing to acknowledge the existence of problems (rs = 0.60); Self-blame is reproaching oneself for problems (rs = 0.56); Humor is not taking problems seriously (rs = 0.75); Religion is seeking solace in religious beliefs (rs = 0.84); Self-distraction is diverting one's attention away from problems by focusing on something else (rs = 0.36); Substance use is escaping reality by consuming alcohol or drugs (rs = 0.94); Behavioral disengagement is abandoning goals prevented by problems (rs = 0.62) [42]. The French translation showed acceptable psychometric properties [42].

Sociodemographic Variables. Participants were asked to indicate their gender (male, female, 'I define myself otherwise'), age category (18–29 years old, 30–39, 40–49, and 50 or more), marital status (married, single, other), and having children (yes, no). The question

on 'marital status other' was open-ended, and most who responded indicated they were divorced (73.3%). Other questions asked were as follows: how long they have had their nursing diploma (less than 5 years, 5 to 10 years, or more than 10 years); if they had been reassigned to another service other than their usual one during the pandemic (yes, no); if at any point, they had been exposed to COVID-19 during their work (direct exposure: worked in a COVID-specific unit; indirect exposure: worked in a non-COVID-specific unit but that they received some COVID patients; and no exposure: no COVID patient was admitted to the unit); and whether they were engaged in private practice (NPPs) or a hospital/institutional care setting (NHCIs).

2.3. Data Analysis

All variables were treated as continuous except for sociodemographic variables that were treated either as dichotomized variables or as dummy variables (more than two categories). Descriptive analyses were first used to describe the sample and independent samples *t*-tests and Chi-square tests of independence were used to compare the two groups of nurses (NHCIs vs. NPPs). We also computed Pearson's correlations and, after checking for linearity and normality assumptions, we conducted multiple linear regressions with QoL as the outcome variable: on (a) the full sample, and (b) stratified by the type of practice samples. We checked for multicollinearity among the predictive variables using the variance inflation factor (VIF) index, which revealed no problematic collinearity (all VIFs < 3) among the predictor variables [43]. As our sample was very large, we used listwise deletion for handling missing values and we lowered the significance threshold to 0.005 to minimize type I error [44]. All analyses were performed using R 4.1.1.

3. Results

3.1. Descriptive Characteristics

A total of 9898 nurses completed the questionnaire, with a response rate of about 2.5%. Participants' characteristics are shown in Table 1. Overall, 85.1% of respondents were women, 14.0% were 18 to 29 years old, 26.4% were 30 to 39, 30.7% were 40 to 49, and 28.1% were 50 and more. Concerning work practice, 55.4% were NHCIs, 39.0% were NPPs, and 5.6% were both. This last group was included in the general analyses but, because of its small size (n = 553) compared to the others, it was not included in the stratified analyses.

Table 1. Descriptive characteristics for the whole sample and both types of practice.

	All (n = 9898)	NHCI (n = 5485)	NPP (n = 3860)	p-Values
Sociodemographic variables	Frequency	Frequency	Frequency	
Gender: Men	14.7%	14.0%	15.5%	
Gender: Women	85.1%	85.7%	84.3%	0.136
Gender: Describes otherwise	0.1%	0.1%	0.1%	
Age: 18–29	14.0%	20.2%	4.5%	
Age: 30–39	26.4%	27.7%	25.0%	<0.001
Age: 40–49	30.7%	26.9%	36.7%	
Age: 50 or greater	28.1%	24.6%	32.9%	
Marital situation: Single	20.1%	21.5%	17.1%	
Marital situation: Married	76.0%	74.8%	78.8%	<0.001
Marital situation: Other	3.7%	3.5%	3.9%	
Having Children: Yes	70.1%	63.6%	80.6%	<0.001
Time since diploma: less than 5 years	14.3%	21.3%	3.5%	
Time since diploma: 5–10 years	19.1%	21.6%	15.3%	<0.001
Time since diploma: more than 10 years	66.3%	56.8%	80.9%	
COVID-19-related variables	Frequency	Frequency	Frequency	
Exposure: None	20.0%	23.5%	14.9%	
Exposure: Indirect	50.1%	48.1%	53.4%	<0.001
Exposure: Direct	26.7%	28.0%	23.9%	
Reassignment: Yes	25.2%	33.2%	11.9%	<0.001

Table 1. *Cont.*

	All (n = 9898)	NHCI (n = 5485)	NPP (n = 3860)	p-Values	
Main independent variables	Mean (SD)	Mean (SD)	Mean (SD)		Cohen's d
Quality of Life	59.5 (14.8)	59.9 (14.7)	59.0 (15.0)	0.006	0.06
Perceived Stress	3.1 (0.6)	3.1 (0.6)	3.1 (0.6)	0.711	0.01
Social Support	5.4 (1.2)	5.4 (1.2)	5.3 (1.3)	<0.001	0.13
Resilience	3.6 (0.7)	3.5 (0.7)	3.6 (0.7)	<0.001	0.14
Copings styles variables	Mean (SD)	Mean (SD)	Mean (SD)		
Active Coping	2.72 (0.67)	2.70 (0.67)	2.75 (0.67)	<0.001	0.08
Planning	2.67 (0.73)	2.65 (0.72)	2.71 (0.73)	<0.001	0.08
Seeking Instrumental Support	2.35 (0.77)	2.40 (0.76)	2.28 (0.78)	<0.001	0.16
Seeking Emotional Support	2.35 (0.75)	2.40 (0.75)	2.27 (0.75)	<0.001	0.17
Venting	2.46 (0.78)	2.49 (0.76)	2.41 (0.79)	<0.001	0.10
Positive Reframing	2.70 (0.77)	2.66 (0.77)	2.75 (0.78)	<0.001	0.12
Acceptance	2.62 (0.75)	2.59 (0.74)	2.66 (0.75)	<0.001	0.09
Denial	1.49 (0.63)	1.48 (0.62)	1.51 (0.64)	0.048	0.04
Self-Blame	2.24 (0.67)	2.25 (0.68)	2.22 (0.67)	0.038	0.04
Humor	1.91 (0.76)	1.89 (0.76)	1.94 (0.76)	0.002	0.07
Religion	1.53 (0.80)	1.56 (0.81)	1.48 (0.76)	<0.001	0.10
Self-distraction	2.62 (0.70)	2.63 (0.69)	2.59 (0.71)	0.009	0.06
Substance Use	1.36 (0.63)	1.34 (0.61)	1.37 (0.63)	0.027	0.05
Behavioral Disengagement	1.46 (0.59)	1.49 (0.61)	1.43 (0.57)	<0.001	0.12

Remark: some nurses who participated in the study had a mixed practice alternating between hospital/care institution and private work. They were included in the general analyses but, because of how few they were in number (n = 553) compared to the other two categories, they were not included in the stratified analyses. NHCI: nurses working at hospitals or care institutions; NPP: nurses in private practice.

Moreover, 26.7% of the respondents had worked in COVID-19-specific units, 50.1% had worked in facilities not initially dedicated to COVID-19 but that were temporarily transformed to receive COVID-19 patients, and 20.0% had only worked in units that never received COVID-19 patients. Finally, 25.2% of the participants had been reassigned to another service than their usual one at least once since the beginning of the pandemic.

Most coping strategies were reported to be used almost equally often (mean scores ranged between 2.2 and 2.7; SD ranged from 0.67 to 0.78), except for denial, humor, religion, substance use, and behavioral disengagement, which participants used less often (means ranged between 1.3 and 1.9 and SDs ranged between 0.59 and 0.80).

3.2. Analyses

The Chi-square test of independence (Table 1) conducted on the two samples revealed that NHCIs were generally younger ($\chi^2(3) = 538.75$, $p < 0.001$) and had had their diploma for a shorter time than NPPs had ($\chi^2(2) = 753.33$, $p < 0.001$). NHCI were also less frequently exposed indirectly to COVID-19, but more frequently exposed directly ($\chi^2(2) = 98.85$, $p < 0.001$).

Independent sample t-tests showed that NHCIs tended to receive more social support (t = 6.07, $p < 0.001$, $d = 0.13$) and were less resilient (t = −6.60, $p < 0.001$, $d = 0.14$) than NPPs, though effect sizes were very small. Moreover, the NHCIs reported seeking instrumental (t = 7.53, $p < 0.001$, $d = 0.16$) and emotional (t = 7.95, $p < 0.001$, $d = 0.17$) support, venting (t = 4.71, $p < 0.001$, $d = 0.10$), turning to religion (t = 4.85, $p < 0.001$, $d = 0.10$), and exhibiting behavioral disengagement (t = 5.58, $p < 0.001$, $d = 0.12$) more often than NPPs. On the contrary, NHCIs used active coping (t = −3.57, $p < 0.001$, $d = 0.08$), planning (t = −3.58, $p < 0.001$, $d = 0.08$), positive reframing (t = −5.85, $p < 0.001$, $d = 0.12$), and acceptance (t = −4.46, $p < 0.001$, $d = 0.09$) less often than NPPs.

Pearson's correlations among the variables are provided in Table 2. The strongest correlations were between QoL and perceived stress ($r = -0.69$), planning and active coping ($r = 0.65$), seeking instrumental and emotional support ($r = 0.61$), and seeking instrumental support and venting ($r = 0.60$). All other rs were below 0.60. With a sample size as large as 9898, any correlation larger than 0.04 would be significant at $p < 0.0001$. It is thus not

surprising that almost all correlations were statistically significant. Consequently, the correlations were not interpreted based on obtained *p*-values alone.

Table 2. Pearson's correlations among all variables for the full sample.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.	17.	18.
1. Quality of Life	-																	
2. Perceived Stress	**−0.69**	-																
3. Social Support	**0.44**	**−0.22**	-															
4. Resilience	**0.45**	**−0.43**	**0.24**	-														
5. Active Coping	**0.35**	**−0.27**	**0.20**	**0.48**	-													
6. Planning	**0.30**	**−0.20**	**0.20**	**0.41**	**0.65**	-												
7. Seeking Instrumental Support	**0.17**	0.01	**0.39**	**0.05**	**0.23**	**0.24**	-											
8. Seeking Emotional Support	**−0.06**	**0.21**	**0.23**	**−0.14**	**0.06**	**0.11**	**0.61**	-										
9. Venting	**0.26**	**−0.09**	**0.38**	**0.19**	**0.29**	**0.27**	**0.60**	**0.39**	-									
10. Positive Reframing	**0.50**	**−0.42**	**0.26**	**0.56**	**0.46**	**0.45**	**0.17**	**−0.03**	**0.25**	-								
11. Acceptance	**0.44**	**−0.40**	**0.18**	**0.44**	**0.39**	**0.38**	**0.09**	**−0.09**	**0.19**	**0.52**	-							
12. Denial	**−0.27**	**0.26**	**−0.10**	**−0.15**	**−0.07**	**−0.08**	0.01	**0.12**	**−0.07**	**−0.15**	**−0.24**	-						
13. Self-Blame	**−0.30**	**0.30**	**−0.13**	**−0.26**	**−0.06**	0.00	**0.10**	**0.23**	−0.01	**−0.20**	**−0.11**	**0.20**	-					
14. Humor	**0.35**	**−0.35**	**0.17**	**0.46**	**0.26**	**0.25**	**0.08**	**−0.08**	**0.16**	**0.48**	**0.37**	**−0.10**	**−0.10**	-				
15. Religion	**0.06**	0.00	**0.05**	**0.06**	**0.11**	**0.10**	**0.12**	**0.09**	**0.12**	**0.17**	**0.08**	**0.05**	−0.01	**0.05**	-			
16. Self-Distraction	**0.05**	0.00	0.02	**0.13**	**0.20**	**0.15**	**0.14**	**0.17**	**0.12**	**0.14**	**0.13**	**0.07**	**0.15**	**0.10**	**0.10**	-		
17. Substance Use	**−0.25**	**0.23**	**−0.13**	**−0.15**	**−0.12**	**−0.12**	**−0.05**	**0.09**	**−0.06**	**−0.17**	**−0.15**	**0.14**	**0.15**	**−0.06**	−0.02	**0.04**	-	
18. Behavioral Disengagement	**−0.42**	**0.39**	**−0.24**	**−0.38**	**−0.36**	**−0.31**	**−0.10**	**0.09**	**−0.17**	**−0.36**	**−0.31**	**0.32**	**0.24**	**−0.21**	0.00	−0.01	**0.21**	-

Variables 5 to 18 are the dimensions measured by the Brief COPE Inventory. Bold font: $p < 0.0001$.

3.3. Regression Analysis

We performed multiple linear regression analyses, first on the full sample and then on each subsample (type of practice). In each analysis, QoL was the outcome variable, and the predictors were perceived stress, social support, resilience, coping styles, exposure to COVID-19, reassignment during the pandemic, and sociodemographic variables (Table 3). Adjusted R^2 values ranged from 0.62 to 0.63 in the three analyses.

The analyses revealed that perceived stress was associated with QoL in the full sample (β = −0.49, 95% CI: [−0.51, −0.48]), and in the NHCI and NPPs samples (β's = −0.49 and −0.50, respectively): Respondents reporting greater perceived stress also reported lower quality of life. Social support was positively associated with QoL in all analyses (β's ranged between 0.20 and 0.21, $p < 0.005$): the more respondents reported having social support, the higher their QoL. Lastly, resilience was not significantly associated with QoL (β's ranged between 0.01 and 0.02, $p > 0.005$).

Table 3. Association between variables and quality of life.

	All (*n* = 8469)		NHCI (*n* = 4930)		NPP (*n* = 3078)	
	β	95% CI	*β*	95% CI	*β*	95% CI
Main independent variables						
Perceived Stress	−0.49 *	[−0.51, −0.48]	−0.49 *	[−0.51, −0.47]	−0.50 *	[−0.52, −0.47]
Social Support	0.21 *	[0.19, 0.22]	0.21 *	[0.19, 0.23]	0.20 *	[0.18, 0.23]
Resilience	0.02	[0.00, 0.04]	0.02	[0.00, 0.05]	0.01	[−0.02, 0.05]
Coping strategies						
Active Coping	0.03 *	[0.01, 0.05]	0.04 *	[0.02, 0.07]	0.01	[−0.02, 0.04]
Planning	0.02	[0.00, 0.03]	0.02	[−0.01, 0.04]	0.02	[−0.01, 0.05]
Seeking Instrumental Support	0.02	[0.00, 0.04]	0.02	[0.00, 0.05]	0.02	[−0.01, 0.06]
Seeking Emotional Support	−0.01	[−0.03, 0.01]	0.00	[−0.03, 0.02]	−0.01	[−0.04, 0.02]
Venting	0.04 *	[0.02, 0.06]	0.03 *	[0.01, 0.06]	0.05 *	[0.02, 0.07]
Positive Reframing	0.09 *	[0.08, 0.11]	0.08 *	[0.05, 0.10]	0.12 *	[0.09, 0.15]
Accepance	0.08 *	[0.06, 0.09]	0.08 *	[0.06, 0.11]	0.06 *	[0.03, 0.09]
Denial	−0.04 *	[−0.05, −0.02]	−0.03 *	[−0.05, −0.01]	−0.04 *	[−0.07, −0.02]
Self-Blame	−0.07 *	[−0.09, −0.06]	−0.08 *	[−0.10, −0.06]	−0.06 *	[−0.09, −0.04]
Humor	0.02	[0.00, 0.03]	0.02	[0.00, 0.04]	0.01	[−0.02, 0.04]

Table 3. *Cont.*

	All (n = 8469)		NHCI (n = 4930)		NPP (n = 3078)	
	β	95% CI	β	95% CI	β	95% CI
Religion	0.02	[0.00, 0.03]	0.01	[−0.01, 0.02]	0.02	[0.00, 0.05]
Self-distraction	0.02	[0.00, 0.03]	0.02	[0.00, 0.04]	0.01	[−0.01, 0.03]
Substance Use	−0.04 *	[−0.05, −0.02]	−0.03 *	[−0.05, −0.01]	−0.04 *	[−0.06, −0.01]
Behavioral disengagement	−0.05 *	[−0.07, −0.04]	−0.05 *	[−0.07, −0.03]	−0.06 *	[−0.09, −0.04]
Sociodemographic variables						
Gender: Woman	0.01	[0.00, 0.02]	0.01	[0.00, 0.03]	0.00	[−0.02, 0.02]
Gender: Describes otherwise	0.00	[−0.01, 0.01]	0.00	[−0.01, 0.02]	−0.01	[−0.03, 0.01]
Age: 30–39	−0.07 *	[−0.09, −0.04]	−0.07 *	[−0.09, −0.04]	−0.05	[−0.10, 0.01]
Age: 40–49	−0.10 *	[−0.13, −0.07]	−0.10 *	[−0.13, −0.06]	−0.08	[−0.15, −0.02]
Age: 50+	−0.10 *	[−0.13, −0.07]	−0.10 *	[−0.13, −0.07]	−0.09 *	[−0.15, −0.03]
Marital situation: Married	0.05 *	[0.04, 0.07]	0.06 *	[0.04, 0.08]	0.04	[0.01, 0.06]
Marital situation: Other	0.01	[−0.01, 0.02]	0.01	[−0.01, 0.02]	0.01	[−0.01, 0.04]
Having Children: Yes	−0.01	[−0.03, 0.01]	−0.02	[−0.04, 0.00]	0.00	[−0.02, 0.03]
Time since diploma: 5–10 years	0.01	[−0.01, 0.03]	0.02	[0.00, 0.05]	−0.01	[−0.06, 0.03]
Time since diploma: 10+ years	0.04 *	[0.02, 0.06]	0.06 *	[0.03, 0.09]	0.00	[−0.05, 0.05]
COVID-19-related variables						
Exposure: Indirect	−0.01	[−0.03, 0.00]	−0.02	[−0.04, 0.01]	−0.01	[−0.04, 0.02]
Exposure: Direct	−0.02	[−0.03, 0.00]	−0.01	[−0.04, 0.01]	−0.03	[−0.06, 0.00]
Reassignment: Yes	0.00	[−0.02, 0.01]	−0.01	[−0.03, 0.01]	−0.01	[−0.04, 0.01]
Adjusted R^2	**0.62**		**0.62**		**0.63**	

*: $p < 0.005$; Remark: some nurses who participated in the study had a mixed practice alternating between hospital/care institution and private work. They were included in the general analyses, but because of how few they were in number (n = 553) compared to the others, they were excluded from the stratified analyses. NHCI: nurses working at hospitals or care institutions; NPP: nurses in private practice; CI: confidence interval.

Higher level of coping-oriented venting (β's ranged between 0.03 and 0.05, $p < 0.005$ in the three analyses), as well as active coping (β's ranged between 0.01 [NHCI] and 0.04 [full sample], $p < 0.005$, positive reframing (β's ranged between 0.08 and 0.12, $p < 0.005$ in the three analyses, and acceptance (β's ranged between 0.06 and 0.08, $p < 0.005$), were associated with higher levels of QoL. Higher levels of coping oriented toward denial (β's ranged between −0.04 and −0.03, $p < 0.005$), blaming one-self (β's ranged between −0.08 and −0.06, $p < 0.005$), substance use (β's ranged between −0.04 and −0.03, $p < 0.005$), and behavioral disengagement (β's ranged between −0.05 and −0.06, $p < 0.005$ were associated with lower levels of QoL.

Direct and indirect exposures to COVID-19 compared with no exposure were not associated with QoL (β's ranged between −0.03 and −0.01, $p > 0.005$). Neither was reassignment during the pandemic (β's ranged between −0.01 and 0.00, $p > 0.005$). Age was negatively associated with QoL, with older participants reporting lower QoL (β's ranged between −0.07 to −0.10 for age classes compared to 18–29 years old, $p < 0.005$ for NHCI and the full sample).

4. Discussion

In France, nurses work in hospitals or care institutions or have private practices [31]. Both groups of practitioners experienced many changes during the COVID-19 pandemic [4]. However, to our knowledge, no study has investigated which protective factors were mobilized by nurses in these different contexts to preserve their QoL during the pandemic. Thus, the goals of the present study were to identify protective factors used by nurses and assess if the protective factors used differed as a function of their type of practice (NHCI or NPP). The results suggest that, for both groups of nurses, high levels of perceived stress and problem-avoidant coping strategies were associated with poor QoL, whereas high social support and solution-oriented coping strategies were associated with good QoL. Surprisingly, resilience was not significantly associated with QoL in either practice.

Nurses' stress has been investigated in many studies [45]. Researchers have shown that even in ordinary times (i.e., without a pandemic) nurses face many sources of stress

resulting from their workload or patient-related issues, which affects their QoL [11,46,47]. The COVID-19 pandemic has exacerbated occupational stress because of the pressure put on care services and the central role nurses play in these services [48]. Prior research has shown that social support played an important role in protecting nurses from negative outcomes (e.g., burnout) caused by their exposure to multiple stress sources and helped them to preserve their QoL during the pandemic [49,50]. Our results confirmed these findings. The stress caused by high levels of uncertainty during the current crises may have increased the need for social support [51]. Undoubtedly, social support (providing assistance and information as needed) allows nurses to cope with both feelings of uncertainty and perceived stress [52,53]. The provision of social support at work can be problematic for NPPs because they cannot receive direct support from their institutions or colleagues. Their professional interactions are restricted to patients, their families, and the patients' physician [31], thus limiting the possibility of sharing experiences and asking for advice. On the contrary, NHCIs, who are included in teams, have more possibilities to receive support in the regular course of their work compared to NPPs. Our results support this assumption since NHCIs reported higher scores on social support than NPPs, though the effect size was very small. Nonetheless, the protective factors associated with QoL differed very little between the two types of nurses despite drastic differences in the nature of their practice. To our knowledge, no study has specifically compared NHCIs and NPPs on determinants of QoL. It is thus difficult to explain that, despite the difference in perception of social support, perception of QoL did not differ between nurses working in these different practice contexts. Nurses may have adapted differently in each work setting to the pandemic by relying on coping strategies appropriate to their own setting to maintain their QoL.

Our analyses confirmed the importance of coping strategies to preserve QoL, which is consistent with findings from previous research [29]. However, our study showed that NHCIs more frequently used coping strategies involving social relationships, such as seeking emotional and instrumental support or venting. NPPs used more individualistic coping strategies, such as active coping, planning, positive reframing, and acceptance. This indicates that both groups of nurses used some strategies to protect their QoL, but these strategies differed according to the professional context. This is what was proposed by Moos in his conceptual framework linking context and coping [54]. To him, cognitive appraisal of the stressful situation and coping responses are interdependent with, among others, an individual's environmental system (i.e., supra-personal and social climate factors, such as pressures arising from professional activities that threaten health). Although developed to understand coping patterns in everyday life, this observation could be valid in professional settings where individuals are exposed to numerous stress sources. Moreover, it is noteworthy that the two coping strategies that were the most strongly associated with a satisfying QoL were positive reframing and acceptance. These strategies focus on finding the positive aspects of stressful situations while still acknowledging the existence of negative events [55,56]. Focusing on positive affect generates positive emotions that, according to Fredrickson [57], lead to enhancing one's social, intellectual, and physical resources, all of which are durable and can be mobilized in other stressful situations. Hence, developing and encouraging the use of these strategies could help increase nurses' QoL. Additionally, negative coping strategies such as denial, blaming self, substance use, and behavioral disengagement were associated with low QoL. The use of these strategies reduces negative affect generated by stressful situations without addressing them [58]. Thus, the continued use of negative coping strategies is likely to lead to an accumulation of problems that might eventually seem insurmountable, which in turn, can elicit more avoidant behaviors, creating a vicious circle [14,59]. Our finding that both NHCIs and NPPs seldom used these strategies indicates that most of them adapted well to their contexts by using healthy coping strategies.

Surprisingly, resilience was not significantly associated with QoL, a finding contrary to our expectations based on previous research [14,23,26]. It is possible that the inclusion of the coping strategies in the analyses masked the link between resilience and QoL since

resilience and coping tend to be closely associated [60,61]. The correlations we observed between resilience and some coping strategies, such as active coping, planning, positive reframing, acceptance, and humor, support this hypothesis. To assess this, a mediation analysis should be conducted. However, the present design using the Brief-COPE inventory, which assesses 14 coping strategies, does not lend itself well to such analysis. Another explanation could be that resilience has an indirect effect on QoL. Indeed, the relationship between resilience and QoL is not precisely defined [62], and QoL is a broad concept that includes both physical and psychological aspects [63]. Thus, resilience might not affect QoL when considered as a composite concept, but it might moderate the effect that crises may have on some of the facets of QoL.

QoL can be improved by working on strengthening social support and promoting problem-oriented coping strategies while discouraging problem-avoidant behaviors. Given the similarity of the associations between these variables and QoL for NHCIs and NPPs, such strategies could benefit both groups. Our findings support the development of primary prevention interventions aimed at all nurses. They also advocate applying salutogenic models in the healthcare system, such as Neuman's Systems Model, which considers protective factors and depicts their role as buffers against the stressors that individuals encounter [64,65]. Lastly, our results support the use of management policies and practices that foster social support to encourage and help nurses face the sources of stress they encounter rather than avoid them.

The main limitation of the present study was its cross-sectional nature, which did not allow for causal explanations. Moreover, some of the differences and regression coefficients we reported were of small magnitude, although statistically significant. Furthermore, NPPs were older on average and more experienced than NHCIs because, to work in private practice, nurses must have worked for at least two years at a hospital or care institution. Additionally, NPPs do not exist in all countries or might take different forms depending on local culture and legislation. Comparisons between the present study results and those found in other countries with different healthcare systems and organizations thus might be limited. As this study used self-reported measures and volunteer samples, our findings do not generalize to reflect the characteristics of non-respondents. Finally, the present study only investigated individual protective factors, but organizational and environmental factors might also play an important role in nurses' QoL [66,67]. It should not be inferred from the results of our study that nurses are solely responsible for protecting themselves from professional stress sources via the use of protective factors and coping strategies.

5. Conclusions

When exposure to sources of stress is unavoidable, individuals have no choice but to rely on protective factors and coping strategies to maintain their QoL. The present study showed that some of these factors and strategies were indeed strongly associated with QoL in a sample of French nurses during the COVID-19 pandemic, whether they worked at hospitals or care institutions or in private practice. Interventions targeted to help nurses seek more social support, and use acceptance and positive reframing strategies could help preserve or increase their QoL. Based on our results, experimental studies might be developed to assess the causality of the observed associations. Additionally, the identification of nurses' QoL protective factors should be expanded to organizational or environmental factors, other countries, and other domains of practice to develop recommendations specific to the context of nursing practice.

After the COVID-19 pandemic, the future will likely hold new challenges, such as natural disasters and new diseases. Again, nurses will have to face these challenges on the frontline. It is thus of paramount importance that measures are taken to help them protect their QoL during stressful events.

Author Contributions: Conceptualization, P.D., I.G., A.O.B. and C.O.B.; data curation, J.J.; formal analysis, J.J. and I.G.; investigation, J.J., P.D., I.G., A.O.B. and C.O.B.; methodology, P.D., I.G., A.O.B. and C.O.B.; project administration, C.O.B.; supervision, P.D., I.G., A.O.B. and C.O.B.; validation, P.D. and I.G.; visualization, J.J.; writing—original draft, J.J., P.D. and I.G.; writing—review and editing, J.J., P.D., I.G., A.O.B. and C.O.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical review and approval were waived for this study, because it was not subject to the French law on human research.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to the presence of health information.

Acknowledgments: The authors would like to thank the Ordre National des Infirmiers for their invaluable support in promoting of the study.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Jahangir, M.; Muheem, A.; Rizvi, M. Coronavirus (COVID-19): History, Current Knowledge and Pipeline Medications. *Int. J. Pharm. Pharmacol.* **2020**, *4*, 1–9. [CrossRef]
2. WHO Coronavirus (COVID-19) Dashboard. Available online: https://covid19.who.int (accessed on 6 December 2021).
3. COVID-19 Info Switzerland. Available online: https://www.corona-data.ch (accessed on 6 December 2021).
4. Shen, X.; Zou, X.; Zhong, X.; Yan, J.; Li, L. Psychological Stress of ICU Nurses in the Time of COVID-19. *Crit. Care* **2020**, *24*, 200. [CrossRef] [PubMed]
5. Stuijfzand, S.; Deforges, C.; Sandoz, V.; Sajin, C.-T.; Jaques, C.; Elmers, J.; Horsch, A. Psychological Impact of an Epidemic/Pandemic on the Mental Health of Healthcare Professionals: A Rapid Review. *BMC Public Health* **2020**, *20*, 1230. [CrossRef]
6. Preti, E.; Di Mattei, V.; Perego, G.; Ferrari, F.; Mazzetti, M.; Taranto, P.; Di Pierro, R.; Madeddu, F.; Calati, R. The Psychological Impact of Epidemic and Pandemic Outbreaks on Healthcare Workers: Rapid Review of the Evidence. *Curr. Psychiatry Rep.* **2020**, *22*, 43. [CrossRef]
7. Park, Y.-M.; Kim, S.Y. Impacts of Job Stress and Cognitive Failure on Patient Safety Incidents among Hospital Nurses. *Saf. Health Work.* **2013**, *4*, 210–215. [CrossRef]
8. Elfering, A.; Grebner, S.; Dudan, A. Job Characteristics in Nursing and Cognitive Failure at Work. *Saf. Health Work.* **2011**, *2*, 194–200. [CrossRef]
9. Aharon, A.A.; Madjar, B.; Kagan, I. Organizational Commitment and Quality of Life at Work among Public Health Nurses in Israel. *Public Health Nurs.* **2019**, *36*, 534–540. [CrossRef]
10. Karaaslan, A.; Aslan, M. The Relationship Between the Quality of Work and Organizational Commitment of Prison Nurses. *J. Nurs. Res.* **2019**, *27*, e25. [CrossRef]
11. Sarafis, P.; Rousaki, E.; Tsounis, A.; Malliarou, M.; Lahana, L.; Bamidis, P.; Niakas, D.; Papastavrou, E. The Impact of Occupational Stress on Nurses' Caring Behaviors and Their Health Related Quality of Life. *BMC Nurs.* **2016**, *15*, 56. [CrossRef]
12. WHOQOL Group. Development of the WHOQOL: Rationale and Current Status. *Int. J. Ment. Health* **1994**, *23*, 24–56. [CrossRef]
13. Keener, T.A.; Hall, K.; Wang, K.; Hulsey, T.; Piamjariyakul, U. Relationship of Quality of Life, Resilience, and Associated Factors Among Nursing Faculty During COVID-19. *Nurse Educ.* **2021**, *46*, 17–22. [CrossRef] [PubMed]
14. Li, W.-Q.; Yuan, P.; Sun, J.; Xu, M.-L.; Wang, Q.-X.; Ge, D.-D.; Jiang, M.-M.; Xing, L.-Q.; Du, W.-J.; Li, Q. Resilience, Coping Style, and COVID-19 Stress: Effects on the Quality of Life in Frontline Health Care Workers. *Psychol. Health Med.* **2021**, *27*, 312–324. [CrossRef] [PubMed]
15. Hawthorne, G.; Herrman, H.; Murphy, B. Interpreting the WHOQOL-Brèf: Preliminary Population Norms and Effect Sizes. *Soc. Indic. Res.* **2006**, *77*, 37–59. [CrossRef]
16. Kandula, U.R.; Wake, A.D. Assessment of Quality of Life Among Health Professionals During COVID-19: Review. *J. Multidiscip. Healthc.* **2021**, *14*, 3571–3585. [CrossRef]
17. Antonovsky, A. The Salutogenic Perspective: Toward a New View of Health and Illness. *Advances* **1987**, *4*, 47–55.
18. Lai, J.; Ma, S.; Wang, Y.; Cai, Z.; Hu, J.; Wei, N.; Wu, J.; Du, H.; Chen, T.; Li, R.; et al. Factors Associated with Mental Health Outcomes among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw. Open* **2020**, *3*, e203976. [CrossRef]
19. Pappa, S.; Ntella, V.; Giannakas, T.; Giannakoulis, V.G.; Papoutsi, E.; Katsaounou, P. Prevalence of Depression, Anxiety, and Insomnia among Healthcare Workers during the COVID-19 Pandemic: A Systematic Review and Meta-Analysis. *Brain Behav. Immun.* **2020**, *88*, 901–907. [CrossRef]
20. Antonovsky, A. The Salutogenic Model as a Theory to Guide Health Promotion. *Health Promot. Int.* **1996**, *11*, 11–18. [CrossRef]

21. Mittelmark, M.B.; Bauer, G.F. The Meaning of Salutogenesis. In *The Handbook of Salutogenesis*; Mittelmark, M.B., Sagy, S., Eriksson, M., Bauer, G.F., Pelikan, J.M., Lindström, B., Espnes, G.A., Eds.; Springer: Cham, Switzerland, 2017.
22. Antonovsky, A. Perceiving the World as Coherent. In *Health, Stress, and Coping: New Perspectives on Mental and Physical Well-Being*; Jossey-Bass Inc., Publishers: San Francisco, CA, USA, 1979; pp. 123–159.
23. Peñacoba, C.; Catala, P.; Velasco, L.; Carmona-Monge, F.J.; Garcia-Hedrera, F.J.; Gil-Almagro, F. Stress and Quality of Life of Intensive Care Nurses during the COVID-19 Pandemic: Self-Efficacy and Resilience as Resources. *Nurs. Crit. Care* **2021**, *26*, 493–500. [CrossRef]
24. Campbell-Sills, L.; Stein, M.B. Psychometric Analysis and Refinement of the Connor-Davidson Resilience Scale (CD-RISC): Validation of a 10-Item Measure of Resilience. *J. Trauma. Stress* **2007**, *20*, 1019–1028. [CrossRef]
25. Lorente, L.; Vera, M.; Peiró, T. Nurses' Stressors and Psychological Distress during the COVID-19 Pandemic: The Mediating Role of Coping and Resilience. *J. Adv. Nurs.* **2021**, *77*, 1335–1344. [CrossRef] [PubMed]
26. De Kock, J.H.; Latham, H.A.; Leslie, S.J.; Grindle, M.; Munoz, S.-A.; Ellis, L.; Polson, R.; O'Malley, C.M. A Rapid Review of the Impact of COVID-19 on the Mental Health of Healthcare Workers: Implications for Supporting Psychological Well-Being. *BMC Public Health* **2021**, *21*, 104. [CrossRef] [PubMed]
27. Szkody, E.; Stearns, M.; Stanhope, L.; McKinney, C. Stress-Buffering Role of Social Support during COVID-19. *Fam. Process* **2021**, *60*, 1002–1015. [CrossRef] [PubMed]
28. Zimet, G.D.; Powell, S.S.; Farley, G.K.; Werkman, S.; Berkoff, K.A. Psychometric Characteristics of the Multidimensional Scale of Perceived Social Support. *J. Pers. Assess.* **1990**, *55*, 610–617. [CrossRef]
29. McFadden, P.; Ross, J.; Moriarty, J.; Mallett, J.; Schroder, H.; Ravalier, J.; Manthorpe, J.; Currie, D.; Harron, J.; Gillen, P. The Role of Coping in the Wellbeing and Work-Related Quality of Life of UK Health and Social Care Workers during COVID-19. *Int. J. Environ. Res. Public Health* **2021**, *18*, 815. [CrossRef]
30. Finstad, G.L.; Giorgi, G.; Lulli, L.G.; Pandolfi, C.; Foti, G.; León-Perez, J.M.; Cantero-Sánchez, F.J.; Mucci, N. Resilience, Coping Strategies and Posttraumatic Growth in the Workplace Following COVID-19: A Narrative Review on the Positive Aspects of Trauma. *IJERPH* **2021**, *18*, 9453. [CrossRef]
31. Douguet, F.; Vilbrod, A. *Le Métier D'infirmière Libérale*; Seli Arslan: Paris, France, 2007.
32. Fabregas, B. Les Infirmiers Libéraux Expriment Leurs Ressentis Face à la Crise du COVID-19. Available online: https://www.infirmiers.com/votre-carriere/ide-liberale/exercice-liberal-infirmier-et-crise-covid-19-quels-enseignements.html (accessed on 18 May 2022).
33. Ortoleva Bucher, C.; Delmas, P.; Oulevey Bachmann, A.; Gilles, I. Stressors, Self-Reported Overall Health, Potential Protective Factors and the Workplace Well-Being of Nurses during the COVID-19 Pandemic in Switzerland: A Longitudinal Mixed-Methods Study Protocol. *BMJ Open* **2021**, *11*, e057021. [CrossRef]
34. Skevington, S.M.; Lotfy, M.; O'Connell, K.A. The World Health Organization's WHOQOL-BREF Quality of Life Assessment: Psychometric Properties and Results of the International Field Trial. A Report from the WHOQOL Group. *Qual. Life Res.* **2004**, *13*, 299–310. [CrossRef]
35. Leplège, A.; Debout, C. Mesure de la qualité de vie et science des soins infirmiers. *Rech. Soins Infirm.* **2007**, *88*, 18–24. [CrossRef]
36. Cohen, S.; Kamarck, T.; Mermelstein, R. A Global Measure of Perceived Stress. *J. Health Soc. Behav.* **1983**, *24*, 385–396. [CrossRef]
37. Lesage, F.X.; Berjot, S.; Deschamps, F. Psychometric Properties of the French Versions of the Perceived Stress Scale. *Int. J. Occup. Med. Environ. Health* **2012**, *25*, 178–184. [CrossRef] [PubMed]
38. Guihard, G.; Deumier, L.; Alliot-Licht, B.; Bouton-Kelly, L.; Michaut, C.; Quilliot, F. Psychometric Validation of the French Version of the Connor-Davidson Resilience Scale. *L'Encéphale* **2018**, *44*, 40–45. [CrossRef] [PubMed]
39. Denis, A.; Callahan, S.; Bouvard, M. Evaluation of the French Version of the Multidimensional Scale of Perceived Social Support during the Postpartum Period. *Matern. Child Health J.* **2015**, *19*, 1245–1251. [CrossRef] [PubMed]
40. Carver, C.S.; Scheier, M.F.; Weintraub, J.K. Assessing Coping Strategies: A Theoretically Based Approach. *J. Pers. Soc. Psychol.* **1989**, *56*, 267–283. [CrossRef] [PubMed]
41. Eisinga, R.; te Grotenhuis, M.; Pelzer, B. The Reliability of a Two-Item Scale: Pearson, Cronbach, or Spearman-Brown? *Int. J. Public Health* **2013**, *58*, 637–642. [CrossRef] [PubMed]
42. Muller, L.; Spitz, E. Multidimensional assessment of coping: Validation of the Brief COPE among French population. *Encephale* **2003**, *29*, 507–518.
43. Tabachnick, B.G.; Fidell, L.S.; Ullman, J.B. *Using Multivariate Statistics*, 7th ed.; Pearson: New York, NY, USA, 2019; ISBN 978-0-13-479054-1.
44. Benjamin, D.J.; Berger, J.O.; Johannesson, M.; Nosek, B.A.; Wagenmakers, E.-J.; Berk, R.; Bollen, K.A.; Brembs, B.; Brown, L.; Camerer, C.; et al. Redefine Statistical Significance. *Nat. Hum. Behav.* **2018**, *2*, 6–10. [CrossRef]
45. Okuhara, M.; Sato, K.; Kodama, Y. The Nurses' Occupational Stress Components and Outcomes, Findings from an Integrative Review. *Nurs. Open* **2021**, *8*, 2153–2174. [CrossRef]
46. Da Silva, A.M.; Guimarães, L.A.M. Occupational Stress and Quality of Life in Nursing. *Paidéia* **2016**, *26*, 63–70. [CrossRef]
47. Ortega-Galán, Á.M.; Ruiz-Fernández, M.D.; Lirola, M.-J.; Ramos-Pichardo, J.D.; Ibáñez-Masero, O.; Cabrera-Troya, J.; Salinas-Pérez, V.; Gómez-Beltrán, P.A.; Fernández-Martínez, E. Professional Quality of Life and Perceived Stress in Health Professionals before COVID-19 in Spain: Primary and Hospital Care. *Healthcare* **2020**, *8*, 484. [CrossRef]
48. Buheji, M.; Buhaid, N. Nursing Human Factor During COVID-19 Pandemic. *Nursing* **2020**, *10*, 12–24. [CrossRef]

49. Velando-Soriano, A.; Ortega-Campos, E.; Gómez-Urquiza, J.L.; Ramírez-Baena, L.; De La Fuente, E.I.; Cañadas-De La Fuente, G.A. Impact of Social Support in Preventing Burnout Syndrome in Nurses: A Systematic Review. *Jpn. J. Nurs. Sci.* **2020**, *17*, e12269. [CrossRef] [PubMed]
50. Fradelos, E.; Mpelegrinos, S.; Mparo, C.; Vassilopoulou, C.; Argyrou, P.; Tsironi, M.; Zyga, S.; Theofilou, P. Burnout Syndrome Impacts on Quality of Life in Nursing Professionals: The Contribution of Perceived Social Support. *Prog. Health Sci.* **2014**, *4*, 102–109.
51. Nelson, H.; Hubbard Murdoch, N.; Norman, K. The Role of Uncertainty in the Experiences of Nurses During the Covid-19 Pandemic: A Phenomenological Study. *Can. J. Nurs. Res.* **2021**, *53*, 124–133. [CrossRef] [PubMed]
52. Helgeson, V.S. Social Support and Quality of Life. *Qual. Life Res.* **2003**, *12*, 7. [CrossRef]
53. Usman, M.; Cheng, J.; Ghani, U.; Gul, H.; Shah, W.U. Social Support and Perceived Uncertainties during COVID-19: Consequences for Employees' Wellbeing. *Curr. Psychol.* 2021, *Online ahead of print*. [CrossRef]
54. Moos, R.H. Context and Coping: Toward a Unifying Conceptual Framework. *Am. J. Community Psychol.* **1984**, *12*, 5–36. [CrossRef]
55. Folkman, S.; Moskowitz, J.T. Positive Affect and the Other Side of Coping. *Am. Psychol.* **2000**, *55*, 647. [CrossRef]
56. Nowlan, J.S.; Wuthrich, V.M.; Rapee, R.M. Positive Reappraisal in Older Adults: A Systematic Literature Review. *Aging Ment. Health* **2015**, *19*, 475–484. [CrossRef]
57. Fredrickson, B.L. What Good Are Positive Emotions? *Rev. Gen. Psychol.* **1998**, *2*, 300–319. [CrossRef]
58. Shoss, M.K.; Hunter, E.M.; Penney, L.M. Avoiding the Issue: Disengagement Coping Style and the Personality–CWB Link. *Hum. Perform.* **2016**, *29*, 106–122. [CrossRef]
59. Carver, C.S.; Connor-Smith, J. Personality and Coping. *Annu. Rev. Psychol.* **2010**, *61*, 679–704. [CrossRef] [PubMed]
60. Gloria, C.T.; Steinhardt, M.A. Relationships Among Positive Emotions, Coping, Resilience and Mental Health. *Stress Health* **2016**, *32*, 145–156. [CrossRef] [PubMed]
61. Mayordomo, T.; Viguer, P.; Sales, A.; Satorres, E.; Meléndez, J.C. Resilience and Coping as Predictors of Well-Being in Adults. *J. Psychol.* **2016**, *150*, 809–821. [CrossRef] [PubMed]
62. Lawford, J.; Eiser, C. Exploring Links between the Concepts of Quality of Life and Resilience. *Pediatric Rehabil.* **2001**, *4*, 209–216. [CrossRef]
63. Felce, D.; Perry, J. Quality of Life: Its Definition and Measurement. *Res. Dev. Disabil.* **1995**, *16*, 51–74. [CrossRef]
64. Neuman, B.; Fawcett, J. *The Neuman Systems Model*, 5th ed.; Pearson Education: Boston, MA, USA, 2011.
65. Gigliotti, E. New Advances in the Use of Neuman's Lines of Defense and Resistance in Quantitative Research. *Nurs. Sci. Q.* **2012**, *25*, 336–340. [CrossRef]
66. Parker, D.F.; DeCotiis, T.A. Organizational Determinants of Job Stress. *Organ. Behav. Hum. Perform.* **1983**, *32*, 160–177. [CrossRef]
67. Picou, J.S.; Nicholls, K.; Guski, R. Environmental Stress and Health. In *International Encyclopedia of the Social & Behavioral Sciences*; Elsevier: Orlando, FL, USA, 2015; pp. 804–808, ISBN 978-0-08-097087-5.

International Journal of
Environmental Research and Public Health

MDPI

Article

More Prosocial, More Ephemeral? Exploring the Formation of a Social Entrepreneur's Exit Intention via Life Satisfaction

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Abstract: This study was designed to test if satisfaction with health and personal financial well-being mediates the relationship between prosocial motivations and exit intentions among social entrepreneurs. Using a sample of 317 social entrepreneurs, the partial least square structural equation modeling (PLS-SEM) revealed that prosocial motivation decreased the financial satisfaction of entrepreneurs, which increased their exit intentions. However, health satisfaction did not have a mediating effect on the relationship between prosocial motivation and exit intention. Moreover, adopting the multi-group analysis (MGA) technique, we found that the negative impact of prosocial motivation on financial satisfaction was stronger for males than for females, suggesting male entrepreneurs were more likely to experience lower financial satisfaction caused by prosocial motivation than female entrepreneurs. There was no evidence that gender moderated the relationship between prosocial motivation and health satisfaction.

Keywords: social entrepreneur; exit intention; prosocial motivation; life satisfaction; gender

Citation: Dong, J.; Wang, X.; Cao, X.; Higgins, D. More Prosocial, More Ephemeral? Exploring the Formation of a Social Entrepreneur's Exit Intention via Life Satisfaction. *IJERPH* **2022**, *19*, 6966. https://doi.org/10.3390/ijerph19126966

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 14 March 2022
Accepted: 5 June 2022
Published: 7 June 2022

1. Introduction

Why do most entrepreneurs end up unsuccessful in their businesses? Despite a large number of studies on entrepreneurial opportunities, entrepreneurial characteristics, and determinants of new emergent ventures in specific social and global contexts [1], scholars have argued that it is also crucial to explore the determinants of entrepreneurs' intentions to leave or terminate their ventures [2]. From another perspective, understanding what determines an entrepreneur's exit intention is important to understanding the nature of entrepreneurial success [3]. Moreover, compared to studies conducted on conventional or regular entrepreneurs, much less is known about the exit intentions of social entrepreneurs [4], and even less is known about the psychological antecedents of the exit intentions [2] or about the emotional processes that lead to the exit intentions [5].

Prosocial motivation, the core personality trait of social entrepreneurs, is a psychological antecedent that has been the subject of considerable research [6,7]. It differentiates from conventional or regular entrepreneurs [8] and drives entrepreneurs to have concern for others/the endeavor to help. However, extant studies on the relationship between prosocial motivation and entrepreneurs' exit intentions have reported contentious findings. Some investigators have suggested that social entrepreneurs develop an "attachment to their organizations" as a result of the process of helping others in their work, which, in turn, may emotionally impede their intention to exit [9–11]. However, some studies indicated that prosocial motivation may hinder the venture development of a viable firm or lead to its failure [12,13], thereby increasing a sense of failure and arousing the intention to exit [14]. Consequently, there are substantial gaps in our understanding of the relationship between prosocial motivation and the exit intentions of social entrepreneurs [15]; more in-depth explorations are needed.

According to Bolino and Grant [7], prosocial motivation has been mostly investigated as a personality trait that may trigger behaviors that are both positive (organizational citizenship behaviors) and negative (less engagement in task performance). However, its capacity to predict exit intentions can be quite limited [16–20]; its direct effects on behavioral outcomes have been questioned [20–22] and there is a need to examine if a mediating mechanism links prosocial motivation and exit intentions [17].

According to Carree and Verheul [23] and Lindblom, Lindblom, and Wechtler [20], entrepreneurship is much more than a 9-to-5 job; it can often be regarded as a 24/7 fulfilling lifestyle that leads to a situation where satisfaction with one's job and other life domains are intertwined [24]. Social entrepreneurs who devote themselves to more than regular entrepreneurial work likely spend much more time and energy helping others [7,25–27] than necessary [7,13,28]. Previous researchers have suggested that life satisfaction is a critical mediator between prosocial motivations and exit intentions among social entrepreneurs [20,29]. Thus, the central question raised by this study is: does life satisfaction mediate the relationship between prosocial motivation and exit intention?

A special report on social entrepreneurship [30] claims that social enterprises are more likely to be established by men, but longitudinally, the gender gap is not as significant as it was in the early stages. This implies that male entrepreneurs are more likely to quit social entrepreneurship than their female peers. However, research as to why more women entrepreneurs persist as social entrepreneurs is rare [31,32]. Based on the view of gender stereotypes [33,34], we explore the relevant effects of social entrepreneurs and gender.

This study contributes to the literature in three ways: First, responding to Tina, Foss, and Stefan [6], who suggested exploring the potential negative effects of prosocial motivation, especially regarding the entrepreneur's intention to sustain, this study can help address the debate on the relationship between a social entrepreneur's prosocial motivation and exit intention by examining if life satisfaction mediates this relationship [9,10,13]. Second, this study extends the discussion on gender differences in social entrepreneurship [35], especially how it moderates the effects of prosocial motivation on life satisfaction, facilitating the exit intentions of social entrepreneurs. Third, drawing on empirical data from a relatively large sample, we contribute to the scarce quantitative literature on social entrepreneurship [36,37].

2. Theoretical Background and Hypothesis Development

A hierarchical approach to personality assumes that personality traits (1) determine how we respond in various contexts, and (2) shape our behaviors [21,22]. A key assumption is that personality is hierarchically arranged [21,22]. At the top of the hierarchy are basic personality traits, which serve as the building blocks, shaping most of our behaviors [38]. At the bottom of the hierarchy are surface traits, which are more specific and have significant behavioral consequences. The basic personality traits, compared to the surface traits, are enduring dispositions that determine behaviors in a wider range of situations. Surface traits are context-specific and result in behaviors from interactions between basic traits and contextual elements [38–40]. Researchers, including Licata et al. [41], Brown et al. [42], and Prentice and King [43], argue that traits function hierarchically: basic personality traits serve at a deeper level, and provide a foundation for surface traits that function as mediators and relate more closely to individual behaviors.

Following the hierarchical approach to personality [21,22], prosocial motivation is regarded as a basic personality trait and it represents "a person's 'affective lens' (remains constant over the time) on the world" [7,44,45], determining a person's responses in various contexts [21,22]; in contrast, life satisfaction is viewed as a surface trait that connects prosocial motivation and exit intentions [20].

2.1. Prosocial Motivation and Exit Intention

Frequent heroic characterizations of social entrepreneurs have limited the foci of those who have fewer positive stories to tell [46–49]. Normally, social entrepreneurs and their

ventures encounter a range of unique challenges [50], uncertainties, and problems [51], resulting in entrepreneurial exits [6]. Lindblom, Lindblom, and Wechtler [20] and Pollack et al. [52] defined exit intention as "an entrepreneur's desire or goal, at some point in the future, to leave his or her venture." According to Renko [13], entrepreneurs with strong prosocial motivations are less likely to succeed in sustaining their businesses, compared with entrepreneurs who are mainly motivated by financial goals. This is because social entrepreneurs are characterized by pursuing a dual mission of economic and social value creation [53], inducing conflicting and competing logic [54–56]. Largely, social entrepreneurs need to combine their prosocial motivations with regular practices regarding for-profit firms [57–59] and foster inconsistent goals, norms, and values that may lead to contradictory prescriptions for actions [60]. This can cause tension [60], resulting in stronger exit intentions [6,61]. Nevertheless, few studies have investigated such underlying mechanisms. Responding to the calls for systemically exploring the "dark side" of prosocial motivation [7], this research investigates how prosocial motivation affects a social entrepreneur's intention to exit.

2.2. Life Satisfaction

As prior studies have suggested, there may be a key mediator between prosocial motivation and exit intention [7,13,17,28]. Since social entrepreneurship can consume one's time and even impair one's personal life [7,25–27], prosocial motivation may considerably undermine life satisfaction. Thus, social entrepreneurs may consider ceasing their work to regain their diminished life satisfaction, expediting their exit intentions [62,63]. However, empirical studies examining this relationship are rare [64].

Diener et al. [65] defined life satisfaction as a cognitive judgmental process through which an entrepreneur assesses his or her quality of life as a whole. For entrepreneurs, being satisfied with life indicates that they appreciate the progress they have made in achieving their life goals in both work and family domains [66,67]. The two-layer model suggested by Ferrer-I-Carbonell et al. [68] and Erdogan et al. [69] indicates that life satisfaction has two dimensions: financial satisfaction and health satisfaction.

2.3. Prosocial Motivation, Financial Satisfaction, and Exit Intention

Financial satisfaction can be defined as a cognitive evaluation of one's present financial situation [70]. According to the Wharton Center, NYU Stern, and the Fuqua School, all social entrepreneurs do well (financially) by doing good (socially) [58], although it is a critical challenge [58,71–73]. Previous research based on a survey in the United Kingdom provided evidence that social entrepreneurs considered securing financial capital (to develop their businesses) as a major challenge [74]. Largely, adequate income and financial sustainability are buffers against the anxiety and psychological strains of running social businesses [50,75]. According to relevant studies, entrepreneurs who suffer from psychological strains due to financial difficulties will have lower levels of financial satisfaction, especially when financial difficulties are perceived as a signal of entrepreneurial failure [76].

Empirical research generally supports the relationship between financial satisfaction and exit intention among those who pursue prosocial careers. The motivation to pursue self-employment is often tied to economic concerns and the desire to create wealth [77,78]. However, for social entrepreneurs, the major pursuit is to achieve both financial and social goals [79]. Although economic outcomes are not regarded as the exclusive missions of social entrepreneurs [80], they may regret their initial decisions to start such a business when they do not succeed financially [80,81]. Largely, social entrepreneurs focus on outcomes [79], and their commitments to their prosocial ideas, businesses, and products are often intense [82,83]. However, empirical evidence has shown that lower levels of financial satisfaction decrease social entrepreneurs' confidence in their own competence [84] because financial barriers can erode their commitments to their prosocial ideas, businesses, and products [80]. This negative emotion can be magnified, likely leading to intense regret and decreased intention to sustain their social ventures [81]. Therefore, we hypothesize:

Hypothesis 1a (H1a). *Social entrepreneurs' prosocial motivations have a negative effect on their financial satisfaction.*

Hypothesis 1b (H1b). *Social entrepreneurs' prosocial motivations have an indirect effect on their exit intentions via financial satisfaction.*

2.4. Prosocial Motivation, Health Satisfaction, and Exit Intention

Health satisfaction is a cognitive judgment about the quality of one's overall mental and physical fitness [85,86]. Social entrepreneurs tend to have heavier workloads [32], encounter greater business risks, experience higher levels of job stress [87] and incur more psychosomatic ailments than other types of entrepreneurs [7]. Davis et al. [88], Ashton [89], and Kibler et al. [90] found that social entrepreneurs are passionate about their goals, but they are vulnerable to stress resulting from investing considerable time, effort, and cognitive resources needed to fulfill their many commitments on a daily basis. The passion for a prosocial business not only implies higher health costs [91,92] but can also induce anxiety when social entrepreneurs find their job responsibilities arduous or too overwhelming to achieve their prosocial goals; thus, inducing a lower level of health satisfaction [74,76,93,94].

Empirical research supports the relationship between health satisfaction and exit intentions among those who pursue prosocial careers. Poor health satisfaction can be costly in terms of the time and energy needed to perform work-related tasks [95]. Social entrepreneurship requires accessing resources beyond what is currently controlled or possessed, which is mostly rather arduous [96]. Thus, a deficient amount of time and energy for severe challenges mostly induces one's intention to exit. Therefore, we hypothesize:

Hypothesis 2a (H2a). *Social entrepreneurs' prosocial motivations have a negative effect on their health satisfaction.*

Hypothesis 2b (H2b). *Social entrepreneurs' prosocial motivations have an indirect effect on their exit intentions via health satisfaction.*

2.5. The Moderating Role of Entrepreneur's Gender

According to gender stereotypes, different careers can be perceived as masculine or feminine, conduced to the perceived attractiveness of careers [33,34]. Thus, individuals tend to choose their careers according to their socially recognized gender [97,98]. Prosocial behavior is related to empathy and a sense of social responsibility [99,100]; such values are typically associated with females [33,34]; namely, female entrepreneurs better fit the gender stereotypes of social entrepreneurs [101].

Although people aspire to jobs that are socially acceptable for their genders while avoiding those considered inappropriate [97,98], many engage in occupations that do not conform to gender stereotypes and, thus, may feel stereotype threats [102–104]. Previous research claimed that if an individual's social identity is tagged negatively by gender stereotypes, it could undermine his or her well-being and a sense of belonging [98]. According to Marshall [105], individuals who engage in social entrepreneurship can incur income insecurity over time. For male social entrepreneurs, earning less than a typical commercial entrepreneur may conflict with their gender stereotype as the "breadwinner" [106]; this, in turn, can induce the stereotype threat and amplify the negative effects of prosocial motivation on financial satisfaction [107]. In contrast, females are typically regarded as "caregivers" [106]. Thus, for female entrepreneurs, lower levels of income security due to sustaining social entrepreneurship are unlikely to amplify the negative effects of prosocial motivation on financial satisfaction.

Social entrepreneurship has a higher failure rate than commercial or regular entrepreneurship due to its complexity [108,109]. For male social entrepreneurs, this may conflict with their stereotypical heroic characterizations as income generators [102,110], which in turn can increase goal conflicts and negative emotions induced by prosocial

motivation [87,111,112]. This can engender the stereotype threat and, thus, amplify the negative effects of prosocial motivation on health satisfaction [113]. In contrast, as the gender stereotype implies, female entrepreneurs are less likely to be successful in developing profitable firms [108,109], and female social entrepreneurs who fail may have fewer negative emotions resulting from their prosocial motivations [7,53,64]. This, in turn, may ameliorate the negative effects of prosocial motivation on health satisfaction. Therefore, based on the arguments above, we hypothesize:

Hypothesis 3a (H3a). *The negative relationship between prosocial motivation and financial satisfaction is stronger for male entrepreneurs than for female entrepreneurs.*

Hypothesis 3b (H3b). *The negative relationship between prosocial motivation and health satisfaction is stronger for male entrepreneurs than for female entrepreneurs.*

3. Method

3.1. Research Framework

Figure 1 shows the conceptual model of this study. First, it posits that prosocial motivation has direct and negative effects on financial satisfaction (H1a) and health satisfaction (H2a). Second, it suggests that prosocial motivation is related to exit intentions via financial satisfaction (H1b) and health satisfaction (H2b). The first path (H1b) predicts that prosocial motivation attenuates financial satisfaction and this, in turn, reinforces exit intention; the second path (H2b) predicts that prosocial motivation diminishes health satisfaction and this, in turn, escalates exit intention. Third, the relationship between prosocial motivation and financial satisfaction is stronger for male entrepreneurs than for female entrepreneurs (H3a), and the relationship between prosocial motivation and health satisfaction is stronger for male entrepreneurs than for female entrepreneurs (H3b).

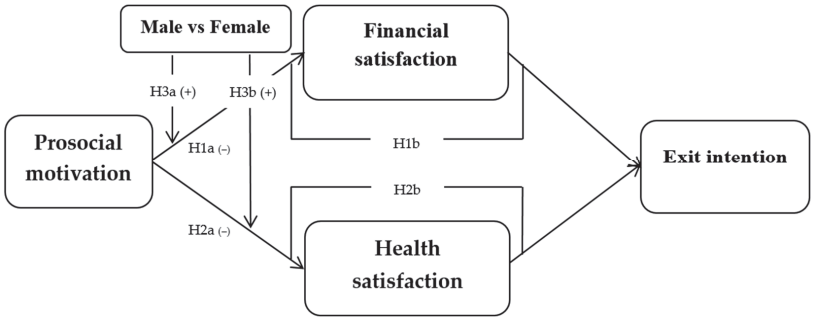

Figure 1. Conceptual model.

3.2. Sample and Procedure

Via two large-scale colloquiums for entrepreneurs, organized by the All-China Federation of Industry and Commerce (ACFIC) in July and August of 2021, we identified the social entrepreneurs attending the colloquium and surveyed them for this study. The ACFIC is China's largest semi-official organization, consisting of business owners in diverse industries.

Considering that the respondents of this study were from China and the instruments used in the questionnaire were originally developed in English by prior researchers, we used the approach suggested by Brislin [114] for translating them into Chinese. After the translation was completed, the questionnaire was sent to experts in the field of social enterprise/entrepreneurship for their review. Afterward, a pilot test (on a sample of 100 respondents) was conducted. The Cronbach's alpha value was over 0.70, indicating the acceptable reliability suggested by Nunnally [115].

Data were gathered during the colloquiums in July (location: Jinan city, Shandong province, China) and August (location: Qingdao city, Shandong province, China), 2021. An invitation (on paper), including a QR code linking to the online questionnaire, was sent to the entrepreneurs (founders or CEOs) participating in the colloquiums.

A total of 450 founders or CEOs accepted our invitation and the response rate exceeded 80%, which is similar to the response rate of prior research [116]. After removing unusable data with missing or problematic values, the sample size was 317 (172 males, 145 females). Table 1 shows an overview of the sample demographics.

Table 1. Sample demographics.

Characteristics	Frequency	Percent (%)
Age		
18–25	5	1.6%
26–35	110	34.7%
36–45	71	22.4%
46–55	131	41.3%
Gender		
Male	172	54.3%
Female	145	45.7%
Marital status		
Married	217	68.5%
Non-married	100	31.5%
Educational Level		
Junior high school	0	0%
High school or equal	2	0.6%
Junior college	61	19.2%
Bachelor's degree	139	43.9%
Postgraduate or above	115	36.3%

For PLS-SEM analyses, Barclay [117] suggested the minimum sample size should be at least 10 times the maximum number of structural paths directed to a construct. The construct with the most paths in our model was the exit intention variable, which had only two paths. Thus, a minimum sample size of 20 was required to validate our model and this study's sample size (317) was highly sufficient.

Social entrepreneurs were identified with the question below employed by the Global Entrepreneurship Monitor (GEM):

> "Are you, alone or with others, currently trying to start or currently owning and managing any kind of activity, organization or initiative that has a particularly social, environmental or community objective? This might include providing services or training to socially deprived or disabled persons, using profits for socially oriented purposes, organizing self-help groups for community action, etc."

Respondents choosing "no" were identified as conventional or regular entrepreneurs and excluded from this research; while those choosing "yes" were defined as social entrepreneurs and included in this research [118]. This method has also been deployed by prior studies of social entrepreneurs [35,119].

3.3. Variables and Measurements

Dependent variable: Exit intention was measured with three items developed by Pollack, Vanepps, and Hayes [52]. The items were rated on a Likert 7-point scale ranging from 1 = strongly disagree to 7 = strongly agree. The Cronbach's alpha for this scale was 0.927.

Independent variable: Prosocial motivation was measured with four items developed by Adam and Grant [27,120]. The items were rated on a 7-point scale ranging from 1 (strongly disagree) to 7 (strongly agree). The Cronbach's alpha for this scale was 0.850.

Mediating variable: Financial satisfaction was measured using the one-item measure developed by Fors, Johansson Sevä, and Gärling [70]. Participants indicated their satisfaction with their "private financial situation" on a 7-point scale ranging from 1 = extremely dissatisfied to 7 = extremely satisfied.

Mediating variable: Health satisfaction was measured by requesting the respondents to report the current state of their health [86,121] on a 7-point scale ranging from 1 = completely dissatisfied to 7 = completely satisfied.

Moderating variable: Gender. Male respondents were coded as "1" and female respondents were coded as "2".

A summary of the operational definitions is presented in Table 2. Moreover, the English version of the items has been appended (Appendix A).

Table 2. Operational definitions.

Construct	Definition	Source
Exit intention	An entrepreneur's desire or goal, at some point in the future, to leave his or her venture.	[20,52]
Prosocial motivation	The desire to help others or expend effort out of concern for others.	[7]
Financial satisfaction	A cognitive evaluation of one's present financial situation.	[70]
Health satisfaction	A cognitive judgment of individuals about the quality of their overall mental and physical fitness.	[85,86]

4. Data Analysis

To test our hypotheses, we employed consistent bootstrapped partial least square structural equation modeling (PLS-SEM) using the software SmartPLS (Version 3.3.3) [122]. Research suggests that PLS-SEM is increasingly being deployed in entrepreneurship research [123], and it is considered suitable for analyzing models with complex paths [123]. It is not limited by stringent assumptions (e.g., the multivariate normality) and sample size requirements [123].

Specifically, there were two reasons to use PLS-SEM for data analyses: first, PLS-SEM has been found to be effective in testing complex models, allowing simultaneous estimations of multiple causal relationships between variables [124], such as the ones in this study. Second, PLS-SEM is suitable for the exploratory analyses [122], such as the one in this study.

The analysis was conducted through two stages [117]. (1) The analysis of the outer model tested the reliability and validity of all latent construct measurements. (2) The analysis of the inner model assessed the relationships among the latent constructs for hypothesis testing. This sequence was to ensure that the measurement scales were valid and reliable.

4.1. Outer Model Analysis

The outer model's validity was evaluated by testing the reliability of each construct, the internal consistency of measures, and the convergent and discriminant validities of each construct.

First, the reliability of constructs was evaluated by examining the factor loadings of each indicator. As Table 3 shows, all factor loadings (range: 0.769 to 0.962) reached the threshold value suggested by Hair et al. [125] of 0.70, implying adequate reliability.

Second, the internal consistency of the measures was examined by computing composite reliability (CR) values (Table 3). The composite reliability values were 0.899 (prosocial motivation) and 0.954 (exit intention), above the acceptable threshold value (0.80), as suggested by Fornell and Larcker [126].

Third, convergent validity was examined by computing the average variance extracted (AVE) values. Table 3 shows the AVEs were 0.690 (prosocial motivation) and 0.873 (exit intention) above the acceptable threshold (0.50) [126], indicating sufficient convergent validity.

Table 3. Reliability and AVE of the measurement model (outer model).

Construct	Indicators	Factor Loading	Composite Reliability	AVE
PM	PM 1	0.868	0.899	0.690
	PM 2	0.835	-	-
	PM 3	0.769	-	-
	PM 4	0.851	-	-
EI	EI 1	0.903	0.954	0.873
	EI 2	0.962	-	-
	EI 3	0.936	-	-

Note 1: PM = prosocial motivation; EI = exit intention. Note 2: Financial satisfaction is a single-item construct. Note 3: health satisfaction is a single-item construct.

Fourth, discriminant validity was tested by comparing the cross-loadings and factor loadings for each indicator (See Table 4), and the heterotrait-monotrait (HTMT) ratio of correlations (See Table 5). As shown in Table 4, the factor loading of each scale item for its assigned latent construct was higher than its loading on any other construct [122], suggesting good discriminant validity. Moreover, as shown in Table 5, the HTMT ratios of the average correlations of the indicators across constructs were all below the threshold (0.90) [127], indicating that each construct was empirically distinct from other constructs in the model and the discriminant validity was sufficient.

Table 4. Discriminant validity—factor loadings and cross-loadings.

	EI	FS	HS	PM
EI1	0.903	−0.504	−0.031	0.445
EI2	0.962	−0.500	−0.012	0.492
EI3	0.936	−0.433	−0.020	0.501
FS1	−0.527	1	0.169	−0.368
HS1	−0.023	0.169	1	0.035
PM1	0.465	−0.291	0.091	0.868
PM2	0.365	−0.246	0.012	0.835
PM3	0.393	−0.340	−0.012	0.769
PM4	0.469	−0.333	0.027	0.841

Note 1: PM = prosocial motivation; FS = financial satisfaction; HS = health satisfaction; EI = exit intention. Note 2: the grey cells are the factor loadings of scale items for each construct.

Table 5. Discriminant validity—HTMT.

Factors	EI	FS	HS	PM
EI	-	-	-	-
FS	0.546	-	-	-
HS	0.025	0.169	-	-
PM	0.575	0.396	0.049	-

Note 1: PM = prosocial motivation; FS = financial satisfaction; HS = health satisfaction; EI = exit intention.

4.2. Inner Model Analysis

The inner model was assessed by computing R^2, effect size (f^2), Q^2, and path coefficients. The R^2 value of endogenous constructs is viewed as the primary criteria for assessing the quality of structural models [128]. We chose to follow the guidelines suggested by Chin [129]; the endogenous latent variables are considered reliable if their R^2 values are greater than 0.10 [130]. Meanwhile, for exploratory studies in social sciences, the R^2 value lower than 0.10 is also accepted [130]. Thus, as shown in Figure 2, the R^2 values indicate the significant explanatory power of the model.

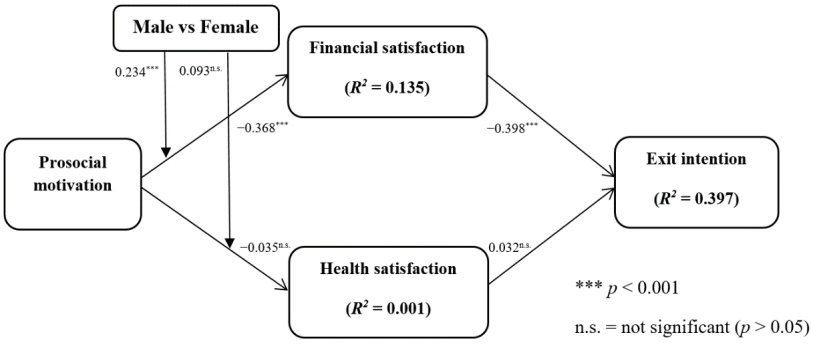

Figure 2. Path coefficients and R^2 of the inner model.

Cohen's f^2 was used to evaluate the contribution of an exogenous variable in multiple regression models. Cohen's guidelines suggest the following criteria for evaluating f^2 values: weak = 0.02; medium = 0.15, and large = 0.35 [131]. The f^2 value for H1a: PM → FS was 0.218, indicating a medium-level contribution of prosocial motivation to predicting financial satisfaction. In contrast, for H2a: PM → HS, f^2 was 0.002, indicating a negligible contribution of prosocial motivation to predicting health satisfaction.

As part of checking the predictive relevance, the Q^2 values were also computed. The Q^2 values for financial satisfaction, health satisfaction, and exit intention were 0.126, 0.013, and 0.341, respectively. Given that all of them were greater than zero, the explanatory constructs had adequate predictive relevance for their indicators [132].

Goodness of Fit (GoF) (0 < GoF <1) is another indicator of a PLS-SEM model's quality [133]. The GOF is calculated as:

$$\text{GoF} = \sqrt{\overline{communality} \times \overline{R^2}} = 0.79$$

The GoF values of 0.10, 0.25, and 0.36 are defined as small, medium, and large effect sizes, respectively [134]. The GoF value for the proposed model was 0.79, indicating a large effect size. Based on the above findings, it can be concluded that the proposed model has a good overall fit.

Next, we examined the structural relationships in the proposed model. Figure 2 reports the results of the algorithm and bootstrapping tests (based on 5000 samples), including the path coefficients (β), *t*-values, and retention or rejection of each hypothesis. Purvis et al. [135] suggested that bootstrapping is an effective procedure to evaluate the significance of each path coefficient. Figure 2 presents the bootstrapping validation outcomes. H1a (predicting prosocial motivation and negatively related to financial satisfaction) was supported (PM → FS: β = −0.368, *t*-value = 8.091, $p < 0.001$). H2a (predicting prosocial motivation and negatively related to health satisfaction) was not supported (PM → HS: β = −0.035, *t*-value = 0.632).

4.3. Mediation Effects

The Sobel test and variance accounted for (VAF) index were employed [136] to examine the mediation hypotheses (H1b and H2b). Per Sobel's test (See Table 6) [136], the mediation by financial satisfaction was significant (absolute Z value = 4.173, $p < 0.01$); whereas the mediation by health satisfaction was not significant (absolute Z value = 0.363, $p > 0.05$).

The method of variance accounted for (VAF) suggested by Hair Jr., Hult, Ringle, and Sarstedt [122] was used to determine the strength of the indirect effects (i.e., mediation effect) in relation to the total effect (i.e., direct effect plus indirect effect). The recommended VAF cutoff values for determining mediation effects are as follows: full mediation >80%, partial mediation ≤80%, and no mediation <20% [122]. Table 6 shows that financial

satisfaction was a partial mediator in the prosocial motivation–exit intention relation, supporting hypothesis H1b. However, hypothesis H2b, concerning the mediation effects of health satisfaction, was not supported since the VAF was less than 20%.

Table 6. Test of mediation effect.

	Original Sample (O)	Standard Error (STERR)	*t* (|O/STERR|)	
PM → FS	−0.368	0.062	5.903	-
FS → EI	−0.398	0.067	5.900	-
PM → HS	0.035	0.074	0.467	-
HS → EI	0.032	0.056	0.577	-
PM → EI	0.366	0.051	7.232	-
	PM → FS → EI	-	PM → HS → EI	Total indirect effect
Indirect effect	0.146	-	0.001	0.515
Sobel Z Test	4.173	-	0.363	-
VAF	0.285	-	0.002	0.287
Supported	YES	-	NO	

Note 1: PM = prosocial motivation; JS = job satisfaction; WB = work burnout; WA = work anxiety; EI = exit intention. Note 2: number of bootstrap samples = 5000.

4.4. Moderation Effects

The multiple group analysis procedure (PLS-MGA) in SmartPLS (Version 3.3.3) was used to examine if the path coefficients [137] for males and females (1 = male, and 2 = female) differed significantly. PLS-MGA was conducted with a bootstrapped sample of 5000 cases. This analysis allowed us to see which path was distinct, how different the paths were, and whether there was a difference in the path direction. The results are presented in Table 7.

The results of the PLS-MGA indicate that the path between prosocial motivation and financial satisfaction was significantly stronger for males than for females, with a coefficient difference of 0.234 ($p = 0.003$). Therefore, H3a was supported. However, there was no statistically significant difference between males and females in the path coefficients between prosocial motivation and health satisfaction. Accordingly, H3b was not supported.

Table 7. Results of the multi-group analysis.

Path	Pooled		Males (M)			Females (F)			M vs. F	Supported
	n = 317		*n* = 145			*n* = 172				
	β	CI	β	CI	f^2	β	CI	f^2	*p*-Value	
PM → FS	−0.368	(0.092, 0.202)	−0.437	(−0.555, −0.310)	0.236	−0.203	(−0.340, −0.041)	0.043	0.003	YES
PM → HS	−0.035	(−0.004, 0.009)	0.007	(−0.152, 0.190)	0.010	0.100	(−0.057, 0.241)	0.007	0.413	NO

Note 1: PM = prosocial motivation; FS = financial satisfaction; HS = health satisfaction; EI = exit intention. Note 2: β = path coefficient; CI = 95% Confidence interval. Note 3: f^2 = size effect: $0.02 < f^2 < 0.15$ (small effect size); $0.15 < f^2 < 0.35$ (medium effect size); $f^2 > 0.35$ (large effect size).

5. Discussion

This study reflects our attempt to respond to the criticism that social entrepreneurship research has been constricted and to open the "black box" regarding the relationship between prosocial motivation and exit intentions [6,9]. Scholars have noted that "[o]ur desire—our need—to open up the black box is not just a matter of scholarly curiosity; it is essential for ultimately improving the insights we can provide . . . " [138]. Largely, this research represents a substantive step in this direction.

5.1. Theoretical Implications

Although scholars who study social entrepreneurship have already highlighted the effects of prosocial motivation on entrepreneurs' exit intentions [6,9], they have largely overlooked the mechanism behind this relationship. Our study adopted the theoretical perspective, the hierarchical approach to personality [21,22], to explore such a mechanism between entrepreneurs' personality traits and entrepreneurial outcomes. Our findings indicate that prosocial motivation (as a personality trait) can be linked to the entrepreneurial outcome exit intention through entrepreneurs' financial satisfaction. Thus, our findings advance extant scholarships, especially concerning the relationship between personality traits and entrepreneurial outcomes [17].

Specifically, we found that financial satisfaction mediated the nexus between prosocial motivation and exit intentions. These findings are well in line with the literature [50,75,76]. A simple but plausible explanation for these results is that social entrepreneurs need adequate financial support to handle a wide range of financial challenges [50,61], easily leading to a lower level of financial satisfaction [76]. If financial satisfaction runs low for social entrepreneurs, it could erode their confidence (in their own competence), encouraging them to regret the career paths they have chosen [82,83], thereby engendering their exit intentions.

Furthermore, we found that the negative impact of prosocial motivation on financial satisfaction was stronger for male entrepreneurs than for female social entrepreneurs. This suggests that gender stereotypes about occupational choice can enhance the negative impact of being a social entrepreneur (on financial satisfaction), possibly leading to stronger intentions to exit. These results respond to previous researchers' calls as to why social enterprises are more likely to be started by men than by women, but the gender gap throughout the entrepreneurial life cycle is not large anymore [30]. Our findings further show the potential gender stereotype threat and relevant issues in the context of social entrepreneurship.

Contrary to our prediction, we found that health satisfaction did not mediate the relationship between prosocial motivation and exit intention. This is possibly due to the age of the sampled entrepreneurs. Although satisfaction with one's health is normally based on one's actual health status, the strength of this relationship might not be the same across the age range. Prior studies claimed that health satisfaction trajectories are relatively flat throughout the lifespan before age 50 and then decrease sharply afterward until the end of one's lifespan [139,140]. This is because people over 50 are particularly intolerant of the early signs of aging [140]. In our study, over 65% of the respondents were below 45 years old; therefore, the health satisfaction of these entrepreneurs could be inflated.

5.2. Practical Implications

According to our findings, prosocial motivation, the typical personality trait of social entrepreneurs, can cause exit intention via life-related wellbeing, such as financial satisfaction. Thus, entrepreneurship educators may need to be aware of the mechanisms, given the high possible failure rate of social entrepreneurs in achieving prosocial goals. Moreover, only focusing on successful case studies for training programs on entrepreneurship can be problematic and misleading. Given our findings that financial satisfaction was a significant mediator, it is necessary to develop the social entrepreneurs' capabilities to acquire financial and institutional support and to encourage them to develop budgeting policies to achieve prosocial goals. Furthermore, given our finding that male social entrepreneurs may have a lower level of life satisfaction compared to female entrepreneurs, relevant government agencies should provide greater support, including relevant policies, facilities, training programs, and consultation availabilities to promote gender role equality and life satisfaction.

6. Limitations and Future Research Directions

This study is not without limitations. First, our analyses should be replicated with different samples from various countries. The distinctive characteristics of China's society,

culture, and lifestyle may help explain the findings of this study. As different economic, cultural, and institutional business environments can affect socially-oriented entrepreneurial activities differently [119,141–144], further research could involve other economic, cultural, and institutional contexts to test the generalizability of our findings.

Second, besides the variables included in this research, other social, biological, occupational, and professional factors may influence the path from prosocial motivation to exit intention. Therefore, additional levels of analysis would further help explicate the individual vs. contextual influences.

Third, future studies involving the potential dimensions of wellbeing or satisfaction as the mediators, and unveiling how they function uniformly or differentially, can help to further our understanding of the nuances in these relationships.

Fourth, in future research, human capital features, such as education, experience, and skills, need to be included as the control variables to further our findings.

7. Conclusions

We found that prosocial motivation negatively influenced the financial satisfaction of social entrepreneurs, which in turn was associated with an increase in their exit intentions. This relationship was significantly stronger for male entrepreneurs than for female entrepreneurs.

Author Contributions: Conceptualization, J.D., X.W., X.C. and D.H.; methodology, J.D.; software, J.D.; validation, J.D.; formal analysis, J.D.; investigation, J.D.; resources, J.D.; data curation, J.D.; writing—original draft preparation, J.D.; writing—review and editing, X.W.; visualization, J.D.; supervision, X.W.; funding acquisition, X.W. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported in part by the XJTLU doctoral scholarship PGRS 1901010.

Institutional Review Board Statement: Ethical review and approval were waived for this study as this was not an invasive survey. We obtained verbal informed consent from all participants before the study, and the survey questionnaire notified participants of their anonymity in this study.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data will be made available upon request from the first author.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

Table A1. The Questionnaire.

Construct	Items	Variables	References
Prosocial Motivation (PM)	1. I care about benefiting others through my work 2. I want to have a positive impact on others 3. Because I want to have a positive impact on others 4. It is important to me to do good for others through my work	PM1–PM4	[27]
Financial Satisfaction (FS)	1. How comfortable and well-off are you financially?	FS1	[70,120]
Health Satisfaction (HS)	1. How would you rate your level of satisfaction with your own health?	HS1	[86,121]
Exit Intention (EI)	Participants rated the extent to which they would, in the next year. 1. Avoid entrepreneurial positions 2. Feel anxious about entrepreneurial positions 3. Feel less excited about entrepreneurial positions	EI1–EI3	[52]

References

1. Audretsch, D.B.; Acs, Z.J.; Braunerhjelm, P.; Carlsson, B. *Growth and Entrepreneurship: An Empirical Assessment*; Max Planck Institute of Economics: Jena, Germany, 2006.
2. DeTienne, D.; Wennberg, K. Studying exit from entrepreneurship: New directions and insights. *Int. Small Bus. J.* **2016**, *34*, 151–156. [CrossRef]
3. Acs, Z.; Audretsch, D. *Handbook of Entrepreneurship Research: An Interdisciplinary Survey and Introduction*; Springer Science & Business Media: New York, NY, USA, 2006; Volume 1.
4. DeTienne, D.R.; Wennberg, K. *Research Handbook of Entrepreneurial Exit*; Edward Elgar Publishing: Cheltenham, UK; Northampton, MA, USA, 2015.
5. Cardon, M.S.; Foo, M.D.; Shepherd, D.; Wiklund, J. Exploring the Heart: Entrepreneurial Emotion Is a Hot Topic. *Entrep. Theory Pract.* **2012**, *36*, 1–10. [CrossRef]
6. Tina, S.; Foss, N.J.; Stefan, L. Social Entrepreneurship Research: Past Achievements and Future Promises. *J. Manag.* **2018**, *45*, 70–95.
7. Bolino, M.C.; Grant, A.M. The Bright Side of Being Prosocial at Work, and the Dark Side, Too: A Review and Agenda for Research on Other-Oriented Motives, Behavior, and Impact in Organizations. *Acad. Manag. Ann.* **2016**, *10*, 599–670. [CrossRef]
8. Miller, T.L.; Grimes, M.G.; Mcmullen, J.S.; Vogus, T.J. Venturing for Others with Heart and Head: How Compassion Encourages Social Entrepreneurship. *Acad. Manag. Rev.* **2012**, *37*, 616–640. [CrossRef]
9. Mcmullen, J.S.; Bergman, B. Social Entrepreneurship and the Development Paradox of Prosocial Motivation: A Cautionary Tale. *Strateg. Entrep. J.* **2017**, *11*, 243–270. [CrossRef]
10. Grant, A.M. Relational Job Design and the Motivation to Make a Prosocial Difference. *Acad. Manag. Rev.* **2007**, *32*, 393–417. [CrossRef]
11. Wry, T.; York, J.G. An identity-based approach to social enterprise. *Acad. Manag. Rev.* **2017**, *42*, 437–460. [CrossRef]
12. De Dreu, C.K.; Nauta, A. Self-interest and other-orientation in organizational behavior: Implications for job performance, prosocial behavior, and personal initiative. *J. Appl. Psychol.* **2009**, *94*, 913. [CrossRef]
13. Renko, M. Early Challenges of Nascent Social Entrepreneurs. *Entrep. Theory Pract.* **2013**, *37*, 1045–1069. [CrossRef]
14. Wennberg, K.; Wiklunc, J.; Detienne, D.R.; Cardon, M.S. Reconceptualizing Entrepreneurial Exit: Divergent Exit Routes and Their Drivers. *J. Bus. Ventur.* **2010**, *25*, 361–375. [CrossRef]
15. Lortie, J. For the greater good: Why and how social entrepreneurs exit social ventures. In *Research Handbook of Entrepreneurial Exit*; Edward Elgar Publishing: Cheltenham, UK; Northampton, MA, USA, 2015; pp. 226–245.
16. Rauch, A.; Frese, M. Psychological approaches to entrepreneurial success: A general model and an overview of findings. *Int. Rev. Ind. Organ. Psychol.* **2000**, *15*, 101–142.
17. Rauch, A.; Frese, M. Let's put the person back into entrepreneurship research: A meta-analysis on the relationship between business owners' personality traits, business creation, and success. *Eur. J. Work Organ. Psychol.* **2007**, *16*, 353–385. [CrossRef]
18. Frese, M. The Psychology of Entrepreneurship. *Annu. Rev. Organ. Psychol. Organ. Behav.* **2014**, *1*, 413–438. [CrossRef]
19. Baum, J.R.; Frese, M.; Baron, R.A. Born to be an entrepreneur? Revisiting the personality approach to entrepreneurship. In *The Psychology of Entrepreneurship*; Psychology Press: London, UK, 2014; pp. 73–98.
20. Lindblom, A.; Lindblom, T.; Wechtler, H. Dispositional optimism, entrepreneurial success and exit intentions: The mediating effects of life satisfaction. *J. Bus. Res.* **2020**, *120*, 230–240. [CrossRef]
21. Allport, G.W. *Pattern and Growth in Personality*; Holt, Reinhart and Winston: New York, NY, USA, 1961.
22. Eysenck, H.J. Dimensions of Personality. In *Explorations in Temperament: International Perspectives on Theory and Measurement*; Strelau, J., Angleitner, A., Eds.; Springer: Boston, MA, USA, 1991; pp. 87–103.
23. Carree, M.A.; Verheul, I. What makes entrepreneurs happy? Determinants of satisfaction among founders. *J. Happiness Stud.* **2012**, *13*, 371–387. [CrossRef]
24. Judge, T.A.; Watanabe, S. Another look at the job satisfaction-life satisfaction relationship. *J. Appl. Psychol.* **1993**, *78*, 939. [CrossRef]
25. Bolino, M.C.; Turnley, W.H. The personal costs of citizenship behavior: The relationship between individual initiative and role overload, job stress, and work-family conflict. *J. Appl. Psychol.* **2005**, *90*, 740. [CrossRef]
26. Grant, A.M. The significance of task significance: Job performance effects, relational mechanisms, and boundary conditions. *J. Appl. Psychol.* **2008**, *93*, 108–124. [CrossRef] [PubMed]
27. Grant, A. Does Intrinsic Motivation Fuel the Prosocial Fire? Motivational Synergy in Predicting Persistence, Performance, and Productivity. *J. Appl. Psychol.* **2008**, *93*, 48–58. [CrossRef]
28. Vansteenkiste, M.; Niemiec Christopher, P.; Soenens, B. The development of the five mini-theories of self-determination theory: An historical overview, emerging trends, and future directions. In *The Decade Ahead: Theoretical Perspectives on Motivation and Achievement*; Timothy, C.U., Stuart, A.K., Eds.; Emerald Group Publishing Limited: Bingley, UK, 2010; Volume 16, Part A; pp. 105–165.
29. Lindblom, A.; Lindblom, T.; Wechtler, H. Retail entrepreneurs' exit intentions: Influence and mediations of personality and job-related factors. *J. Retail. Consum. Serv.* **2020**, *54*, 102055. [CrossRef]
30. GEM. Global Entrepreneurship Monitor. *Soc. Sci. Electron. Publ.* **2011**, *3*, 66–70.
31. Gupta, V.K.; Wieland, A.M.; Turban, D.B. Gender characterizations in entrepreneurship: A multi-level investigation of sex-role stereotypes about high-growth, commercial, and social entrepreneurs. *J. Small Bus. Manag.* **2019**, *57*, 131–153. [CrossRef]

32. Brieger, S.; Clercq, D.D.; Meynhardt, T. Doing Good, Feeling Good? Entrepreneurs' Social Value Creation Beliefs and Work-Related Well-Being. *J. Bus. Ethics* **2020**, *172*, 707–725. [CrossRef]
33. BarNir, A.; Watson, W.E.; Hutchins, H.M. Mediation and moderated mediation in the relationship among role models, self-efficacy, entrepreneurial career intention, and gender. *J. Appl. Soc. Psychol.* **2011**, *41*, 270–297. [CrossRef]
34. Gupta, V.K.; Turban, D.B.; Wasti, S.A.; Sikdar, A. The role of gender stereotypes in perceptions of entrepreneurs and intentions to become an entrepreneur. *Entrep. Theory Pract.* **2009**, *33*, 397–417. [CrossRef]
35. Stephan, U.; Uhlaner, L.M.; Stride, C. Institutions and social entrepreneurship: The role of institutional voids, institutional support, and institutional configurations. *J. Int. Bus. Stud.* **2015**, *46*, 308–331. [CrossRef]
36. Bacq, S.; Janssen, F. The multiple faces of social entrepreneurship: A review of definitional issues based on geographical and thematic criteria. *Entrep. Reg. Dev.* **2011**, *23*, 373–403. [CrossRef]
37. Clark, K.; Newbert, S.; Quigley, N. The motivational drivers underlying for-profit venture creation: Comparing social and commercial entrepreneurs. *Int. Small Bus. J. Res. Entrep.* **2017**, *36*, 026624261773113. [CrossRef]
38. Mowen, J.C. *The 3M Model of Motivation and Personality*; Springer: New York, NY, USA, 2000.
39. Harris, E.G.; Mowen, J.C. The influence of cardinal-, central-, and surface-level personality traits on consumers' bargaining and complaint intentions. *Psychol. Mark.* **2001**, *18*, 1155–1185. [CrossRef]
40. Mowen, J.C.; Carlson, B. Exploring the antecedents and consumer behavior consequences of the trait of superstition. *Psychol. Mark.* **2003**, *20*, 1045–1065. [CrossRef]
41. Licata, J.W.; Mowen, J.C.; Harris, E.G.; Brown, T.J. On the Trait Antecedents and Outcomes of Service Worker Job Resourcefulness: A Hierarchical Model Approach. *J. Acad. Mark. Sci.* **2003**, *31*, 256–271. [CrossRef]
42. Brown, T.J.; Mowen, J.C.; Donavan, D.T.; Licata, J.W. The Customer orientation of service workers: Personality trait determinants and influences on self and supervisor performance ratings. *J. Mark. Res.* **2002**, *39*, 110–119. [CrossRef]
43. Prentice, C.; King, B.E.M. Impacts of personality, emotional intelligence and adaptiveness on service performance of casino hosts: A hierarchical approach. *J. Bus. Res.* **2013**, *66*, 1637–1643. [CrossRef]
44. Eisenberg, N.; Guthrie, I.K.; Cumberland, A.; Murphy, B.C.; Shepard, S.A.; Zhou, Q.; Carlo, G. Prosocial development in early adulthood: A longitudinal study. *J. Personal. Soc. Psychol.* **2002**, *82*, 993. [CrossRef]
45. Nikolaev, B.; Shir, N.; Wiklund, J. Dispositional Positive and Negative Affect and Self-Employment Transitions: The Mediating Role of Job Satisfaction. Entrep. *Theory Pract.* **2019**, *44*, 451–474. [CrossRef]
46. Alvord, S.H. Social Entrepreneurship and Societal Transformation: An Exploratory Study. *J. Appl. Behav. Sci.* **2004**, *40*, 260–282. [CrossRef]
47. Martin, R.L.; Osberg, S. Social entrepreneurship: The case for definition. *Stanf. Soc. Innov. Rev.* **2007**, *5*, 28–39.
48. Seelos, C.; Mair, J. Social entrepreneurship: Creating new business models to serve the poor. *Bus. Horiz.* **2005**, *48*, 241–246. [CrossRef]
49. Kimmitt, J.; Muñoz, P. Sensemaking the 'social'in social entrepreneurship. *Int. Small Bus. J.* **2018**, *36*, 859–886. [CrossRef]
50. Tracey, P.; Phillips, N.; Jarvis, O. Bridging Institutional Entrepreneurship and the Creation of New Organizational Forms: A Multilevel Model. *Organ. Sci.* **2011**, *22*, 60–80. [CrossRef]
51. McMullen, J.S.; Shepherd, D.A. Entrepreneurial action and the role of uncertainty in the theory of the entrepreneur. *Acad. Manag. Rev.* **2006**, *31*, 132–152. [CrossRef]
52. Pollack, J.M.; Vanepps, E.M.; Hayes, A.F. The moderating role of social ties on entrepreneurs' depressed affect and withdrawal intentions in response to economic stress. *J. Organ. Behav.* **2012**, *33*, 789–810. [CrossRef]
53. Doherty, B.; Haugh, H.; Lyon, F. Social Enterprises as Hybrid Organizations: A Review and Research Agenda. *Int. J. Manag. Rev.* **2014**, *16*, 417–436. [CrossRef]
54. Battiliana, J.; Lee, M.; Walker, J.; Dorsey, C. In search of the hybrid ideal. In *Stanford Social Innovation Review*; Leland Stanford Jr. University: Stanford, CA, USA, 2012.
55. Bridgstock, R.; Lettice, F.; Özbilgin, M.F.; Tatli, A. Diversity management for innovation in social enterprises in the UK. *Entrep. Reg. Dev.* **2010**, *22*, 557–574. [CrossRef]
56. Pache, A.-C.; Santos, F. Inside the hybrid organization: Selective coupling as a response to competing institutional logics. *Acad. Manag. J.* **2013**, *56*, 972–1001. [CrossRef]
57. Asante, E.A.; Affum-Osei, E.; Danquah, B. Aspiring to Be a Social Entrepreneur: Does Prosocial Motivation Matter? In *Social Entrepreneurship and Corporate Social Responsibility*; Springer: Berlin/Heidelberg, Germany, 2020; pp. 47–61.
58. Zahra, S.A.; Gedajlovic, E.; Neubaum, D.O.; Shulman, J.M. A typology of social entrepreneurs: Motives, search processes and ethical challenges. *J. Bus. Ventur.* **2009**, *24*, 519–532. [CrossRef]
59. Mair, J.; Battilana, J.; Cardenas, J. Organizing for society: A typology of social etrepreneuring models. *J. Bus. Ethics* **2012**, *111*, 353–373. [CrossRef]
60. Gonin, M.; Besharov, H.P.; Smith, W.K. Managing Social-Business Tensions: A Review and Research Agenda for Social Enterprises. *Acad. Manag. Proc.* **2013**, *2013*, 11745. [CrossRef]
61. Ladstaetter, F.; Plank, A.; Hemetsberger, A. The merits and limits of making do: Bricolage and breakdowns in a social enterprise. *Entrep. Reg. Dev.* **2018**, *30*, 283–309. [CrossRef]
62. Abraído-Lanza, A.F.; Vásquez, E.; Echeverría, S.E. En las manos de Dios [in God's hands]: Religious and other forms of coping among Latinos with arthritis. *J. Consult. Clin. Psychol.* **2004**, *72*, 91. [CrossRef]

63. Li, M.-H.; Yang, Y. Determinants of problem solving, social support seeking, and avoidance: A path analytic model. *Int. J. Stress Manag.* **2009**, *16*, 155. [CrossRef]
64. Stephan, U. Entrepreneurs' Mental Health and Well-Being: A Review and Research Agenda. *Acad. Manag. Exec.* **2018**, *32*, 290–322. [CrossRef]
65. Diener, E.; Lucas, R.E.; Scollon, C.N. Beyond the hedonic treadmill: Revising the adaptation theory of well-being. In *The Science of Well-Being*; Springer: Berlin/Heidelberg, Germany, 2009; pp. 103–118.
66. Binder, M.; Coad, A. Life satisfaction and self-employment: A matching approach. *Small Bus. Econ.* **2013**, *40*, 1009–1033. [CrossRef]
67. Kautonen, T.; Kibler, E.; Minniti, M. Late-career entrepreneurship, income and quality of life. *J. Bus. Ventur.* **2017**, *32*, 318–333. [CrossRef]
68. Ferrer-I-Carbonell, A.; Frijters, P.; Praag, B. The anatomy of subjective well-being. *J. Econ. Behav. Organ.* **2003**, *51*, 29–49.
69. Erdogan, B.; Bauer, T.N.; Truxillo, D.M.; Mansfield, L.R. Whistle while you work: A review of the life satisfaction literature. *J. Manag.* **2012**, *38*, 1038–1083. [CrossRef]
70. Fors, F.; Johansson Sevä, I.; Gärling, T. The Bigger the Better? Business Size and Small-Business Owners' Subjective Well-Being. *J. Happiness Stud.* **2020**, *22*, 1071–1088. [CrossRef]
71. Dorado, S. Social entrepreneurial ventures: Different values so different process of creation, no? *J. Dev. Entrep.* **2006**, *11*, 319–343. [CrossRef]
72. Purdue, D. Neighbourhood Governance: Leadership, Trust and Social Capital. *Urban Stud.* **2001**, *38*, 2211–2224. [CrossRef]
73. Lerner, S.M. Gauging the success of social ventures initiated by individual social entrepreneurs. *J. World Bus.* **2006**, *41*, 6–20.
74. Hoogendoorn, B.; Zwan, P.V.D.; Thurik, R. Sustainable Entrepreneurship: The Role of Perceived Barriers and Risk. *J. Bus. Ethics* **2019**, *157*, 1133–1154. [CrossRef]
75. Beutell, N.J.; Alstete, J.W.; Schneer, J.A.; Hutt, C. A look at the dynamics of personal growth and self-employment exit. *Int. J. Entrep. Behav. Res.* **2019**, *25*, 1452–1470. [CrossRef]
76. Cacciotti, G.; Hayton, J.C.; Mitchell, J.R.; Allen, D.G. Entrepreneurial fear of failure: Scale development and validation. *J. Bus. Ventur.* **2020**, *35*, 106041. [CrossRef]
77. Raijman, R.; Tienda, M. Immigrants' pathways to business ownership: A comparative ethnic perspective. *Int. Migr. Rev.* **2000**, *34*, 682–706.
78. Shinnar, R.S.; Young, C.A. Hispanic immigrant entrepreneurs in the Las Vegas metropolitan area: Motivations for entry into and outcomes of self-employment. *J. Small Bus. Manag.* **2008**, *46*, 242–262. [CrossRef]
79. Gagné, M.; Deci, E.L. Self-determination theory and work motivation. *J. Organ. Behav.* **2010**, *26*, 331–362. [CrossRef]
80. Dacin, P.A.; Dacin, M.T.; Matear, M. Social Entrepreneurship: Why We Don't Need a New Theory and How We Move Forward from Here. *Acad. Manag. Perspect.* **2010**, *24*, 37–57. [CrossRef]
81. Hsu, D.K.; Shinnar, R.S.; Anderson, S.E. 'I Wish I Had a Regular Job': An Exploratory Study of Entrepreneurial Regret. *J. Bus. Res.* **2018**, *96*, 217–227. [CrossRef]
82. Yitshaki, R.; Kropp, F. Entrepreneurial passions and identities in different contexts: A comparison between high-tech and social entrepreneurs. *Entrep. Reg. Dev.* **2016**, *28*, 206–233. [CrossRef]
83. Gupta, P.; Chauhan, S.; Paul, J.; Jaiswal, M.P. Social entrepreneurship research: A review and future research agenda. *J. Bus. Res.* **2020**, *113*, 209–229. [CrossRef]
84. Datta, P.B.; Gailey, R. Empowering Women Through Social Entrepreneurship: Case Study of a Women's Cooperative in India. *Entrep. Theory Pract.* **2012**, *36*, 569–587. [CrossRef]
85. Yousaf, A.; Mishra, A.; Gupta, A. 'From technology adoption to consumption': Effect of pre-adoption expectations from fitness applications on usage satisfaction, continual usage, and health satisfaction. *J. Retail. Consum. Serv.* **2021**, *62*, 102655. [CrossRef]
86. Kesavayuth, D.; Rosenman, R.E.; Zikos, V. Personality and health satisfaction. *J. Behav. Exp. Econ.* **2015**, *54*, 64–73. [CrossRef]
87. Kibler, E.; Wincent, J.; Kautonen, T.; Cacciotti, G.; Obschonka, M. Can Prosocial Motivation Harm Entrepreneurs' Subjective Well-being? *J. Bus. Ventur.* **2019**, *34*, 608–624. [CrossRef]
88. Davis, P.E.; Bendickson, J.S.; Muldoon, J.; McDowell, W.C. Agency theory utility and social entrepreneurship: Issues of identity and role conflict. *Rev. Manag. Sci.* **2021**, *15*, 2299–2318. [CrossRef]
89. Ashton, R. *How to Be a Social Entrepreneur: Make Money and Change the World*; John Wiley & Sons: Hoboken, NJ, USA, 2011.
90. Kibler, E.; Wincent, J.; Kautonen, T.; Cacciotti, G.; Obschonka, M. Why social entrepreneurs are so burned out. *Harv. Bus. Rev.* 2018. Available online: http://hbr.org/2018/12/why-social-entrepreneurs-are-so-burned-out (accessed on 12 March 2022).
91. Cardon, M.S.; Wincent, J.; Singh, J.; Drnovsek, M. The nature and experience of entrepreneurial passion. *Acad. Manag. Rev.* **2009**, *34*, 511–532. [CrossRef]
92. Kickul, J.; Lyons, T.S. *Understanding Social Entrepreneurship: The Relentless Pursuit of Mission in an Ever Changing World*; Routledge: London, UK, 2020.
93. Thompson, N.A.; Gelderen, M.V.; Keppler, L. No Need to Worry? Anxiety and Coping in the Entrepreneurship Process. *Front. Psychol.* **2020**, *11*, 398. [CrossRef]
94. Hambrick, D.C.; Finkelstein, S.; Mooney, A.C. Executive Job Demands: New Insights for Explaining Strategic Decisions and Leader Behaviors. *Acad. Manag. Rev.* **2005**, *30*, 472–491. [CrossRef]
95. Shepherd, D.A.; Patzelt, H. The "heart" of entrepreneurship: The impact of entrepreneurial action on health and health on entrepreneurial action. *J. Bus. Ventur. Insights* **2015**, *4*, 22–29. [CrossRef]

96. Morris, M.H.; Santos, S.C.; Kuratko, D.F. The great divides in social entrepreneurship and where they lead us. *Small Bus. Econ.* **2021**, *57*, 1089–1106. [CrossRef]
97. Heilman, M.E. Sex bias in work settings: The lack of fit model. *Res. Organ. Behav.* **1983**, *5*, 269–298.
98. Heilman, M.E. Description and prescription: How gender stereotypes prevent women's ascent up the organizational ladder. *J. Soc. Issues* **2001**, *57*, 657–674. [CrossRef]
99. Penner, L.A.; Finkelstein, M.A. Dispositional and Structural Determinants of Volunteerism. *J. Personal. Soc. Psychol.* **1998**, *74*, 525–537. [CrossRef]
100. Bacq, S.; Alt, E. Feeling capable and valued: A prosocial perspective on the link between empathy and social entrepreneurial intentions. *J. Bus. Ventur.* **2018**, *33*, 333–350. [CrossRef]
101. Dickel, P.; Eckardt, G. Who wants to be a social entrepreneur? The role of gender and sustainability orientation. *J. Small Bus. Manag.* **2021**, *59*, 196–218. [CrossRef]
102. Gupta, V.K.; Goktan, A.B.; Gunay, G. Gender differences in evaluation of new business opportunity: A stereotype threat perspective. *J. Bus. Ventur.* **2014**, *29*, 273–288. [CrossRef]
103. Greene, A.M.; Ackers, P.; Black, J. Going against the historical grain: Perspectives on gendered occupational identity and resistance to the breakdown of occupational segregation in two manufacturing firms. *Gend. Work Organ.* **2002**, *9*, 266–285. [CrossRef]
104. Arndt, M.; Bigelow, B. Professionalizing and masculinizing a female occupation: The reconceptualization of hospital administration in the early 1900s. *Adm. Sci. Q.* **2005**, *50*, 233–261. [CrossRef]
105. Marshall, R.S. Conceptualizing the International For-Profit Social Entrepreneur. *J. Bus. Ethics* **2011**, *98*, 183–198. [CrossRef]
106. Masterson, C.R.; Hoobler, J.M. Care and career: A family identity-based typology of dual-earner couples. *J. Organ. Behav.* **2015**, *36*, 75–93. [CrossRef]
107. Weaver, J.R.; Vandello, J.A.; Bosson, J.K. Intrepid, imprudent, or impetuous? The effects of gender threats on men's financial decisions. *Psychol. Men Masc.* **2013**, *14*, 184–191. [CrossRef]
108. Justo, R.; DeTienne, D.R.; Sieger, P. Failure or voluntary exit? Reassessing the female underperformance hypothesis. *J. Bus. Ventur.* **2015**, *30*, 775–792. [CrossRef]
109. Powell, G.N.; Eddleston, K.A. Linking family-to-business enrichment and support to entrepreneurial success: Do female and male entrepreneurs experience different outcomes? *J. Bus. Ventur.* **2013**, *28*, 261–280. [CrossRef]
110. Fairlie, R.W.; Robb, A.M. Gender differences in business performance: Evidence from the Characteristics of Business Owners survey. *Small Bus. Econ.* **2009**, *33*, 375–395. [CrossRef]
111. Lewis, M.W.; Andriopoulos, C.; Smith, W.K. Paradoxical leadership to enable strategic agility. *Calif. Manag. Rev.* **2014**, *56*, 58–77. [CrossRef]
112. Besharov, M.L.; Smith, W.K. Multiple institutional logics in organizations: Explaining their varied nature and implications. *Acad. Manag. Rev.* **2013**, *39*, 364–381. [CrossRef]
113. Scott, C.; Stetyick, A.; Bochantin, J. Organizational Discourse and Sexuality in Male-Dominated Organizational Settings. In *The Routledge Handbook of Gender and Communication*; Routledge: London, UK, 2020; pp. 365–388.
114. Brislin, R.W. Translation and content analysis of oral and written materials. In *Handbook of Cross-Cultural Psychology: Methodology*; Allyn and Bacon: Boston, MA, USA, 1980; pp. 389–444.
115. Nunnally, J.C. *Psychometric Theory*, 3rd ed.; Tata McGraw-Hill Education: New Delhi, India, 1994.
116. Kropp, F.; Lindsay, N.J.; Shoham, A. Entrepreneurial orientation and international entrepreneurial business venture startup. *Int. J. Entrep. Behav. Res.* **2008**, *14*, 102–117. [CrossRef]
117. Barclay, D.; Higgins, C.; Thompson, R. The Partial Least Squares (PLS) Approach to Casual Modeling: Personal Computer Adoption Ans Use as an Illustration. *Technol. Stud.* **1995**, *2*, 285–309.
118. Lepoutre, J.; Justo, R.; Terjesen, S.; Bosma, N. Designing a global standardized methodology for measuring social entrepreneurship activity: The Global Entrepreneurship Monitor social entrepreneurship study. *Small Bus. Econ.* **2013**, *40*, 693–714. [CrossRef]
119. Estrin, S.; Mickiewicz, T.; Stephan, U. Entrepreneurship, social capital, and institutions: Social and commercial entrepreneurship across nations. *Entrep. Theory Pract.* **2013**, *37*, 479–504. [CrossRef]
120. Grant, A.M.; Berry, J.W. The necessity of others is the mother of invention: Intrinsic and prosocial motivations, perspective taking, and creativity. *Acad. Manag. J.* **2011**, *53*, 375–383. [CrossRef]
121. Kesavayuth, D.; Poyago-Theotoky, J.; Tran, D.B.; Zikos, V. Locus of control, health and healthcare utilization. *Econ. Modell.* **2022**, *86*, 227–238. [CrossRef]
122. Ringle, C.; Wende, S.; Becker, J. *SmartPLS (Versión 3.3. 3) [Software]*, SmartPLS GmbH: Bönningstedt, Germany, 2015.
123. Manley, S.C.; Hair, J.F.; Williams, R.I.; McDowell, W.C. Essential new PLS-SEM analysis methods for your entrepreneurship analytical toolbox. *Int. Entrep. Manag. J.* **2020**, *17*, 1805–1825. [CrossRef]
124. Chin, W.W.; Newsted, P.R. Structural equation modeling analysis with small samples using partial least squares. *Stat. Strateg. Small Sample Res.* **1999**, *1*, 307–341.
125. Hair, J.F.; Risher, J.J.; Sarstedt, M.; Ringle, C.M. When to use and how to report the results of PLS-SEM. *Eur. Bus. Rev.* **2019**, *31*, 2–24. [CrossRef]
126. Fornell, C.; Larcker, D.F. Evaluating structural equation models with unobservable variables and measurement error. *J. Mark. Res.* **1981**, *18*, 39–50. [CrossRef]

127. Gold, A.H.; Malhotra, A.; Segars, A.H. Knowledge management: An organizational capabilities perspective. *J. Manag. Inf. Syst.* **2001**, *18*, 185–214. [CrossRef]
128. Henseler, J.; Ringle, C.M.; Sinkovics, R.R. The use of partial least squares path modeling in international marketing. In *New Challenges to International Marketing*; Emerald Group Publishing Limited: Bingley, UK, 2009.
129. Chin, W.W. The partial least squares approach to structural equation modeling. *Mod. Methods Bus. Res.* **1998**, *295*, 295–336.
130. Falk, R.F.; Miller, N.B. *A Primer for Soft Modeling*; University of Akron Press: Akron, OH, USA, 1992.
131. Cohen, J. *Statistical Power Analysis for the Behavioral Sciences*; Academic Press: Cambridge, MA, USA, 2013.
132. Hair, J.F., Jr.; Sarstedt, M.; Ringle, C.M.; Gudergan, S.P. *Advanced Issues in Partial Least Squares Structural Equation Modeling*; Sage Publications: Thousand Oaks, CA, USA, 2017.
133. Amato, S.; Esposito Vinzi, V.; Tenenhaus, M. A global goodness-of-fit index for PLS structural equation modeling. *Oral Commun. PLS Club HEC Sch. Manag. Fr. March* **2004**, *24*, 4.
134. Wetzels, M.; Odekerken-Schröder, G.; Van Oppen, C. Using PLS path modeling for assessing hierarchical construct models: Guidelines and empirical illustration. *MIS Q.* **2009**, *33*, 177–195. [CrossRef]
135. Purvis, R.L.; Sambamurthy, V.; Zmud, R.W. The assimilation of knowledge platforms in organizations: An empirical investigation. *Organ. Sci.* **2001**, *12*, 117–135. [CrossRef]
136. Sobel, M.E. Asymptotic confidence intervals for indirect effects in structural equation models. *Sociol. Methodol.* **1982**, *13*, 290–312. [CrossRef]
137. Lee, C.; Hallak, R. Investigating the moderating role of education on a structural model of restaurant performance using multi-group PLS-SEM analysis. *J. Bus. Res.* **2018**, *88*, 298–305. [CrossRef]
138. Hambrick, D.C. *Upper Echelons Theory: An Update*; Academy of Management Briarcliff Manor: New York, NY, USA, 2007.
139. Mcadams, K.K.; Lucas, R.E.; Donnellan, M.B. The Role of Domain Satisfaction in Explaining the Paradoxical Association Between Life Satisfaction and Age. *Soc. Indic. Res.* **2012**, *109*, 295–303. [CrossRef]
140. Deaton, A. Income, Health, and Well-Being around the World: Evidence from the Gallup World Poll. *J. Econ. Perspect. A J. Am. Econ. Assoc.* **2008**, *22*, 53–72. [CrossRef]
141. Brieger, S.A.; De Clercq, D. Entrepreneurs' individual-level resources and social value creation goals: The moderating role of cultural context. *Int. J. Entrep. Behav. Res.* **2019**, *25*, 193–216. [CrossRef]
142. Brieger, S.A.; Terjesen, S.A.; Hechavarría, D.M.; Welzel, C. Prosociality in Business: A Human Empowerment Framework. *J. Bus. Ethics* **2019**, *159*, 361–380. [CrossRef]
143. Brieger, S.A.; Bro, A.; Criaco, G.; Terjesen, S.A. Entrepreneurs' age, institutions, and social value creation goals: A multi-country study. *Small Bus. Econ.* **2020**, *57*, 425–453. [CrossRef]
144. Hechavarría, D.M.; Terjesen, S.A.; Ingram, A.E.; Renko, M.; Justo, R.; Elam, A. Taking care of business: The impact of culture and gender on entrepreneurs' blended value creation goals. *Small Bus. Econ.* **2017**, *48*, 225–257. [CrossRef]

International Journal of
Environmental Research and Public Health

MDPI

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How Does Social Security Fairness Predict Trust in Government? The Serial Mediation Effects of Social Security Satisfaction and Life Satisfaction

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Abstract: Several studies have found that trust in government is associated with social fairness, citizens' satisfaction with public service, and life satisfaction. This study aimed to investigate the serial mediation effects of social security satisfaction and life satisfaction on the association between social security fairness and trust in government. We analyzed the data from the Chinese Social Survey in 2019 (n = 7403) to examine the serial mediation effects. The findings showed that the higher the level of government, the greater the trust it enjoyed from its citizens. The direct prediction of trust by social security fairness was stronger at the county and township levels than at the central government level. Both social security satisfaction and life satisfaction partially mediated the relationship between social security fairness and overall trust in government. Social security fairness indirectly positively predicted trust in local government at the county and township levels through social security satisfaction, life satisfaction, and their serial mediation. While social security fairness could only indirectly predict trust in central government through social security satisfaction, the prediction of trust in central government via life satisfaction (mediator) was not significant. We observed a serial mediation model in which social security fairness positively predicted trust in government directly and indirectly through social security satisfaction and life satisfaction. The finding that social security satisfaction partially mediates the relationship between perceptions of fairness in the social security system and trust in government has implications for improving policies and the functioning of the system at all levels of the government.

Keywords: trust in government; social security fairness; social security satisfaction; life satisfaction

Citation: Zhi, K.; Tan, Q.; Chen, S.; Chen, Y.; Wu, X.; Xue, C.; Song, A. How Does Social Security Fairness Predict Trust in Government? The Serial Mediation Effects of Social Security Satisfaction and Life Satisfaction. *IJERPH* **2022**, *19*, 6867. https://doi.org/10.3390/ijerph19116867

Academic Editors: V. K. Kumar, Jasmin Tahmaseb-McConatha and Paul B. Tchounwou

Received: 8 April 2022
Accepted: 2 June 2022
Published: 3 June 2022

1. Introduction

With the spread of COVID-19, in many countries, including China, citizens' trust in government has become more important [1]. Trust in government refers to the citizens' belief or confidence that the government will produce results consistent with their expectations [2,3], which is the core foundation of effective governance [1]. Extensive studies have been conducted to explore the factors of trust in government, including government performance [4,5], fairness [6,7], public service [8], and citizen satisfaction [9,10]. Citizens' requirements of the government have gradually changed from economic development to livelihood issues such as public services and social fairness in the COVID-19 era [11]. The importance of social fairness and public services has exceeded that of economic performance in mediating trust in government [11].

As an important element of basic public services, fairness is the core concept and primary principle of social security [12]. The issue of fairness in China's social security still exists [12]. The government provides social security [13]; thus, if citizens feel that the

social security system is unfair and that the government's management of social security is inconsistent with citizens' expectations, they may lose trust in the government [14]. Therefore, it seems reasonable to assume that social security fairness is related to trust in government.

On the one hand, fairness is one of the standards that citizens use to evaluate the quality of social security, which may affect their satisfaction with social security [15,16]. On the other hand, citizens' daily life is closely related to social security, whereby its improved supply level and fairness could significantly promote citizens' life satisfaction [13]. Previous studies have indicated that social security satisfaction and life satisfaction are positively associated with citizens' trust in government [17,18]. Thus, it can be seen that social security fairness, social security satisfaction, life satisfaction, and trust in government are closely related.

However, we know little about how social security fairness predicts citizens' trust in government as it is mediated through social security satisfaction and life satisfaction. Previous studies mostly discussed the correlations among government performance, public service satisfaction, social fairness, and trust in government [5,6,17]. Further empirical studies are needed to explore the correlations between social security fairness and trust in government. In this study, we used data from the 2019 Chinese Social Survey (CSS) to explore the serial mediation effects of social security satisfaction and life satisfaction on the association between social security fairness and trust in government.

2. Literature Review and Research Hypothesis

2.1. Trust in Government

Citizens' confidence in central and local government constitutes their trust in governments [3,5]. Citizens with a high level of trust in government are more willing to comply with government policies, respond to the government's call, and participate in public affairs [19,20]. When citizens lose confidence in their government, they become reluctant to cooperate with the government [19,21], leading to increased costs and difficulty of governance and potentially causing the government to fall into the "Tacitus trap" [22]. Accordingly, it is important to investigate factors that might affect trust in government and help improve citizens' confidence.

Trust in government has been a popular topic in political science research [23]. Institutional theories and cultural theories have provided completely different perspectives to explain the origin and development of trust in government [24]. Institutional theories hold that trust in government is politically endogenous [24]. Government performance mainly determines citizens' trust in government, as based on a rational evaluation [24,25]. Trust fluctuates with fluctuations in a government's economic and public service performance [4,5,25]. Cultural theories hold that trust in government is exogenous [24,25], originating from factors such as traditional culture, values, social capital, and individual experience [24,25]. Institutional theories and cultural theories are not mutually exclusive but complementary, with both considered the main theories explaining the origin of trust in government.

Supporters of institutional theories and cultural theories have investigated various factors of trust in government from different perspectives [5,11,17,18]. However, institutional theories ignore that social security fairness is an important basis for citizens to evaluate social security performance, whereas cultural theories neglect the effects of psychological feelings related to social security fairness on trust in government. Therefore, further empirical research is needed to investigate the associated mechanisms between social security fairness and trust in government, which could provide theoretical support for improving the level of citizens' trust in government.

2.2. Social Security Fairness and Trust in Government

Social security fairness refers to the fairness of the process and results of social security services, which involves the fairness of multiple social security systems, such as elder

security, public health security, and employment security [26]. The fairness theory proposed by Adams [27] suggests that people not only pay attention to the absolute value of the reward they received but also take note of its relative value to other rewards they or others have received. If people consider the rewards fair, they work more actively, thereby reducing workplace deviance [28]. Specifically, people's perception of fairness affects their subsequent attitudes and behaviors [29]. Extending this concept to the study of trust in government, we examined the role of citizens' attitudes toward their government in using social security services. If the social security services provided are perceived as fair and reasonable, the citizens are more likely to have higher levels of trust in their government.

Previous studies show that citizens have a strong dislike for the lack of fairness and equality [30,31]. The unfairness of public service resources and policy implementation can lead to their expectations falling short, thus damaging their trust in government [6,32]. Zmerli and Castillo [14] found that both income inequality and distributive unfairness are negatively associated with trust in government. Marien and Werner [7] also discovered that citizens who consider authorities to treat them fairly have greater trust in political institutions. Lee [6] confirmed that social fairness is positively correlated to trust in government.

On the basis of this evidence, we formulated a hypothesis about the relationship between social security fairness and trust in government.

Hypothesis 1 (H1). *Social security fairness positively predicts citizens' trust in government.*

2.3. The Mediator of Social Security Satisfaction

Social security satisfaction is defined as the overall satisfaction with various security systems. Expectancy disconfirmation theory holds that if the actual results exceed expectations, positive disconfirmation occurs and satisfaction emerges. If the actual results are lower than expected, negative disconfirmation occurs, leading to decreased satisfaction and complaints [33,34]. The fairness preference theory holds that human beings are born with a preference to pursue fairness [30]. Accordingly, citizens would have great expectations regarding social security fairness. When the perceived fairness in social security reaches or exceeds their expectations, citizens would evaluate social security services more positively, indicating greater social security satisfaction. On the contrary, when citizens believe that social security is unfair, negative disconfirmation, disappointment, and dissatisfaction with social security services will occur.

Several scholars have claimed that citizens' satisfaction is closely correlated to trust in government. Welch et al. [10] confirmed that citizens' satisfaction with e-government is positively associated with trust in government. Zhao and Hu [8] found that, compared with citizens who are unsatisfied with the quality of public service, satisfied citizens have greater trust in their government. Beeri et al. [9] found that citizens' satisfaction with government is associated with trust in local government. Better quality of public services is associated with greater citizen satisfaction, as well as greater confidence in government [9,35]. Accordingly, it can be speculated that social security satisfaction affects trust in government.

On the basis of the above findings, we propose a hypothesis regarding social security fairness, social security satisfaction, and trust in government.

Hypothesis 2 (H2). *Social security satisfaction mediates the relationship between social security fairness and trust in government.*

2.4. The Mediator of Life Satisfaction

Life satisfaction is an individual's overall subjective evaluation of their quality of life [36]. Research supports that subjective relative deprivation is a negative emotional experience, e.g., loss, dissatisfaction, and anger toward unfairness, which leads to a decline in an individual's life satisfaction and happiness [37]. Liu and Pan [38] found that Chinese rural-to-urban migrant workers' subjective relative deprivation is negatively associated

with life satisfaction. Perception of unfairness is an indicator of relative deprivation [39]. Thus, social security unfairness may result in relative deprivation, negatively affecting life satisfaction. A previous study found that perceptions of social fairness and personal life satisfaction are highly correlated in EU countries [36]. Wang and Li [40] revealed that Wenchuan earthquake survivors who believed the government relief policy to be fair had a greater life satisfaction compared to those who did not. Sun and Xiao [13] confirmed that social security fairness significantly correlated with citizens' life satisfaction.

Institutional theories hold that citizens' life satisfaction is related to the government's performance and is one of the institutional factors affecting trust in government [41]. On the basis of data from the four waves of the World Values Survey (WVS), Helliwell [42] found a positive linear relationship between life satisfaction and citizens' evaluation of government. In general, the government's actions affect citizens' life satisfaction, which is highly correlated with trust in the government. Kong [18] confirmed that both competence-based trust in government and goodwill-based trust in government are positively related to citizens' life satisfaction. Therefore, we propose a relationship linking social security fairness, life satisfaction, and trust in government.

Hypothesis 3 (H3). *Life satisfaction mediates the relationship between social security fairness and trust in government.*

2.5. The Serial Mediation Effects of Social Security Satisfaction and Life Satisfaction

Bottom-up and top-down theories are two approaches used to explain life satisfaction [43,44]. Top-down theories consider personality traits to be the main predictors of life satisfaction [44]. Bottom-up theories hold that life satisfaction is a function of satisfaction in all subareas of life, such as family, leisure, and work, and that a person's satisfaction with all areas of life mainly determines their personal life satisfaction [45]. Lachmann et al. [46] discovered that personality variables contribute much less to the prediction of overall life satisfaction compared to such life satisfaction variables as work, family, and leisure. They concluded that their results support the bottom-up theories that life satisfaction in various areas of life (e.g., family, work) has a higher impact on overall life satisfaction than top-down variables of demographic and personality variables. Since social security is an essential aspect of daily life, we suggest that social security satisfaction should be highly correlated with citizens' life satisfaction. Thus, we propose a serial two-mediator model describing social security fairness, social security satisfaction, life satisfaction, and trust in government.

Hypothesis 4 (H4). *Social security satisfaction and life satisfaction sequentially mediate the relationship between social security fairness and trust in government.*

3. Materials and Methods

3.1. Data and Sample

The data for this study came from the 2019 CSS, a nationally representative survey conducted by the Institute of Sociology at the Chinese Academy of Social Sciences. CSS performed a structured questionnaire administered in household interviews via the probability sampling method, covering 31 provinces of China, including 151 districts and 604 villages. Since 2005, it has used a biennial and continuous survey which involves covering between 7000 and 10,000 families on issues such as family and social life and social attitudes (for more information, please visit: http://css.cssn.cn/css_sy/ accessed on 7 April 2022).

The 2019 CSS collected 10,283 valid questionnaires; adults aged 18 and above were asked to respond to the survey questions. Respondents participated in the survey voluntarily and anonymously. Through processing the original data, the samples with missing values for the variables involved in the study were eliminated. The final sample included 7403 participants (44.99% males, 55.01% females). The participants' mean age was

44.22 years old; 57.13% were educated below the senior high-school level, while 42.87% had an education at the senior high-school level or above. In addition, 59.34% were from urban areas, while 40.66% were from rural areas.

Because the 2019 CSS data were participants' subjective self-reported answers, statistical measures were used to detect the presence of common method bias in the data [47]. The results of Harman's single-factor test showed that the initial four factors extracted had eigenvalues greater than 1.0, and the first factor accounted for 36.90% of the total variance, which is less than the critical value of 40% [48], suggesting that our data had no serious common method bias.

3.2. Measures

3.2.1. Criterion Variable

The criterion variable in this study was trust in government. In previous studies, researchers have measured overall trust in government as a function of participants' trust in various hierarchies of the government, such as the central government and local government [5,49]. The 2019 CSS asked participants about their level of trust in central government, county government, and township government. The answers ranged from "no trust at all (1)" to "a great deal of trust (5)". We used the average value of participants' trust in central, county, and township governments as the level of overall trust in government, with higher scores reflecting greater levels of overall trust in government. Cronbach's α coefficient for overall trust in government was 0.744. The KMO value was 0.566 (>0.5), and Bartlett's test was significant ($p < 0.001$), indicating that the three items (trust at each level of government) were suitable for factor analysis [50]. The results of the principal component analysis (PCA) showed that one factor with an eigenvalue greater than 1.0 was retained, and it accounted for 67.244% of the total variance. Additionally, the factor loadings of the three items were 0.620, 0.922, and 0.885, respectively. The results of the confirmatory factor analysis (CFA) showed that the construct reliability (CR) of the three items was 0.784, and the average variance extracted (AVE) was 0.589, indicating that the scale had acceptable convergent validity.

3.2.2. Predictor Variable

The predictor variable in this study was social security fairness. Social security is a general term used to refer to various social measures. In this study, social security fairness mainly refers to fairness in terms of public health, employment, and elder security. We measured social security fairness by asking participants the following question: "What do you think of the fairness of the following aspects in current social life: (a) public health, (b) work and employment opportunities, and (c) social security benefits such as elder security?" Respondents answered the question using a five-point rating scale: "very unfair (1)", "generally unfair (2)", "neither unfair nor fair (3)", "generally fair (4)", and "very fair (5)". We used the average scores relating to public health fairness, employment fairness, and elder security fairness to represent the level of social security fairness. Higher scores indicated better social security fairness. Cronbach's α coefficient for social security fairness was 0.659. The KMO value was 0.655 (>0.5), and Bartlett's test was significant ($p < 0.001$), indicating that the three items were suitable for factor analysis. The results of the PCA showed that one factor was extracted which accounted for 59.453% of the total variance. Additionally, the factor loadings of the three items were 0.787, 0.744, and 0.781, respectively. The CFA results indicated that the AVE value was 0.394, and the CR value was 0.667.

3.2.3. Mediator Variables

The first mediator variable in this study was social security satisfaction. Social security satisfaction was measured as overall satisfaction using three social security items: public health security, elder security, and employment security. To measure social security satisfaction, participants were instructed to "Please use a score of 1–10 to express your evaluation

of the following social security items provided by the government to the people, where 1 means very dissatisfied and 10 means very satisfied: (a) public health security, (b) elder security, and (c) employment security." In keeping with the 5-point rating scale used above, we converted the 10-point rating scale to a 5-point rating scale, whereby we coded scores of 1 and 2 as "1" and scores of 9 and 10 as "5". A score of "1" meant "very dissatisfied", while a score of "5" meant very satisfied. We took the average satisfaction with the three aspects as the index to measure the level of social security satisfaction. Cronbach's α coefficient for social security satisfaction was 0.837. The KMO value was 0.713 (>0.5), and Bartlett's test was significant ($p < 0.001$). The results of PCA showed that one factor was extracted which accounted for 75.457% of the total variance. The factor loadings of the three items were 0.888, 0.883, and 0.833, respectively. The CFA suggested that the AVE value was 0.387, and the CR value was 0.749.

The second mediator variable in this study was life satisfaction. Life satisfaction was measured as a function of the participants' satisfaction with family relationships, family economic status, education level, leisure, and social life. We converted the 10-point rating scale to a 5-point rating scale, ranging from "very dissatisfied (1)" to "very satisfied (5)". The average level of satisfaction with the five items was used to indicate the level of life satisfaction. Higher scores indicated that participants had greater satisfaction with their lives. Cronbach's α coefficient for life satisfaction was 0.741. The KMO value was 0.756 (>0.5), and Bartlett's test was significant ($p < 0.001$). The results of the PCA indicated that one factor was extracted which accounted for 49.946% of the total variance. The factor loadings of 5 items ranged from 0.491 to 0.811. The CFA suggested that the measurement of life satisfaction had acceptable convergent validity (AVE = 0.637 and CR = 0.843).

3.2.4. Control Variables

We included gender (1 = male and 0 = female), age, education level (1 = senior high school or above and 0 = below senior high school), marital status (1 = married and 0 = not married or divorced), political status (1 = member of the Communist Party of China and 0 = others), region (1 = urban and 0 = rural), Internet use (1 = yes and 0 = no), and location (1 = in the east or west and 0 = others) in the model as control variables.

3.3. Statistical Analysis

We used SPSS 24.0 and Process 2.16 to conduct the statistical analyses. We employed descriptive statistics to examine the overall characteristics of the criterion and predictor variables. Correlation coefficients were computed to examine the strength of linear relationships among social security fairness, social security satisfaction, life satisfaction, and trust in government. Model 6 in Process 2.16 was used to test the serial mediation effects of social security satisfaction and life satisfaction on the relationship between social security fairness and trust in government at the central, county, and township levels.

4. Results

4.1. Descriptive Statistics and Correlation Analysis

Table 1 shows descriptive statistics and correlation coefficients. The average score for Chinese citizens' overall trust in their government was 3.910. The central government enjoyed a higher level of trust than the county and township governments (M = 4.492, M = 3.745, and M = 3.494, respectively). Paired sample *t*-tests showed the three means differed significantly: (a) the mean difference between trust in central and county governments was 0.744 ($t = 56.975$, $df = 7402$, $p < 0.001$, medium Cohen's $d = 0.662$), (b) the mean difference between trust in central and township governments was 0.998 ($t = 65.466$, $df = 7402$, $p < 0.001$, medium Cohen's $d = 0.761$), and (c) the mean difference between trust in county and township governments was 0.251 ($t = 25.905$, $df = 7402$, $p < 0.001$, small Cohen's $d = 0.301$). The average score of social security fairness across all levels was 3.491. Scores concerning citizens' satisfaction with social security and life were also at a similar level (M = 3.453 and M = 3.471, respectively).

Table 1. Descriptive statistics and correlations among the variables.

Variables	M	SD	1	2	3	4	5	6
1 Trust in central government	4.492	0.803						
2 Trust in county government	3.745	1.180	0.403 ***					
3 Trust in township government	3.494	1.300	0.294 ***	0.778 ***				
4 Overall trust in government	3.910	0.912	0.606 ***	0.919 ***	0.897 ***			
5 Social security fairness	3.491	0.887	0.189 ***	0.375 ***	0.387 ***	0.401 ***		
6 Social security satisfaction	3.453	1.067	0.194 ***	0.346 ***	0.357 ***	0.375 ***	0.475 ***	
7 Life satisfaction	3.471	0.810	0.110 ***	0.247 ***	0.252 ***	0.259 ***	0.253 ***	0.441 ***

*** $p < 0.001$.

The correlation analysis showed that social security fairness was positively associated with overall trust in government ($r = 0.401$, $p < 0.001$). Social security fairness was significantly associated with trust in central, county, and township governments ($r = 0.189$, $p < 0.001$; $r = 0.375$, $p < 0.001$ and $r = 0.387$, $p < 0.001$, respectively). Social security satisfaction and life satisfaction were significantly positively associated with overall trust in government ($r = 0.375$, $p < 0.001$ and $r = 0.259$, $p < 0.001$, respectively). Social security satisfaction was also significantly positively associated with life satisfaction ($r = 0.441$, $p < 0.001$). Correlations among social security fairness, social security satisfaction, life satisfaction, and trust in government were all significant. We also found that social security fairness, social security satisfaction, and life satisfaction had the weakest correlations with trust in central government and the strongest correlations with trust in township government. The correlations between trust and other variables were higher for lower levels of government. Considering that correlations were significant among the variables, we performed several mediation analyses.

4.2. The Serial Mediation Effects of Social Security Satisfaction and Life Satisfaction

We used Amos software to analyze the overall fit of the tested models before path analysis. The results presented acceptable model fit indices (CFI = 0.946, TLI = 0.931, RMSEA = 0.060, SRMA = 0.034, and chi-square/df = 27.8). We used the bootstrap sampling method to test the serial mediation effect through Model 6 in the Process 2.16 plug-in of the SPSS macro program. The sample size was set to 5000, and the confidence level was 95%. Mediation analyses included the following control variables: gender, age, education level, marital status, political status, region, Internet use, and location. Figure 1 shows the results of the path analysis. The proposed model explained 23.8% of the variance in social security satisfaction ($p < 0.001$), 27.1% of the variance in life satisfaction ($p < 0.001$), and 22.7% of the variance in overall trust in government ($p < 0.001$). The results demonstrated that social security fairness had a positive and statistically significant direct effect on overall trust in government ($\beta = 0.286$, $p < 0.001$). The path coefficient between social security satisfaction and social security fairness was 0.472 ($p < 0.001$), indicating that social security fairness significantly positively predicted social security satisfaction. The path coefficient between overall trust in government and social security satisfaction was 0.192 ($p < 0.001$), showing that social security satisfaction significantly partially mediated the relationship between social security fairness and overall trust in government ($\beta = 0.091$, $p < 0.001$). In addition, the 95% confidence intervals of bootstrapping with a sample size of 5000 were 0.077 and 0.104, excluding 0.

The path coefficient between social security fairness and life satisfaction was 0.078 ($p < 0.001$), indicating that social security fairness significantly positively predicted life satisfaction. The path coefficient between life satisfaction and overall trust in government was 0.079 ($p < 0.001$). Life satisfaction partially mediated the association between social security fairness and overall trust in government ($\beta = 0.006$, $p < 0.001$). In addition, the 95% confidence intervals of bootstrapping with a sample size of 5000 were 0.004 and 0.010, excluding 0.

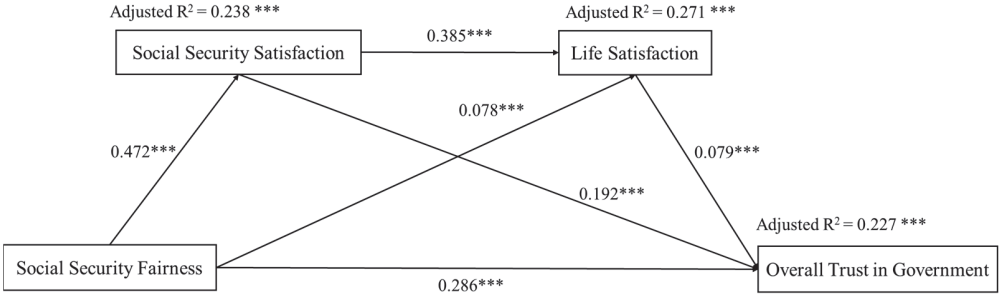

Figure 1. The serial mediator model of social security fairness, social security satisfaction, life satisfaction, and overall trust in government after adding the control variables (n = 7403). Standardized regression coefficients are shown next to the arrows. Adjusted R^2 is shown above the explained variable. *** $p < 0.001$.

The path coefficient between social security satisfaction and life satisfaction was 0.385 ($p < 0.001$), indicating that life satisfaction was highly correlated with social security satisfaction. The results revealed that the serial mediation effects of social security satisfaction and life satisfaction between social security fairness and overall trust in government were significant ($\beta = 0.014$, $p < 0.001$). The 95% confidence intervals of bootstrapping with a sample size of 5000 were 0.010 and 0.019, excluding 0. Therefore, all path coefficients in the model reached the level of statistical significance ($p < 0.001$). Social security fairness indirectly partially predicted overall trust in government through social security satisfaction, life satisfaction, and the serial mediation of social security satisfaction and life satisfaction.

We further examined the serial mediation effects that social security satisfaction and life satisfaction had on the relationship between social security fairness and trust in government at the central, county, and township levels. Figure 2 presents the results of the path analysis between social security fairness and trust in central government. After adding control variables, the path coefficient between social security fairness and trust in central government was 0.134 ($p < 0.001$), indicating that social security fairness directly and positively predicted trust in central government. The path coefficient between social security satisfaction and trust in central government was 0.113 ($p < 0.001$), showing that social security satisfaction partially mediated the relationship between social security fairness and trust in central government ($\beta = 0.054$, 95% CIs: 0.039, 0.067). Meanwhile, the path coefficient between life satisfaction and trust in central government was 0.016 ($p > 0.05$), indicating that the prediction of trust in central government using life satisfaction was not significant. Life satisfaction was not a significant mediator in the relationship between social security fairness and trust in central government. The results reveal that social security fairness cannot significantly and indirectly predict trust in central government through life satisfaction (95% CIs: −0.001, 0.035) and the serial mediation of social security satisfaction and life satisfaction (95% CIs: −0.002, 0.008). In addition, the serial model explained the change in trust in central government by 9.9% ($p < 0.001$).

Figure 3 shows the results of the path analysis between social security fairness and trust in local government at the county and township levels. The serial mediation model explained 19.6% of the variance in trust in county government ($p < 0.001$). The path coefficients of social security fairness, social security satisfaction, and life satisfaction on trust in county government were 0.267 ($p < 0.001$), 0.170 ($p < 0.001$), and 0.083 ($p < 0.001$), respectively. Social security fairness indirectly predicted trust in county government through social security satisfaction, life satisfaction, and their serial mediation were 0.080 (95% CIs: 0.067, 0.094), 0.006 (95% CIs: 0.004, 0.010), and 0.015 (95% CIs: 0.010, 0.020), respectively.

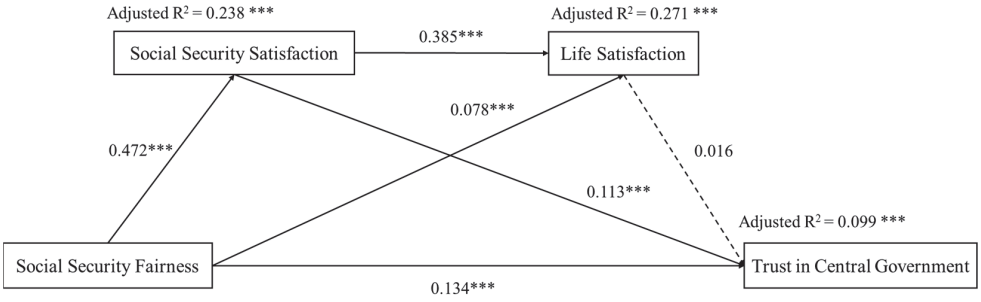

Figure 2. The serial mediator model of social security fairness, social security satisfaction, life satisfaction, and trust in central government after adding the control variables (n = 7403). Standardized regression coefficients are marked next to the arrows. Adjusted R^2 is marked above the explained variable. *** $p < 0.001$.

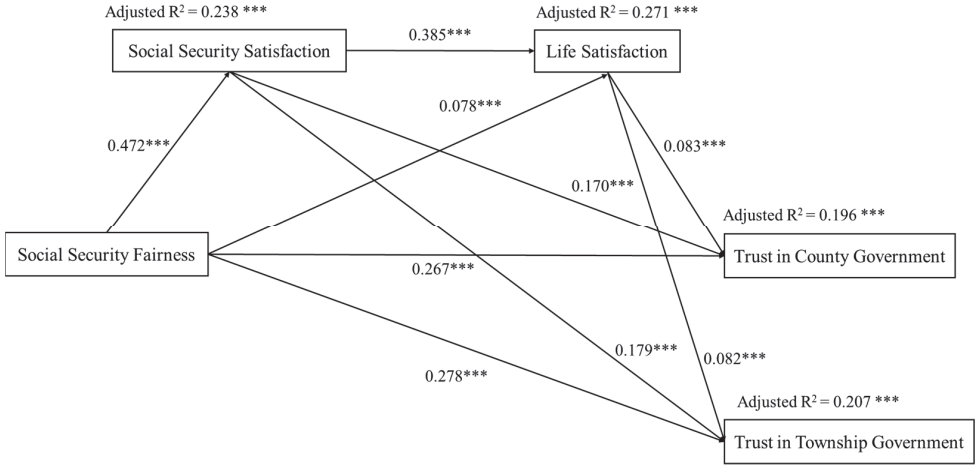

Figure 3. The serial mediator model of social security fairness, social security satisfaction, life satisfaction, and trust in local (county and township) government after adding the control variables (n = 7403). Standardized regression coefficients are shown next to the arrows. Adjusted R^2 is shown above the explained variable. *** $p < 0.001$.

The results of the path analysis between social security fairness and trust in township government show that the serial mediation model explained 20.7% of the variance in trust in township government ($p < 0.001$). The path coefficients from social security fairness, social security satisfaction, and life satisfaction to trust in township government were 0.278 ($p < 0.001$), 0.179 ($p < 0.001$), and 0.082 ($p < 0.001$), respectively. Social security fairness significantly and directly predicted trust in township government ($\beta = 0.278$, $p < 0.001$). Social security fairness and trust in township government were related through social security satisfaction ($\beta = 0.085$, 95% CIs: 0.072, 0.099), life satisfaction ($\beta = 0.006$, 95% CIs: 0.004, 0.010), and their serial mediation ($\beta = 0.015$, 95% CIs: 0.010, 0.020), respectively.

In addition, the regression results concerning the control variables revealed some demographic factors that predicted overall trust in government. Since a large sample size can influence the statistical significance of results, $p = 0.001$ was used to evaluate significance. Citizens' age ($\beta = 0.065$, $p < 0.001$), education level ($\beta = 0.075$, $p < 0.001$), and political status ($\beta = 0.062$, $p < 0.001$) were significantly associated with their overall trust in government. The path coefficients from gender ($\beta = -0.008$, $p > 0.001$), marital status

(β = −0.012, $p > 0.001$), region (β = −0.03, $p > 0.001$), Internet use (β = −0.03, $p > 0.001$), living in eastern China (β = 0.023, $p > 0.001$), or living in western China (β = −0.007, $p > 0.001$) to overall trust in government were not significant at the 0.001 level. Citizens who are older, have a higher education level, and are members of the Communist Party of China have a higher level of overall trust in government. We can also see that social security fairness is capable of significantly and positively predicting trust in central government (β = 0.134, $p < 0.001$), trust in county government (β = 0.267, $p < 0.001$), and trust in township government (β = 0.278, $p < 0.001$). In examining the adjusted R^2 changes, the serial mediation model appeared to have a higher explanatory power to trust in county (adjusted $R^2 = 0.196$, $p < 0.001$) and township (adjusted $R^2 = 0.207$, $p < 0.001$) governments than in central government (adjusted $R^2 = 0.099$, $p < 0.001$). The results illustrate the fact that the positive prediction of trust in government via social security fairness was better for lower levels of the government than for higher levels.

5. Discussion

The results of the descriptive statistical analysis and paired-samples *t*-tests showed that Chinese citizens' trust in central government was significantly higher than in county and township governments. The effect sizes showed that the trust gap between the central and county and township governments was medium, but the trust gap between the latter two governments was small. This is consistent with the results of previous studies [51,52]. The hierarchical trust in government may be due to Chinese citizens' inclination of regarding the central government as performing better than local governments [53]. The trust gap between the central and local governments in part reflected "the gap between central rhetoric and local practice" [54]. Chinese citizens' social security fairness, social security satisfaction, and life satisfaction were at an average level, which may be caused by the government's failure to meet the citizens' demand for social security services.

The results indicated that social security fairness positively predicted trust in government, and the positive prediction of trust via social security fairness in the lower-level government was better than in higher-level government. Previous research has shown that maintaining social fairness is the government's inherent duty and that social fairness is closely related to trust in government [6]. Social policy fairness, distributive fairness, and the fairness of the service delivery processes have been confirmed to positively predict citizens' trust in government [7,14,40,55]. Our findings were consistent with previous results. However, we further discovered that the prediction of trust in local government (county and township government) using social security fairness was stronger compared to that of trust in central government. China's governance system may explain this interesting finding. The Chinese governance system's characteristics can be summarized as "vertically decentralized authoritarianism"; the central government governs the Chinese officials, while the local government governs the people [56]. The low-level governments execute more social security services, and the citizens have more contact with the low-level governments in the process of receiving social security services. Citizens interact more frequently with low-level governments. Therefore, the role of social security fairness in improving trust in low-level governments may be more obvious than in high-level governments. A previous study also found social fairness had a stronger effect on trust in local government compared to trust in central government [57].

The results showed that social security satisfaction partially mediated the relationship between social security fairness and overall trust in government including at the central, county, and township levels of government. Previous studies have demonstrated that the fairness of the service delivery process and citizens' satisfaction with the quality of public services are highly associated with trust in government [8,58]. Our results are consistent with previous studies. If citizens perceive the process and outcome of social security service delivery as unfair, their satisfaction with social security will be significantly reduced, leading to complaints and the loss of trust in their government.

Figure 3 illustrates that social security fairness indirectly and partially predicted trust in government at the county and township levels through life satisfaction. Prior research has shown that social policy fairness positively predicts citizens' life satisfaction [13,40]. This finding is consistent with previous studies. It is worth noting that life satisfaction did not have a statistically significant association with trust in central government. Life satisfaction was not a significant mediator in the relationship between social security fairness and trust in central government. In China, the central government is responsible for the formulation of policies, while local governments are responsible for the implementation of these policies. The governance system of "vertically decentralized authoritarianism" makes the county and township governments the main service providers in China. Thus, the quality of citizens' life is more closely determined by the actions of the county and township governments than by the central government. Prior research has shown that improvements in family finances significantly increased citizens' trust in county and township governments, but not in high-level governments [59]. Li found that citizens with lower life satisfaction had lower trust in government and even lower trust in local government, which was directly related to their perceptions of quality of life [60]. Therefore, improvements in life satisfaction can help increase trust in county and township governments.

Our results indicated that social security fairness indirectly positively predicted overall trust in government, county, and township governments through the serial mediation of social security fairness and life satisfaction. Zhou et al. [61] demonstrated that social security satisfaction significantly and positively predicted citizens' life satisfaction. Since social security services affect all aspects of a citizen's life, their dissatisfaction with social security may have a negative spillover effect that may negatively impact life satisfaction and trust in county and township governments. Therefore, formulating social policy to safeguard social security fairness is important for promoting trust in county and township governments.

6. Conclusions

We used a nationally representative survey to examine the mediation effects of social security satisfaction and life satisfaction on the association between social security fairness and trust in government. We found in 2019 that although the Chinese government enjoyed high levels of trust, there was stronger trust in the central than in the local governments. Our results suggest the need to improve social security fairness because it is likely to lead to higher levels of social security satisfaction, life satisfaction, and trust in government.

Trust was better predicted via social security at county and township levels than at the central government level. Furthermore, social security fairness indirectly and positively predicted trust in local government at the county and township levels through social security satisfaction and life satisfaction. Social security fairness only indirectly predicted trust in central government through social security satisfaction, and the prediction of trust in central government via life satisfaction was not significant. Therefore, improving social security fairness can help narrow the trust gap between the Chinese local and central governments. During the current pandemic, administering social security benefits in a fair manner is very important for ensuring that citizens' needs are met adequately [62,63]. The Chinese government should strive to promote fairness in the distribution of social security to improve trust by building service-oriented local and township agencies.

Several limitations of this study need to be considered in the interpretation of the results. First, the CSS was a cross-sectional investigation, which made it impossible for us to determine the causal relationships between variables. We hope future studies will examine the possible causal relationship among variables. Second, the AVE values of scales measuring social security fairness and social security satisfaction were below 0.4, indicating that the convergent validity of the two scales was not ideal. We simply measured fairness and satisfaction in social security services from three aspects (public health, employment, and elder security). Future studies that examine the roles of fairness and satisfaction in determining trust in government should include other dimensions of social security services (e.g., housing security and minimum living security). Third, our results were

specific to China, and it will be interesting to see if the same trends can be found in other countries despite differences in the political systems. Fourth, the data we used came from before the outbreak of the COVID-19, and therefore our results were not generalizable to the pandemic times. Future studies can compare the effects of social security fairness on trust in government before and after the pandemic. A longitudinal and multinational design is needed in pandemic times that examines the multiple mediation effects of social security fairness, social security satisfaction, life satisfaction, and trust in government.

Author Contributions: Conceptualization, K.Z., Q.T., S.C. and Y.C.; Data curation, S.C. and Y.C.; Formal analysis, K.Z.; Funding acquisition, K.Z. and Y.C.; Investigation, K.Z. and Q.T.; Methodology, K.Z. and Q.T.; Project administration, K.Z.; Resources, K.Z.; Software, K.Z., Q.T. and S.C.; Supervision, K.Z. and Y.C.; Validation, K.Z., Q.T. and S.C.; Visualization, Q.T., S.C., X.W., C.X. and A.S.; Writing—original draft, K.Z. and Q.T.; Writing—review & editing, K.Z., Q.T., S.C., Y.C., X.W., C.X. and A.S. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Fundamental Research Funds for the Central Universities (grant number 2019CDJSK01PY11), the Social Science Planning Fund Program from Chongqing (grant number 2020BS33), and the National Social Science Foundation Research Program (grant number 21BSH117, 18BGL209).

Institutional Review Board Statement: Ethical review and approval were waived for this study due to the only data we used is publicly available. The data released by the CSS project team has deleted the respondents' privacy, so applicants can directly apply to obtain the data without an ethical review.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Publicly available datasets were analyzed in this study. These data can be found at: http://css.cssn.cn/css_sy/, accessed on 7 April 2022.

Acknowledgments: We would like to thank the Institute of Sociology, the Chinese Academy of Social Sciences, for conducting the national social survey (Chinese Social Survey). We thank all colleagues who contributed to this study.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Vu, V. Public Trust in Government and Compliance with Policy during COVID-19 Pandemic: Empirical Evidence from Vietnam. *Public Organ. Rev.* **2021**, *21*, 779–796. [CrossRef]
2. Lee, Y.; Schachter, H.L. Exploring the Relationship between Trust in Government and Citizen Participation. *Int. J. Public Adm.* **2019**, *42*, 405–416. [CrossRef]
3. Miller, A.H.; Listhaug, O. Political-Parties and Confidence in Government—A Comparison of Norway, Sweden and the United-States. *Br. J. Political Sci.* **1990**, *20*, 357–386. [CrossRef]
4. Wong, T.K.Y.; Wan, P.S.; Hsiao, H.H.M. The bases of political trust in six Asian societies: Institutional and cultural explanations compared. *Int. Political Sci. Rev.* **2011**, *32*, 263–281. [CrossRef]
5. Yang, J.; Dong, C.H.; Chen, Y.J. Government's Economic Performance Fosters Trust in Government in China: Assessing the Moderating Effect of Respect for Authority. *Soc. Indic. Res.* **2021**, *154*, 545–558. [CrossRef]
6. Lee, Y. Government for Leaving No One Behind: Social Equity in Public Administration and Trust in Government. *Sage Open* **2021**, *11*, 1–11. [CrossRef]
7. Marien, S.; Werner, H. Fair treatment, fair play? The relationship between fair treatment perceptions, political trust and compliant and cooperative attitudes cross-nationally. *Eur. J. Political Res.* **2019**, *58*, 72–95. [CrossRef]
8. Zhao, D.H.; Hu, W. Determinants of public trust in government: Empirical evidence from urban China. *Int. Rev. Adm. Sci.* **2017**, *83*, 358–377. [CrossRef]
9. Beeri, I.; Uster, A.; Vigoda-Gadot, E. Does Performance Management Relate to Good Governance? A Study of Its Relationship with Citizens' Satisfaction with and Trust in Israeli Local Government. *Public Perform. Manag.* **2019**, *42*, 241–279. [CrossRef]
10. Welch, E.W.; Hinnant, C.C.; Moon, M.J. Linking citizen satisfaction with e-government and trust in government. *J. Public Adm. Res. Theory* **2005**, *15*, 371–391. [CrossRef]
11. Meng, T.; Yang, M. Governance Performance and Political Trust in Transitional China:From "Economic Growth Legitimacy" to "Public Goods Legitimacy". *Comp. Econ. Soc. Syst.* **2012**, *4*, 122–135. (In Chinese)
12. Gao, Y.D.; Qin, H. Survey on Perceptions of Social Fairness and Their Implications for Social Governance Innovation. *Soc. Sci. China* **2018**, *39*, 187–208. [CrossRef]

13. Sun, F.; Xiao, J.J. Perceived Social Policy Fairness and Subjective Wellbeing: Evidence from China. *Soc. Indic. Res.* **2012**, *107*, 171–186. [CrossRef]
14. Zmerli, S.; Castillo, J.C. Income inequality, distributive fairness and political trust in Latin America. *Soc. Sci. Res.* **2015**, *52*, 179–192. [CrossRef] [PubMed]
15. Roy, S.K.; Lassar, W.M.; Shekhar, V. Convenience and satisfaction: Mediation of fairness and quality. *Serv. Ind. J.* **2016**, *36*, 239–260. [CrossRef]
16. Zhu, Y.Q.; Chen, H.G. Service fairness and customer satisfaction in internet banking Exploring the mediating effects of trust and customer value. *Internet Res.* **2012**, *22*, 482–498. [CrossRef]
17. Christensen, T.; Yamamoto, K.; Aoyagi, S. Trust in Local Government: Service Satisfaction, Culture, and Demography. *Adm. Soc.* **2020**, *52*, 1268–1296. [CrossRef]
18. Kong, D.T. Intercultural Experience as an Impediment of Trust: Examining the Impact of Intercultural Experience and Social Trust Culture on Institutional Trust in Government. *Soc. Indic. Res.* **2013**, *113*, 847–858. [CrossRef]
19. Chanley, V.A.; Rudolph, T.J.; Rahn, W.M. The origins and consequences of public trust in government—A time series analysis. *Public Opin. Quart.* **2000**, *64*, 239–256. [CrossRef] [PubMed]
20. Im, T.; Cho, W.; Porumbescu, G.; Park, J. Internet, Trust in Government, and Citizen Compliance. *J. Public Adm. Res. Theory* **2014**, *24*, 741–763. [CrossRef]
21. Zhu, Z.; Liu, Y.Y.; Kapucu, N.; Peng, Z.C. Online media and trust in government during crisis: The moderating role of sense of security. *Int. J. Disaster Risk Reduct.* **2020**, *50*, 101717. [CrossRef]
22. Curtis, J.S. Springing the 'Tacitus Trap': Countering Chinese state-sponsored disinformation. *Small Wars Insur.* **2021**, *32*, 229–265. [CrossRef]
23. Turper, S.; Aarts, K. Political Trust and Sophistication: Taking Measurement Seriously. *Soc. Indic. Res.* **2017**, *130*, 415–434. [CrossRef] [PubMed]
24. Mishler, W.; Rose, R. What Are the Origins of Political Trust? Testing Institutional and Cultural Theories in Post-Communist Societies. *Comp. Political Stud.* **2001**, *34*, 30–62. [CrossRef]
25. Fu, X.W. The Contextual Effects of Political Trust on Happiness: Evidence from China. *Soc. Indic. Res.* **2018**, *139*, 491–516. [CrossRef]
26. Dong, K.Y.; Ye, X.F. Social security system reform in China. *China Econ. Rev.* **2003**, *14*, 417–425. [CrossRef]
27. Adams, J.S. Inequity in Social-Exchange. *Adv. Exp. Soc. Psychol.* **1965**, *2*, 267–299.
28. El Akremi, A.; Vandenberghe, C.; Camerman, J. The role of justice and social exchange relationships in workplace deviance: Test of a mediated model. *Hum. Relat.* **2010**, *63*, 1687–1717. [CrossRef]
29. Katok, E.; Pavlov, V. Fairness in supply chain contracts: A laboratory study. *J. Oper. Manag.* **2013**, *31*, 129–137. [CrossRef]
30. Fehr, E.; Schmidt, K.M. A theory of fairness, competition, and cooperation. *Q. J. Econ.* **1999**, *114*, 817–868. [CrossRef]
31. Loch, C.H.; Wu, Y.Z. Social Preferences and Supply Chain Performance: An Experimental Study. *Manag. Sci.* **2008**, *54*, 1835–1849. [CrossRef]
32. Li, Z.C.; Tan, X.H. Revitalization of Trust in Local Government after Wenchuan Earthquake: Constraints and Strategies. *Sustainability* **2018**, *10*, 4030. [CrossRef]
33. Oliver, R.L. A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions. *J. Mark. Res.* **1980**, *17*, 460–469. [CrossRef]
34. Petrovsky, N.; Mok, J.Y.; Leon-Cazares, F. Citizen Expectations and Satisfaction in a Young Democracy: A Test of the Expectancy-Disconfirmation Model. *Public Adm. Rev.* **2017**, *77*, 395–407. [CrossRef]
35. Christensen, T.; Laegreid, P. Trust in government: The relative importance of service satisfaction, political factors, and demography. *Public Perform. Manag.* **2005**, *28*, 487–511. [CrossRef]
36. Di Martino, S.; Prilleltensky, I. Happiness as fairness: The relationship between national life satisfaction and social justice in EU countries. *J. Community Psychol.* **2020**, *48*, 1997–2012. [CrossRef] [PubMed]
37. Mishra, S.; Carleton, R.N. Subjective relative deprivation is associated with poorer physical and mental health. *Soc. Sci. Med.* **2015**, *147*, 144–149. [CrossRef]
38. Liu, Q.; Pan, H.M. Investigation on Life Satisfaction of Rural-to-Urban Migrant Workers in China: A Moderated Mediation Model. *Int. J. Environ. Res. Public Health* **2020**, *17*, 2454. [CrossRef]
39. Shin, J. Relative Deprivation, Satisfying Rationality, and Support for Redistribution. *Soc. Indic. Res.* **2018**, *140*, 35–56. [CrossRef]
40. Wang, D.X.; Li, D.Y. Social capital, policy fairness, and subjective life satisfaction of earthquake survivors in Wenchuan, China: A longitudinal study based on post-earthquake survey data. *Health Qual. Life Outcomes Health* **2020**, *18*, 350. [CrossRef]
41. Wong, T.K.Y.; Hsiao, H.H.M.; Wan, P.S. Comparing Political Trust in Hong Kong and Taiwan: Levels, Determinants, and Implications. *Jpn. J. Political Sci.* **2009**, *10*, 147–174. [CrossRef]
42. Helliwell, J.F.; Huang, H.F. How's your government? International evidence linking good government and well-being. *Br. J. Political Sci.* **2008**, *38*, 595–619. [CrossRef]
43. Headey, B.; Veenhoven, R.; Wearing, A. Top-down Versus Bottom-up Theories of Subjective Well-Being. *Soc. Indic. Res.* **1991**, *24*, 81–100. [CrossRef]
44. Loewe, N.; Bagherzadeh, M.; Araya-Castillo, L.; Thieme, C.; Batista-Foguet, J.M. Life Domain Satisfactions as Predictors of Overall Life Satisfaction among Workers: Evidence from Chile. *Soc. Indic. Res.* **2014**, *118*, 71–86. [CrossRef]

45. Erdogan, B.; Bauer, T.N.; Truxillo, D.M.; Mansfield, L.R. Whistle while You Work: A Review of the Life Satisfaction Literature. *J. Manag.* **2012**, *38*, 1038–1083. [CrossRef]
46. Lachmann, B.; Sariyska, R.; Kannen, C.; Blaszkiewicz, K.; Trendafilov, B.; Andone, I.; Eibes, M.; Markowetz, A.; Li, M.; Kendrick, K.; et al. Contributing to Overall Life Satisfaction: Personality Traits Versus Life Satisfaction Variables Revisited—Is Replication Impossible? *Behav. Sci.* **2018**, *8*, 1. [CrossRef]
47. Conway, J.M.; Lance, C.E. What Reviewers Should Expect from Authors Regarding Common Method Bias in Organizational Research. *J. Bus. Psychol.* **2010**, *25*, 325–334. [CrossRef]
48. Zhou, H.; Long, L. Statistical Remedies for Common Method Biases: Problems and Suggestions. *Adv. Psychol. Sci.* **2004**, *12*, 942–950. (In Chinese)
49. Dong, L.S.; Kubler, D. Sources of Local Political Trust in Rural China. *J. Contemp. China* **2018**, *27*, 193–207. [CrossRef]
50. Kaiser, H.F. An index of factorial simplicity. *Psychometrika* **1974**, *39*, 31–36. [CrossRef]
51. Li, L.J. Political trust in rural China. *Mod. China* **2004**, *30*, 228–258. [CrossRef]
52. Shi, T.J. Cultural values and political trust—A comparison of the People's Republic of China and Taiwan. *Comp. Politics* **2001**, *33*, 401–419. [CrossRef]
53. Hu, A.N. Outward specific trust in the balancing of hierarchical government trust: Evidence from mainland China. *Br. J. Sociol.* **2021**, *72*, 774–792. [CrossRef] [PubMed]
54. Dickson, B.J.; Shen, M.M.; Yan, J. Generating Regime Support in Contemporary China: Legitimation and the Local Legitimacy Deficit. *Mod. China* **2017**, *43*, 123–155. [CrossRef]
55. Chang, W.C. Corruption and Perceived Fairness: Empirical Evidence from East Asian Countries. *J. East Asian Stud.* **2021**, *21*, 305–330. [CrossRef]
56. Cao, Z.H.; Zhang, X.M. Structure hypothesis of authoritarian rule: Evidence from the lifespans of China's dynasties. *J. Chin. Gov.* **2018**, *3*, 1–24. [CrossRef]
57. Zhao, J.; Yu, X. Influence of Social Fairness on Government Trust: An Empirical Research Based on the Data of CGSS2010. *Financ. Trade Res.* **2017**, *28*, 76–84. (In Chinese)
58. De Blok, L.; Kumlin, S. Losers' Consent in Changing Welfare States: Output Dissatisfaction, Experienced Voice and Political Distrust. *Political Stud.* **2021**, 1–20. [CrossRef]
59. Hu, R. Farmers' petition and Erosion of Political Trust in Government. *Sociol. Stud.* **2007**, *22*, 39–55. [CrossRef]
60. Li, L.J. The Magnitude and Resilience of Trust in the Center: Evidence from Interviews with Petitioners in Beijing and a Local Survey in Rural China. *Mod. China* **2013**, *39*, 3–36. [CrossRef]
61. Zhou, S.; Wang, H.; Su, Y. How Can the Chinese People Gain a Higher Level of the Subjective Wellbeing? Based on the survey of people's livelihood index in China. *Manag. World* **2015**, *6*, 8–21. (In Chinese)
62. Qian, X.Y. China's social security response to COVID-19: Wider lessons learnt for social security's contribution to social cohesion and inclusive economic development. *Int. Soc. Secur. Rev.* **2020**, *73*, 81–100. [CrossRef]
63. Zhang, J.F.; Zheng, Z.C.; Zhang, L.J.; Qin, Y.C.; Duan, J.R.; Zhang, A.Y. Influencing Factors of Environmental Risk Perception during the COVID-19 Epidemic in China. *Int. J. Environ. Res. Public Health* **2021**, *18*, 9375. [CrossRef] [PubMed]

International Journal of
Environmental Research and Public Health

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Predictors of Life Satisfaction in New Zealand: Analysis of a National Dataset

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Abstract: The study aim was to determine prevalence and predictors of life satisfaction in New Zealand. In this observational cross-sectional study, a sample of 10,799 participants from NZ were drawn from the Gallup World Poll from 2006 to 2017. Data were analysed using regression analysis and ANOVA. Prevalence of life satisfaction across time varied little from a high of 7.61 (*SD* = 1.6) in 2007 to a low of 7.23 (*SD* = 1.73) in 2011 (range 0–10). Satisfaction with standards of living predicted life satisfaction regardless of age or gender. For males across all age groups and females up to age 40 years, positive experiences and satisfaction with household income were important predictors. Being married was an important predictor for males over 40 years and feeling satisfied with their current city was important for females across all ages and for men under 40. The levels of life satisfaction changed over time, possibly due to major national events. Satisfaction with standards of living was found to predict life satisfaction regardless of age or gender. These results provide a path for policy focus towards increased life satisfaction.

Keywords: Gallup World Poll; life satisfaction; New Zealand; wellbeing

Citation: Jarden, R.J.; Joshanloo, M.; Weijers, D.; Sandham, M.H.; Jarden, A.J. Predictors of Life Satisfaction in New Zealand: Analysis of a National Dataset. *IJERPH* **2022**, *19*, 5612. https://doi.org/10.3390/ijerph19095612

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 6 March 2022
Accepted: 1 May 2022
Published: 5 May 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

1.1. Wellbeing Is Important to New Zealand

In 2018, the Prime Minister of New Zealand (NZ) announced that NZ would lead the world by embedding wellbeing into its budget decision-making process [1]. The core indicators covered social, cultural and environmental outcomes, aligning with the United Nations sustainable development goals [2]. Alongside the Prime Minister's announcement, an updated version of NZ's Living Standards Framework (LSF) was released [3]. Inspired by the Organisation for Economic Co-operation and Development's "How's Life?" approach [4], NZ's new model of wellbeing for measuring national progress and guiding public policy included subjective wellbeing as a wellbeing output domain. In doing so, NZ signaled the importance of people's subjective opinions about how their life is going.

1.2. Changes in New Zealand 2006 to 2017

Against the backdrop of increased policy focus on wellbeing, New Zealand faced notable social and economic events in the 2006–2017 time period, including two major earthquakes in the Canterbury region (September 2010 and February 2011) causing mass casualties and loss of homes and livelihoods; the Global Financial Crisis (GFC) causing a

long recession [5,6] (approx. mid 2007 to early 2009); a large rise in unemployment levels from a record low of 3.7% in 2007 to 7% in 2009 [7,8]; and in 2008, New Zealand and China signed a historic free-trade agreement which led to a quadrupling of exports to China and an influx of Chinese investment, tourism, and students [9].

1.3. What Is Life Satisfaction?

One of the three measures of subjective wellbeing used in NZ's Living Standards Framework is life satisfaction. Life satisfaction, or 'satisfaction with life', has been defined as a cognitive evaluation of overall satisfaction with an individual's current life, relative to the individual's own criteria of what a satisfactory life is [10]. Life satisfaction is widely regarded as a key measure of subjective wellbeing [4,11,12], and is one of the most predominant measures of wellbeing per se. Measures of life satisfaction are appealing to policy makers because they are understandable and have been, and are still, used extensively in international surveys [13]. Life satisfaction measures are subjective global assessments—they assess respondents' own views of how their life is going for them. The measures are highly subjective in that respondents must draw on their own individual views of what is important in life to judge how their life measures up. This ability to incorporate a wide range of views on what is important in life is a key reason for some researchers to view life satisfaction as the most important measure of subjective wellbeing [14]. Individual life satisfaction items have demonstrated consistently high correlations with a broad range of much more complex measures of wellbeing, including objective measures [4,14–18].

1.4. Life Satisfaction in New Zealand

Few life satisfaction studies have been undertaken within New Zealand at national level. The Christchurch Health and Development longitudinal birth cohort study [19] evaluated life satisfaction in relation to mental health. A reciprocal association was found between mental health problems and life satisfaction, with the study concluding that life satisfaction influences mental disorder, and mental disorder influences life satisfaction. For university medical students, life satisfaction was found to be negatively correlated with anxiety and depression [20]. Māori and European New Zealanders demonstrate differences in the strength of the relationship between life satisfaction and work–life balance [21]. For Māori, higher levels of work–life balance were not associated with higher levels of life satisfaction, but for European New Zealanders, they were. These differences were attributed to Māori tending to be less individualistic than NZ Europeans, whose perceptions of overall quality of work and life experiences may be more strongly influenced by their perceptions of work–life balance [21,22]. Statistics New Zealand conducted a wellbeing survey of 5549 Māori aged over 15 years in 2013, which included Māori-specific measures of wellbeing in addition to life satisfaction and other variables [23]. Predictors of life satisfaction for Māori were reported as similar to international predictors. For example, demographic factors, such as age, sex, urban area, and marital status, predicted life satisfaction [23]. The subjective variables "adequacy of income; number of housing problems; health status; loneliness; trust in people; trust in courts; and importance of culture" were also significant predictors of life satisfaction [23].

Most of the existing national studies of the predictors of life satisfaction in NZ have used data from the General Social Survey. Using data from the 2008 wave of the General Social Survey, Brown, Woolf, and Smith [12] found that the main international trends were also present in NZ. In particular, they found the strongest predictors of life satisfaction to be income, unemployment, health status (especially mental health), and social contact. Jia and Smith [24] found similar results using data from the 2009, 2010, and 2012 waves of the General Social Survey. In particular, they found that, when controlling for demographic variables, mental health, unemployment, and having someone to rely on in a crisis were the strongest predictors of life satisfaction (p. 15). More than the previous study, this one emphasized that although "income is highly significant and positively related to life satisfaction . . . , the potential impact is small" (pp. 15–16). Although the international

literature generally finds the income–life satisfaction relationship to be small, Jia and Smith [24] used the Sacks et al. [25] estimate of the relationship found internationally to show that income is probably a much weaker determinant of life satisfaction in NZ. Another NZ study, the Sovereign New Zealand Wellbeing Index [26], investigated 10,000+ New Zealanders' wellbeing over time, identifying no real change in wellbeing between 2012 and 2014, and that a significant predictor of wellbeing was living comfortably on present income. The authors concluded that: "While earning more money isn't always a realistic option, evaluating how you are living within your means is an important consideration for your wellbeing" (p. 15).

The aforementioned studies produced results in line with international expectations for the relationships between demographic variables and life satisfaction [24]. Females reported slightly higher averages of life satisfaction throughout the life course than males, with both groups reaching a nadir about 45 years old [24,27]. Being partnered or married (i.e., in a relationship) was also a significant predictor of life satisfaction in both studies. Measures of community trust, engagement, and safety were all correlated with life satisfaction in both studies, but the coefficients of most were small [12,24,28]. Education results were partially mixed between the studies, but generally weak or insignificant when other variables were controlled for [12,24,29]. Being unemployed tends to cause a significant drop in life satisfaction [30], even after controlling for the associated reduction in income [31,32]. Taken as a whole, the above studies suggest that NZ is not that different to its Western counterparts when it comes to life satisfaction, regarding both the prevalence and predictors of it.

However, some variables that have been found to predict life satisfaction have not been assessed in the studies of subjective wellbeing in NZ. Country of origin has been shown to predict life satisfaction, especially when the cultures of the current and original nations are very different [33,34]. Religious affiliation has been found to predict life satisfaction in some international studies [35,36] and in New Zealand [37]. However, the relationship appears complex, and can disappear when controls are added [37]. Given the complexity of the relationship and the (decreasing, but) sizable importance of religion in New Zealand [38], further investigation seems warranted.

1.5. Study Objectives

"What predicts life satisfaction, and to what extent?" is likely to be influenced by cultural differences and major events over time. Having detailed analyses of the prevalence and predictors of life satisfaction in as many nations as possible could explicate cultural understanding of differences in correlates of life satisfaction whilst also providing insight into the specific nation under study [39]. Since, as mentioned, there have only been a few national surveys of the predictors of life satisfaction in NZ, the objectives of the present study are to report a national investigation of the prevalence and predictors of life satisfaction in NZ and whether, and to what extent, the predictors commonly found in international research play a similar role in NZ. Special attention is paid to the most predictive variables and those that our data can shed more light on than the previously published studies: age, sex, income, relationship status, and employment status.

2. Materials and Methods

2.1. Study Sample

The data came from the Gallup World Poll, which has collected nationally representative samples from NZ since 2006. Each year, randomly selected participants (aged 15 and older) have been contacted via landline and/or mobile telephones for participation in the survey. New Zealand sample sizes are approximately 500 to 2000 for each year, with an average of 982 per year across international data. We used all available data from 2006 to 2017 in the present analyses, consisting of 10,799 participants (57.4% females, M_{age} = 50.174, SD_{age} = 18.655) which is an average of 900 across the waves. The age distribution of all participants across all years (2006 to 2017) is shown in Figure 1.

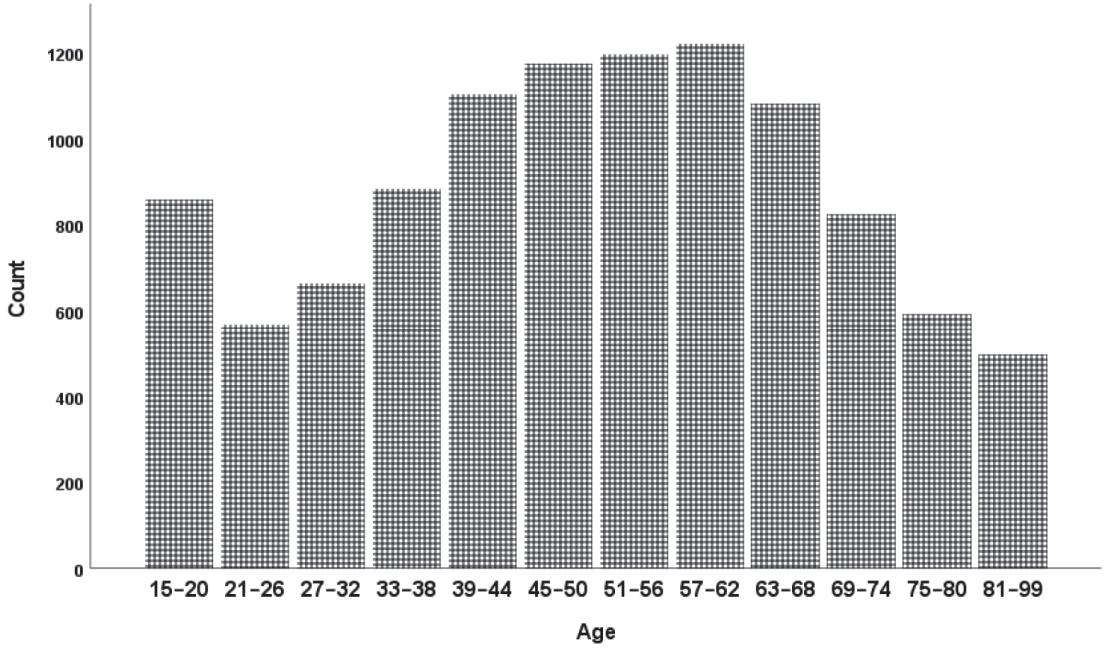

Figure 1. Age distribution (N = 10,799).

2.2. Measures

We used several items from the battery of Gallup World Poll items including the seven demographic variables of: employment, education, location, religious affiliation, relationship status, country of birth, and income quintile. These items measure variables that have been identified as relevant predictors of life satisfaction as discussed above. The items and their response formats are presented in Supplementary Materials (Table S1).

Life Satisfaction

The Ladder of Life Scale [40] was used to measure life satisfaction. This scale asks participants to:

> "Please imagine a ladder with steps numbered from zero at the bottom to ten at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?"
>
> Reliability and validity for this scale have been reported as adequate [41].

2.3. Analysis

Intercorrelations between items were weak; so, all items were used separately as variables. However, using factor analysis, we were able to calculate two composite variables. The results of a principal axis factoring with six affective variables showed that a two-factor structure was consistent with the data, as only two of the eigenvalues were above 1.0 (i.e., 2.289 and 1.140). The factor analysis was repeated with a promax rotation to obtain rotated factor loadings. Only loadings greater than 0.4 were considered nontrivial. Stress, worry, sadness, and anger had nontrivial loadings (ranging from 0.416 to 0.788) on the first factor (variance explained = 28.330%). These four variables were averaged to form an index of negative experience (Kuder–Richardson 21 reliability coefficient = 0.589). Factor 2 had only two nontrivial loadings (both = 0.646), laughter and enjoyment (variance

explained = 9.513%). The two items for positive affect were averaged to form an index of positive experience (Kuder–Richardson 21 reliability coefficient = 0.592). Data were analysed using regression analysis to examine which variables significantly predict life satisfaction and ANOVA to examine group differences in life satisfaction. We used a standard or simultaneous regression model. In this model, all predictors enter the regression equation simultaneously; each is evaluated as if it entered the regression after all other predictors. In other words, each predictor is evaluated based on its unique contribution to predicting dependent variables, after other predictors' contributions are controlled for [42]. We used stepwise regression as a supplementary tool to filter out the best predictors from our long list of potential predictors. Stepwise regression helps reduce a long list of potential predictors to a manageable number of significant predictors to facilitate interpretation. While the simultaneous method retains all entered variables regardless of significance level, this method combines the forward and backward approaches to remove nonsignificant predictors. The variance explained by each predictor changes as more predictors are added to the equation. As more predictors enter the equation, a variable that has qualified for inclusion may lose some of its predictive power. In this case, the variable with "weakened" predictive power is removed using the stepwise procedure [43].

2.4. Ethical Considerations

This study used publicly available data and as such did not require further ethical approvals.

3. Results

3.1. Prevalence of Life Satisfaction over Time

Life satisfaction over time (years 2006 to 2017) is illustrated in Figure 2 and full descriptive statistics can be found in Supplementary Materials (Table S2).

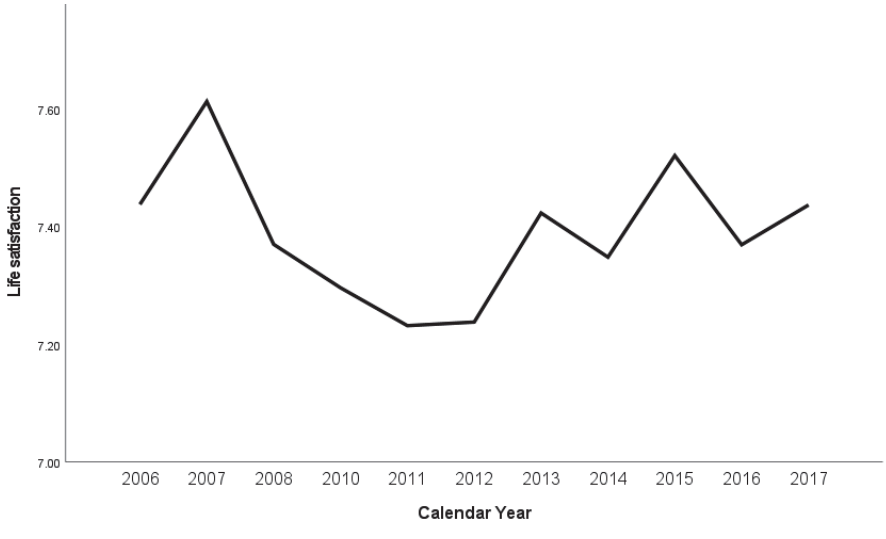

Figure 2. Prevalence of life satisfaction in New Zealand from 2006 to 2017.

Between 2006–2017 mean life satisfaction varied from a high of 7.61 (SD = 1.6) in 2007 to a low of 7.23 (SD = 1.73) in 2011; the range in mean changing 0.38 over this time between the high and low.

3.2. Life Satisfaction by Age and Gender

The results of an independent samples t-test showed that women scored significantly higher than men on life satisfaction ($t(10{,}771) = -3.763$, $p < 0.001$, 95% CI of difference:

−0.186, −0.058, $d = 0.073$), albeit with a very small effect size. Figure 3 shows the distribution of life satisfaction by age and gender for all participants across all years.

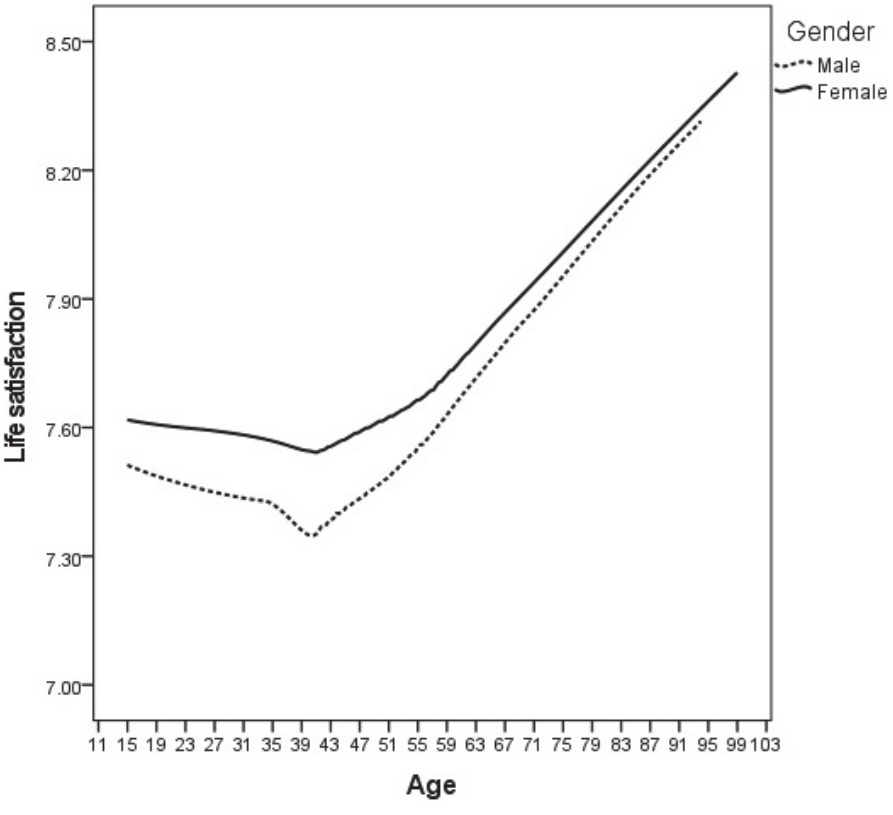

Figure 3. Life satisfaction by age and gender.

Figure 3 shows that females tend to report being slightly more satisfied with life throughout and over the life course compared to males, with this gender gap being most predominant mid-life. Both females and males on average report slightly decreasing levels of life satisfaction from teenage to mid-life, and then increasing from mid-life onwards.

As a supplementary analysis, we also looked at gender differences in the positive and negative experience indexes we created (composite variables described above). The results of independent samples *t*-tests showed that women scored significantly higher on the negative experience index ($t(9401.196) = -7.238$, $p < 0.001$, 95% CI of difference: −0.054, −0.031, $d = 0.146$), again with a small effect size. No significant gender differences were found for the positive experience index.

3.3. Other Demographic Predictors of Life Satisfaction

Table 1 presents the results of seven separate ANOVAs, using demographic variables as independent variables (employment, education, location, religious affiliation, relationship status, country of birth, income quintile) explaining life satisfaction.

Table 1. ANOVA Results Predicting Life Satisfaction.

Independent Variable	Category	Raw Mean	*SD*	*N*
Employment	Employed full-time for an employer	7.273	1.516	3109
	Employed full-time for self	7.696	1.564	706
$df = 5, 8251$	Employed part-time do not want full-time	7.710	1.434	1172
$F = 48.884$	Unemployed	6.294	2.004	285
$p < 0.001$	Employed part-time want full-time	6.917	1.806	484
$\eta^2 = 0.029$	Out of workforce	7.397	1.853	2501
	Total	7.354	1.678	8257
Education	Elementary	7.276	1.986	1030
$df = 2, 10{,}575$	Secondary	7.342	1.676	6563
$F = 12.231$	Tertiary (four years beyond high school)	7.506	1.525	2985
$p < 0.001$	Total	7.382	1.670	10,578
$\eta^2 = 0.002$				
Location	Rural or farm	7.661	1.694	1827
$df = 3, 10{,}718$	Small town or village	7.424	1.707	2469
$F = 25.094$	Large city	7.326	1.659	1308
$p < 0.001$	Suburb of a large city	7.275	1.638	5118
$\eta^2 = 0.007$	Total	7.381	1.672	10,722
Religious affiliation	Christian	7.427	1.649	5198
$df = 2, 8998$	Secular/Non-religious	7.301	1.690	3153
$F = 17.820$	Other	7.043	1.790	650
$p < 0.001$	Total	7.355	1.677	9001
$\eta^2 = 0.004$				
Relationship status	Single	7.084	1.768	2557
	Married	7.589	1.542	5451
$df = 5, 10{,}717$	Separated	6.670	1.867	282
$F = 54.524$	Divorced	7.074	1.804	674
$p < 0.001$	Widow	7.594	1.799	961
$\eta^2 = 0.025$	Domestic partnership	7.177	1.589	798
	Total	7.382	1.672	10,723
Country of birth	Born in NZ	7.378	1.678	6618
$df = 1, 8745$	Born in another country	7.357	1.662	2129
$F = 0.244$				
$p = 0.622$	Total	7.373	1.674	8747
$\eta^2 = 0.000$				
Income quintile	Poorest 20%	6.818	1.963	1206
	Second 20%	7.097	1.871	1542
$df = 4, 8252$	Middle 20%	7.313	1.611	1644
$F = 78.291$	Fourth 20%	7.483	1.508	1736
$p < 0.001$	Richest 20%	7.772	1.400	2129
$\eta^2 = 0.037$	Total	7.354	1.679	8257

For religious affiliation, several categories with very small sample sizes (e.g., "Hinduism" and "Islam") were combined with the "other" category. As indicated in Table 1, the strongest predictor of life satisfaction was income quintile (explaining 3.7% of the variance), followed by employment status (explaining 2.9% of the variance) and relationship status (explaining 2.5% of the variance). Figure 4 presents life satisfaction and employment status.

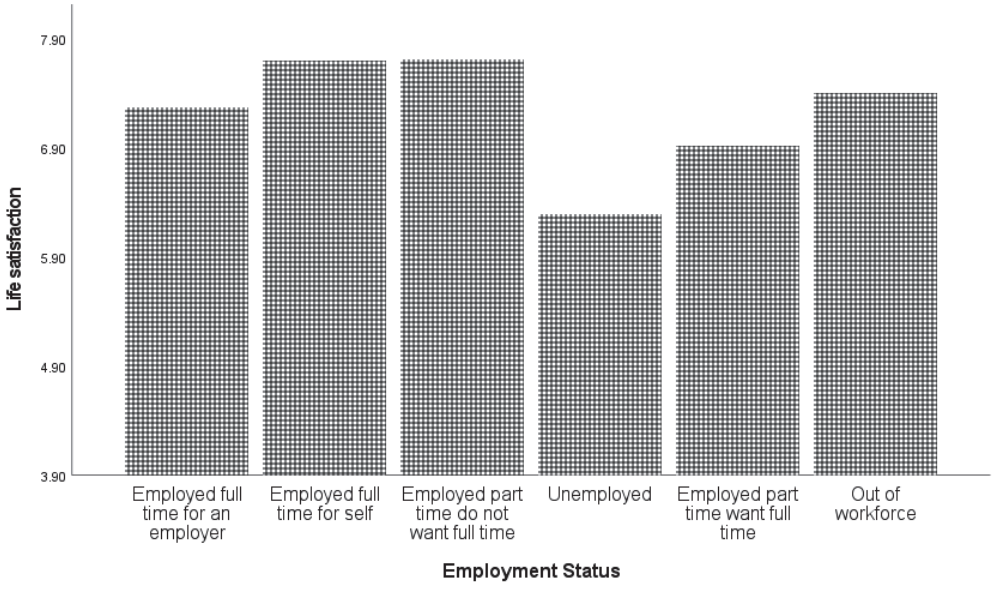

Figure 4. Life satisfaction and employment status.

The self-employed and those who choose to work part-time had the highest levels of life satisfaction and those unemployed experienced the lowest levels of life satisfaction. The results of the Games–Howell test showed that all employment groups were significantly different from each other ($p < 0.05$) except employed full-time for an employer and out of workforce ($p = 0.074$).

Figure 5 presents life satisfaction and relationship status.

Figure 5. Life satisfaction and relationship status.

Individuals identifying as married or widowed reported the highest levels of life satisfaction, and those identifying as separated reported the lowest levels of life satisfaction. In summary, and as shown in Figures 4 and 5 and Table 1, the unemployed and separated groups of individuals were in comparison the least satisfied with their lives. The results of the Games–Howell test showed that all marital groups were significantly different from each other ($p < 0.05$) except single and domestic partnership ($p = 0.717$) and domestic partnership and divorced ($p = 0.856$). A separate ANOVA indicated that gender did not moderate the relationship between relationship status and life satisfaction. The results of the Games–Howell test showed that all income groups were significantly different from each other ($p < 0.05$). Education, religious affiliation, and location each explained 0.7% or less of the variance in life satisfaction. Country of birth was not a significant predictor. The results of the Games–Howell test showed that there was a significant difference between people with elementary and tertiary education, and between people with secondary and tertiary education ($p < 0.01$). For religious affiliation, the Games–Howell test showed that all groups were significantly different from each other ($p < 0.01$), whereas for location, the significant differences were between "rural or farm" and all other types of location, as well as between "small town or village" and "Suburb of a large city" ($p < 0.01$).

3.4. Regression Analysis

We included all predictors of life satisfaction along with key demographic variables (the variables are provided in the predictor column of Table 2) in a regression using the standard or simultaneous regression model. A total sample of 6023 participants, of the 10,799 participants (56%), had no missing values on all of the 28 variables and were included in the analysis (see Table 2).

Table 2. Comprehensive Regression Analysis.

Predictor	*B*	95.0% CI for *B*		*t*	*p*	Beta
		Low	Up			
(Constant)	2.963	2.631	3.296	17.468	0.000	-
Female	0.262	0.186	0.338	6.754	0.000	0.077
Age	0.005	0.002	0.007	4.064	0.000	0.052
Squared age	0.000	0.000	0.000	4.911	0.000	0.059
Negative experience	−0.703	−0.839	−0.566	−10.084	0.000	−0.122
Positive experience	0.500	0.380	0.620	8.153	0.000	0.097
Health problems	−0.302	−0.394	−0.210	−6.424	0.000	−0.072
HH income satisfaction	0.405	0.351	0.458	14.755	0.000	0.191
Satisfaction with standards of living	0.762	0.645	0.880	12.720	0.000	0.162
Satisfied with healthcare	0.130	0.033	0.226	2.633	0.008	0.030
Satisfied with housing	0.115	0.043	0.187	3.139	0.002	0.034
Confidence in government	0.119	0.041	0.198	2.976	0.003	0.035
Corruption	−0.022	−0.130	0.087	−0.394	0.694	−0.005
City satisfaction	0.644	0.521	0.768	10.225	0.000	0.115
Helped	0.112	0.036	0.187	2.896	0.004	0.032
Volunteered	0.185	0.112	0.259	4.968	0.000	0.055
Donated	0.075	−0.008	0.157	1.778	0.076	0.020
Religiosity	−0.027	−0.104	0.050	−0.693	0.489	−0.008
Social support	0.435	0.271	0.599	5.199	0.000	0.057
Learned	0.175	0.095	0.256	4.292	0.000	0.049
Freedom	0.180	0.028	0.332	2.324	0.020	0.027
Safe at night	0.092	0.012	0.171	2.269	0.023	0.026
Respect	0.122	−0.023	0.268	1.648	0.099	0.019
Education	−0.026	−0.086	0.034	−0.848	0.396	−0.010
Separated	−0.139	−0.369	0.090	−1.194	0.233	−0.013
Married	0.255	0.176	0.335	6.313	0.000	0.076
Unemployed	−0.178	−0.372	0.015	−1.808	0.071	−0.020
No. of children	0.014	−0.026	0.054	0.689	0.491	0.008

Note. *B* = unstandardised regression coefficient. Beta = standardised regression coefficient.

The predictors collectively explained 33.1% of the variance in life satisfaction, $F(27, 5995) = 110.024$, $p < 0.001$, $R^2 = 0.331$. Based on the results of a separate stepwise regression analysis, household income satisfaction was the strongest predictor explaining 16.8% of the variance. The second strongest predictor was satisfaction with standards of living, contributing an additional 5.4%. Negative experience, city satisfaction, and positive experience were next explaining 3.4%, 1.9%, and 1.7%, respectively. These five variables jointly explained 29.3% of the variance in life satisfaction scores. The other variables collectively added only 3.8% of additional variance. Based on the results of the stepwise regression, perceptions of corruption, donation, religiosity, respect, education, separated, unemployed, and number of children did not add a significant amount of variance beyond the other 19 variables and were excluded.

We also conducted regression analyses separately across age and gender groups. Given the large sample size, the probability of a type 1 error is increased. Therefore, the significance threshold of 0.001 is preferred for assessing significance. Table 3 presents the unstandardised regression coefficients for age and gender groups.

Table 3. Unstandardised Regression Coefficients for Age and Gender Groups.

	Male		Female	
	15–39	**40–99**	**15–39**	**40–99**
(Constant)	3.667 ***	3.332 ***	3.506 ***	3.163 ***
Negative experience	−0.610	−0.816 ***	−0.428	−0.888 ***
Positive experience	0.643 ***	0.723 ***	0.462	0.348 ***
Health problems	0.021	−0.366 ***	−0.246	−0.200
HH income satisfaction	0.295 ***	0.465 ***	0.421 ***	0.432 ***
Satisfaction with standards of living	0.558	0.969 ***	0.538 ***	0.776 ***
Satisfied with housing	0.206	0.093	0.034	0.177
Confidence in government	0.175	0.085	0.018	0.105
Corruption	−0.040	−0.256	0.111	−0.010
City satisfaction	0.401	0.507 ***	0.538 ***	0.877 ***
Helped	0.126	0.097	0.085	0.007
Volunteered	0.064	0.123	0.282	0.255 ***
Donated	0.197	0.106	0.036	0.158
Religiosity	−0.087	0.024	−0.050	0.051
Social support	0.613	0.372	0.453	0.464 ***
Learned	0.102	0.184	0.207	0.212
Freedom	0.170	−0.229	0.348	0.408 ***
Safe at night	−0.049	0.010	0.129	0.057
Respect	0.233	0.105	0.502	−0.044
Education	−0.058	−0.021	−0.181	−0.027
Married	0.073	0.312 ***	0.190	0.180
Number of children	0.075	−0.042	−0.019	−0.023

Note. HH income = satisfaction with household income; *** $p < 0.001$. Given the large sample size, the probability of a type 1 error is increased. Therefore, the significance threshold of 0.001 is preferred for assessing significance.

Satisfaction with healthcare, being separated, and unemployed were removed as they showed no variation in one or more groups. Table 4 presents the regression results across age and gender groups, and also presents the five most important predictors for each group in order of predictive power, based on separate regression analyses using the stepwise procedure for each group.

Table 4. Regression Results across Age and Gender Groups.

		R^2	*F*	*df*	Most Important Predictors
Male	15–39	0.256	12.602 ***	21, 770	SWSL, Positive, HH income, Negative, City satisfaction
	40–99	0.350	51.077 ***	21, 1993	SWSL, Positive, HH income, Negative, Married
Female	15–39	0.274	19.333 ***	21, 1074	SWSL, Positive, HH income, City satisfaction, Respect
	40–99	0.341	69.680 ***	21, 2828	SWSL, HH income, Negative, City satisfaction, Volunteered

Note. The R^2, *F*, and *df* values come from simultaneous regression analyses. The important predictors come from separate regression analyses using the stepwise method. The most important predictors are in order of predictive power. Abbreviations. SWSL = satisfaction with standards of living; HH income = satisfaction with household income; positive = positive experience; negative = negative experience. *** $p < 0.001$.

For all groups, an important predictor of life satisfaction was satisfaction with standards of living. For males across all age groups and females up to the age of 40 years, positive experiences and satisfaction with household income were also important predictors. Being married was an important predictor for males over 40 years. Feeling satisfied with city was important for females across all ages and for men under 40.

3.5. Relationship between Household Income and Life Satisfaction: A Close Examination

The relationship between per capita annual household income in International Dollars, e.g., see [44], and life satisfaction is shown in Figure 6.

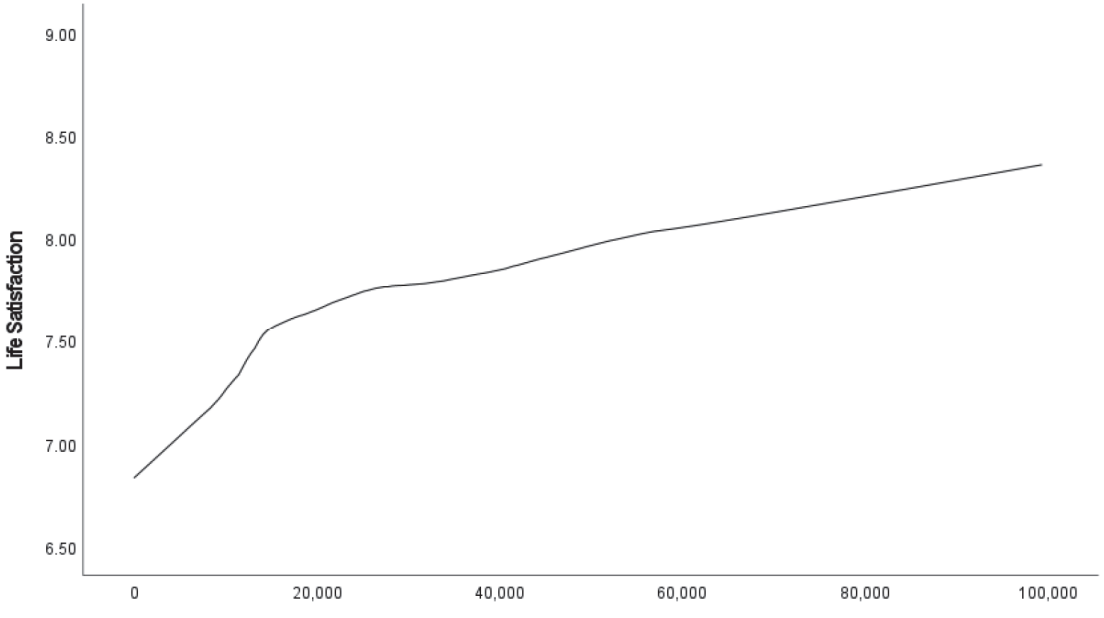

Figure 6. The relationship between annual household income (in International Dollars) and life satisfaction in NZ.

Individuals with incomes over $100,000 International Dollars were excluded due to their small sample size. As can be seen, the lower income group (under $15,000 International Dollars, equivalent to about $23,000 NZD) reported much lower life satisfaction, however,

past approximately $20,000 International Dollars (equivalent to about $31,000 NZD), there were smaller increases as income increased.

4. Discussion

4.1. Prevalence of Life Satisfaction

Life satisfaction research has typically comprised cross-sectional observational studies correlating various demographic, economic, health, education, social and community, and personality factors with life satisfaction. In this study, we have extended this research to both prevalence and predictors for NZ people. Regarding the prevalence of life satisfaction in the NZ population between 2006–2017, we found small changes over time from a high of 7.61 (SD = 1.6) in 2007 to a low of 7.23 (SD = 1.73) in 2011 [7]. This result indicates that NZ is consistently higher than the world means reported in the World Happiness Reports across time, for example, from 2006 to 2015, these range from 4.45/10 to 5.3/10 (e.g., see [16,45,46]). Notably, the NZ low of 7.23 reported for 2011 occurs around the time of the significant earthquakes in the major NZ city of Christchurch at the end of 2010 and beginning of 2011. These earthquakes had devastating and ongoing impacts locally and nationally, which not only created immediate illbeing and traumatic impacts in the Christchurch region, but also created stress and anxiety nationally [47]. Also notable in this time period was the Global Financial Crisis (GFC) of 2007–2008 which negatively impacted many New Zealanders through the shrinking of the Gross Domestic Product (GDP) over five consecutive quarters [5]. Unemployment in 2007 was at a record low, but the GFC that followed contributed to the rise in unemployment back to 7% in late 2009 [7]. In sum, while the prevalence of life satisfaction in NZ was higher than the global average [45], there was a small amount of change during the study period in reported life satisfaction, which may be attributed to some extent to the major events that happened in NZ during that time period.

4.2. Predictors of Life Satisfaction

The existing literature holds mixed results for the relationship between gender and life satisfaction. Various studies reported a range of relationships, including men being more satisfied by a small amount, men and women being about as satisfied, and, as we have here, women being slightly more satisfied with their lives (see [48]). Donovan and Halpern [13] suggested that men may be under-reporting their emotional experiences. Regardless, it is becoming increasingly accepted that women tend to report higher levels of life satisfaction when compared to men of the same age [49]. Although the reasons have not yet been thoroughly explored, the modest "U-shaped" relationship between age and life satisfaction in our results matches what has been found in many studies [13,50].

We found for all groups, across both age and gender, satisfaction with standards of living was the most important predictor of life satisfaction, and satisfaction with household income was the second or third most important predictor. There is most likely a direct relationship between these two variables, as satisfaction with household income is likely to impact satisfaction with standards of living. As can be seen in Figure 6, (objective) household income also seems to impact life satisfaction, especially for those with very low incomes. Studies using similar methodologies demonstrate the same income-related findings in a diverse range of nations, including Italy [51] and the United Arab Emirates [52]. The relationship between life satisfaction and income has been well studied, but is complex [53,54]. People from wealthier countries are more satisfied than citizens of poorer countries, and within a country, richer people are more satisfied with life than poorer people [55]. Yet, it appears that relative income matters for life satisfaction, and that habituation occurs as people adjust to levelling up through income brackets [12,56].

We found being married significantly predicted life satisfaction when looking at the whole population. This is in line with existing results for Australasia (and Western nations generally), which usually show that being married is positively associated with life satisfaction, and being divorced, widowed or separated is negatively associated with wellbeing [57]. However, age group analysis revealed that the association between being

married and life satisfaction was driven by the older age group. Being married was a significant predictor for females over 40 years old and a significant and important predictor for males in the same age group. However, being married was an insignificant predictor for males and females under 40 years of age.

Education has been associated with life satisfaction, but the majority of the variance can be explained by differences in income, health, and social capital [49]. Life satisfaction is greater amongst people with high physical and mental health, and subjective evaluations of health status are more strongly correlated with subjective wellbeing than objective measures [58]. Our results are in line with these findings. Education was not a significant predictor of life satisfaction, but subjective measures of income satisfaction, health problems, and negative emotions all were, with negative emotions being an important predictor and income satisfaction being the most important. Our more detailed analysis shows that income satisfaction is an important predictor for both age groups for males and females, and that negative experiences are also an important predictor for all groups except females under 40 years of age.

The importance of positive affect for life satisfaction has been stressed by Frederickson [59]. Our results reflect this. Positive experience, which contains items related to positive affect, was a significant predictor of life satisfaction. As shown in Table 4, positive experience was an important predictor of life satisfaction for males and females under 40 years old and males over 40 years old. It is unclear why positive experience was not an important predictor of life satisfaction for females over 40 years old in our study. Despite sex differences in life satisfaction found here and elsewhere, and the obvious differences in experiences and expectations across age groups, very little research has investigated the importance of positive and negative affect for life satisfaction across these different groups [60]. Future research should investigate this aspect in more detail.

In our study, feeling satisfied with city was important for females in both age groups and for men under 40. Perhaps people in these groups find it important to have suitable options for activities outside of their home. Life satisfaction has also been related to environmental factors in NZ. For example, residents with easy access to greenspace in their neighborhood reported higher levels of life satisfaction; however, this effect is nearly eliminated when the person has a high fear of crime in their neighborhood [61]. Feeling safe at night was not predictive of life satisfaction in our study. However, the evidence on the relationship between life satisfaction and with security and safety is somewhat patchy and mixed [49], but several recent studies do find it to be significant, albeit small [62–64].

The importance of satisfaction with living standards and household income, and the strong relationship between income and life satisfaction for the lowest income New Zealanders, suggests that improvements to the average life satisfaction of New Zealanders might be achieved by securing high incomes and standards of living for the worst off in society. While such policies generally require greater government intervention, international studies suggest that nations with greater income redistribution and social services have higher life satisfaction [65,66]. The minimum wage in NZ has increased recently, but further policies that increase incomes or living standards for the poorest New Zealanders may be required to address societal issues such as child poverty [67,68]. Alternatively, as the Sovereign study suggested [26], learning to live within your means, regardless of income level, seems to positively impact wellbeing. For example, in the Sovereign study, the odds ratio of having very high wellbeing was 12 times higher for people living within their means compared to people finding it difficult to live with their present income.

4.3. Strengths and Limitations

Jebb and colleagues noted limitations in studies assessing life satisfaction, including that life satisfaction is a cognitive assessment of happiness, which overlooks that the subjective wellbeing construct also contains positive and negative affect [69]. Instead of including affect in our outcome measure, we assessed positive and negative experiences in the present study (through affective items about emotions and enjoyment). Positive and

negative experiences were found to be important predictors of life satisfaction; so, they were still an important part of the study.

Another potential limitation is that, despite analysing a wide range of variables, the variables could not (even collectively) explain the majority of variance in life satisfaction. Furthermore, small effect sizes were found suggesting that whilst a statistical relationship was significant, the real-world impact of these findings may be small. This is to be expected. Previous research demonstrates the important contributions of genetics, behaviour, and personality to life satisfaction (e.g., see [70,71]). In the current study, we used demographic and other variables that are more closely related to the levers of policy in order to provide insights that are potentially useful for the generation of wellbeing policy recommendations. Further exploration of the relationships between income, satisfaction with income, and life satisfaction, as well as an individual's relationships to and perceptions of income remain a future research opportunity.

5. Conclusions

Life satisfaction in NZ changed slightly over the study period, most likely due to major national and international events such as the Christchurch earthquakes and the GFC. Satisfaction with standards of living was found to be an important predictor of life satisfaction regardless of age or gender. These findings may provide a path for policy focus directed towards raising standards of living which will in turn increase life satisfaction. Policy may also be used to respond to the increasing social discourse on inequalities between income levels, genders and age groups which has been growing for some time in NZ and impacts life satisfaction. In line with other policy recommendations based on similar analyses internationally [28,72], Figure 6 implies that raising the living standards of New Zealanders with the lowest incomes might improve average life satisfaction more than raising them for those with the highest incomes.

Supplementary Materials: The following are available online at https://www.mdpi.com/article/10.3390/ijerph19095612/s1, Table S1: Items used in study, Table S2: Prevalence of life satisfaction in NZ from 2006 to 2017.

Author Contributions: Conceptualisation: R.J.J., M.J., D.W., M.H.S. and A.J.J.; data curation: M.J.; formal analysis: M.J.; investigation: M.J.; project administration: R.J.J. and M.J.; resources: M.J.; visualization: M.J.; writing—original draft: R.J.J., M.J., D.W., M.H.S. and A.J.J.; writing—review and editing: R.J.J., M.J., D.W., M.H.S. and A.J.J. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported by the Ministry of Education and the National Research Foundation of the Republic of Korea (NRF-2017S1A3A2066611).

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Not applicable.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. New Zealand Treasury. *Budget 2018*; NZ Government: Wellington, New Zealand, 2018.
2. United Nations. *Sustainable Development Goals*; United Nations: San Francisco, CA, USA, 2018.
3. New Zealand Treasury. *The Treasury Approach to the Living Standards Framework*; New Zealand Treasury: Wellington, New Zealand, 2018.
4. Organisation for Economic Co-operation and Development. *Measuring Well-Being and Progress: Well-Being Research*; Organisation for Economic Co-operation and Development: Paris, France, 2013; Available online: www.oecd.org/statistics/measuring-well-being-and-progress.htm (accessed on 5 March 2022).
5. BBC News. *New Zealand's Slump Longest Ever*; BBC News: London, UK, 2009.
6. New York Times. *New Zealand Takes a Pause in Cutting Rates*; New York Times: New York, NY, USA, 2009.

7. Ministry of Social Development. *The Social Report 2016—Te Pūrongo Oranga Tangata*; Ministry of Social Development: Wellington, New Zealand, 2016.
8. New Zealand Treasury. *New Zealand Economic and Financial Overview: 2010*; New Zealand Treasury: Wellington, New Zealand, 2010.
9. New Zealand Foreign Affairs & Trade. *New Zealand-China FTA overview*; New Zealand Foreign Affairs & Trade: Wellington, New Zealand, 2008.
10. Diener, E.; Emmons, R.A.; Larson, R.J.; Griffin, S. The Satisfaction with Life Scale. *J. Pers. Assess.* **1985**, *49*, 71–75. [CrossRef] [PubMed]
11. Dolan, P.; Metcalfe, R. Measuring subjective wellbeing: Recommendations on measures for use by national governments. *J. Soc. Policy* **2012**, *41*, 409–427. [CrossRef]
12. Brown, D.; Woolf, J.; Smith, C. An empirical investigation into the determinants of life satisfaction in New Zealand. *N. Z. Econ. Pap.* **2012**, *46*, 239–251. [CrossRef]
13. Donovan, N.; Halpern, D. *Life Satisfaction: The State of Knowledge and Implications for Government*; Prime Minister's Strategy Unit: London, UK, 2002.
14. VanderWeele, T.J.; Trudel-Fitzgerald, C.; Allin, P.; Farrelly, C.; Fletcher, G.; Frederick, D.E.; Hall, J.; Helliwell, J.F.; Kim, E.S.; Lauinger, W.A.; et al. Current Recommendations on the Selection of Measures for Well-Being. In *Measuring Well-Being*; Oxford University Press: Oxford, UK, 2021; pp. 501–520.
15. Cheung, F.; Lucas, R. Assessing the validity of single-item life satisfaction measures: Results from three large samples. *Qual. Life Res.* **2014**, *23*, 2809–2818. [CrossRef] [PubMed]
16. Helliwell, J.; Layard, R.; Sachs, J. *World Happiness Report [2012]*; Sustainable Development Solutions Network: New York, NY, USA, 2013.
17. Layard, R. Measuring subjective well-being. *Science* **2010**, *327*, 534–535. [CrossRef] [PubMed]
18. Layard, R. *Happiness: Lessons from a New Science*; Penguin Books: London, UK, 2005.
19. Fergusson, D.M.; McLeod, G.F.; Horwood, L.J.; Swain, N.R.; Chapple, S.; Poulton, R. Life satisfaction and mental health problems (18 to 35 years). *Psychol. Med.* **2015**, *45*, 2427–2436. [CrossRef]
20. Samaranayake, C.; Fernando, A. Satisfaction with life and depression among medical students in Auckland, New Zealand. *N. Z. Med. J.* **2011**, *124*, 12–17.
21. Haar, J.; Russo, M.; Suñe, A.; Ollier-Malaterre, A. Outcomes of work–life balance on job satisfaction, life satisfaction and mental health: A study across seven cultures. *J. Vocat. Behav.* **2014**, *85*, 361–373. [CrossRef]
22. Spector, P.; Allen, T.; Poelmans, S.; Lapierre, L.; Cooper, C.; O'Driscoll, M.; Sanchez, J.; Abarca, N.; Alexandrova, M.; Beham, B.; et al. Cross-national differences in relationships of work demands, job satisfaction, and turnover intentions with work–family conflict. *Pers. Psychol.* **2007**, *60*, 805–835. [CrossRef]
23. Statistics New Zealand. *Ngā Tohu o te ora: The Determinants of Life Satisfaction for Māori 2013*; Statistics New Zealand: Wellington, New Zealand, 2015.
24. Jia, K.; Smith, C. *Subjective Wellbeing in New Zealand: Some Recent Evidence*; New Zealand Productivity Commission/Te Kōmihana Whai Hua o Aotearoa: Wellington, New Zealand, 2016.
25. Sacks, D.; Stevenson, B.; Wolfers, J. *NBER Working Paper Series: Subjective Well-Being, Income, Economic Development and Growth*; National Bureau of Economic Research: Cambridge, MA, USA, 2010.
26. Mackay, L.; Schofield, G.; Jarden, A.; Prendergast, K. *The Sovereign New Zealand Wellbeing Index 2014. Executive Report*; AUT University: Auckland, New Zealand, 2015.
27. Becchetti, L.; Conzo, G. The gender life satisfaction/depression paradox. *Soc. Indic. Res.* **2022**, *160*, 35–113. [CrossRef]
28. Boarini, R.; Comola, M.; Smith, C.; Manchin, R.; De Keulenaer, F. What Makes for a Better Life? The Determinants of Subjective Well-Being in OECD Countries–Evidence from the Gallup World Poll. 2012. Available online: https://www.oecd-ilibrary.org/economics/what-makes-for-a-better-life_5k9b9ltjm937-en (accessed on 5 March 2022).
29. Helliwell, J. *NBER Working Paper Series: Life Satisfaction and Quality of Development*; (No. w14507); National Bureau of Economic Research: Cambridge, MA, USA, 2008.
30. Di Tella, R.; MacCulloch, R.; Oswald, A. The macroeconomics of happiness. *Rev. Econ. Stat.* **2003**, *85*, 809–827. [CrossRef]
31. Winkelmann, L.; Winkelmann, R. Why are the unemployed so unhappy? Evidence from panel data. *Economica* **1998**, *65*, 1–15. [CrossRef]
32. Lucas, R.; Clark, A.; Georgellis, Y.; Diener, E. Unemployment alters the set point for life satisfaction. *Psychol. Sci.* **2004**, *15*, 8–13. [CrossRef] [PubMed]
33. Berggren, N.; Bergh, A.; Bjørnskov, C.; Tanaka, S. Migrants and life satisfaction: The role of the country of origin and the country of residence. *Kyklos* **2020**, *73*, 436–463. [CrossRef]
34. Sam, D. Predicting life satisfaction among adolescents from immigrant families in Norway. *Ethn. Health* **1998**, *3*, 5–18. [CrossRef]
35. Bergan, A.; McConatha, J. Religiosity and life satisfaction. Activities. *Adapt. Aging* **2001**, *24*, 23–34.
36. Elliott, M.; Hayward, R. Religion and life satisfaction worldwide: The role of government regulation. *Sociol. Relig.* **2009**, *70*, 285–310. [CrossRef]
37. Sibley, C.; Harré, N.; Hoverd, W.; Houkamau, C. The gap in the subjective wellbeing of Māori and New Zealand Europeans widened between 2005 and 2009. *Soc. Indic. Res.* **2011**, 103–115. [CrossRef]

38. Statistics New Zealand. *2013 Census QuickStats About Culture and Identity*; Statistics New Zealand: Wellington, New Zealand, 2014.
39. Fleche, S.; Smith, C.; Sorsa, P. *Exploring Determinants of Subjective Wellbeing in OECD Countries*; OECD Publishing: Paris, France, 2012.
40. Cantril, H. *Pattern of Human Concerns*; Rutgers University Press: New Brunswick, NJ, USA, 1965.
41. Jovanović, V.; Lazić, M. Is longer always better? A comparison of the validity of single-item versus multiple-item measures of life satisfaction. *Appl. Res. Qual. Life* **2020**, *15*, 675–692. [CrossRef]
42. Tabachnick, B.; Fidell, L. *Using Multivariate Statistics*, 6th ed.; Pearson: Boston, MA, USA, 2013.
43. George, D.; Mallery, P. *IBM SPSS Statistics 26 Step by Step: A Simple Guide and Reference*; Routledge: New York, NY, USA, 2019.
44. The World Bank. *Currencies*; The World Bank: Washington, DC, USA, 2022.
45. Helliwell, J.; Layard, R.; Sachs, J.; De Neve, J. *World Happiness Report*; Sustainable Development Solutions Network: New York, NY, USA, 2021.
46. Helliwell, J.; Layard, R.; Sachs, J. *World Happiness Report*; Sustainable Development Solutions Network: New York, NY, USA, 2015.
47. Beaglehole, B.; Mulder, R.; Boden, J.; Bell, C. A systematic review of the psychological impacts of the Canterbury earthquakes on mental health. *Aust. N. Z. J. Public Health* **2019**, *43*, 274–280. [CrossRef]
48. Batz, C.; Tay, L. Gender differences in subjective well-being. In *Handbook of Well-Being*; Diener, E., Oishi, S., Tay, L., Eds.; DEF Publishers: Salt Lake City, UT, USA, 2018.
49. Dolan, P.; Peasgood, T.; White, M. Do we really know what makes us happy? A review of the economic literature on the factors associated with subjective well-being. *J. Econ. Psychol.* **2008**, *29*, 94–122. [CrossRef]
50. Van Hoorn, A. *A Short Introduction to Subjective Wellbeing: Its Measurement, Correlates and Policy Uses. Prepared for the International Conference, 'Is Happiness Measurable and What Do Those Measures Mean for Policy?'*; University of Rome: Rome, Italy, 2007.
51. Capone, V.; Joshanloo, M.; Scheifinger, H. Predictors of life satisfaction in a large representative sample from Italy. *Curr. Psychol.* **2021**, *40*, 3609–3627. [CrossRef]
52. Lambert, L.; Karabchuk, T.; Joshanloo, M. Predictors of life satisfaction in the United Arab Emirates: Results based on Gallup data. *Curr. Psychol.* **2020**. [CrossRef]
53. Boes, S.; Winkelmann, R. The effect of income on general life satisfaction and dissatisfaction. *J. Soc. Indic. Res.* **2010**, *95*, 111. [CrossRef]
54. Clark, A.; Frijters, P.; Shields, M. *Paris-Jourdan Sciences Economiques Working Paper Series: Income and Happiness: Evidence, Explanations and Economic Implications (2006–24)*; Paris-Jourdan Sciences Economiques: Paris, France, 2006.
55. Easterlin, R.A.; O'Connor, K. The Easterlin Paradox. In *Handbook of Labor, Human Resources and Population Resources*; Zimmermann, K., Ed.; Springer: Berlin/Heidelberg, Germany, 2021.
56. Boyce, C.J.; Brown, G.D.; Moore, S.C. Money and happiness: Rank of income, not income, affects life satisfaction. *Psychol. Sci.* **2010**, *21*, 471–475. [CrossRef]
57. Helliwell, J.; Barrington-Leigh, C.; Harris, A.; Huang, H. *International Evidence on the Social Context of Well-Being*; National Bureau of Economic Research: Cambridge, MA, USA, 2009.
58. Diener, E.; Suh, E.; Lucas, R.; Smith, H. Subjective well-being: Three decades of progress. *Psychol. Bull.* **1999**, *125*, 276–302. [CrossRef]
59. Fredrickson, B. The broaden-and-build theory of positive emotions. Philosophical transactions of the Royal Society of London. Series B. *Biol. Sci.* **2004**, *359*, 1367–1377. [CrossRef]
60. Jovanović, V.; Joshanloo, M. The contribution of positive and negative affect to life satisfaction across age. *Appl. Res. Qual. Life* **2022**, *17*, 511–524. [CrossRef]
61. Fleming, C.; Manning, M.; Ambrey, C. Crime, greenspace and life satisfaction: An evaluation of the New Zealand experience. *Landsc. Urban Plan.* **2016**, *149*, 1–10. [CrossRef]
62. Ma, J.; Dong, G.; Chen, Y.; Zhang, W. Does satisfactory neighbourhood environment lead to a satisfying life? An investigation of the association between neighbourhood environment and life satisfaction in Beijing. *Cities* **2018**, *74*, 229–239. [CrossRef]
63. Varela, J.; Alfaro, J.; Melipillán, R.; Gómez, D.; González-Carrasco, M. Perceptions of safety, satisfaction with neighborhood and life satisfaction among Chilean adolescents. *J. Child Indic. Res.* **2020**, *13*, 1489–1502. [CrossRef]
64. Camacho, D.; Lee, Y.; Bhattacharya, A.; Vargas, L.X.; Kimberly, L.; Lukens, E. High life satisfaction: Exploring the role of health, social integration and perceived safety among Mexican midlife and older adults. *J. Gerontol. Soc. Work.* **2019**, *62*, 521–542. [CrossRef] [PubMed]
65. Ono, H.; Lee, K. Welfare states and the redistribution of happiness. *Soc. Forces* **2013**, *92*, 789–814. [CrossRef]
66. Hajdu, T.; Hajdu, G. Reduction of income inequality and subjective well-being in Europe. *Economics* **2014**, *8*, 1–29. [CrossRef]
67. Duncanson, M.; van Asten, H.; Adams, J.; McAnally, H.; Zhang, X.; Wicken, A.; Oben, G. *Child Poverty Monitor: Technical Report 2021*; New Zealand Child and Youth Epidemiology Service: Dunedin, New Zealand, 2021.
68. Boston, J.; Chapple, S. *Child Poverty in New Zealand*; Bridget Williams Books: Wellington, New Zealand, 2014.
69. Jebb, A.; Morrison, M.; Tay, L.; Diener, E. Subjective well-being around the world: Trends and predictors across the life span. *Psychol. Sci.* **2020**, *31*, 293–305. [CrossRef]
70. Bartels, M.; Boomsma, D. Born to be happy? The etiology of subjective well-being. *Behav. Genet.* **2009**, *39*, 605–615. [CrossRef]

71. Røysamb, E.; Nes, R.; Czajkowski, N.; Vassend, O. Genetics, personality and wellbeing. A twin study of traits, facets and life satisfaction. *Sci. Rep.* **2018**, *8*, 12298. [CrossRef]
72. O'Connor, K. Happiness and welfare state policy around the world. *Rev. Behav. Econ.* **2017**, *4*, 397–420. [CrossRef]

International Journal of
Environmental Research and Public Health

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Article

The Role of Recreation Specialization and Self-Efficacy on Life Satisfaction: The Mediating Effect of Flow Experience

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Abstract: Previous studies confirmed that leisure sport participation could contribute to people's life satisfaction. However, little is known about the predictors of life satisfaction in the context of long-distance running. A model was proposed in this study to examine the relationship between recreation specialization, self-efficacy, flow experience, and life satisfaction. An online questionnaire was distributed to long-distance runners in China, and a total of 404 valid questionnaires were obtained for data analysis in this study. Results indicated that recreation specialization and self-efficacy had a direct and positive effect on runners' flow experience; recreation specialization, self-efficacy, and flow experience were positively associated with runners' life satisfaction. Furthermore, flow experience partially mediated the relationship between self-efficacy and life satisfaction, while it fully mediated the role of recreation specialization in life satisfaction. The findings shed some new insights for understanding the influence of leisure sport engagement on people's life satisfaction.

Keywords: self-efficacy; recreation specialization; flow experience; life satisfaction; mediating effect

Citation: Tian, H.; Zhou, W.; Qiu, Y.; Zou, Z. The Role of Recreation Specialization and Self-Efficacy on Life Satisfaction: The Mediating Effect of Flow Experience. *IJERPH* **2022**, *19*, 3243. https://doi.org/10.3390/ijerph19063243

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 27 January 2022
Accepted: 8 March 2022
Published: 9 March 2022

Publisher's Note: MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.

1. Introduction

Life satisfaction, a cognitive evaluation of satisfaction with overall life quality, acts as a key dimension of subjective well-being [1]. It has been defined as "a positive assessment of an individual's whole life according to the criteria determined by him or her" [2]. Foreign governments (e.g., U.S., Australia, and New Zealand) have used life satisfaction as an important indicator of people's well-being [3]. Previous studies have confirmed that life satisfaction can be predicted by variables such as personality, self-esteem, income, marriage, and societal factors [4–8]. Although life satisfaction is not equal to well-being, exploring other predictors of life satisfaction is necessary to understand what makes people's lives better [9].

Previous studies have confirmed that, among various predictors of life satisfaction, physically active leisure can play a significant role in improving people's life satisfaction [3,10]. More importantly, Sato et al. [3,11] found that participation in long-distance running exerts a positive influence on how people assess their lives. Per statistical data, in 2020, over 1800 marathon events (with over 800 participants) were held in 337 cities all over China, attracting more than 7.13 million participants, a significant increase in comparison with 5.84 million runners in 2018 (Chinese Athletica Association, 2020). Recent studies confirm that being seriously involved in long-distance running has a positive impact on the marathoner's subjective well-being [11,12].

Bryan [13] developed a conceptual framework named "recreation specialization" to generalize the various behaviors that individuals had exhibited when participating in leisure sports activities. It refers to a continuum that outdoor recreation participants

usually advanced from general interest and low engagement to specialized interest and high engagement [14]. Most studies evaluated the degree of an individual's recreation specialization using a three-dimensional construct [15], which included behavior, cognition, and affect. Using this construct, scholars have dedicated themselves to examining the influence of recreation specialization on other variables such as successful aging, place identity, and environmental attitude [16–18]. Moreover, existing literature also provided some evidence to explore the influence of recreation specialization on life satisfaction. According to the results of recent studies, the affect dimension of recreation specialization showed a positive effect on people's life satisfaction [3,4]. Individuals who engaged in more leisure time activities reported experiencing higher levels of life satisfaction and health benefits [10,19].

As described in previous literature, self-efficacy has been defined as "individual judgments of one's ability to organize and execute courses of action to designated goals through evaluating its level, generality, and strength across contexts and activities" [20]. It reflects confidence in the ability to exert control over one's motivation, behavior, and social environment. Under normal conditions, the stronger an individual's self-efficacy and outcome expectation, the more likely he or she will begin and persist with a given activity [21]. During exercise, people with a higher level of self-efficacy were usually found to show a greater sense of energy, expend less effort, and experience more positive feelings [22]. Recent studies have found that general self-efficacy was strongly related to college students' life satisfaction [23,24]. Therefore, it appears runners' life satisfaction can improve as their self-efficacy increases.

Csikszentmihalyi developed the concept of flow experience to understand why individuals become committed to certain activities without any material or economic benefits [25]. It has been defined as an enjoyable, intrinsically rewarding psychological state characterized by total concentration in a particular activity, exclusion of irrelevant thoughts, a sense of everything clicking together, and involvement in challenging situations [26]. Flow experience was generally conceptualized in nine key dimensions, three describing preconditions for flow occurrence (e.g., challenge-skill balance, clear goals, and action-awareness) and six reflecting characteristics of the experience (e.g., transformation of sense of time and sense of control) [25,27]. Recent research in sport has mainly focused on the antecedents of flow experience [28], the role of flow experience on performance [29], and interventions to increase flow [30]. Through structural equation modeling, scholars have verified that satisfaction with event levels fully mediated the role of flow experience in people's overall life satisfaction [31]. However, the relationship between flow experience and life satisfaction has not been documented.

The development of the concept of recreation specialization came from the study of individuals who continuously seek new challenges and advance their skills and knowledge in performing a specific activity [14]. People tend to avoid their leisure pursuits when they become bored and frustrated while negotiating factors such as poor weather, injuries, or lack of a partner [32]. Experiencing flow, however, tends to be related to the outcomes of self-enrichment, self-expression, and self-actualization in those individuals who pursue their leisure time activities seriously [33]. Leisure involvement, equivalent to the affect dimension of recreation specialization, has been found to have a positive impact on people's flow experience [34]. As indicated by Wu et al. [35], specialized individuals were more likely to report experiencing more intense flow experiences than those who were inexperienced. Additionally, recreation specialization moderated the role of flow experience on addiction tendencies.

Prior studies have provided evidence to support the role of self-efficacy in the experiencing of flow. For example, in cross-national comparative research, scholars have found self-efficacy to be positively related to undergraduate students' flow experience and engagement [36]. Another study showed that the greater the self-efficacy, the higher the flow frequency and the higher the challenge and skill levels, which, in turn, predicted flow over two time periods among teachers when engaged in their work-related activities [37].

In sports, recent research also revealed that self-efficacy has a significant positive correlation with elderly adults' flow experience [38].

When people are highly involved in long-distance running, they tend to engage in regular daily exercise, make significant efforts to improve their knowledge and skills, and show a strong willingness to continue running [39]. As specialization progresses, such individuals will come to exhibit a high level of flow experience, reap various durable benefits, and report a more satisfying life [29,31]. Extant literature suggests that a higher degree of self-efficacy is more likely to correlate with people's life satisfaction [23,24]. As mentioned above, individuals with higher levels of self-efficacy are more likely to overcome various difficulties [32], experience a psychological flow [36–38], and lead a more satisfying life.

In summary, the objectives of this study are twofold. The first is to examine the direct effects among self-efficacy, recreation specialization, flow experience, and life satisfaction. The second is to examine the indirect effects of flow experience on the relationship between self-efficacy, recreation specialization, and life satisfaction. Based on the review of literature as described above, a model was proposed as shown in Figure 1. The hypotheses of this study are as follows:

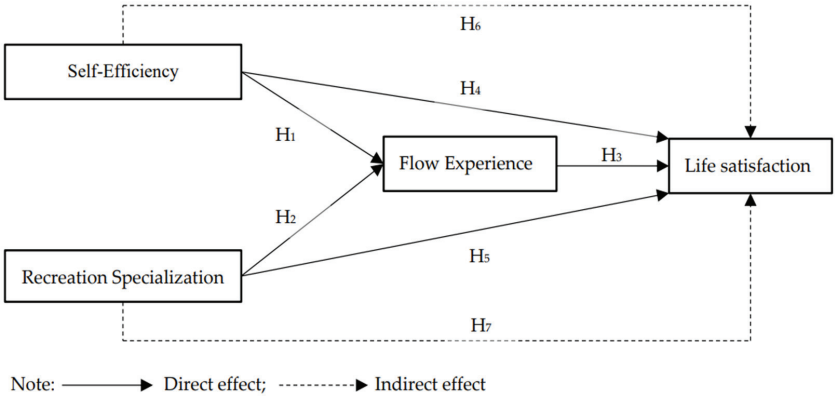

Figure 1. Proposed conceptual model.

Hypothesis 1 (H_1). *Runners' self-efficacy has direct positive effects on flow experience.*

Hypothesis 2 (H_2). *Runners' recreation specialization has direct positive effects on flow experience.*

Hypothesis 3 (H_3). *Runners' flow experience has direct positive effects on life satisfaction.*

Hypothesis 4 (H_4). *Runners' self-efficacy has direct positive effects on life satisfaction.*

Hypothesis 5 (H_5). *Runners' recreation specialization has direct positive effects on life satisfaction.*

Hypothesis 6 (H_6). *Runners' flow experience mediates the role of self-efficacy on life satisfaction.*

Hypothesis 7 (H_7). *Runners' flow experience mediates the role of recreation specialization on life satisfaction.*

2. Method

2.1. Participants

The data for this study were collected through a web-based platform named Questionnaire Star from 13 December to 21 December 2021. We shared the questionnaire link or a QR code to the respondents through WeChat (a popular social software in China). The

informed consent form was given to the respondents before they started to complete the questionnaires. The respondents participated voluntarily and completed questionnaires anonymously. A total of 420 respondents completed the questionnaire, but data from 16 of them were excluded because they reported a weekly running frequency of 0 times.

Table 1 shows the demographic information of the respondents. More than half of the runners were male (269 or 66.6%). Most of the runners were 18 to 44 years old (368 or 91.1%). Most of the respondents were unmarried (251 or 62.1%), and more than 35% of the participants were married. More than half of the runners owned a college or university educational level (284 or 70.3%), and a smaller proportion had a high school or below educational level (27 or 6.7%). Nearly half of the participants had an annual income over the US $3001 (198 or 49%). Moreover, most runners owned a membership in a running group (277 or 68.6%).

Table 1. Respondent's profile (n = 404).

Characteristics	Frequency (n)	Percentage (%)
Sex		
Male	269	66.6
Female	135	33.4
Age		
18–29	242	59.9
30–44	126	31.2
45–60	29	7.2
61 and above	7	1.7
Marital status		
Unmarried	251	62.1
Married	146	36.1
Divorced or widowed	7	1.7
Education		
High school or below	27	6.7
College or university	284	70.3
Postgraduate	93	23.0
Income (per year)		
US $3000 and below	206	51.0
US $3001–US $7500	39	9.7
US $7501–US $18,000	73	18.1
US $18,000 and above	86	21.3
Membership in a running group		
Joined	277	68.6
Not joined	127	31.4

2.2. Measurements

The Chinese Version of the Self-efficacy for Exercise Scale (SEES-C), modified from a previous study [40] by Lee et al. [21], was used to examine the degree of an individual's confidence in exercising regularly. The SEES-C includes nine items rated on an 11-point Likert scale where "0" represents "not confident" and "10" represents "very confident". An example of an item (translated from Chinese) on SEES-C is "How confident are you right now that you could run three times per week for 20 min even if the weather is bothersome to you?". The Cronbach's alpha reliability coefficient of the SEES-C in this study was 0.93, suggesting a high level of internal consistency.

Recreation specialization was measured with nine items modified from previous studies [4,16,41]. It is a measure of a marathoner's level of interest and involvement. The items were modified for this study according to how long-distance running is usually characterized in the Chinese culture. Recreation specialization was measured using three factors: behavior (three items), cognition (two items), and affect (four items). Both the behavioral and cognitive dimensions were rated on a five-point Likert scale ranging from "novice" (score 1) to "expert" (score 5). The affect dimension was rated on a five-point

Likert scale where "1" represents "disagree strongly" and "5" represents "agree strongly". An example of an affect item is "I would rather go running than do other activities". The internal consistency coefficient of recreation specialization dimensions ranged from 0.67 to 0.89. The total scores for recreation specialization were used in mediation analyses.

Flow experience was measured by the Flow Short Scale (FSS) adapted from previous studies [42,43]. FSS includes 10 items for two dimensions, including fluency of performance (six items) and absorption by activity (four items). FSS is translated into Chinese using a forward-backward translation approach. The items are rated on a seven-point Likert scale ranging from "not at all" (score 1) to "very much" (score 7). An example of an item for measuring fluency of performance is "my thoughts/activities run fluidly and smoothly". The Cronbach's alpha values of flow experience dimensions ranged from 0.88 to 0.95. The total scores for flow experience were used in mediation analyses.

The Satisfaction With Life Scale (SWLS), developed by Diener et al. [2], was used to measure people's evaluation of the overall quality of their life. The Chinese version of SWLS has shown good reliability and validity for people of Chinese background [44]. The scale consists of five items rated on a seven-point Likert scale ranging from "disagree strongly" (score 1) to "agree strongly" (score 7). An example of an item is "so far, I have gotten the important things I want in life". The internal consistency coefficient of SWLS was 0.92 in this study.

Based on suggestions included in previous studies [4,45,46], six demographic variables were included in this study as control variables: age, sex, marital status, education, annual income, and membership in a running group.

2.3. Data Analysis

JASP 0.16 [47] was used to analyze all data in this study. The respondent's profile, mean value, and standard deviations were evaluated through descriptive statistics. Internal consistency reliability analysis was used to evaluate the reliability of all constructs in this study. The correlation of all variables was evaluated by a Pearson's correlation coefficient. Furthermore, mediation analyses were used to examine research Hypotheses 1 through 7.

3. Results

3.1. Descriptive Statistics, Correlation Analysis, and Reliability Testing

The results of descriptive statistics, correlation analysis, and reliability are shown in Table 2. Affect had the highest mean value (M = 3.62, SD = 0.94) on the recreation specialization scale, followed by cognition (M = 3.47, SD = 0.99); behavior had the lowest mean value (M = 2.89, SD = 1.04). These findings are similar to those reported in recent research [12,16]. The respondents also reported feelings of high self-efficacy (M = 7.36, SD = 2.28), suggesting their strong confidence to keep running. On the scale flow experience, a higher mean value was found for fluency of performance (M = 5.44, SD = 1.10) than for absorption by activity (M = 5.30, SD = 1.13). These findings suggest that runners reported being fully immersed with strong feelings of involvement and energized focus. In addition, the respondents reported a high degree of life satisfaction (M = 5.10, SD = 1.19).

Table 2. Descriptive statistics, correlation analysis, and reliability testing.

Constructs	M	SD	α	1	2	3	4	5	6	7
1 BEH	2.89	1.04	0.67	1						
2 COG	3.47	0.99	0.89	0.40 ***	1					
3 AFF	3.62	0.94	0.89	0.45 ***	0.66 ***	1				
4 SEE	7.36	2.28	0.93	0.48 ***	0.53 ***	0.61 ***	1			
5 FOP	5.44	1.10	0.95	0.36 ***	0.53 ***	0.59 ***	0.59 ***	1		
6 ABA	5.30	1.13	0.88	0.35 ***	0.55 ***	0.63 ***	0.62 ***	0.79 ***	1	
7 LIS	5.10	1.19	0.92	0.24 ***	0.49 ***	0.48 ***	0.54 ***	0.69 ***	0.72 ***	1

Note: BEH = behavior; COG = cognition; AFF = affect; SEE = self-efficacy; FOP = fluency of performance; ABA = absorption by activity; LIS = life satisfaction. *** $p < 0.001$.

Furthermore, all scales/subscales used in this study had significantly positive correlations with each other ranging from 0.24 to 0.79, $p < 0.001$.

3.2. Testing of Hypothese 1–7

JASP 0.16 was used to test research Hypotheses 1 through 7. Self-efficacy and recreation specialization were used as predictors, flow experience as the mediator, life satisfaction as the outcome variable, and demographic variables as background confounders. Results shown in Table 3 indicate that self-efficacy ($\beta = 0.37$; $p < 0.01$) and recreation specialization ($\beta = 0.42$; $p < 0.001$) were positively related to flow experience; self-efficacy ($\beta = 0.37$; $p < 0.001$), recreation specialization ($\beta = 0.28$; $p < 0.001$), and flow experience ($\beta = 0.62$; $p < 0.001$) were positively associated with life satisfaction. Thus, Hypotheses 1 through 5 were supported in this study. In addition, flow experience had a significant indirect effect on the role of self-efficacy and recreation specialization on runners' life satisfaction. Specifically, flow experience partially mediated the relationship between self-efficacy and life satisfaction, while it fully mediated the influence of recreation specialization on life satisfaction. The standardized indirect effect values were 0.23 (H_6) and 0.26 (H_7), respectively.

Table 3. Direct effect and indirect effect in the proposed research model.

No.	Hypothesis	Direct Effects		Indirect Effects		Total Effects	
		Beta	t Value	Beta	t Value	Beta	t Value
H_1	SE → FE	0.37	2.72 **				
H_2	RS → FE	0.42	3.43 ***				
H_3	FE → LS	0.62	4.12 ***				
H_4	SE → LS	0.15	3.07 **			0.37	6.89 ***
H_5	RS → LS	0.02	0.41 ^{NS}			0.28	4.89 ***
H_6	SE → FE → LS			0.23	6.552 ***		
H_7	RS → FE → LS			0.26	6.959 ***		

Note: ** $p < 0.01$; *** $p < 0.001$; ^{NS} = No significant; SE = Self-efficacy; FE = Flow experience; RS = Recreation specialization; LS = Life satisfaction.

4. Discussion

A model was proposed to evaluate the role of self-efficacy, recreation specialization, and flow experience in long-distance runners' life satisfaction. This study extended the extant literature in two ways: by examining the predictors of flow experience and life satisfaction and investigating the influential paths of life satisfaction by introducing flow experience as a mediating variable. The results of mediation analysis using JASP 0.16 supported all seven hypotheses proposed in this study.

Consistent with previous studies [36,38], we found that runners' self-efficacy significantly predicted flow experience. As suggested in recent research, flow experiences were reported more often by those who also reported building-up momentum and confidence in their performance [48]. Self-efficacy was a stronger predictor of how effectively an individual can perform a specific task than either his/her self-confidence or self-esteem [49]. Usually, higher levels of self-efficacy contribute to people persisting and finding ways to improve their performance by collecting important information, making appropriate decisions, and taking actions at the right time.

Our results support the findings from previous studies [34,35] that indicate that runners with higher degrees of recreation specialization report stronger flow experiences. The results also confirm Cheng et al.'s [34] findings of a positive relationship between recreation specialization and flow experience and no relationship with the affect dimension. Contrary to the results of this research, Wöran and Arnberger [50] found that mountain hikers' specialization was negatively associated with their flow experience index. As suggested by Engeser and Rheinberg [42], there is not always a prerequisite for flow experience, which may be related to a balance between an individual's skill level and how

challenging is the activity. Thus, flow experience is still possible when the difficulty of activity is lower than the individual's level of skill [50].

The results of this study support earlier findings of other investigators [28–30] who found that flow experience positively predicts life satisfaction. In a qualitative investigation [51], participants reported many positive outcomes after engaging in rewarding physical activities, including the building of confidence and the experiencing of optimal arousal, self-recovery, and intrinsic motivation. Earlier cross-sectional research found that flow intensity had a significant and positive relationship with Tai Chi participants' view of life as worth living (a variable similar to wellbeing in Japanese culture) [52]. Our results also suggest self-efficacy significantly contributes to runners' life satisfaction. A high degree of self-efficacy contributes to perseverance and to feeling positive and energetic [21,22], all of which are important to leading a healthy and satisfying life [23,24,53]. More importantly, our results extend earlier work by finding that flow experience had an indirect effect on the relationship between self-efficacy and life satisfaction. In other words, the results suggest the possibility that a runner's self-efficacy directly influences the intensity of flow experience, and indirectly contributes to improving life satisfaction.

The findings of this study bring forth several implications. From a theoretical perspective, the findings extend the cognition of flow theory by confirming the positive influence of self-efficacy and recreation specialization on flow experience. In addition, this study contributes to the extant literature by exploring the predictors of life satisfaction and provides an insight into the relationships among runners' self-efficacy, recreation specialization, flow experience, and life satisfaction. Higher levels of self-efficacy and recreation specialization contribute to an individual's flow experience and life satisfaction. From an applied perspective, these findings suggest that strategies should be developed to improve self-efficacy, for people to engage in rewarding physical activities and become specialized in performing activities so they are more likely to experience flow states, and these, in turn, may help improve people's life satisfaction. Broader societal efforts are needed to create a more encouraging exercise atmosphere and provide comprehensive sports facilities. At the individual level, people should choose activities of optimal difficulty levels and use strategies to resolve constraints that block their participation in recreational activities.

Although several implications were discussed above, several limitations are to be kept in mind. First, the data in this study were collected through a web-based questionnaire platform. Those who were not proficient in using smartphones or computers may have been excluded from participation in this study. A more effective data collection strategy should be used in future studies. Second, the COVID-19 pandemic has impacted the runners' daily routines, including engaging in daily exercise and participation in running events. The study needs to be replicated after the COVID-19 pandemic is over or at least significantly abates. Third, other variables, not included in the study, such as social support and psychological commitment, may be included to examine their path effects in a more comprehensive model. Fourth, age differences in self-efficacy and flow experience were not examined in this study as possible moderators of life satisfaction. A future study could include age as a moderating variable.

5. Conclusions

This study explored the relationship between self-efficacy, recreation specialization, flow experience, and life satisfaction among Chinese long-distance runners. The seven hypotheses, proposed in a conceptual model, were supported by the results of this study. The findings extended existing literature by confirming the positive role of self-efficacy and recreation specialization on flow experience and life satisfaction. Additionally, the results revealed the significant mediating effects of flow experience between self-efficacy, recreation specialization, and life satisfaction. Considering the ongoing COVID-19 pandemic, local agencies should make efforts to meet people's need for better leisure and recreational facilities. Simultaneously, individuals should make a more concerted effort to pursue

leisure and recreational activities by examining time and other constraints that block their efforts.

Author Contributions: Methodology, Y.Q.; formal analysis, H.T.; investigation, W.Z. and Z.Z.; data curation, H.T. and W.Z.; writing—original draft preparation, H.T.; writing—review and editing, H.T. and Z.Z.; project administration, Y.Q.; funding acquisition, Y.Q. All authors have read and agreed to the published version of the manuscript.

Funding: This research was supported by the Starting Research fund from Shaoxing University (No. 20216011), the Hengyi foundation of Zhejiang University, and national social science funding in China (No. 16BTY077) in China.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Written informed consent has been obtained from the respondents to publish this paper.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Diener, E.; Suh, E.M.; Lucas, R.E.; Smith, H.L. Subjective Well-Being: Three Decades of Progress. *Psychol. Bull.* **1999**, *125*, 276–302. [CrossRef]
2. Pavot, W.; Diener, E. Review of the Satisfaction with Life Scale. *Psychol. Assess.* **1993**, *5*, 164–172. [CrossRef]
3. Sato, M.; Jordan, J.S.; Funk, D.C.; Sachs, M.L. Running Involvement and Life Satisfaction: The Role of Personality. *J. Leis. Res.* **2018**, *49*, 28–45. [CrossRef]
4. Tian, H.; Qiu, Y.; Lin, Y.; Zhou, W. Personality and Subjective Well-Being among Elder Adults: Examining the Mediating Role of Cycling Specialization. *Leis. Sci.* **2020**, 1–18. [CrossRef]
5. Kim, J.; Lee, S.; Chun, S.; Han, A.; Heo, J. The Effects of Leisure-Time Physical Activity for Optimism, Life Satisfaction, Psychological Well-Being, and Positive Affect among Older Adults with Loneliness. *Ann. Leis. Res.* **2017**, *20*, 406–415. [CrossRef]
6. Diener, E.; Ng, W.; Harter, J.; Arora, R. Wealth and Happiness across the World: Material Prosperity Predicts Life Evaluation, whereas Psychosocial Prosperity Predicts Positive Feeling. *J. Pers. Soc. Psychol.* **2010**, *99*, 52–61. [CrossRef]
7. Bowman, J.L.; Dollahite, D.C. "Why Would such a Person Dream about Heaven?" Family, Faith, and Happiness in Arranged Marriages in India. *J. Comp. Fam. Stud.* **2013**, *44*, 207–225. [CrossRef]
8. Tay, L.; Herian, M.N.; Diener, E. Detrimental Effects of Corruption on Subjective Well-Being: Whether, How, and When. *Soc. Psychol. Pers. Sci.* **2014**, *5*, 751–759. [CrossRef]
9. Erdogan, B.; Bauer, T.N.; Truxillo, D.M.; Mansfield, L.R. Whistle while You Work: A Review of the Life Satisfaction Literature. *J. Manag.* **2012**, *38*, 1038–1083. [CrossRef]
10. Kim, J.; Dattilo, J.; Heo, J. Taekwondo Participation as Serious Leisure for Life Satisfaction and Health. *J. Leis. Res.* **2011**, *43*, 545–559. [CrossRef]
11. Sato, M.; Jordan, J.S.; Funk, D.C. Distance Running Events and Life Satisfaction: A Longitudinal Study. *J. Sport Manag.* **2015**, *29*, 347–361. [CrossRef]
12. Tian, H.B.; Qiu, Y.J.; Lin, Y.Q.; Zhou, W.T.; Fan, C.Y. The Role of Leisure Satisfaction in Serious Leisure and Subjective Well-Being: Evidence from Chinese Marathon Runners. *Front. Psychol.* **2020**, *11*, 2761. [CrossRef] [PubMed]
13. Bryan, H. Leisure Value Systems and Recreational Specialization: The Case of Trout Fishermen. *J. Leis. Res.* **1977**, *9*, 174–187. [CrossRef]
14. Bryan, H. Recreation Specialization Revisited. *J. Leis. Res.* **2000**, *32*, 18–21. [CrossRef]
15. Kim, H.; Song, H. Measuring Hiking Specialization and Identification of Latent Profiles of Hikers. *Landsc. Ecol. Eng.* **2016**, *13*, 59–68. [CrossRef]
16. Tian, H.; Zhou, W.; Qiu, Y.; Shang, Y. The Impact of Cycling Specialization on Successful Aging and the Mediating Role of Loneliness. *Int. J. Environ. Res. Public Health* **2021**, *19*, 19. [CrossRef]
17. Oh, C.-O.; Lyu, S.O.; Hammitt, W.E. Predictive Linkages between Recreation Specialization and Place Attachment. *J. Leis. Res.* **2012**, *44*, 70–87. [CrossRef]
18. Cheung, L.T.O.; Lo, A.; Fok, L. Recreational Specialization and Ecologically Responsible Behaviour of Chinese Birdwatchers in Hong Kong. *J. Sustain. Tour.* **2016**, *25*, 817–831. [CrossRef]
19. Heo, J.; Stebbins, R.A.; Kim, J.; Lee, I. Serious Leisure, Life Satisfaction, and Health of Older Adults. *Leis. Sci.* **2013**, *35*, 16–32. [CrossRef]
20. Bandura, A. *Self-Efficacy in Changing Societies*; Cambridge University Press: Cambridge, UK, 1999.

21. Lee, L.-L.; Perng, S.-J.; Ho, C.-C.; Hsu, H.-M.; Lau, S.-C.; Arthur, A. A Preliminary Reliability and Validity Study of the Chinese Version of the Self-Efficacy for Exercise Scale for Older Adults. *Int. J. Nurs. Stud.* **2009**, *46*, 230–238. [CrossRef]
22. Medrano-Ureña, M.; Ortega-Ruiz, R.; Benítez-Sillero, J. Physical Fitness, Exercise Self-Efficacy, and Quality of Life in Adulthood: A Systematic Review. *Int. J. Environ. Res. Public Health* **2020**, *17*, 6343. [CrossRef] [PubMed]
23. Lightsey, O.R.; McGhee, R.; Ervin, A.; Gharghani, G.G.; Rarey, E.B.; Daigle, R.P.; Wright, K.F.; Constantin, D.; Powell, K. Self-Efficacy for Affect Regulation as a Predictor of Future Life Satisfaction and Moderator of the Negative Affect—Life Satisfaction Relationship. *J. Happiness Stud.* **2012**, *14*, 1–18. [CrossRef]
24. Azizli, N.; Atkinson, B.E.; Baughman, H.M.; Giammarco, E.A. Relationships between General Self-Efficacy, Planning for the Future, and Life Satisfaction. *Pers. Individ. Differ.* **2015**, *82*, 58–60. [CrossRef]
25. Csikszentmihalyi, M. *Beyond Boredom and Anxiety*; Jossey-Bass: Hoboken, NJ, USA, 1975.
26. Csikszentmihalyi, M. *Flow: The Psychology of Optimal Experience*, 2nd ed.; Harper & Row: New York, NY, USA, 2002.
27. Nakamura, J.; Csikszentmihalyi, M. The concept of flow. In *The Oxford Handbook of Positive Psychology*, 3rd ed.; Lopez, S.J., Snyder, C.R., Eds.; Oxford University Press: New York, NY, USA, 2021; pp. 89–105.
28. Koehn, S.; Donald, B.; Paramei, G. Antecedents of Flow and the Flow-Performance Relationship in Cricket. *Kinesiology* **2018**, *50*, 277–284. [CrossRef]
29. Norsworthy, C.; Thelwell, R.; Weston, N.; Jackson, S.A. Flow Training, Flow States, and Performance in Elite Athletes. *Int. J. Sport Psychol.* **2017**, *48*, 134–152. [CrossRef]
30. Koehn, S.; Morris, T.; Watt, A.P. Imagery Intervention to Increase Flow State and Performance in Competition. *Sport Psychol.* **2014**, *28*, 48–59. [CrossRef]
31. Chen, L.H.; Ye, Y.-C.; Chen, M.-Y.; Tung, I.-W. Alegría! Flow in Leisure and Life Satisfaction: The Mediating Role of Event Satisfaction Using Data from an Acrobatics Show. *Soc. Indic. Res.* **2010**, *99*, 301–313. [CrossRef]
32. Zhou, W.; Qiu, Y.; Tian, H.; Xu, J. Women Runners in China: Constraints Negotiation Process of Serious Leisure. *Int. J. Environ. Res. Public Health* **2021**, *19*, 214. [CrossRef]
33. Elkington, S.; Stebbins, R.A. *The Serious Leisure Perspective an Introduction*; Routledge: New York, NY, USA, 2014; p. 22.
34. Cheng, T.-M.; Hung, S.-H.; Chen, M.-T. The Influence of Leisure Involvement on Flow Experience during Hiking Activity: Using Psychological Commitment as a Mediate Variable. *Asia Pac. J. Tour. Res.* **2015**, *21*, 1–19. [CrossRef]
35. Wu, T.-C.; Scott, D.; Yang, C.-C. Advanced or Addicted? Exploring the Relationship of Recreation Specialization to Flow Experiences and Online Game Addiction. *Leis. Sci.* **2013**, *35*, 203–217. [CrossRef]
36. Mesurado, B.; Richaud, M.C.; Mateo, N.J. Engagement, Flow, Self-Efficacy, and Eustress of University Students: A Cross-National Comparison between the Philippines and Argentina. *J. Psychol.* **2015**, *150*, 281–299. [CrossRef] [PubMed]
37. Rodríguez-Sánchez, A.; Salanova, M.; Cifre, E.; Schaufeli, W.B. When Good Is Good: A Virtuous Circle of Self-Efficacy and Flow at Work among Teachers. *Int. J. Soc. Psychol.* **2011**, *26*, 427–441. [CrossRef]
38. Wen, L.; Lei, Y.; Pan, X. Effects of Leisure Involvement on the Well-Being of Elderly People: Mediation Effects of Self-Efficacy and Flow Experience. *J. Shanghai Univ. Sport* **2020**, *44*, 87–94. [CrossRef]
39. Park, S.H.; Hsieh, C.-M.; Miller, J.C. Moderating Effects of Recreation Specialization on the Quality-Value-Loyalty Chain: A Case of the Taroko Gorge Marathon. *Int. J. Tour. Sci.* **2018**, *18*, 29–42. [CrossRef]
40. Resnick, B.; Jenkins, L.S. Testing the Reliability and Validity of the Self-Efficacy for Exercise Scale. *Nurs. Res.* **2000**, *49*, 154–159. [CrossRef]
41. Song, H.; Graefe, A.R.; Kim, K.; Park, C. Identification and Prediction of Latent Classes of Hikers Based on Specialization and Place Attachment. *Sustainability* **2018**, *10*, 1163. [CrossRef]
42. Engeser, S.; Rheinberg, F. Flow, Performance and Moderators of Challenge-Skill Balance. *Motiv. Emot.* **2008**, *32*, 158–172. [CrossRef]
43. Rheinberg, F.; Vollmeyer, R.; Engeser, S. The assessment of flow experience. In *Diagnosis of Motivation and Self-Concept*; Stiensmeier-Pelster, J., Rheinberg, F., Eds.; Hogrefe: Göttingen, Germany, 2003; pp. 261–279.
44. Xiong, C.; Xu, Y. Reliability and Validity of the Satisfaction with Life Scale for Chinese Demos. *China J. Health Psychol.* **2009**, *17*, 948–949. [CrossRef]
45. Qiu, Y.; Tian, H.; Zhou, W.; Lin, Y.; Gao, J. 'Why Do People Commit to Long Distance Running': Serious Leisure Qualities and Leisure Motivation of Marathon Runners. *Sport Soc.* **2020**, *23*, 1256–1272. [CrossRef]
46. Qiu, Y.; Tian, H.; Lin, Y.; Zhou, W. Serious Leisure Qualities and Participation Behaviors of Chinese Marathon Runners. *Int. Rev. Sociol. Sport* **2019**, *55*, 526–543. [CrossRef]
47. JASP (Version 0.16). Available online: https://jasp-stats.org (accessed on 16 November 2021).
48. Swann, C.; Keegan, R.; Crust, L.; Piggott, D. Psychological States Underlying Excellent Performance in Professional Golfers: "Letting It Happen" vs. "Making It Happen". *Psychol. Sport Exerc.* **2016**, *23*, 101–113. [CrossRef]
49. Heslin, P.A.; Klehe, U.C. Self-Efficacy. In *Encyclopedia of Industrial/Organizational Psychology*; Rogelberg, S.G., Ed.; Sage: Thousand Oaks, CA, USA, 2006; pp. 705–708.
50. Wöran, B.; Arnberger, A. Exploring Relationships between Recreation Specialization, Restorative Environments and Mountain Hikers' Flow Experience. *Leis. Sci.* **2012**, *34*, 95–114. [CrossRef]
51. Swann, C.; Jackman, P.C.; Schweickle, M.J.; Vella, S.A. Optimal Experiences in Exercise: A Qualitative Investigation of Flow and Clutch States. *Psychol. Sport Exerc.* **2018**, *40*, 87–98. [CrossRef]

52. Iida, K.; Oguma, Y. Relationships between Flow Experience, IKIGAI, and Sense of Coherence in Tai Chi Practitioners. *Holist. Nurs. Pr.* **2013**, *27*, 260–267. [CrossRef] [PubMed]
53. Amatulli, C.; Peluso, A.M.; Sestino, A.; Petruzzellis, L.; Guido, G. The Role of Psychological Flow in Adventure Tourism: Sociodemographic Antecedents and Consequences on Word-of-Mouth and Life Satisfaction. *J. Sport Tour.* **2021**, *25*, 353–369. [CrossRef]

International Journal of
Environmental Research and Public Health

MDPI

Article

Post-Migration Stressors and Health-Related Quality of Life in Refugees from Syria Resettled in Sweden

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Abstract: The link between post-migration stressors and mental ill health is well documented in refugees resettled in high-income host countries, but the consequences of these stressors on refugees' health-related quality of life (HRQoL) are less known. This study examined the association between post-migration stressors and HRQoL among Syrian adult refugees resettled in Sweden using a preference-based value set obtained from the general Swedish population. A total of 1215 Syrian adults, ages 18–64 years, granted residency in Sweden, responded to a postal questionnaire in 2016 regarding various aspects of their resettlement. The European Quality of Life Five Dimensions Five Level (EQ–5D–5L) questionnaire was used to assess HRQoL through an EQ–5D–5L index score (range; 0=dead to 1=full health). The index score was preference weighted using a Swedish population value set. Predictors were four self-reported post-migration stressors related to daily living in the host country: financial strain, social strain, competency strain and perceived discrimination divided into low, medium and high levels of experienced stress. Multivariable linear regression models were employed to assess the association between post-migration stressors and HRQoL index score, adjusting for potentially traumatic events in the pre- and peri-migration phase as well as sociodemographic confounders/covariates (sex, age, education, civil status, immigration year). The Syrian refugees had a mean EQ–5D–5L index score of 0.863 (SD = 0.145). There was strong evidence of a negative dose-response association in both unadjusted and adjusted models between HRQoL and the post-migration stressors financial strain and social strain—i.e., there was a stepwise, and statistically significant, decrease in HRQoL when going from low to medium to high strain. Competency strain and discrimination were only associated with lower HRQoL when experienced at high levels in fully adjusted models. High exposure to potentially traumatic experiences before or during flight was also associated with lower HRQoL. Syrian refugees resettled in Sweden reported a lower HRQoL than the general Swedish population and lower than age-matched Swedish adults. The present study results point to the possible adverse effects of post-migration stressors on HRQoL.

Keywords: preference-based health-related quality of life; refugee; EQ–5D–5L; post-migration stressors

Citation: Sengoelge, M.; Nissen, A.; Solberg, Ø. Post-Migration Stressors and Health-Related Quality of Life in Refugees from Syria Resettled in Sweden. *IJERPH* **2022**, *19*, 2509. https://doi.org/10.3390/ijerph19052509

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 20 December 2021
Accepted: 18 February 2022
Published: 22 February 2022

1. Introduction

The link between stressors pre-, peri- and post-migration and mental ill health in refugees resettled in high-income host countries is well documented [1–4], and a growing number of studies are exploring how these stressors are associated with the broader concept of quality of life (QoL). A review of refugee populations in high-income countries concluded that social networks and social integration was positively associated with QoL, whereas mental ill health (e.g., depression or PTSD) was negatively associated with QoL [5]. When comparing QoL in general and clinical populations of refugees in community settings, a recent review found that there was a wide heterogeneity in the scores, and domain-specific

patterns of QoL varied across the two groups [6]. Both reviews acknowledge the complexity and diversity of the refugee experiences and the variety of elements that may affect QoL.

Indeed, QoL is a complex, multidimensional concept developed to encompass an individual's perception of one's physical and psychological state, level of independence, social relationships, personal beliefs and relationship to the environment [7,8]. Moreover, health is a major component of QoL, yet the related term health-related quality of life (HRQoL) has been inconsistently defined and operationalized in the scientific literature of migrants [9]. For example, use of the term HRQoL when referring to a measure of self-perceived health status, or when stating that research is focusing on HRQoL when the instrument measures "overall" QoL [10]. The key to HRQoL research is an individual's *evaluation of* one's health state, as compared to solely reporting on it [11,12]. The term HRQoL should be utilized when either: (a) exploring how health affects QoL using separate measures of each and statistically exploring how they relate to one another, or (b) examining the utility associated with different health states using health status questionnaires with an attached value set [13].

Preference-based HRQoL studies both assess and apply preference weights for different health states. This valuation is summarized as a health index score anchored on a 0 (dead) to 1 (perfect health) scale [14]. Such measures have been increasingly used to determine whether there has been a change in HRQoL in the population [15]. Examples of such measures include the SF−6D [16] and the European Quality of Life Five Dimensions known as the EQ–5D [17]. Few studies in the published literature to date have explored HRQoL in refugee populations using such a preference-based approach. One study of 133 Syrian refugees in Germany found that the HRQoL of the refugees reported was lower compared to a representative German population sample [18]. A prior publication by our research group used the EQ–5D–5L index score to examine gender differences in HRQoL in Syrian adult refugees resettled in Sweden but based on the United Kingdom population data as no value set was available for the Swedish population at the time [19]. The study found that male sex, younger age, living with a partner and social support were positively associated with HRQoL [19].

Moreover, potential determinants of HRQoL in refugee populations might be related to the level of trauma experienced before and during flight [20], including exposure to torture [21]. Other determinants may involve stressors experienced in the resettlement phase [22]. These post-migration stressors can be family-related (e.g., family separation, conflicts with family), related to poor social integration and weak social networks (e.g., no or low number of friends from within or outside one's ethnic community, low participation in activities), or related to financial or housing difficulties, poor host language proficiency and/or unemployment [23]. All of these resettlement stressors have been shown to be associated with higher levels of negative mental health outcomes, particularly post-traumatic stress disorder, anxiety and depression [3,24]. HRQoL may also likely be linked to cultural values in the perception of one's own state of health [25].

In sum, there is a scarcity of studies that utilize the full potential of HRQoL measures in refugee populations examining preference-based HRQoL and in relation to flight-related trauma exposure and post-migration stressors. Host countries need to obtain an understanding of the HRQoL of its refugee population in order to allocate resources and monitor the effectiveness of broad community interventions. With this knowledge, host countries can more effectively identify and support positive resettlement interventions, services and policies that mitigate unmet needs. Thus, the aim of the present study was to establish a benchmark reporting of HRQoL among a sample of Syrian adult refugees resettled in Sweden using preference-weighted data, and to explore how post-migration factors influence HRQoL.

2. Materials and Methods

2.1. Study Population

Eligible participants for the study included all adult refugees from Syria who were given permanent residency in Sweden and resettled in the country between 2011 and 2013. A random sample of 4000 refugees was drawn from a sampling frame of $N = 9662$ identified through the Swedish Population Registry. All sampled refugees were invited to participate in a postal questionnaire survey in 2016 on self-reported health, pre- and peri-migration experiences and various aspects of their resettlement, drawn up in Swedish and back-translated into Arabic. Of the invited refugees, 1215 returned the questionnaire (response rate = 30%). More detailed information on design, sampling and recruitment strategies and potential study population bias has been previously published [26].

2.2. Measures

2.2.1. European Quality of Life Five Dimensions Five Level (EQ–5D–5L)

The EQ–5D–5L is a well-known indirect, generic measure of HRQoL consisting of five domains: mobility, self-care, usual activities, pain/discomfort and anxiety/depression [27]. For each domain, participants endorse one of five levels of functioning ranging from no problems (=1), slight problems (=2), moderate problems (=3), severe problems (=4) to unable to/extreme problems (=5). A full, 5-digit scoring profile, or health state, is created by putting each domain score after one another in the order outlined above (starting with mobility and ending with anxiety/depression). For example, someone reporting 'no problems' on all five domains has a profile of 11,111, whereas someone with 'extreme problems' in the domains usual activities and anxiety/depression and 'no problems' in the other three domains has a profile of 11515. In total, there are 3125 possible combinations of domains scores and thus 3125 possible health states. In order to compare the perceived relative value or utility of different states, preference data are obtained from people experiencing these states by asking their willingness to trade time in their current state for time in 'perfect health' (time trade-off method), and this preference is converted to a number between 0 and 1. People who are perfectly happy with their health will not be willing to trade off any time and they define the 'perfect health'-end of the spectrum and are given an index score of 1 (10/10 = 1). People who struggle with severe health issues may be willing to trade, say, 10 years in their current health for 1 year in perfect health (hypothetically), and are given an index score of 0.1 (1/10 = 0.1). The closer the index score is to 1, the better the associated health and HRQoL. A value set for a population is a complete coding scheme where each of the possible 3125 health states have an assigned index score based on preference data from the population in question. Using the example above, the profile 11111 will have an index score of 1.0 (perfect health), whereas the profile 11515 may have an index score of, say, 0.70 (this depends on how the people with this profile in the population responded to the time trade-off question). The present study uses a value set from the Swedish general population to estimate HRQoL index scores for respondents [28].

2.2.2. Post-Migration Factors

The Refugee Post-Migration Stress Scale was used to measure four domains of post-migration strain related to resettlement in the host country: (1) financial strain; (2) social strain; (3) competency strain; (4) perceived discrimination [29]. Financial strain relates to material and economic hardship that could affect integrity, independence, dignity and well-being (example: 'Worry about unstable financial situation'). Social strain relates to social hardship, e.g., feeling isolated or frustrated due to loss of status (example: 'Feeling excluded or isolated in the Swedish society'). Competency strain relates to feelings of inadequacy of host-country specific skills needed to successfully navigate and function in daily life (example: 'Bothering difficulties communicating in Swedish'). Perceived discrimination asks about experiences of unfair treatment in Sweden, either verbally or nonverbally, on the basis of prejudice (example: 'Feeling disrespected due to my national background'). All domains are comprised of three items, except perceived discrimination

that has four items. Respondents were asked to indicate how frequently they experience each item on a scale ranging from 1 = never to 5 = very often. Please refer to Figure S1 for the distribution of responses on individual items. Respondents were categorized into low, medium and high strain for each of the four domains. The low-strain group had a maximum score of 2 = seldom for all items within a given domain. The high-strain group answered 4 = often or 5 = very often on all items within a given domain, and the medium-strain group consisted of the remaining. Cronbach's alpha for the four domains ranged between 0.80 and 0.84.

2.2.3. Sociodemographic and Pre-Migration Trauma Exposure

Potential confounders included were sociodemographic variables, e.g., sex, age, education, civil status and year of immigration to Sweden. Potentially traumatic experiences (PTEs) related to before (pre-flight) or during (peri-flight) migration were measured with the Refugee Trauma History Checklist, tested and validated in a sample of Syrian asylum seekers in Sweden [30]. The scale asks about eight PTEs prior to flight, and the same eight during flight, for a total of 16 PTE items (e.g., 'War at close quarter' and 'Forced separation from family or close friends'). A PTE adversity ratio (PTE-AR) introduced by Steel et al., was calculated as the number of endorsed PTEs divided by the total number of PTEs inquired about and categorized into: <0.2; 0.2–0.29; 0.3–0.39; ≥0.4 [2].

2.3. Statistical Analyses

Data were inspected for errors, outliers and missing values. Frequency distributions, simple summary statistics and cross tabulations were used to make the descriptive table. Sociodemographic variables were modelled as in prior studies by our group to facilitate comparison. Unadjusted and adjusted logistic regression were used to explore the association between post-migration stressors and the five domains in the EQ5 scale. Each domain was analyzed separately and answer choices were dichotomized with choice 1 (i.e., 'no problem') as the reference category and choices 2–5 (i.e., 'slight problems' or higher) defined as a case. In the adjusted analysis, missing was handled through listwise deletion with the total number contributing data to full models indicated in the relevant table. Odds ratios (ORs) with 95% confidence interval (95% CI) and associated *p*-values are presented.

Unadjusted and adjusted linear regression was used to investigate the association between post-migration stressors and HRQoL, with results reported through unstandardized regression coefficients with 95% CI and associated *p*-values. Standard regression coefficients were also estimated to make it easier to compare regression coefficients for different post-migration stressors. The standardized coefficients are only commented on in the text in order not to clutter tables. Missing values were handled through listwise deletion as in logistic regression (total number included in models is denoted in the table). Linear regression was deemed appropriate even if the outcome was skewed due to the large sample size (central limit theorem).

3. Results

Descriptive statistics of all respondents are shown in Table 1, as well as the proportion of respondents reporting at least 'slight' problems within each of the five dimensions of the EQ–5D–5L. Dimensions four (pain/discomfort) and five (anxiety/depression) were the two dimensions with the highest number of respondents reporting problems (over half in each dimension). Respondents with higher levels of post-migration stress reported problems in each of the five dimensions more frequently and had lower index scores. This occurred for all post-migration stressors. Furthermore, there was a clear dose-response pattern for each stressor. The high stress group reported more problems and had a lower mean index score than the medium stress group, which had more problems/a lower index score than the low stress group.

Table 2 presents unadjusted and adjusted logistic models of each dimension of the EQ–5D–5L regressed on post-migration stressors, controlling for pre- and peri-migration

stress and sociodemographic variables. There was strong and consistent evidence in both the unadjusted and partially adjusted models that all post-migration stressors were associated with increased odds of reporting problems in all five dimensions of the EQ–5D–5L, with the exception of discrimination. In general, there were small to moderate attenuations of the ORs after controlling for sociodemographic variables, indicating that the confounding by these variables was not substantial. In the fully adjusted models with all post-migration stressors included together with pre- and peri-migration stress, the evidence for associations changed notably. Self-care (dimension 2) was no longer associated with any of the post-migration stressors, and the associations between competency strain and the EQ–5D–5L dimensions were markedly attenuated or no longer significant. A similar attenuation pattern was seen for social strain, though the association between social strain and dimension 4 (pain/discomfort) and 5 (anxiety/depression) remained highly significant. The strongest evidence was found for financial strain, which was strongly associated with all EQ–5D–5L dimensions except for self-care, with the odds of experiencing problems three- to fourfold higher in the high financial strain group compared to the low strain group (all p-values < 0.001).

In Table 3, unadjusted and adjusted linear regression models of the EQ–5D–5L index score are presented. There was strong evidence in both unadjusted and partly adjusted models that all four post-migration stressors were associated with a lower index score and there were clear dose-response patterns. When comparing standardized regression coefficients in partly adjusted models, financial strain and social strain were the two stressors associated with the greatest change in the standardized index score. In the fully adjusted model, there was very strong evidence that respondents reporting the highest level of financial and social strain had lower index scores compared to the lowest strain groups, with the standardized regression coefficient for financial strain much larger than that for social strain ($\beta = -0.296$ vs. $\beta = -0.166$, respectively). There was also evidence that respondents in the medium strain group for these two stressors had lower index scores compared to the low strain group, though the evidence was weaker. Respondents reporting high levels of competency strain and discrimination had lower index scores compared to their respective reference categories, though the standardized regression coefficients were notably smaller than for financial strain (β = competency strain = -0.108; β = discrimination = -0.094) and we found no evidence for an association for the medium strain group. Lastly, high exposure to potentially traumatic experiences before or during flight was associated with a lower HRQoL index score at the $p < 0.01$ level.

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Table 1. Descriptive characteristics of Syrian adult refugees resettled in Sweden.

Characteristic	Level	All Respondents		EQ–5D–5L—Percentage with Problems					ED5 Index Score	
		n	%	D1	D2	D3	D4	D5	Mean	(SD)
		1215	100.0	27.1	6.5	29.5	54.8	61.7	0.863	0.145
Gender	Male	763	62.8	23.8	5.7	27.4	50.3	60.5	0.871	(0.139)
	Female	452	37.2	32.4	7.9	32.8	62.2	63.8	0.851	(0.153)
Age	18–29	283	23.3	11.8	2.5	18.1	40.6	56.9	0.895	(0.119)
	30–39	400	32.9	20.7	4.7	23.9	49.2	59.9	0.878	(0.136)
	40–49	295	24.3	30.1	5.6	29.3	60.3	62.0	0.867	(0.138)
	≥50	237	19.5	53.1	15.9	52.8	74.6	70.4	0.792	(0.173)
Education	0–9 yrs	453	38.4	33.5	8.0	32.1	52.5	56.8	0.850	(0.160)
	10–12 yrs	255	21.6	23.5	5.7	27.8	52.4	62.6	0.872	(0.138)
	13–14 yrs	234	19.9	26.2	7.1	27.6	55.8	65.0	0.866	(0.138)
	≥15 yrs	237	20.1	20.3	5.1	27.8	61.6	67.4	0.872	(0.128)
Civil status	Married	771	63.4	30.4	6.6	31.7	57.3	60.0	0.864	(0.141)
	Unmarried	386	31.8	18.5	5.1	23.6	47.3	63.7	0.871	(0.147)
	Div./wid.	58	4.8	40.0	17.0	39.3	69.6	72.7	0.799	(0.174)
Year immigration	2008–2011	76	6.3	28.8	4.2	34.7	57.5	55.4	0.860	(0.151)
	2012	334	27.5	25.6	6.9	28.7	54.6	58.1	0.856	(0.158)
	2013	802	66.2	27.4	6.6	29.1	54.5	63.9	0.867	(0.139)
PTE adversity ratio	<0.20	279	24.4	17.3	5.1	21.9	45.3	49.6	0.899	(0.126)
	0.20–0 29	128	11.2	26.8	4.0	25.0	55.2	56.3	0.887	(0.113)
	0.30–0 39	250	21.9	26.1	6.6	30.9	54.4	61.6	0.865	(0.137)
	≥0.40	486	42.5	32.5	8.0	34.9	60.2	69.3	0.833	(0.162)
Financial strain	Low	284	23.8	10.4	1.4	10.4	30.1	34.8	0.937	(0.077)
	Medium	692	58.1	28.0	6.7	30.3	57.5	65.9	0.868	(0.130)
	High	216	18.1	45.0	11.8	50.7	77.0	83.5	0.759	(0.180)
Social strain	Low	326	27.8	15.6	2.2	13.8	33.7	37.7	0.926	(0.088)
	Medium	713	60.8	29.4	7.3	33.0	59.3	68.1	0.858	(0.140)
	High	133	11.4	41.5	11.6	46.9	81.1	86.4	0.748	(0.190)

Table 1. *Cont.*

Characteristic	Level	All Respondents		EQ–5D–5L—Percentage with Problems					ED5 Index Score	
Competency strain	Low	286	24.2	11.1	2.9	12.4	37.1	49.8	0.912	(0.104)
	Medium	787	66.6	28.3	6.0	32.4	57.9	63.1	0.861	(0.142)
	High	108	9.2	52.0	16.2	50.0	73.1	77.4	0.769	(0.186)
Discrimination	Low	748	63.4	27.5	6.9	27.7	51.7	55.6	0.873	(0.142)
	Medium	425	36.0	25.1	5.6	31.8	59.4	71.5	0.852	(0.142)
	High	7	0.6	57.1	28.6	42.9	85.7	85.7	0.601	(0.204)

D1 = Mobility; D2 = Self-care; D3 = Usual activities; D4 = Pain/discomfort; D5 = Anxiety/depression; PTE-AR: potentially traumatic experiences adversity ratio.

Table 2. Unadjusted and adjusted logistic regression models of having problems in domain-specific EQ–5D–5L.

Regression Models	Level	Mobility		Self-Care		Usual Activities		Pain/Discomfort		Anxiety/Depression	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Model 1—unadjusted †											
Financial strain	Med	**3.34**	**(2.19–5.08)**	**4.94**	**(1.76–13.9)**	**3.77**	**(2.48–5.72)**	**3.14**	**(2.33–4.22)**	**3.63**	**(2.71–4.87)**
	High	**7.03**	**(4.39–11.3)**	**9.21**	**(3.15–26.8)**	**8.90**	**(5.57–14.2)**	**7.77**	**(5.16–11.7)**	**9.49**	**(6.12–14.7)**
Social strain	Med	**2.26**	**(1.60–3.19)**	**3.48**	**(1.56–7.75)**	**3.07**	**(2.15–4.38)**	**2.87**	**(2.17–3.79)**	**3.54**	**(2.68–4.68)**
	High	**3.86**	**(2.43–6.13)**	**5.77**	**(2.29–14.5)**	**5.53**	**(3.46–8.83)**	**8.44**	**(5.15–13.8)**	**10.5**	**(6.07–18.1)**
Competency strain	Med	**3.18**	**(2.12–4.76)**	**2.18**	**(1.01–4.67)**	**3.39**	**(2.30–4.98)**	**2.33**	**(1.76–3.08)**	**1.72**	**(1.31–2.27)**
	High	**8.69**	**(5.07–14.9)**	**6.57**	**(2.74–15.7)**	**7.06**	**(4.20–11.9)**	**4.59**	**(2.80–7.55)**	**3.44**	**(2.06–5.74)**
Discrimination	Med	0.88	(0.67–1.16)	0.80	(0.48–1.33)	1.22	(0.94–1.59)	**1.37**	**(1.07–1.75)**	**2.00**	**(1.55–2.59)**
	High	3.52	(0.78–15.9)	**5.42**	**(1.02–28.6)**	1.96	(0.44–8.84)	5.61	(0.67–46.8)	4.79	(0.57–40.0)
Model 2—partly adjusted ‡											
Financial strain	Med	**2.78**	**(1.79–4.32)**	**4.13**	**(1.45–11.8)**	**3.34**	**(2.16–5.16)**	**2.89**	**(2.10–3.96)**	**3.58**	**(2.64–4.86)**
	High	**5.60**	**(3.40–9.24)**	**7.13**	**(2.39–21.2)**	**7.81**	**(4.77–12.8)**	**7.44**	**(4.81–11.5)**	**9.83**	**(6.21–15.6)**
Social strain	Med	**2.10**	**(1.44–3.07)**	**2.98**	**(1.31–6.77)**	**2.77**	**(1.90–4.04)**	**2.64**	**(1.96–3.56)**	**3.45**	**(2.58–4.62)**
	High	**3.54**	**(2.13–5.87)**	**5.05**	**(1.95–13.0)**	**5.13**	**(3.12–8.43)**	**8.73**	**(5.14–14.8)**	**10.9**	**(6.19–19.3)**
Competency strain	Med	**2.21**	**(1.43–3.40)**	1.49	(0.68–3.30)	**2.62**	**(1.74–3.94)**	**1.95**	**(1.44–2.64)**	**1.70**	**(1.27–2.29)**
	High	**5.10**	**(2.86–9.09)**	**3.78**	**(1.49–9.59)**	**5.04**	**(2.90–8.77)**	**3.79**	**(2.23–6.43)**	**3.65**	**(2.13–6.25)**

Table 2. *Cont.*

Regression Models	Level	Mobility		Self-Care		Usual Activities		Pain/Discomfort		Anxiety/Depression	
		OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI
Discrimination	Med	1.16	(0.85–1.57)	0.98	(0.58–1.66)	**1.46**	**(1.10–1.94)**	**1.49**	**(1.15–1.94)**	**2.15**	**(1.64–2.81)**
	High	4.96	(0.81–30.3)	**6.21**	**(1.05–36.9)**	2.41	(0.46–12.6)	*	*	*	*
Model 3—fully adjusted §											
Financial strain	Med	**2.04**	**(1.22–3.41)**	3.40	(0.97–11.9)	**2.09**	**(1.28–3.41)**	**2.03**	**(1.41–2.94)**	**2.41**	**(1.68–3.45)**
	High	**3.14**	**(1.71–5.77)**	**5.24**	**(1.37–20.0)**	**3.97**	**(2.22–7.08)**	**3.43**	**(2.05–5.74)**	**4.53**	**(2.66–7.74)**
Social strain	Med	1.27	(0.80–2.02)	1.70	(0.65–4.43)	**1.60**	**(1.02–2.49)**	**1.72**	**(1.20–2.45)**	**2.12**	**(1.49–3.01)**
	High	1.30	(0.68–2.49)	1.72	(0.51–5.74)	1.60	(0.86–2.98)	**3.66**	**(1.96–6.83)**	**4.00**	**(2.07–7.71)**
Competency strain	Med	1.61	(0.99–2.62)	1.11	(0.45–2.70)	**1.70**	**(1.08–2.68)**	1.26	(0.89–1.79)	0.96	(0.67–1.37)
	High	**3.51**	**(1.81–6.80)**	2.40	(0.82–7.02)	**2.85**	**(1.51–5.39)**	1.64	(0.87–3.07)	1.42	(0.74–2.73)
Discrimination	Med	0.94	(0.67–1.33)	0.87	(0.47–1.61)	1.22	(0.88–1.69)	1.16	(0.86–1.57)	**1.60**	**(1.18–2.18)**
	High	2.01	(0.31–12.9)	2.77	(0.38–20.1)	0.94	(0.16–5.54)	*	*	*	*

† Model 1 = univariate logistic regression (i.e., only one post-migratory stressor as independent variable in model); ‡ Model 2 = multivariate logistic regression, each post-migration stressor adjusted for gender, age, education, civil status and immigration year, but not the other post-migration stressors; § Model 3 = multivariate logistic regression, all four post-migration stressors and gender, age, education, civil status and immigration year in same model; * Too few participants in individual cells for parameter estimation; EQ–5D–5L answer choices dichotomized so that levels 2–5 = 'problem' category (code = 1) vs. level 1 = 'no problem' (code = 0); OR = odds ratio. Reference category = low strain. PTE = potentially traumatic experiences; bold indicates statistically significant association at the $p < 0.05$ level; Med = medium.

Table 3. Unadjusted and adjusted linear regression models of EQ−5L−5D index score based on Swedish time trade-off value sets.

Variable	Level	Model 1 (Unadjusted) †		Model 2 (Partly Adjusted) ‡		Model 3 (Fully Adjusted) §	
		B	95% CI	B	95% CI	B	95% CI
Financial strain	Medium	**−0.069**	**(−0.088–−0.051)**	**−0.055**	**(−0.074–−0.035)**	**−0.036**	**(−0.057–−0.016)**
	High	**−0.178**	**(−0.202–−0.155)**	**−0.154**	**(−0.180–−0.129)**	**−0.108**	**(−0.136–−0.081)**
Social strain	Medium	**−0.068**	**(−0.086–−0.050)**	**−0.057**	**(−0.076–−0.038)**	**−0.027**	**(−0.047–−0.006)**
	High	**−0.177**	**(−0.205–−0.149)**	**−0.154**	**(−0.183–−0.125)**	**−0.076**	**(−0.108–−0.044)**
Competency strain	Medium	**−0.051**	**(−0.070–−0.032)**	**−0.033**	**(−0.053–−0.013)**	−0.008	(−0.028 − 0.012)
	High	**−0.143**	**(−0.175–−0.112)**	**−0.114**	**(−0.147–−0.082)**	**−0.054**	**(−0.087–−0.021)**
Discrimination	Medium	**−0.021**	**(−0.039–−0.004)**	**−0.025**	**(−0.043–−0.008)**	−0.007	(−0.023 − 0.010)
	High	**−0.272**	**(−0.378–−0.166)**	**−0.304**	**(−0.413–−0.195)**	**−0.170**	**(−0.272–−0.068)**
Gender	Female	**−0.020**	**(−0.037–−0.002)**			**−0.032**	**(−0.049–−0.016)**
Age	30–39	−0.017	(−0.039 − 0.004)			−0.020	(−0.043 − 0.003)
	40–49	**−0.029**	**(−0.052–−0.005)**			**−0.030**	**(−0.057–−0.004)**
	≥50	**−0.103**	**(−0.128–−0.078)**			**−0.095**	**(−0.123–−0.067)**
Education	10–12 yrs	0.022	(−0.001 − 0.045)			0.011	(−0.010 − 0.032)
	13–14 yrs	0.016	(−0.008 − 0.039)			0.004	(−0.018 − 0.025)
	≥15 yrs	0.022	(−0.002 − 0.045)			0.009	(−0.012 − 0.030)
Civil status	Unmarried	0.007	(−0.011 − 0.025)			**−0.041**	**(−0.062–−0.020)**
	Divorced/widowed	**−0.065**	**(−0.106–−0.024)**			**−0.041**	**(−0.079–−0.003)**
Immigration year	2012	−0.004	(−0.042 − 0.034)			0.009	(−0.026 − 0.044)
	2013	0.006	(−0.030 − 0.042)			0.026	(−0.007 − 0.059)
PTE adversity ratio	0.20–0 29	−0.012	(−0.043 − 0.019)			0.002	(−0.026 − 0.029)
	0.30–0 39	**−0.034**	**(−0.059–−0.009)**			−0.004	(−0.027 − 0.020)
	≥0.40	**−0.066**	**(−0.088–−0.045)**			**−0.030**	**(−0.050–−0.009)**

† Model 1 = univariate linear regression (i.e., models included only one predictor variable); ‡ Model 2 = multivariate linear regression, each post-migration stressor adjusted for gender, age, education, civil status and immigration year, but not the other post-migration stressors; § Model 3 = multivariate linear regression, all four post-migration stressors and gender, age, education, civil status and immigration year in same model; † R squared for the fully adjusted model = 0.28; PTE = potentially traumatic experiences. B = unstandardized regression coefficient. Reference categories: low (post-migration stressors), male (gender), 18–29 (age), 0–9 years (education), married (civil status), 2008–2011 (immigration year), <0.20 (PTE adversity ratio); bold indicates statistically significant association at the $p < 0.05$ level.

4. Discussion

In the present study, refugees from Syria resettled in Sweden reported a lower HRQoL than an age-matched Swedish reference population [31] and lower than the general Swedish norm data from which the value set was derived [28]. A markedly higher proportion of refugees reported problems in the Anxiety/depression domain (62% vs. 37% in the Swedish norm data). In contrast, the proportion with reported problems in the domains Mobility, Self-care and Usual activities were comparable in both groups, whereas a somewhat lower proportion of refugees reported problems in the domain Pain/discomfort (55% vs. 68% in the Swedish norm data). Mental health is therefore the likely driver of the lower HRQoL reported by the refugee group. However, comparability of HRQoL index scores in the current study with those of the representative Swedish population samples is limited due to the younger age of the current sample. Approximately half of the refugees were under 40 years of age compared to 9% in the Swedish sample, and there exists a known and very strong negative association between age and HRQoL. The estimated mean index score is also somewhat higher than the 0.82 value found in a study of Syrian refugees resettled in Germany [18]. Possible explanations for this difference include the use of value sets obtained from different populations (Sweden versus Germany). Additionally, an inclusion criterion in the German study was the presence of mild to moderate symptoms of post-traumatic stress, whereas the present study used a general refugee population. Moreover, the German sample had a notably higher proportion of singles/divorced and civil status was strongly associated with HRQoL in our study.

To our knowledge, the present study is one of the first studies to estimate HRQoL using preference-weighted data in a large sample of refugees while exploring the association between HRQoL and post-migration stressors. Refugees who reported experiencing high levels of post-migration stressors had the lowest HRQoL scores. The stressors driving this association were firstly financial strain, followed by social strain.

The measure of financial strain used in the present study was related to material and economic hardship threatening integrity, independence, dignity and well-being. Refugees in Sweden receive financial assistance to cover basic needs for clothing and food, but the findings from this study suggest that many refugees nonetheless experience financial strain that may adversely and significantly impact HRQoL. This is supported by a study on Iraqi asylum seekers in the Netherlands, which found that socioeconomic living conditions was a more important predictor of reduced overall QoL than psychopathology [32]. While relatively few studies have explored the association between financial strain and QoL in refugee populations, there is solid evidence for the adverse association between financial strain and mental distress (for an overview see [4,24]), including a recent, longitudinal study from Australia providing consistent evidence across all time-points that economic stressors were positively associated with mental illness [1]. Limited access to employment and economic opportunities is key to explaining the economic hardship often faced by refugees. Employment rates of refugees resettled in high-income countries are typically under 20% in the first two years after arrival and then increase depending on the host country. However, refugees have been shown to continue having lower employment rates than other immigrants and natives, even ten years after migration [33]. Moreover, adequacy of income and employment have been shown to be significant predictors of general mental health for resettled refugees [34,35] and to moderate the adverse mental health effects of pre- and peri-migratory stressors experienced by refugees [36]. Barriers to employment identified by refugees include adverse effects of PTSD, problems with professional recertification and economic barriers to pursuing education [37].

In the case of social strain related to feelings of isolation and loss of status in the host country, a fair number of studies have found positive associations between social integration/support and QoL both in selected [38,39] and more general refugee populations [40–42]. Studies have further shown that social connectedness and support are key enablers for integration, health and well-being, with some evidence suggesting patterns are gender specific [43,44]. A recent, large German survey of 4325 resettled refugees found

that contact with members of the host society, better host country language skills and being employed were related to reduced distress and higher levels of life satisfaction [45]. The negative relationship between social integration and mental distress has been documented in several studies [39,46,47], including in the abovementioned longitudinal study of refugees resettled in Australia [1]. The study found that loneliness during resettlement was positively associated with PTSD and severe mental illness over time, though the strength of the association fluctuated across timepoints, suggesting time-varying effects. A challenge when comparing findings from the present study to the existing literature is that the concept of social strain is defined and measured in different ways across studies. Whereas many studies focus primarily on loneliness and the lack of social networks, the present study also includes status loss and frustration at not being able to use skills and competence. In summary, the overall findings in the current study on financial and social strain are consistent with much of the available evidence to date linking both stressors to lower levels of positive mental health outcomes, such as QoL and well-being, and elevated levels of mental distress.

Contrasting this overall picture is a recent systematic review by Hou and colleagues [48]. The review investigated both general distress and well-being/QoL in relation to post-migration everyday life stressors stratified into *subjective* (perceived emotional distress associated with different daily experiences), *interpersonal* (e.g., conflict, discrimination, isolation, lack of emotional support) and *material* (e.g., housing/neighborhood contexts, accommodation difficulties, employment-related issues, access to social or mental health services). Results showed consistent positive associations of daily stressors with general distress but, somewhat surprisingly, non-significant effect sizes between daily stressors and general well-being/QoL across seven studies. The authors concluded that more research focusing on domain-specific QoL in relation to stressors is needed. By using a single index value as the outcome measure for HRQoL, the present study took a somewhat opposite approach. The strong associations found between both financial and social strain and the single index HRQoL score suggest this approach may be reasonable. A large sample size increasing power may partly explain why significant associations were found in the present study and not in the studies included in the review by Hou [48]. Another possible explanation is that the present study used a preference-based approach to HRQoL. Our findings demonstrate that worse HRQoL among Syrian adult refugees living in Sweden may not be limited to mental health problems, but also extend to other dimensions of general health that in turn influence quality of life. This is important from a health determinants viewpoint as interventions to address this are limited by the complexity of resettlement hardships faced by this group as they attempt to acculturate into the host society. Future studies are needed to analyze the HRQoL of refugees in Sweden longitudinally, as compared to the general Swedish population and in refugees of different countries of origin. More research is also required to identify mechanisms that strengthen HRQoL, such as support networks, employment and education opportunities.

Strengths and Limitations

Strengths of the study include random sampling from population-based registries, a large sample size and the use of well-established measures of key variables. A particular strength is that HRQoL was estimated by combining refugees' HRQoL self-reported data with an experienced, preference-based value set obtained from the general Swedish population. The study thus follows expert advice that studies on HRQoL should move beyond looking solely at self-perceived health and/or general QoL, and instead focus on the *utility* associated with health, accomplished by using health status data in combination with an attached value set [13]. Our results represent a benchmark that can be used to evaluate changes in HRQoL in this sample over time or after participation in specific interventions or policies. Furthermore, information about the sociodemographic variables, except civil status, was retrieved from national, high-quality registers, reducing the risk of information bias.

A limitation is that self-reported health is likely linked to cultural values [25], thus, applying preference data from one culture to another, in this case adults in Sweden to adults with a refugee background from Syria living in Sweden, could lead to an index score with low validity. However, in the absence of available preference data from any refugee population, this may still be the best alternative. Another limitation is that the data were self-reported through a postal survey. Refugees with low HRQoL may have not been able to participate in the survey (non-responders), resulting in potential selection bias and a sample that is healthier than the target population.

5. Conclusions

Syrian refugees resettled in Sweden report a lower HRQoL than the general Swedish population and lower than age-matched Swedish adults. Findings of the present study also point to the adverse effects of post-migration stressors on HRQoL. Effective, community-based interventions are needed to reduce the financial and social strain experienced by this population. Moreover, multidimensional interventions are recommended to improve HRQoL in combination with advocacy and support to improve financial status and social competency skills.

Supplementary Materials: The following are available online at https://www.mdpi.com/article/10.3390/ijerph19052509/s1, Figure S1: Distribution individual items post-migration stressors.

Author Contributions: Conceptualization, Ø.S. and M.S.; methodology and formal analysis, A.N.; writing—original draft preparation, M.S.; writing—review and editing, all authors.; visualization, A.N. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Swedish Research Council for Health, Working Life and Welfare Grant 2016–07194.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki and approved by the Stockholm Regional Ethical Review Board (number: 2015/1463–1431 and 2016/549–32).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The statistical code is available from the corresponding author. Under Swedish law and ethical approval, individual level data of this kind cannot be made publicly available.

Acknowledgments: We would like to thank the resettled refugees from Syria who participated in the study.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Wu, S.; Renzaho, A.M.N.; Hall, B.J.; Shi, L.; Ling, L.; Chen, W. Time-varying associations of pre-migration and post-migration stressors in refugees' mental health during resettlement: A longitudinal study in Australia. *Lancet Psychiatry* **2021**, *8*, 36–47. [CrossRef]
2. Steel, Z.; Chey, T.; Silove, D.; Marnane, C.; Bryant, R.A.; van Ommeren, M. Association of torture and other potentially traumatic events with mental health outcomes among populations exposed to mass conflict and displacement: A systematic review and meta-analysis. *J. Am. Med. Assoc.* **2009**, *302*, 537–549. [CrossRef] [PubMed]
3. Gleeson, C.; Frost, R.; Sherwood, L.; Shevlin, M.; Hyland, P.; Halpin, R.; Murphy, J.; Silove, D. Post-migration factors and mental health outcomes in asylum-seeking and refugee populations: A systematic review. *Eur. J. Psychotraumatol.* **2020**, *11*, 1793567. [CrossRef] [PubMed]
4. Bogic, M.; Njoku, A.; Priebe, S. Long-term mental health of war-refugees: A systematic literature review. *BMC Int. Health Hum. Rights* **2015**, *15*, 29. [CrossRef] [PubMed]
5. Van der Boor, C.F.; Amos, R.; Nevitt, S.; Dowrick, C.; White, R.G. Systematic review of factors associated with quality of life of asylum seekers and refugees in high-income countries. *Confl. Health* **2020**, *14*, 48. [CrossRef]
6. Gagliardi, J.; Brettschneider, C.; König, H.H. Health-related quality of life of refugees: A systematic review of studies using the WHOQOL-Bref instrument in general and clinical refugee populations in the community setting. *Confl. Health* **2021**, *15*, 44. [CrossRef]

7. World Health Organization. The World Health Organization quality of life assessment (WHOQOL): Position paper from the World Health Organization. *Soc. Sci. Med.* **1995**, *41*, 1403–1409. [CrossRef]
8. Salvador-Carulla, L.; Lucas-Carrasco, R.; Ayuso-Mateos, J.; Miret, M. Use of the terms "Wellbeing" and "Quality of Life" in health sciences: A conceptual framework. *Eur. J. Psychiatry* **2014**, *28*, 50–65. [CrossRef]
9. Buchcik, J.; Westenhoefer, J.; Martin, C.R. Assessment measures of Health-Related Quality of Life (HRQoL) of migrants: A systematic review. *Int. J. Migr. Health Soc. Care* **2013**, *9*, 170–188. [CrossRef]
10. Moons, P. Why call it health-related quality of life when you mean perceived health status? *Eur. J. Cardiovasc. Nurs.* **2004**, *3*, 275–277. [CrossRef]
11. Moons, P.; Jaarsma, T.; Norekvål, T.M. Requirements for Quality-Of-Life Reports. *Eur. J. Cardiovasc. Nurs.* **2010**, *9*, 141–143. [CrossRef] [PubMed]
12. Gill, T. A critical appraisal of the quality of quality-of-life measurements. *J. Am. Med. Assoc.* **1994**, *272*, 619. [CrossRef]
13. Karimi, M.; Brazier, J. Health, health-related quality of life, and quality of life: What is the difference? *PharmacoEconomics* **2016**, *34*, 645–649. [CrossRef] [PubMed]
14. Brazier, J.; Ratcliffe, J.; Saloman, J.; Tsuchiya, A. *Measuring and Valuing Health Benefits for Economic Evaluation*, 2nd ed.; Oxford University Press: Oxford, UK, 2016. [CrossRef]
15. Leidl, R. Preferences, quality of life and public health. *Eur. J. Public Health* **2009**, *19*, 228–229. [CrossRef] [PubMed]
16. Brazier, J.; Roberts, J.; Deverill, M. The estimation of a preference-based measure of health from the SF−36. *J. Health Econ.* **2002**, *21*, 271–292. [CrossRef]
17. Rabin, R.; de Charro, F. EQ−5D: A measure of health status from the EuroQol Group. *Ann. Med.* **2001**, *33*, 337–343. [CrossRef]
18. Grochtdreis, T.; Röhr, S.; Jung, F.U.; Nagl, M.; Renner, A.; Kersting, A.; Riedel-Heller, S.G.; König, H.H.; Dams, J. Health care services utilization and health-related quality of life of Syrian refugees with post-traumatic stress symptoms in Germany (the Sanadak Trial). *Int. J. Environ. Res. Public Health* **2021**, *18*, 3408. [CrossRef]
19. Gottvall, M.; Sjölund, S.; Arwidson, C.; Saboonchi, F. Health-related quality of life among Syrian refugees resettled in Sweden. *Qual. Life Res.* **2020**, *29*, 505–514. [CrossRef]
20. Sengoelge, M.; Johnson-Singh, C.M.; Mittendorfer-Rutz, E.; Vaez, M.; Saboonchi, F. Identifying subgroups of refugees from Syria resettled in Sweden based on multiple trauma exposures: A latent class analysis of trauma history and mental health outcomes. *J. Psychosom. Res.* **2019**, *125*, 109814. [CrossRef]
21. Gottvall, M.; Vaez, M.; Saboonchi, F. Social support attenuates the link between torture exposure and post-traumatic stress disorder among male and female Syrian refugees in Sweden. *BMC Int. Health Hum. Rights* **2019**, *19*, 28. [CrossRef]
22. Hynie, M. The social determinants of refugee mental health in the post-migration context: A critical review. *Can. J. Psychiatry* **2017**, *63*, 297–303. [CrossRef] [PubMed]
23. Hynie, M. Refugee integration: Research and policy. *Peace Confl. J. Peace Psychol.* **2018**, *24*, 265–276. [CrossRef]
24. Li, S.S.; Liddell, B.J.; Nickerson, A. The relationship between post-migration stress and psychological disorders in refugees and asylum seekers. *Curr. Psychiatry Rep.* **2016**, *18*, 82. [CrossRef] [PubMed]
25. Roudijk, B.; Donders, R.; Stalmeier, P. Cultural values: Can they explain self-reported health? *Qual. Life Res.* **2017**, *26*, 1531–1539. [CrossRef]
26. Tinghög, P.; Malm, A.; Arwidson, C.; Sigvardsdotter, E.; Lundin, A.; Saboonchi, F. Prevalence of mental ill health, traumas and postmigration stress among refugees from Syria resettled in Sweden after 2011: A population-based survey. *BMJ Open* **2017**, *7*, e018899. [CrossRef]
27. Herdman, M.; Gudex, C.; Lloyd, A.; Janssen, M.; Kind, P.; Parkin, D.; Bonsel, G.; Badia, X. Development and preliminary testing of the new five-level version of EQ−5D (EQ–5D–5L). *Qual. Life Res.* **2011**, *20*, 1727–1736. [CrossRef] [PubMed]
28. Burström, K.; Teni, F.S.; Gerdtham, U.G.; Leidl, R.; Helgesson, G.; Rolfson, O.; Henriksson, M. Experience-based Swedish TTO and VAS value sets for EQ–5D–5L health states. *PharmacoEconomics* **2020**, *38*, 839–856. [CrossRef]
29. Malm, A.; Tinghög, P.; Narusyte, J.; Saboonchi, F. The refugee post-migration stress scale (RPMS)—Development and validation among refugees from Syria recently resettled in Sweden. *Confl. Health* **2020**, *14*, 2. [CrossRef]
30. Sigvardsdotter, E.; Nilsson, H.; Malm, A.; Tinghög, P.; Gottvall, M.; Vaez, M.; Saboonchi, F. Development and preliminary validation of refugee trauma history checklist (RTHC)—A brief checklist for survey studies. *Int. J. Environ. Res. Public Health* **2017**, *14*, 1175. [CrossRef]
31. Teni, F.S.; Gerdtham, U.-G.; Leidl, R.; Henriksson, M.; Åström, M.; Sun, S.; Burström, K. Inequality and heterogeneity in health-related quality of life: Findings based on a large sample of cross-sectional EQ–5D–5L data from the Swedish general population. *Qual. Life Res.* **2021**. [CrossRef]
32. Laban, C.J.; Komproe, I.H.; Gernaat, H.B.P.E.; de Jong, J.T.V.M. The impact of a long asylum procedure on quality of life, disability and physical health in Iraqi asylum seekers in the Netherlands. *Soc. Psychiatry Psychiatr. Epidemiol.* **2008**, *43*, 507. [CrossRef] [PubMed]
33. Brell, C.; Dustmann, C.; Preston, I. The labor market integration of refugee migrants in high-income countries. *J. Econ. Perspect.* **2020**, *34*, 94–121. [CrossRef]
34. Dang, H.-A.H.; Trinh, T.-A.; Verme, P. *Do Refugees with Better Mental Health Better Integrate? Evidence from the Building a New Life in Australia Longitudinal Survey*; IZA Institute of Labor Economics: Bonn, Germany, 2021; p. 58.

35. Hajak, V.L.; Sardana, S.; Verdeli, H.; Grimm, S. A systematic review of factors affecting mental health and well-being of asylum seekers and refugees in Germany. *Front. Psychiatry* **2021**, *12*, 315. [CrossRef] [PubMed]
36. Porter, M.; Haslam, N. Predisplacement and postdisplacement factors associated with mental health of refugees and internally displaced persons: A meta-analysis. *J. Am. Med. Assoc.* **2005**, *294*, 602–612. [CrossRef]
37. Hess, J.M.; Isakson, B.L.; Amer, S.; Ndaheba, E.; Baca, B.; Goodkind, J.R. Refugee mental health and healing: Understanding the impact of policies of rapid economic self-sufficiency and the importance of meaningful work. *J. Int. Migr. Integr.* **2019**, *20*, 769–786. [CrossRef]
38. Carlsson, J.M.; Mortensen, E.L.; Kastrup, M. Predictors of mental health and quality of life in male tortured refugees. *Nord. J. Psychiatry* **2006**, *60*, 51–57. [CrossRef]
39. Teodorescu, D.S.; Siqveland, J.; Heir, T.; Hauff, E.; Wentzel-Larsen, T.; Lien, L. Posttraumatic growth, depressive symptoms, posttraumatic stress symptoms, post-migration stressors and quality of life in multi-traumatized psychiatric outpatients with a refugee background in Norway. *Health Qual. Life Outcomes* **2012**, *10*, 84. [CrossRef]
40. Ghazinour, M.; Richter, J.; Eisemann, M. Quality of life among Iranian refugees resettled in Sweden. *J. Immigr. Health* **2004**, *6*, 71–81. [CrossRef]
41. Georgiadou, E.; Schmitt, G.M.; Erim, Y. Does the separation from marital partners of Syrian refugees with a residence permit in Germany have an impact on their quality of life? *J. Psychosom. Res.* **2020**, *130*, 109936. [CrossRef]
42. Regev, S.; Slonim-Nevo, V. Sorrow shared is halved? War trauma experienced by others and mental health among Darfuri asylum seekers. *Psychiatry Res.* **2019**, *273*, 475–480. [CrossRef]
43. Nissen, A.; Sengoelge, M.; Solberg, Ø. Post-migration stressors and subjective well-being in adult Syrian refugees resettled in Sweden: A gender perspective. *Front. Public Health* **2021**, *9*, 717353. [CrossRef]
44. Nickerson, A.; Liddell, B.J.; Keegan, D.; Edwards, B.; Felmingham, K.L.; Forbes, D.; Hadzi-Pavlovic, D.; McFarlane, A.C.; O'Donnell, M.; Silove, D.; et al. Longitudinal association between trust, psychological symptoms and community engagement in resettled refugees. *Psychol. Med.* **2019**, *49*, 1661–1669. [CrossRef] [PubMed]
45. Walther, L.; Fuchs, L.M.; Schupp, J.; von Scheve, C. Living conditions and the mental health and well-being of refugees: Evidence from a large-Scale German survey. *J. Immigr. Minor. Health* **2020**, *22*, 903–913. [CrossRef] [PubMed]
46. Teodorescu, D.S.; Heir, T.; Hauff, E.; Wentzel-Larsen, T.; Lien, L. Mental health problems and post-migration stress among multi-traumatized refugees attending outpatient clinics upon resettlement to Norway. *Scand. J. Psychol.* **2012**, *53*, 316–332. [CrossRef] [PubMed]
47. Schick, M.; Zumwald, A.; Knöpfli, B.; Nickerson, A.; Bryant, R.A.; Schnyder, U.; Müller, J.; Morina, N. Challenging future, challenging past: The relationship of social integration and psychological impairment in traumatized refugees. *Eur. J. Psychotraumatol.* **2016**, *7*, 28057. [CrossRef]
48. Hou, W.K.; Liu, H.; Liang, L.; Ho, J.; Kim, H.; Seong, E.; Bonanno, G.A.; Hobfoll, S.E.; Hall, B.J. Everyday life experiences and mental health among conflict-affected forced migrants: A meta-analysis. *J. Affect. Disord.* **2020**, *264*, 50–68. [CrossRef]

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Review

Children's and Adolescents' Happiness and Family Functioning: A Systematic Literature Review

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Abstract: Background: the present research represents the first systematic review of the literature on the relation between happiness (i.e., subjective well-being, life satisfaction, positive affect) and family functioning in families with children aged 6–18 years. Method: relevant articles were systematically searched in three scientific databases (i.e., PsycInfo, Pubmed, and Web of Science) in June 2022. The databases were searched for original articles published after 1968 with the keywords "happiness" and "family functioning." Results: of the 2683 records recovered, 124 original articles met the eligibility criteria and were included in the review. The articles were divided according to four emergent themes: (1) family dimensions and happiness; (2) global family functioning (i.e., family functioning, and family relationships), environmental variables, and happiness; (3) parental differences; (4) longitudinal studies. Conclusions: the results of the review provide evidence for a positive relation between happiness and family functioning, across different cultures and age groups: Family dimensions (e.g., cohesion, communication) were found to strongly predict children's and adolescents' happiness. Future studies should investigate the differences between fathers and mothers using multi-informant and mixed methods procedures and a longitudinal research approach. The implications of the findings for children's positive development are discussed.

Keywords: happiness; subjective well-being; life satisfaction; positive affect; family functioning; developmental age; systematic review

Citation: Izzo, F.; Baiocco, R.; Pistella, J. Children's and Adolescents' Happiness and Family Functioning: A Systematic Literature Review. *IJERPH* **2022**, *19*, 16593. https://doi.org/10.3390/ijerph192416593

Academic Editors: V. K. Kumar and Jasmin Tahmaseb-McConatha

Received: 8 October 2022
Accepted: 8 December 2022
Published: 10 December 2022

1. Introduction

Research on children's and adolescents' happiness has increased in recent years [1] due to the association between happiness and improved physical and mental health [2,3]. For the present systematic review, happiness was conceptualized as a relatively stable, positive, and affective trait [4,5], with an emphasis on subjective well-being and general life satisfaction [2,6,7]. Previous studies [8,9] have suggested that family emotional bonds and positive relationships are primary sources of children's happiness. Indeed, dimensions of family functioning have been shown to significantly predict children's happiness, beyond the influence of peer and school settings [10]. However, to the best of our knowledge, there has been no systematic review of the relation between children's happiness and family functioning. Thus, the present systematic literature review aimed to understand the associations between children's and adolescents' happiness and dimensions of family functioning.

Happiness is comprised of an affective and a cognitive component [6,11]: (a) the affective component involves high levels of pleasant emotions (e.g., joy, interest, excitement, confidence, readiness) and low levels of negative emotions (e.g., anger, fear, sadness, guilt, contempt, disgust) [12]; (b) the cognitive component represents a global assessment of quality of life, indicating the degree to which one's essential needs, goals, and desires are satisfied [13]. These judgments are usually understood to describe overall life satisfaction, or satisfaction within a specific domain (e.g., work, family life, social life, school).

1.1. Family Functioning and Happiness

Previous studies have suggested that healthy family functioning is associated with children's and adolescents' happiness [14]. Since the 1980s, the Circumplex model [15] and the McMaster Model of Family Functioning (MMFF) [16] have promoted a new vision of the family as an open system in interaction with the environment. However, there is no single definition of family functioning in the literature. Regardless of the differing compositions of modern families, family functioning refers to effective emotional bonding between family members, the use of family rules, family communication, and the management of external events [17]. Thus, family functioning describes the dynamic interactions within a family unit and how a family fulfills its functions [18], referring to the ways in which family members interact and work together to achieve common goals and outcomes [19,20]. Various factors may influence family functioning, including family structure, socioeconomic status, life events, family relationships, and the evolutive stages of the family [19,21,22]. Although family functioning is a complex phenomenon that can be assessed in various ways [23], it generally refers to the quality of family life at a systemic level, emphasizing wellness, competence, strengths, and weaknesses [24].

Previous studies have reported that positive family functioning is associated with children's and adolescents' happiness [25–27]. In particular, research has found that family connectedness promotes well-being and parental support directly contributes to children's happiness [28]. Furthermore, the quality of family relationships has been shown to be more important to students' happiness than the peer group, school, or community [29].

Family cohesion and adaptability have been found to be linearly correlated with family functioning (i.e., family communication and satisfaction) [15]. Effective communication is a central feature of high family functioning [30], and research has shown that when parent–adolescent communication is good, the family is closer, more loving, and more flexible in solving problems [31]. Indeed, when defining their perceptions of well-being, adolescents frequently refer to good relationships and pleasant moments spent with family members [32].

As conflict tends to generate negative emotions, high-conflict families have been found to be associated with lower levels of happiness and life satisfaction [33]. On the other hand, family satisfaction, defined as the extent to which individuals feel satisfied with the level of perceived support from family members [34], has been shown to be associated with increased happiness and overall life satisfaction in children and adolescents [35–38]. Other studies have confirmed that a dysfunctional family relationship (e.g., low-income, family coherence, family conflict) is a risk factor for children's and adolescents' happiness [32,39].

1.2. The Present Study

Decades of research have highlighted the importance of studying children's development within their immediate life contexts (i.e., home, school, and community) [40]. During childhood and adolescence, these contexts represent microsystems where young people spend large parts of their daily lives [2,41]. However, few studies have comprehensively examined the personal and familial factors associated with happiness as a function of developmental age. Family functioning, parent–child relationship quality, and family satisfaction have been identified as significant predictors of children's happiness [42–44]. Moreover, studies have shown that happy people tend to have stronger social relationships than less happy people [45]. Research has also reported that the family plays an essential role in shaping the positive development of children and adolescents [46]. Finally, longitudinal studies have found that adolescents' family experiences predict multiple facets of adult functioning, including physical and mental health, well-being, and academic achievement [47].

To the best of our knowledge, the present study represents the first systematic review of the literature on the relation between happiness (i.e., subjective well-being, life satisfaction, and positive affect) and family functioning during the developmental ages of 6–18 years. The importance of exploring this specific development phase derives from scientific evidence that happiness declines with increasing age [2,27,48]. Again, studies have

highlighted the importance of addressing multicontextual influences on happiness, with the relevant literature strongly supporting the ecological theory, emphasizing the effects of salient life contexts [49]. In this sense, a systematic review of the literature could improve our understanding of the associations between children's and adolescents' happiness and dimensions of family functioning.

2. Methods

2.1. Search Strategy

The present systematic review followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [50]. Relevant articles, indexed in three scientific databases (i.e., PsycInfo, Pubmed, and Web of Science), were searched. Further studies were identified through by-hand searches of the reference lists of the included articles. The investigation was conducted in June 2022, and the search included all original research articles published post-1968.

The exact search term combinations were: ([“happi *” OR “happy” OR “positive affect *” OR “positive emotions” OR “subjective well-being” OR “subjective wellbeing” OR “well-being” OR “wellbeing” OR “life satisfaction” OR “satisfaction with life”] AND [“family funct *” OR “family conflict” OR “family cohesion” OR “family communication” OR “family flexibility” OR “family problem-solving” OR “family problem solving” OR “family satisfaction” OR “family relation*”] AND [“toddler *” OR “infant *” OR “child *” “pre-schooler *” OR “preschooler *” OR “pre-adoles *” OR “preadoles *” OR “adolesc *” OR “student *” OR “pupil *”]).

2.2. Study Screening Selection

Two reviewers independently selected abstracts, excluding articles that did not meet the selection criteria. Age and language filters were applied to the various databases to limit the search to studies reported in only English, French, Spanish, Italian, Portuguese, and German. Since the review focused on childhood and adolescence, studies involving participants over 18 years old were excluded. Specifically, only original research articles published in scientific journals were included in the review. Furthermore, only scientific studies using mixed or quantitative methodology were selected, while no studies involving clinical samples were included. Pure qualitative studies, books, and book chapters were excluded. No reviews examining the association between children's and adolescents' happiness and family functioning were found.

Moreover, to be considered for inclusion, studies had to assess both happiness and family functioning. Studies with a single measure evaluating the two variables as subdimensions (i.e., general life satisfaction and family satisfaction) were excluded. Only studies reporting associations between happiness and family functioning, or the effects of family functioning on children's happiness, were included. When the results appeared vague, the researchers contacted the authors (n = 50) to clarify their methodology and results (n = 8 responded). In the absence of a response, the relevant studies were excluded. Figure 1 displays the PRISMA flowchart of the systematic review process.

2.3. Data Extraction

The following information was independently extracted using a structured template by two reviewers: author(s), year of publication, country, study design, participant age and gender, sample size, measures of happiness and family functioning, and main findings. Coding disagreements were resolved through discussion between the first two reviewers. The Cohen's kappa coefficient, calculated to assess inter-rater reliability, was 0.94, reflecting very high agreement. The third author resolved any discrepancies.

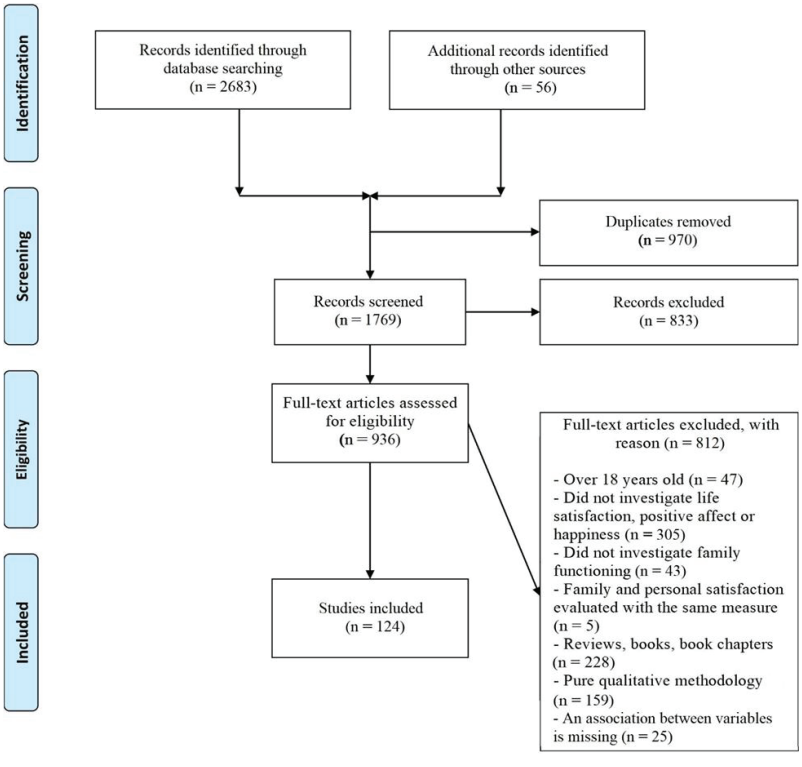

Figure 1. PRISMA flowchart of the study selection.

3. Results

3.1. Study Characteristics

A total of 2683 scientific articles were identified (777 from PsycInfo, 662 from Pubmed, and 1244 from Web of Science), and 56 other records were added through other sources. After 970 duplicates were removed, a further 833 articles were excluded based on a review of their titles and abstracts. The remaining 936 studies were considered potentially eligible for inclusion. The full-text articles were obtained and assessed for eligibility, resulting in a final selection of 124 studies. Although the search included works published between 1968 and 2022, the present review was restricted to the years 1991–2022, because no articles published prior to 1991 met the inclusion criteria.

Regarding the study characteristics, sample sizes ranged from 74–25,906. Participant ages were also heterogeneous, though predominantly falling within the pre-adolescent and adolescent age range. With respect to school level, 18 studies examined elementary school students (i.e., aged 6–11 years) and 111 studies explored middle and high school students (i.e., aged 12–18 years). The studies were conducted in different continents: 30% in Asia (i.e., 27 in China, 1 in India, 2 in Indonesia, 3 in Israel, 3 in Korea, and 1 in Palestine), 22% in Europe (i.e., 4 in Croatia, 3 in Finland, 1 in France, 1 in Germany, 1 in Holland, 1 in Ireland, 3 in Italy, 1 in The Netherlands, 2 in Portugal, 8 in Spain, and 3 in the United Kingdom), 18% in the United States, 13% in South America (i.e., 3 in Brazil, 11 in Chile, 1 in Mexico, and 1 in Peru), and 2% in Australia. In addition, 13 articles (i.e., 11%) were cross-cultural, while 5 (i.e., 4%) were conducted in transcontinental states (i.e., 1 in Russia, 4 in Turkey). Tables 1–4 present detailed characteristics of each of the reviewed articles, including the study design, participants, and tools.

The articles were categorized according to four emergent themes (and subthemes): (1) family dimensions and happiness; (2) global family functioning (i.e., family functioning and family relationships), environmental variables, and happiness; (3) parental differences; (4) longitudinal studies. The studies are presented in Tables 1–4 (according to theme), and the significant findings within these four themes are synthesized in Sections 3.2–3.5.

3.1.1. Happiness Measures

The investigated studies used various measures to assess affective, cognitive, or global components of happiness. The affective component of happiness was evaluated using the Happiness Face Scale [26], Piers-Harris Children's Concept Scale 2 (PHS) [51], Subjective Happiness Scale [52], Chinese Happiness Inventory (CHI) [53], Oxford Happiness Inventory (OHI) [54], Happiness Overall Life (HOL) [55], Happiness Taking into Account Overall Life (HTOL) [56,57], Russell's Core Affect [58], Positive and Negative Affect Schedule (PANAS) [59], Positive and Negative Affect Scale for Children [60], Scale of Positive and Negative Affects for Adolescents (PNAA) [61], Affect Balance Scale (ABS) [62], Profile of Mood States-Adolescents (POMS-A) [63], positive affect subscales of the Profile of Mood States (POMS) [64], Personal Wellbeing Index—School Children (PWI-SC) [65], and Patients' Well-Being Questionnaire for adolescents (PWBQ) [66].

The cognitive component of happiness was assessed using the Satisfaction with Life Scale (SWLS) [67], Students' Life Satisfaction Scale (SLSS) [34], Cantril Ladder [68], Quality of Life Questionnaire (modified version) [69], Multidimensional Life Satisfaction Scale [70], Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) [71], Overall Life Satisfaction (OLS) [57], Life 3 Scale [72], General Questionnaire for Adolescents [73], and Rating of Global Life Satisfaction (RGLS) [71]. Finally, the global measures of happiness were investigated using the World Health Organization—Five Well-Being Index (WHO-5 WBI) [74]), Berne Questionnaire of Subjective Well-Being/Youth form (BSW/Y) [75], Multidimensional Scale for the Measurement of Subjective Well-being of Anguas-Plata and Reyes-Lagunes (EMMBSAR) [76], and Emotional Well-Being Scale (EWS) [77].

3.1.2. Family Functioning Measures

Family functioning and relationships were evaluated using nine measures, including self-report questionnaires (12 articles) and interview assessments (n = 1). Of the self-report measures of family functioning, the most frequently used were the Family Assessment Instrument (FAI) [78] (n = 7), Family Assessment Device (FAD) [23] (n = 6), Self-Report Family Instrument (SFI) [79] (n = 6), Behaviour Assessment System for Children (BASC) [80] (n = 2), Family Relationships Scale [81] (n = 2), and Family Relationship subscale of the International Survey of Children's Well-Being (ISCWeB) [82] (n = 2).

Less frequently used measures (n = 1) included the Brief Family Function Questionnaire (BFFQ) [83], Family APGAR Index [84], Family Dynamics Measure (FDM II) [85], Family-of-Origin Scale (FOS) [86], Father/Mother Involvement Scale [87], and Relationship with Father/Mother Questionnaire (RFMQ) [88]. The only qualitative measure of family functioning was the Adolescent Interview Schedule [89], which measures the perceived family environment and the parent–adolescent relationship. Finally, some studies used specially-designed measures to investigate the quality of family relationships (e.g., [90,91]).

The investigated studies assessed specific family dimensions: (a) family cohesion and adaptability, (b) family communication and satisfaction, and (c) family conflict. Family cohesion and adaptability were evaluated using the Family Adaptability and Cohesion Evaluation Scales (FACES II, [92]; FACES III, [93]; FACES IV; [94,95]), Colorado Self-Report of Family Functioning Inventory (CSRFFI) [96], Family Environment Scale (FES) [96], and Brief Family Relationship Scale [97]. Only one study measuring family cohesion used a graphical method, applying the Pictorial Representation Index [98].

Family communication and satisfaction were assessed using the Parent-Adolescent Communication Scale [31], Attitudes and Behaviors Survey (A&B) [99], Family Satisfaction subscale of the Multidimensional Life Satisfaction Scale for Adolescents (MLSSA) [100],

Family Satisfaction subscale of the Multidimensional Students' Life Satisfaction Scale (MSLSS) [70], Family Satisfaction subscale of the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS) [71], Satisfaction with Family Life Scale (SWFLS; Based on SWLS [67]), Satisfaction with Family Relationships (adaptation of a scale proposed by Cantril Ladder [68]), Satisfaction with Family subscale of the General Domain Satisfaction Index [101], Satisfaction with Family Life (SWFaL) [102], Family Life Satisfaction Scale (FLSS) [103], Satisfaction with Different Life Domains [104], General Family Satisfaction subscale of the Quality of Family Interaction Scale [105], and the Adolescent Interview Schedule (with the latter representing the only qualitative measure) [89].

Finally, family conflict was investigated using the Father-Adolescent Conflict Scale (FACS), Mother-Adolescent Conflict Scale (MACS) [106], Family Conflicts Scale [107], Aversive Parent-Child Interactions subscale of the Youth Everyday Social Interactions and Mood measure [108], Network of Relationships Inventory (NRI) [109], and Family Conflict subscale of the Brief Family Relationship Scale [97]. Only one study measured daily family conflict by adapting items from the Family Environment Scale [96].

3.2. Family Dimensions Predicting Happiness

Regarding the first theme (n = 91), family dimensions (i.e., cohesion and communication) were found to strongly predict children's and adolescents' levels of happiness. Three interconnected subdimensions characterized this theme: family cohesion and adaptability, family satisfaction and communication, and family conflict (Table 1).

3.2.1. Family Cohesion and Adaptability

In the selected studies (n = 21), family cohesion—reflecting the strength of the family bond—was positively correlated with both the affective (i.e., positive affect and emotions) and the cognitive components (i.e., life satisfaction) of children's and adolescents' happiness [77,110–112]. Adolescents from families with higher cohesion reported a more positive mood and a higher level of happiness [111,113]. The affective component of happiness was positively correlated with family cohesion and closeness [25,114]. Feeling close to family members, doing things with family members, and sharing interests and hobbies with family members were also associated with happiness, especially in boys [25].

Children's and adolescents' happiness was positively correlated with family cohesion and intimacy [7,28,44,115–120]. Therefore, children who perceived a less cohesive atmosphere at home reported lower life satisfaction and higher negative affect [121], which precipitated negative thoughts towards people and events (i.e., hostility). Therefore, increased life satisfaction and low negative affect might help children to cope with adverse events [111]. In addition, Song et al. (2018) [44] found that self-esteem mediated the relationship between family cohesion and life satisfaction.

Happiness had a significantly positive correlation with family adaptability [20]—defined as the quality and expression of leadership and organization, role relationships, and rules and negotiations within the family [95]—from the perspectives of both children and parents [27]. Again, adolescents' perceptions of family flexibility were positively associated with their happiness [122,123]. Although most studies reported that cohesion and flexibility were correlated with higher levels of happiness in children, Verrastro et al. (2020) [27] found that family variables were not significantly predictive of children's happiness.

3.2.2. Family Conflict

The examined studies highlighted that parent–child conflict (n = 17) strongly negatively predicted children's and adolescents' positive affect [77,124,125] and perceived happiness [126]. Adolescents felt less happy and satisfied on days of intense conflict with parents [113], and adequate parental warmth moderated and decreased the negative effect on children's happiness and well-being [124]. Furthermore, parent–adolescent conflict was associated with low life satisfaction of children and adolescents [33,46,89,114,127–130], from

the perspectives of both parents and children [131]. Even in late adolescence, happiness negatively correlated with family conflict before college [132].

Family conflict directly affected emotional happiness (i.e., life satisfaction and positive emotions) [77,127,133] during late adolescence. Indeed, one study found that satisfaction with life buffered the harmful effects of family conflict among undergraduate students [132]. However, other studies did not reveal a statistically-significant correlation between children's happiness and parent–child conflict [33,134].

Adolescent gender moderated between- and within-family (i.e., daily cohesion and conflict) effects on mood, and the interaction between daily conflict and adolescent gender was significantly correlated with positive mood. One study found that, relative to girls, boys reported significantly lower levels of happiness in the context of family conflict [113]. However, another study found no gender differences among adolescents in the association between parent–adolescent conflict and adolescent psychological well-being [129].

3.2.3. Family Communication and Satisfaction

In the selected studies (n = 13), mother–adolescent and father–adolescent communication were positively associated with both the affective component (i.e., positive affect) and the cognitive component (i.e., life satisfaction) of adolescents' happiness [30,135]. Children's happiness and positive affect positively correlated with family communication [25], from both the children's and parents' perspectives [27]. Therefore, having family members who expressed their opinions and talked about their feelings was associated with positive affect [25].

Children's and adolescents' life satisfaction [20,136,137] and emotional well-being (i.e., happiness, positive affect, and life satisfaction) [30] correlated positively with family communication. Specifically, adolescents' life satisfaction was positively associated with communicative openness with their father and mother [138] and negatively with offensive and avoidant communication with their parents [114,139,140]. Some research reported that positive (i.e., accessible, comprehensive, and satisfying) family communication significantly predicted life satisfaction [138,141]. Verrastro et al. (2020) [27] found an interaction between children's gender and family communication, suggesting that, among female participants, having a family that practiced good communication was more strongly associated with higher levels of happiness.

Moreover, studies found positive correlations between family satisfaction (n = 47) and happiness [142–144], identifying satisfaction with family life as the strongest predictor of overall life satisfaction, from childhood to adolescence [3,29,35,42,145,146]. In particular, family satisfaction correlated positively with both the affective component (i.e., positive affect and positive emotions) and the cognitive component (i.e., life satisfaction) of happiness [36,37,71,147–150]. Furthermore, family life satisfaction was positively associated with children's positive affect [148,151–153] and happiness [38,126], from the perspectives of both children [1,154–167] and parents [27,73,168,169]. However, one study reported a non-significant positive correlation between happiness and family satisfaction [38].

The relation between family satisfaction and life satisfaction may be bidirectional. Indeed, one study showed that positive affect predicted high school students' satisfaction with family life [151]. On the other hand, other studies identified family satisfaction as a significant predictor of life satisfaction [170–173]. For instance, some authors [36,149] found that high satisfaction with family life was related to a greater frequency and intensity of affective experiences of love, affection, joy, and happiness [174].

Table 1. Sample Characteristics and Methods of Assessment of the Reviewed Studies Investigating Family Dimensions and Happiness (n = 91).

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Alcantara et al. (2017) [35], Brazil	910	Range 10–13 (M = 11.90)	47.9	S	OLS SLSS	S	SDDC	C	Pub
Bahrassa et al. (2011) [132], United States	82	Range 17–19 (M = 18.5)	43.9	S	SWLS	S	FCS	C	Pub
Bakalım & Taşdelen-Karçkay (2015) [151], Turkey	456	Range 14–18	47.1	S	PANAS	S	FLSS	C	Pub
Bedin & Sarriera (2015) [147], Brazil	543	Range 12–16 (M = 14.1)	31.7	S	HOL OLS SWLS	S	BMSLSS	C	Pub *
Bennefield (2018) [25], United States	10,148	Range 13–17 (M = 15.2)	48.9	S	PAS	S	FCQ FCLQ	C	Pub
Bernal et al. (2011) [36], Mexico	580	Range 15–19 (M = 16.45)	49.0	S	EMMBSAR SWLS	S	SWFLS	C	Pub
Bradley & Corwyn (2004) [33], United States	310	Range 15–19 (M = 12.24)	46.5	S	QLQ	S	FCC	C	Pub
Braithwaite & Devine (1993) [115], Australia	112	Range 14–21 (M = 16.62)	53.0	S	L3S	G S	PRI PCI	C	Pub
Cacioppo et al. (2013) [136], Italy	255	Range 15–17 (M = 15.98)	40.8	S	MSLSS	S	FAD	C	Pub
Carrascosa et al. (2018) [139], Spain	672	Range 12–19 (M = 14.45)	51.2	S	SWLS	S	PACS	C	Pub
Casas et al. (2007) [168], Spain (1999 sample)	1634	Range 12–16 (M = 14.12)	48.5	S	OLS	S	LDS	C	Pub
Casas et al. (2007) [168], Spain (2003 sample)	1618	Range 12–16 (M = 13.97)	46.9	S	OLS	S	LDS	C	Pub
Casas et al. (2013) [101], Spain	5937	Range 11–14	ns	S	OLS SLSS	S	GDSI	C	Pub
Casas et al. (2015) [154], Spain, Brazil, and Chile	5316	Range 12–16 (M = 13.59)	44.2	S	OLS	S	BMSLSS	N	Pub
Cava et al. (2014) [140], Spain	1795	Range 11–18 (M = 14.2)	52.0	S	SWLS	S	PACS	C	Pub
Caycho-Rodríguez et al. (2018) [142], Peru	804	Range 11–18 (M = 13.5)	53.0	S	WHO-5 WBI	S	SWFLS	V	Pub
Cruz & Piña-Watson (2017) [127], United States	524	Range 14–20 (M = 16.23)	46.9	S	BMSLSS	S	FCS	C	Pub
da Costa & Neto (2019) [155], Portugal	252	Range 15–19 (M = 16.87)	52.0	S	SWLS	S	SWFLS	V	Pub
Dost-Gözkan (2021) [116], Turkey	1097	Range 14–16 (M = 15.12)	38.4	S	MLSS	S	FES	C	Pub
Ercegovac et al. (2021) [156], Croatia	481	Range 10–17 (M = 12.45)	37.4	S	OLS	S	FSS	C	Pub
Estévez López et al. (2018) [114], Spain	1510	Range 12–17 (M = 13.4)	52.0	S	SWLS	S	PACS FES	C	Pub *
Fosco & Lydon-Staley (2020) [113], United States	151	Range 13–16 (M = 14.60)	38.4	S	POMS SWLS	S	FES	C	Pub
Froh et al. (2009) [148], United States	154	Range 11–13 (M = 12.14)	ns	S	OLS PNA SLSS PANAS	S	BMSLSS	C	Pub
Gao & Potwarka (2021) [110], China	675	Range 12–15	47.3	S		S	FACES II	L	Pub
Galarce Muñoz et al. (2020) [152], Chile (students without disabilities)	70	Range 14–19 (M = 16.6)	54.3	S	PANAS	S	MSLSS	C	Pub *
Galarce Muñoz et al. (2020) [152], Chile (students with motor disabilities)	18	Range 14–19 (M = 15.7)	44.4	S	PANAS	S	MSLSS	C	Pub *
Galarce Muñoz et al. (2020) [152], Chile (hearing-impaired students)	17	Range 14–19 (M = 15.5)	76.5	S	PANAS	S	MSLSS	C	Pub *
Galarce Muñoz et al. (2020) [152], Chile (visually impaired students)	15	Range 14–19 (M = 16.1)	46.7	S	PANAS	S	MSLSS	C	Pub *
Gil da Silva & Dell'Aglio (2018) [153], Brazil	426	Range 12–18 (M = 14.9)	38.0	S	PNAA	S	MLSSA	C	Pub *
Gomez (2011) [149], United States	158	Range 11–15 (M = 13.49)	55.0	S	PANAS SWLS	S	MSLSS	C	Pub
Gómez et al. (2019) [1], Chile	1392	Range 10–13 (M = 11.5)	54.2	S	SLSS	S	GDSI	C	Pub

Table 1. *Cont.*

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
González-Carrasco et al. (2017) [174], Spain	970	Range 9–16 (M = 12.02)	44.1	S	HTOL OLS RCA	S	SDLD	F	Pub
Gross-Manos et al. (2015) [170], Israel	1081	Range 11–13 (M = 11.49)	51.5	S	HLTW OLS SLSS	S	BMSLSS	C	Pub
Hamama & Arazi (2012) [111], Israel	111	Range 9–13 (M = 11.8)	50.5	S	PANAS SLSS	S	FACES III	C	Pub
Huebner (1991a) [29], United States	79	Range 10–13 (M = 11.45)	63.0	S	SLSS	S	FSD	C	Pub
Ingelmo & Litago (2018) [145], Spain	1409	Range 11–18 (M = 14.4)	49.6	S	CL	S	SWFR	C	Pub
Irmak & Kuruüzüm (2009) [157], Turkey	959	Range 11–16 (M = 14.35)	50.0	S	SWLS	S	MSLSS	V	Pub
Jackson et al. (1998) [30], Holland	660	Range 13–15 (M = 13.5)	46.4	S	ABS CL	S	PACS	C	Pub
Jhang (2021) [175], China (Time 1)	1273	Range 12–15 (M = 13.55)	49.0	S	SWLS	S	FACES III	L	Pub
Jhang (2021) [175], China (Time 2)	1028	Range 14–17	ns	S	SWLS	S	FACES III	L	Pub
Jiménez et al. (2009) [138], Spain	565	Range 11–18 (M = 13.6)	51.0	S	SWLS	S	PACS	C	Pub
Jiménez et al. (2014) [176], Spain (Time 1)	1319	Range 12–16 (M = 13.5)	46.0	S	SWLS	S	PACS	L	Pub
Jiménez et al. (2014) [176], Spain (Time 2)	554	Range 12–16 (M = 13.7)	46.0	S	SWLS	S	PACS	L	Pub
Kaye-Tzadok et al. (2017) [171], 16 countries	5000	12-year-old children	46.2	S	SLSS	S	SWF	C	Pub
Khurana (2011) [126], India	400	Range 16–18	50.0	S	PHAS	S	MSLSS PCS	C	Pub
Kim & Main (2017) [143], South Korea and United Kingdom	3743	Range 11–12 (M = 12.0)	42.0	S	SLSS	S	SWF	N	Pub
Koster et al. (2018) [133], The Netherlands	255	Range 15–19 (M = 16.27)	57.0	S	SWLS	S	NRI	C	Pub
Leto et al. (2019) [7], Russia	424	Range 7–10 (M = 9.1)	49.0	S	SLSS	S	FAD	C	Pub
Lietz et al. (2020) [112], Australia	5440	Range 8–15	48.1	S	SLSS	S	ISCWeB	C	Pub
Lin & Yi (2019) [117], China	2690	Range 13–17 (M = 13.3)	51.2	S	LS	S	FACES III	L	Pub
Ljubetić & Reić Ercegovac (2020) [73], Croatia	101	Range 10–17 (M = 15.4)	31.7	S	GQA	S	QFIS	C	Pub
Mallette et al. (2021) [122], United States	207	Range 11–18	ns	S	PWI-SC	S	FACES IV	C	Pub
Manzi et al. (2006) [118], Italy and United Kingdom	223	Range 17–21 (M = 18.9)	49.3	S	SWLS	S	CSRFFI	N	Pub
Merkaš & Brajša-Žganec (2011) [119], Croatia	298	Range 10–15 (M = 12.7)	43.0	S	BMSLSS	S	CSRFFI	C	Pub
Migliorini et al. (2019) [159], Italy	1145	Range 7–10 (M = 8.21)	49.9	S	OLS SLSS	S	BMSLSS	C	Pub
Moore et al. (2018) [135], United Kingdom	9055	Range 11–16 (M = 13.7)	50.6	S	SWB	S	FCSFR	C	Pub
Moreno-Maldonado et al. (2020) [158], Portugal and Spain	21,081	Range 11–16	50.2	S	CL	S	SWFR	N	Pub
Orejudo et al. (2021) [172], Mexico, Peru, and Spain (Mexico sample)	645	Range 12–18 (M = 14.69)	72.6	S	LSD	S	QFR	N	Pub
Orejudo et al. (2021) [172], Mexico, Peru, and Spain (Peru sample)	1331	Range 12–18 (M = 14.35)	37.6	S	LSD	S	QFR	N	Pub
Orejudo et al. (2021) [172], Mexico, Peru, and Spain (Spain sample)	791	Range 12–18 (M = 14.45)	41.0	S	LSD	S	QFR	N	Pub
Park & Huebner (2005) [3], Korea and United States (Korea sample)	472	Range 12–17 (M = 15.22)	51.0	S	SLSS	S	MSLSS	N	Pub
Park & Huebner (2005) [3], Korea and United States (United States sample)	543	Range 12–17 (M = 14.89)	46.0	S	SLSS	S	MSLSS	N	Pub
Park (2005) [146], Korea (elementary students sample)	247	Range 9–11 (M = 10.7)	47.0	S	SLSS	S	MSLSS	C	Pub
Park (2005) [146], Korea (middle school student sample)	231	Range 12–14 (M = 13.8)	48.0	S	SLSS	S	MSLSS	C	Pub
Park (2005) [146], Korea (high school student sample)	258	Range 15–17 (M = 16.5)	49.0	S	SLSS	S	MSLSS	C	Pub
Park et al. (2005) [137], South Korea	501	Range 14–16	54.1	S	SWLS	S	PACS	C	Pub

Table 1. *Cont.*

		Child Characteristics		Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Raboteg-Šarić et al. (2009) [28], Croatia	2823	Range 14–18 (M = 16.86)	45.5	S	GSL	S	FES	C	Pub
Rees (2017) [42], eight European countries	9156	Aged around 12 years old	ns	S	SLSS	S	BMSLSS	N	Pub
Rhatigan (2002) [123], United States	189	Range 11–14	ns	S	SWLS	S	FACES II	C	Pub
Rodríguez-Rivas et al. (2021) [128], Chile	287	Range 15–18 (M = 15.95)	60.3	S	SLSS	S	FC	C	Pub
Salewski (2003) [121], Germany	30	Range 14–19 (M = 17.2)	56.6	S	PWBQ	S	FACES II	C	Pub
Sastre & Ferrière (2000) [144], France	100	Range 12–19	50.0	S	SWLS	S	SWFR	C	Pub
Schnettler et al. (2017) [169], Chile	300	Range 10–17 (M = 13.2)	51.0	S	SWLS	P/S	SWFaL	C	Pub
Schnettler et al. (2018a) [160], Chile	300	Range 10–17 (M = 13.2)	51.3	S	SWLS	P/S	SWFaL	C	Pub *
Schnettler et al. (2018b) [161], Chile	340	Range 10–17 (M = 13.2)	ns	S	SWLS	P/S	SWFaL	C	Pub *
Schnettler et al. (2018c) [162], Chile	470	Range 10–17 (M = 13.3)	52.3	S	SWLS	S	SWFaL	C	Pub
Schnettler et al. (2018d) [163], Chile	303	Range 10–17 (M = 13.3)	48.5	S	SWLS	S	SWFaL	C	Pub
Schnettler et al. (2020) [21], Chile	473	Range 10–17 (M = 13.3)	48.2	S	SWLS	S	SWFaL	C	Pub
Schnettler et al. (2021) [164], Chile	470	Range 10–17 (M = 13.3)	47.7	S	SWLS	S	SWFaL	C	Pub
Schnettler et al. (2022) [165], Chile	303	Range 10–17 (M = 13.3)	48.5	S	SWLS	S	SWFaL	C	Pub *
Seligson et al. (2003) [71], United States	221	Range 11–14 (M = 12.33)	58.0	S	BMSLSS PANAS RGLS SLSS	S	MSLSS	V	Pub
Seligson et al. (2005) [150], United States	518	Range 8–11 (M = 9.34)	46.7	S	PANAS RGLS SLSS	S	BMSLSS	C	Pub
Shek (1997a) [46], China	365	Range 12–16	80.5	S	SWLS	S	F/MACS	C	Pub
Shek (1997c) [131], China	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	P/S	F/MACS	D	Pub
Shek (1998b) [129], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	P/S	F/MACS	L	Pub
Shek (1998b) [129], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	F/MACS	L	Pub
Shek (1998c) [89], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	S I	F/MACS AIS	L	Pub
Shek (1998c) [89], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	S I	F/MACS AIS	L	Pub
Shek (2002d) [177], China	229	Range 12–16	53.3	S	SWLS	S	F/MACS	D	Pub
Shek et al. (2001) [130], China	1519	Range 11–18 (M = 13.5)	49.9	S	SWLS	S	F/MACS	C	Pub
Silva et al. (2020) [124], United States	120	Range 13–15 (M = 14.36)	39.0	S	POMS	S	YESIMM	C	Pub
Soares et al. (2019) [141], Portugal	503	Range 13–19 (M = 15.92)	37.0	S	SWLS	S	A&B	C	Pub
Song et al. (2018) [44], China	428	Range 11–16 (M = 13.16)	65.0	S	SLSS	S	FACES II	C	Pub
Sun et al. (2015) [120], China	1708	Range 14–18 (M = 15.03)	45.2	S	SLSS	S	FACES II	C	Pub
Taşdelen-Karçkay (2016) [173], Turkey	436	Range 14–19 (M = 16.35)	44.0	S	SWLS	S	FLSS	V	Pub
Tian et al. (2015) [166], China	1904	Range 9–14 (M = 11.25)	52.0	S	SLSS	S	BMSLSS	V	Pub
Vera et al. (2012) [37], United States	168	Range 12–15 (M = 13.5)	55.0	S	PANAS SWLS	S	MSLSS	C	Pub
Veronese et al. (2012) [38], Palestine	74	Range 7–15 (M = 10.80)	58.0	G S	HFS PANAS	S	MSLSS	C	Pub
Verrastro et al. (2020) [27], Italy	1549	Range 7–14 (M = 11.1)	47.0	G S	HFS PHS	S	FACES IV	C	Pub
Wang et al. (2021) [125], United States	447	Range 12–18 (M = 15.09)	39.1	S	PANAS	S	NRI	C	Pub
Weber & Huebner (2015) [167], United States	344	Range 11–14 (M = 12.23)	45.1	S	SLSS	S	MSLSS	C	Pub

Table 1. *Cont.*

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Yuan et al. (2019) [20], China	703	Range 10–13 (M = 12.5)	54.9	S	SLSS	S	PACS FACES II	C	Pub
Yun & Choi (2018) [77], Korea	527	Range 10–12 (M = 11.42)	54.3	S	EWBS	S	BFRS	C	Pub
Zhao et al. (2015) [178], China (Father migrating group)	145	Range 10–17 (M = 13.9)	60.0	S	SWLS	S	FACES II	C	Pub
Zhao et al. (2015) [178], China (two-parent migrating sample)	96	Range 10–17 (M = 13.9)	55.2	S	SWLS	S	FACES II	C	Pub

Note. Happiness method: G = graphical assessment; S = self-report questionnaire. Happiness measure: ABS = Affect Balance Scale; PWBQ = Patients' Well-Being Questionnaire for adolescents; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; CL = Cantril Ladder; EMMBSAR = Multidimensional Scale for the Measurement of Subjective Well-Being of Anguas-Plata and Reyes-Lagune; EWBS = Emotional Well-being Scale; GSL = Global Satisfaction with Life; GQA = General Questionnaire for Adolescents; HFS = Happiness Face Scale; HLTW = Happiness in the Last Two Weeks; HOL = Happiness Overall Life; HTOL = Happiness Taking into Account Overall Life; LS = Life Satisfaction; LSD = Life Satisfaction Domain; L3S = Life 3 Scale; OLS = Overall Life Satisfaction; MLSS = Multidimensional Life Satisfaction Scale; PANAS = Positive and Negative Affect Scale; PAS = Positive Affect Scale; PHS = Piers-Harris Children's Concept Scale 2; PHAS = Perceived Happiness Status; PNA = Positive and Negative Affect; PNAA = Scale of Positive and Negative Affects for Adolescents; POMS = Profile of Mood States; QLQ = Quality of Life Questionnaire; RCA = Russell's Core Affect; RGLS = Rating of Global Life Satisfaction; SLSS = Students' Life Satisfaction Scale; SWB = Subjective Well-Being; SWLS = Satisfaction with Life Scale; WHO-5 WBI = World Health Organization-Five Well-Being Index. Family Method: I = interview assessments; P/S = parent and self-report; S = self-report. Family measures: A&B = Attitudes and Behaviors survey; AIS = Adolescent Interview Schedule; BFRS = Brief Family Relationship Scale; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; CSRFFI = Colorado Self-Report of Family Functioning Inventory; FACES = Family Adaptability and Cohesion Evaluation Scales; FC = Family Conflict; FCC = Family Conflict Climate; FCS = Family Conflict Scale; FCLQ = Family Closeness Questions; FCQ = Family Communication Questions; FCSFR = Family Communication Subscale of Family Relationships; FES = Family Environment Scale; FLSS = Family Life Satisfaction Scale; F/MACS = Father/Mother–Adolescent Conflict Scale; FSD = Family Satisfaction Domain; FSS = Family Satisfaction Scale; GDSI = General Domain Satisfaction Index; ISCWeB = International Survey of Children's Well-Being; LDS = Life Domains Satisfaction; MLSSA = Family Satisfaction subscale of the Multidimensional Life Satisfaction Scale for Adolescents; MSLSS = Multidimensional Students Life Satisfaction Scale; NRI = Network of Relationship Inventory; PACS = Parent-Adolescent Communication Scale; PCI = Parent-Child Intimacy; PRI = Pictorial Representation Index; QFIS = Quality of Family Interaction Scale; QFR = Quality of Family Relationships; SDDC = Satisfaction with Different Developmental Contexts; SDLD = Satisfaction with Different Life Domains; SWF = Satisfaction with Family; SWFaL = Satisfaction with Family Life; SWFLS = Satisfaction with Family Life Scale; SWFR = Satisfaction with Family Relationships; YESIMM = Aversive Parent–Child Interactions subscale of the Youth Everyday Social Interactions and Mood Measure. Research design: C = cross-sectional study; D = derived from a longitudinal study (one wave of a longitudinal study); F = 1-year follow-up study; L = longitudinal study; V = validation study of measure. Pub = published; * = Additional data retrieved from authors. ns = not specified.

3.3. Global Family Functioning, Environmental Variables, and Happiness

The impact of global family functioning and family environmental variables (i.e., family relationships and family dynamics) on happiness was supported by a large number of studies (n = 39). Most articles (Table 2) specifically discussed the impact of dysfunctional family functioning on happiness, from both the parents' and children's perspectives. Many studies showed that adequate and adaptive family functioning correlated positively with higher levels of happiness [18,24,134,136,174,179–184], considering both affective and cognitive components [22,43,185]. Furthermore, some studies showed that family environment and happiness correlated with adolescents' gender and age [46,181,186]. Only one study found no significant relation between family functioning and adolescents' happiness [187].

Children's and adolescents' global happiness correlated positively with family relationships [12,90,91,188–197]. Positive relationships within the family strongly predicted increased subjective happiness [172,198,199] and low depressive symptoms. Children who reported more daily activities with family members reported higher levels of happiness, regardless of the type of activity (e.g., talking, playing, learning together). Studies also indicated that adolescents' perceptions of high mutuality and stability and a lack of severe problems in the family predicted their global satisfaction [1,200]. Studies further suggested that perceived good relationships in the family helped adolescents to develop feelings of freedom, love, and happiness [172,194,198,199].

Sociodemographic Variables: Age, Gender, and Socioeconomic Status

Sociodemographic variables (e.g., age, gender, socioeconomic status) represent a subtheme of environmental factors associated with happiness (n = 21). The well-being of children and adolescents primarily depended on the closeness of their relationships with family members and, particularly, their parents. Children reported more satisfaction with their family relationships [198] relative to adolescents [43,146]. However, one study found no age or gender differences in the interaction between life satisfaction and family functioning [191]. Young people who perceived a higher quality parent–child relationship had greater and more stable life satisfaction from middle (i.e., aged 14–16 years) to late adolescence (i.e., aged 17–18 years) [197].

The negative correlation between family functioning and life satisfaction was affected by gender differences. Girls perceived less familial dysfunction relative to boys [46]. One study found that family satisfaction was the only significant predictor of girls' life satisfaction [37]. Another study showed that boys with high overall satisfaction reported high stability and reciprocity and fewer problems in the family [200]. However, other studies found no gender differences in the association between these variables [136,179,201]. Only one study found no correlation between family functioning and the life satisfaction of adolescent boys from low-income families [202].

Shek (1998) [89] showed that adolescents' life satisfaction correlated with the perceived family atmosphere (i.e., family happiness and family interactions), parent–adolescent relationship, and adolescent–parent communication at both data collection points (i.e., one year apart), regardless of gender. Thus, for both boys and girls, greater life satisfaction was associated with a higher level of perceived happiness in the family and more frequent positive conversations within the family. Some studies revealed that adolescents with a more positive family environment displayed greater happiness and life satisfaction [89,195,196]. Other studies revealed that the link between family functioning and life satisfaction was significantly stronger among adolescent girls, compared to adolescent boys [24,180].

Concerning socioeconomic status, Shek (2002) [177] showed that family functioning was more strongly related to adolescent adaptation among economically disadvantaged adolescents relative to non-economically disadvantaged adolescents. This suggests that family functioning may be associated with better adaptation in high-risk adolescents [22,161]. One study found that satisfaction with family functioning predicted the happiness of rural-urban migrant children—a subgroup with worse self-rated family financial situations [203].

Table 2. Sample Characteristics and Methods of Assessment of the Reviewed Studies Investigating Global Family Functioning, Environment Variables, and Happiness (n = 39).

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Ben-Zur (2003) [12], Israel	112	Range 15–19 (M = 17.06)	48	S	LSS PANAS	P/S	RFMQ	C	Pub
Cacioppo et al. (2013) [136], Italy	255	Range 15–17 (M = 15.98)	40.8	S	MSLSS	S	FAD	C	Pub
Chui & Wong (2017) [18], China	1830	Range 10–19 (M = 14.2)	47.9	S	SWLS	S	FAI	C	Pub
Flouri & Buchanan (2003) [201], United Kingdom	2722	Range 14–18 (M = 14.2)	41.3	S	HS	S	F/MIS	C	Pub
Gilman & Huebner (2006) [188], United States	485	Range 11–18 (M = 14.45)	54.0	S	SLSS	S	BASC	C	Pub
Gómez et al. (2019) [1], Chile	1392	Range 10–13 (M = 11.5)	54.2	S	SLSS	S	ISCWeB	C	Pub
Goswami (2012) [198], United Kingdom	4673	Two age groups (8 and 10 year)	47.0	S	SLSS	S	MSLSS	C	Pub
Heaven et al. (1996) [186], Australia	183	Range 13–17 (M = 13.3)	36.1	S	SWLS	S	FOS	C	Pub

Table 2. *Cont.*

		Child Characteristics		Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Huebner et al. (2000) [199], United States (Time 1)	321	Range 14–18 (M = 16.14)	35.0	S	SLSS	S	BASC	L	Pub
Huebner et al. (2000) [199], United States (Time 2)	99	Range 14–18	34.5	S	SLSS	S	BASC	L	Pub
Lawler et al. (2015) [189], 11 countries (United States sample)	784	Range 11–14 (M = 12.63)	ns	S	LSI	S	FRQ PIS	C	Pub
Lawler et al. (2015) [189], 11 countries (international sample)	781	Range 10–14 (M = 12.06)	ns	S	LSI	S	FRQ PIS	N	Pub
Lawler et al. (2017) [190], 11 countries (United States sample)	502	Range 10–12 (M = 10.66)	ns	S	LSI	S	FRQ PIS	C	Pub
Lawler et al. (2017) [190], 11 countries (international sample)	502	Range 9–12 (M = 10.12))	ns	S	LSI	S	FRQ PIS	N	Pub
Lawler et al. (2018) [90], South Korea and United States (SK sample)	489	Range 10–12	ns	S	SLSS	S	FRQ PIS	C	Pub
Lawler et al. (2018) [90], South Korea and United States (US sample)	1286	Range 10–12 (M = 11.21)	ns	S	SLSS	S	FRQ PIS	C	Pub
Nevin et al. (2005) [191], Ireland	294	Range 15–18 (M = 16.4)	40.0	S	OHI SWLS	S	FAD	C	Pub
Newland et al. (2014) [192], United States	149	Range 12–14 (M = 13.0)	52.3	S	LSI	S	FRQ PIS	C	Pub
Newland et al. (2015) [193], United States (5th grade)	502	Range 10–12 (M = 10.66)	54.8	S	LSI	S	FRQ PIS	C	Pub
Newland et al. (2015) [193], United States (7th grade)	784	Range 12–14 (M = 12.63)	49.1	S	LSI	S	FRQ PIS	C	Pub
Newland et al. (2019) [91], 14 countries	25,906	Range 9–14 (M = 11.4)	47.8	S	SLSS + OLS	S	FRQ	N	Pub
Rask et al. (2003) [200], Finland	239	Range 12–17 (M = 14.0)	49.0	S	BSW/Y	P/S	FDM II	C	Pub
Sari & Dahlia (2018) [185], Indonesia	193	Range 12–15 (M = 12.97)	50.3	S	SWLS PANAS	S	FAD	C	Pub
Sarriera et al. (2018) [194], Brazil and Spain	6747	Range 11–14 (M = 12.07)	49.3	S	SLSS	S	ISCWeB	N	Pub
Shek (1997a) [46], China	365	Range 12–16	80.5	S	SWLS	S	SFI	C	Pub
Shek (1997b) [179], China	429	Range 12–16 (M = 13.0)	50	S	SWLS	S	SFI	D	Pub
Shek (1998a) [180], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	P/S	SFI	L	Pub
Shek (1998a) [180], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	SFI	L	Pub
Shek (1998c) [89], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	S I	SFI AIS	L	Pub
Shek (1998c) [89], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	S I	SFI AIS	L	Pub
Shek (1999) [181], China (Time 1)	429	Range 12–16 (M = 13.0)	51.0	S	SWLS	P/S	SFI	L	Pub
Shek (1999) [181], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	SFI	L	Pub
Shek (2002b) [182], China	1519	Range 11–18	ns	S	SWLS	S	FAI	C	Pub
Shek (2002c) [134], China	361	Range 12–16 (M = 14.0)	66.4	S	SWLS	S	SFI FAD FAI	C	Pub
Shek (2002d) [177], China	229	Range 12–16	53.3	S	SWLS	S	PPAR	D	Pub
Shek (2004) [202], China	228	Range 12–16	46.5	S	SWLS	S	FAI	D	Pub
Shek (2005) [24], China (Time 1)	229	Range 12–16	46.7	S	SWLS	S	FAI	L	Pub
Shek (2005) [24], China (Time 2)	199	Range 13–17	ns	S	SWLS	S	FAI	L	Pub
Shek & Liang (2018) [43], China	3328	Range 12–18 (M = 12.59)	51.7	S	SWLS	S	FAI	L	Pub
Shek & Liu (2014) [22], China (Time 1)	4106	Range 14–15 (M = 14.65)	53.2	S	SWLS	S	FAI	L	Pub
Shek & Liu (2014) [22], China (Time 2)	2667	Range 17–18	ns	S	SWLS	S	FAI	L	Pub
Shek et al. (2001) [130], China	1519	Range 11–18 (M = 13.5)	49.9	S	SWLS	S	PPAR	C	Pub
Syanti & Rahmania (2019) [187], Indonesia	118	Range 12–19	44.0	S	SWBS	S	FAD	C	Un
Tang et al. (2021) [183], China	1060	Range 13–16 (M = 14.6)	ns	S	CHI	S	BFFQ	C	Pub *
Uusitalo-Malmivaara (2012) [195], Finland	737	Range 11–12 (M = 12.10)	49.2	S	SHS	S	FRS	C	Pub
Uusitalo-Malmivaara & Lehto (2013) [196], Finland	737	Range 11–12 (M = 12.10)	49.2	S	SHS	S	FRS	C	Pub
Wang et al. (2019) [203], China	2229	Range 9–17 (M = 11.46)	52.0	S	PANAS PWI-SC SWLS	S	FAPGARI	C	Pub

Table 2. *Cont.*

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Willroth et al. (2021) [197], United States (Time 1)	674	Range 14–16 (*M* = 14.75)	ns	S	OLS	S	PCRQ	L	Pub
Zhou et al. (2018) [184], China	1656	Range 16–19 (*M* = 15.8)	44.39	S	HS + MSLSS	S	FAD	C	Pub

Note. Happiness method: S = self-report questionnaire. Happiness measure: BSW/Y = Berne Questionnaire of Subjective Well-Being/Youth form; CHI = Chinese Happiness Inventory; HS = Happiness Scale; LSI = Life Satisfaction Indicator; LSS = Life Satisfaction Scale; MSLSS = Multidimensional Students' Life Satisfaction Scale; OHI = Oxford Happiness Inventory; OLS = Overall Life Satisfaction; PANAS = Positive and Negative Affect Scale; SHS = Subjective Happiness Scale; SLSS = Students' Life Satisfaction Scale; SWBS = Subjective Well-Being Scale; SWLS = Satisfaction with Life Scale. Family Method: I = interview assessments; P/S = parent and self-report; S = self-report. Family measure: AIS = Adolescent Interview Schedule; BASC = Behavior Assessment System for Children-Self-Report-Adolescent Form; BFFQ = Brief Family Function Questionnaire; FAD = Family Assessment Device; FAI = Family Assessment Instrument; FAPGARI = Family APGAR Index; FDM II = Family Dynamics Measure; F/MIS = Father/Mother Involvement Scale; FOS = Family-of-Origin Scale; FRS = Family Relationship Scale; FRQ = Family Relationship Quality; ISCWeB = International Survey of Children's Well-Being; MSLSS = Multidimensional Students' Life Satisfaction Scale; PCRQ = Parent-Child Relationship Quality; PIS = Parent Involvement Scale; PPAR = Perceived Parent–Adolescent Relationship; RFMQ = Relationship with Father/Mother Questionnaire; SFI = Self-Report Family Instrument. Research design: C = cross-sectional; D = derived from a longitudinal study (one wave of a longitudinal study); L = longitudinal; N = cross-national. Publication status: Pub = published; Un = not published; * = additional data retrieved from authors. ns = not specified.

3.4. Parental Differences

Parent gender was a central factor in studies investigating the association between happiness and family functioning in children and adolescents (n = 17) (Table 3). One study revealed that perceived family competence was associated with family members' perceptions of parental dyadic qualities and individual functioning [131]. In particular, regardless of the informant (i.e., father, mother, and child), child satisfaction correlated negatively with family dysfunction [181]. No differences emerged between parents and children regarding the impact of family conflict [129] and family satisfaction on children's happiness [169]. Finally, one study indicated no significant differences between parents and children in the association between children's happiness and family functioning (i.e., cohesion, adaptability, communication, and family satisfaction) [27].

While the investigated studies highlighted differences between mothers and fathers, the results were contradictory and heterogeneous. Some studies reported that maternal understanding was closely related to adolescent life satisfaction [145] and overall adolescent satisfaction [200]. Adolescents with a positive relationship with their mother showed greater happiness than those with a poor mother–child relationship; however, this association was not significant for the father–child relationship [43].

Other research found that the father–child relationship was more closely correlated with indicators of adolescents' happiness than the mother–child relationship [12,73,129]. Furthermore, the perceived father–adolescent relationship (but not the mother–adolescent relationship) correlated positively with children's happiness [177]. For instance, Zhao et al. (2015) showed that children's life satisfaction correlated positively with father–child cohesion, but not mother–child cohesion [178]. Although the involvement of both the father and the mother contributed significantly and independently to children's happiness, the involvement of the father had a more substantial effect than the involvement of the mother [201].

Children's and adolescents' life satisfaction was positively correlated with parent–child relationship qualities [91]. The father–adolescent relationship correlated positively with positive affect and life satisfaction, while the mother–adolescent relationship correlated positively with life satisfaction and only weakly with positive affect [12]. However, one study showed that only the perceived father–adolescent relationship correlated positively with children's life satisfaction [177].

Age and gender differences emerged in mother–child and father–child communication. Adolescents were significantly more satisfied with their communication with their mother than their communication with their father [30]. One study showed that girls reported

greater openness with their mother and boys with their father [140]. Boys reported fewer problems and more open communication with their father, relative to girls [138], while no gender differences emerged in their communication with their mother [30]. Regarding age differences, early adolescents (i.e., aged 12–13 years) reported more positive open communication with their mother and their father relative to mid-adolescents (i.e., aged 14–16 years). In addition, communication problems with both parents increased with age. Overall, adolescents were generally satisfied with their communication with their parents (particularly their mother), and early adolescents were more positive about their communication with their parents compared to mid-adolescents [30].

Table 3. Sample Characteristics and Methods of Assessment of the Reviewed Studies Investigating the Parental Differences (n = 17).

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Ben-Zur (2003) [12], Israel	112	Range 15–19 (M = 17.06)	48.0	S	LSS PANAS	P/S	RFMQ	C	Pub
Cava et al. (2014) [140], Spain	1795	Range 11–18 (M = 14.2)	52.0	S	SWLS	S	PACS	C	Pub
Flouri & Buchanan (2003) [201], United Kingdom	2722	Range 14–18 (M = 14.2)	41.3	S	HS	S	F/MIS	C	Pub
Ingelmo & Litago (2018) [145], Spain	1409	Range 11–18 (M = 14.4)	49.6	S	CL	S	SWFR	C	Pub
Jackson et al. (1998) [30], Holland	660	Range 13–15 (M = 13.5)	46.4	S	ABS CL	S	PACS	C	Pub
Jiménez et al. (2009) [138], Spain	565	Range 11–18 (M = 13.6)	51.0	S	SWLS	S	PACS	C	Pub
Ljubetić & Reić Ercegovac (2020) [73], Croatia	101	Range 10–17 (M = 15.4)	31.7	S	GQA	S	QFIS	C	Pub
Newland et al. (2019) [91], 14 countries	25,906	Range 9–14 (M = 11.4)	47.8	S	SLSS + OLS	S	FRQ	N	Pub
Rask et al. (2003) [200], Finland	239	Range 12–17 (M = 14.0)	49.0	S	BSW/Y	P/S	FDM II	C	Pub
Schnettler et al. (2017) [169], Chile	300	Range 10–17 (M = 13.2)	51.0	S	SWLS	P/S	SWFaL	C	Pub
Shek (1997c) [131], China	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	P/S	F/MACS	D	Pub
Shek (1998b) [129], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	P/S	F/MACS	L	Pub
Shek (1998b) [129], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	F/MACS	L	Pub
Shek (1999) [181], China (Time 1)	429	Range 12–16 (M = 13.0)	51.0	S	SWLS	P/S	SFI	L	Pub
Shek (1999) [181], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	SFI	L	Pub
Shek (2002d) [177], China	229	Range 12–16	53.3	S	SWLS	S	F/MACS PPAR	D	Pub
Shek & Liang (2018) [43], China	3328	Range 12–18 (M = 12.6)	51.7	S	SWLS	S	FAI	L	Pub
Verrastro et al. (2020) [27], Italy	1549	Range 7–14 (M = 11.1)	47.0	G S	HFS PHS	S	FACES IV	C	Pub
Zhao et al. (2015) [178], China (father migrating group)	145	Range 10–17 (M = 13.9)	60.0	S	SWLS	S	FACES II	C	Pub
Zhao et al. (2015) [178], China (two-parent migrating group)	96	Range 10–17 (M = 13.9)	55.2	S	SWLS	S	FACES II	C	Pub

Note. Happiness method: G = graphical assessment; S = self-report questionnaire. Happiness measure: ABS = Affect Balance Scale; BSW/Y = Berne Questionnaire of Subjective Well-Being/Youth form; CL = Cantril Ladder; GQA = General Questionnaire for Adolescents; HFS = Happiness Face Scale; HS = Happiness Scale; LSS = Life Satisfaction Scale; OLS = Overall Life Satisfaction; PANAS = Positive and Negative Affect Scale; PHS = Piers-Harris Children's Concept Scale 2; SLSS = Students' Life Satisfaction Scale; SWLS = Satisfaction with Life Scale. Family Method: P/S = parent and self-report; S = self-report. Family measures: F/MACS = Father/Mother–Adolescent Conflict Scale; FAI = Family Assessment Instrument; FDM II = Family Dynamics Measure; F/MIS = Father/Mother Involvement Scale; FRQ = Family Relationship Quality; PACS = Parent-Adolescent Communication Scale; PPAR = Perceived Parent–Adolescent Relationship; QFIS = Quality of Family Interaction Scale; RFMQ = Relationship with Father/Mother Questionnaire; SFI = Self-Report Family Instrument; SWFaL = Satisfaction with Family Life; SWFR = Satisfaction with Family Relationships. Source of information (info). Research design: C = cross-sectional; D = derived from a longitudinal study (one wave of a longitudinal study); L = longitudinal; N = cross-national. Publication status: Pub = published. ns = not specified.

3.5. Longitudinal Studies and Predictions of Happiness over Time

Finally, the last theme (n = 13) highlighted the relevance of assessing the relation between happiness and family functioning longitudinally (Table 4). Some of the studies showed that children's and adolescents' life satisfaction correlated with family functioning and parental relationships over time [22,24,43,89,180,181,199]. In particular, one longitudinal study suggested that the relation between adolescents' perceived family functioning and their psychological happiness was bidirectional [24].

Generally, the results showed that adolescent psychological happiness at Time 1 was related to perceived family functioning at Time 2. Therefore, children's life satisfaction predicted children's family functioning over time [181]. Moreover, the longitudinal linkage between family functioning and adolescent adjustment was stronger for adolescent girls than for adolescent boys [24]. At the same time, some studies revealed that adolescents with more poorly perceived family functioning at Time 1 (i.e., negative family environment) had poorer life satisfaction at Time 2 [22,89,180]. Notably, a negative family atmosphere, more significant family dysfunction, and more parent–adolescent conflict predicted a negative trend in adolescents' happiness over time [89]. Overall, youth with a more positive family environment in middle adolescence (i.e., aged 14–16 years) reported higher levels of happiness during late adolescence (i.e., aged 17–18 years) [197].

Regarding the different dimensions of family functioning, studies found that family cohesion, but not perceived family adaptability, significantly predicted changes in adolescents' happiness over time [110]. Family cohesion and open communication with parents at Time 1 positively correlated with happiness at Time 2 [175,176]. Furthermore, increased family cohesion was associated with increased life satisfaction and positive affection [110], which may have promoted happiness over time [175]. Studies also showed that parent–adolescent conflict predicted changes in adolescents' psychological happiness over time. Thus, more significant parent–adolescent conflict at Time 1 tended to be associated with lower adolescent life satisfaction at Time 2 [89,129,181]. One study showed that children's life satisfaction and family cohesion remained significantly related, despite gradually deteriorating during early and middle adolescence (i.e., aged 13–15 years). Youth from more cohesive families often had higher life satisfaction when they entered middle school [117], while pre-adolescents who reported higher life satisfaction at the beginning of middle school (i.e., aged 11 years) tended to experience a slower decline in family cohesion during adolescence.

Table 4. Sample Characteristics and Methods of Assessment of the Longitudinal Studies (n = 13).

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Gao & Potwarka (2021) [110], China	675	Range 12–15	47.3	S	SLSS PANAS	S	FACES II	L	Pub
Huebner et al. (2000) [199], United States (Time 1)	321	Range 14–18 (M = 16.14)	35.0	S	SLSS	S	BASC	L	Pub
Huebner et al. (2000) [199], United States (Time 2)	99	Range 14–18	34.5	S	SLSS	S	BASC	L	Pub
Jhang (2021) [175], China (Time 1)	1273	Range 12–15 (M = 13.55)	49.0	S	SWLS	S	FACES III	L	Pub
Jhang (2021) [175], China (Time 2)	1028	Range 14–17	ns	S	SWLS	S	FACES III	L	Pub
Jiménez et al. (2014) [176], Spain (Time 1)	1319	Range 12–16 (M = 13.5)	46.0	S	SWLS	S	PACS	L	Pub
Jiménez et al. (2014) [176], Spain (Time 2)	554	Range 12–16 (M = 13.7)	46.0	S	SWLS	S	PACS	L	Pub
Lin & Yi (2019) [117], China	2690	Range 13–17 (M = 13.3)	51.2	S	LS	S	FACES III	L	Pub
Shek (1998a) [180], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	P/S	SFI	L	Pub
Shek (1998a) [180], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	SFI	L	Pub
Shek (1998b) [129], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	P/S	F/MACS	L	Pub

Table 4. *Cont.*

	Child Characteristics			Happiness Measure		Family Measure			
Author (Year), Country	***N***	**Age**	**% Male**	**Method**	**Measure**	**Method**	**Measure**	**Res. Design**	**Pub**
Shek (1998b) [129], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	F/MACS	L	Pub
Shek (1998c) [89], China (Time 1)	429	Range 12–16 (M = 13.0)	50.6	S	SWLS	S I	F/MACS SFI AIS	L	Pub
Shek (1998c) [89], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	S I	F/MACS SFI AIS	L	Pub
Shek (1999) [181], China (Time 1)	429	Range 12–16 (M = 13.0)	51.0	S	SWLS	P/S	SFI	L	Pub
Shek (1999) [181], China (Time 2)	378	Range 13–17 (M = 14.0)	ns	S	SWLS	P/S	SFI	L	Pub
Shek (2005) [24], China (Time 1)	229	Range 12–16	46.7	S	SWLS	S	FAI	L	Pub
Shek (2005) [24], China (Time 2)	199	Range 13–17	ns	S	SWLS	S	FAI	L	Pub
Shek & Liang (2018) [43], China	3328	Range 12–18 (M = 12.59)	51.7	S	SWLS	S	FAI	L	Pub
Shek & Liu (2014) [22], China (Time 1)	4106	Range 14–15 (M = 14.65)	53.2	S	SWLS	S	FAI	L	Pub
Shek & Liu (2014) [22], China (Time 2)	2667	Range 17–18	ns	S	SWLS	S	FAI	L	Pub
Willroth et al. (2021) [197], United States (Time 1)	674	Range 14–16 (M = 14.75)	ns	S	OLS	S	PCRQ	L	Pub

Note. Happiness method: S = self-report questionnaire. Happiness measures: LS = Life Satisfaction; OLS = Overall Life Satisfaction; PANAS = Positive and Negative Affect Scale; SLSS = Students' Life Satisfaction Scale; SWLS = Satisfaction with Life Scale. Family Method: I = interview assessments; P/S = parent and self-report; S = self-report. Family measures: AIS = Adolescent Interview Schedule; BASC = Behavior Assessment System for Children-Self-Report-Adolescent Form; FACES = Family Adaptability and Cohesion Evaluation Scales; F/MACS = Father/Mother–Adolescent Conflict Scale; FAI = Family Assessment Instrument; PACS = Parent-Adolescent Communication Scale; PCRQ = Parent-Child Relationship Quality; SFI = Self-Report Family Instrument. Source of information (info). Research design: L = longitudinal. Publication status: Pub = published. ns = not specified.

4. Discussion

A total of 124 studies were systematically reviewed to identify relevant dimensions of family functioning associated with children's and adolescents' happiness. Four themes emerged from a review of these studies: (1) family dimensions and happiness; (2) global family functioning (i.e., family functioning and family relationships), environmental variables and happiness; (3) parental differences; (4) longitudinal studies.

Regarding the first theme, 91 studies examined the relationship between family dimensions (i.e., family cohesion and adaptability, family satisfaction and communication, and family conflict) and children's and adolescents' happiness. The results highlighted that family cohesion significantly predicted changes in happiness, life satisfaction, and positive affect over time [77,113,117,175]. In other words, increased family cohesion and adaptability were associated with higher levels of happiness in children and adolescents [20,110,122]. Thus, positive family dimensions may contribute directly to children's and adolescents' sense of happiness, contentment, and general life satisfaction [111,121].

Furthermore, in both boys and girls, positive communication with the mother and the father and high family satisfaction were directly associated with increased happiness [25,138,170,174]. The possibility to express oneself freely at home (i.e., to speak openly about any subject) was associated with greater life satisfaction for adolescents [114]. Adolescents who communicated effectively with their families probably felt that they could share their points of view and feelings openly and sincerely with their parents, and they may have interpreted this communication as a sign of parental support, trust, and closeness [30,140]. This may be especially true for girls, for whom the influence of family communication on happiness was slightly greater [27,171], possibly due to gender differences in cultural norms and socialization. Different parental socialization styles based on child gender [204] may also explain why communication tends to be more open between mothers and daughters and between fathers and sons [140].

On the other hand, communication problems and higher levels of family conflict were associated with lower happiness for children and adolescents [126,128,139]. When

communication was open and trouble-free, children and adolescents were more likely to report satisfaction with their families, positive affect, and low levels of conflict, relative to children and adolescents who reported less communication with parents [30]. This finding suggests that family relationships which are perceived to be good may help children and adolescents develop feelings of freedom, love, and happiness [172], underlining that family dimensions play an essential role in influencing children's and adolescents' happiness [46].

As regards the second theme, 39 studies examined the association between global family functioning (i.e., family functioning and family relationships), family environment variables, and children's and adolescents' happiness. Specifically, a more positive perception of family functioning was related to better emotional well-being in children and adolescents [184,185,191,203]. Furthermore, regardless of the cultural background, children's family relationships influenced their levels of happiness [1,196] more significantly than any other variable. Bad parent–child relationships were usually accompanied by lower levels of family satisfaction and happiness [145]. Thus, feeling happy at home may contribute to both boys' and girls' happiness [174].

The reported studies provided support for the association between global family functioning and happiness during adolescence, even though adolescents consolidate new social relationships with friends and partners during this developmental period [36]. The family is the context in which the first emotional relationships develop, and where children learn to respect and establish positive relationships of love and respect for others [194]. Parents in a well-functioning family can provide emotional support to children, allowing them to express their emotions. A warm and open family communicates happiness to children [185], giving them a sense of security, emotional connection, and trust [178].

A subtheme of environmental factors associated with happiness concerned differences in sociodemographic variables. Some family factors predicted individual differences in happiness and life satisfaction during adolescence. In particular, more positive family environments were associated with greater happiness [191,197]. Furthermore, the findings supported both stability and change in perceived levels, and the relevance of certain life satisfaction domains, among children and adolescents. Young people who perceived a higher quality parent–child relationship had elevated and stable life satisfaction from middle adolescence (i.e., aged 14–16 years) to late adolescence (i.e., aged 17–18 years) [197].

Other studies found that young people's life satisfaction was negatively correlated with age in all global and life (i.e., family satisfaction) domains [48,146]. The decrease in happiness levels during this period suggests that pre-adolescence may be a stressful phase of development, during which cognitive, physical, and emotional changes strongly influence young people's overall sense of happiness [27]; family members may play an essential role in accompanying them through these changes. In particular, the decline in both family cohesion and happiness during early and middle adolescence (i.e., aged 12–16 years) may be explained by both the multiple challenges that adolescents face and the more significant conflict that they tend to experience with parents, which tend to result in less participation in family activities; this may reduce adolescents' perceived family cohesion and life satisfaction [117].

Regarding the third theme identified, 17 studies explored parental gender differences in the association between happiness and family functioning. The selected studies produced contradictory results: a single study reported that a positive mother–child relationship, but not a father–child relationship, was associated with greater happiness in children [43]. However, six studies found significant correlations with the father–child relationship and not the mother–child relationship [12,73,129,177,178,201]. These results suggest that relationships with both mothers and fathers are relevant to children's and adolescents' happiness.

However, the reviewed studies found that the father–child relationship was more closely related to indicators of happiness in adolescents than the mother–child relationship [12,73,129]. Indeed, the father–child relationship, father–child cohesion, and father–child conflict predicted children's life satisfaction, while no equivalent associations were

found for the mother [129,177,178]. These results suggest that the effect of father–child proximity on children's and adolescents' development is not related to mother–child proximity [178].

However, these studies, which suggest that fathers have the most significant impact on children's and adolescents' well-being, contradict the literature showing that mothers tend to be more significant in determining child developmental outcomes. While fathers tend to spend less time with children relative to mothers [205], they may be more committed and dedicated to children when they do spend time together, focusing on the specific situation at hand. Children may perceive their father's behavior as an essential aspect of their relationship that increases their happiness over the long term [73]. Future studies should investigate the differences between mothers and fathers and the different perspectives between parents and children, to better understand these aspects.

Finally, the last theme that emerged (13 studies) highlighted the importance of evaluating the relation between happiness and family functioning over time, from a predictive perspective. Several studies showed that, regardless of the informant (i.e., father, mother, or child) and the sequence of data collection (i.e., simultaneously vs. longitudinally), children's happiness was correlated with family functioning [89,181]. The results of both the simultaneous and longitudinal studies consistently showed that the cognitive component of happiness (i.e., life satisfaction) was significantly associated with family functioning and family relationships [22,43,199]. In addition, the longitudinal studies suggested that the relation between perceived family functioning and adolescents' happiness may be bidirectional [24]; therefore, it is not possible to confirm a univocal causal link between these factors.

Regarding subdimensions of family functioning, studies found that family cohesion [110,175], family communication [176], and parent–adolescent conflict [89,129] significantly predicted changes in adolescent happiness over time: more significant parent–adolescent conflict at Time 1 tended to be associated with a decline in adolescent life satisfaction at Time 2 [89], and greater family cohesion and open communication with parents tended to be associated with increased life satisfaction over time [117,176]. Also, concerning family conflict, the data showed that the relation between parent–adolescent conflict and adolescent emotional well-being could be bidirectional [89]. Future studies should further investigate the causal links between individual and family variables.

In conclusion, the findings of this study suggest that family dimensions may influence the affective and cognitive components of children's and adolescents' happiness [30,46,77,110–112,124,125,135]. In particular, the reviewed findings demonstrate the significance of family bonds and support for adolescents, indicating that, when family members provide help, affection, and understanding, children and adolescents experience multiple benefits that undoubtedly affect their development of positive psychological experiences [145,200].

Limitations and Strengths of the Studies, and Future Research Directions

Despite increasing research interest in the relation between happiness and family functioning (as evidenced by the growing number of publications in recent years), the investigated studies suffered from some methodological limitations. First, the use of self-report measures may have exposed the research to social desirability bias. Future studies should employ a multi-informant and multi-method methodology combining qualitative measures (i.e., structured or semi-structured interviews and observational measures) or multi-informant questionnaires (i.e., parent and teacher reports) with self-reports. Second, the use of cross-sectional designs did not enable causal links to be drawn between variables. Thus, future studies should implement longitudinal procedures to better understand the factors that contribute to the happiness of children and adolescents. Furthermore, the heterogeneity of the samples (with respect to, e.g., geographical scope, size, and age range) limit the generalizability of the results.

The lack of a coherent theoretical model to define the construct of happiness represents a significant gap in the literature. This may explain the variety in both measurement tools and operationalizations of the construct in the investigated studies. Compounding this, some of the investigated studies did not clearly define happiness, positive affect, or life satisfaction. Therefore, future research should explicitly make the psychological construct operational. Additionally, future research should explore the association between attachment styles and children's and adolescents' happiness during development.

A further limitation of the present research is the possibility that methodological biases may have affected the study selection, due to the arbitrariness of the constructs and the interpretation of the reviewers. However, two independent evaluators excluded all articles that deviated from a precise definition of happiness or that analyzed family factors other than family functioning. Thus, attempts were made to target the constructs of interest.

A future research direction might be to examine overall effect sizes, which were not addressed in the present study. Moreover, as the present work focused on the relation between happiness and family functioning in non-clinical samples, an equivalent analysis in clinical samples may provide important new insights. Finally, the present review suggests the relevance of the father–child relationship, father–child cohesion, and father–child conflict in predicting children's and adolescents' happiness. Future research should further investigate the differences between fathers and mothers, using multi-informant and mixed-methods procedures and a longitudinal approach.

However, the present work also has significant strengths, including compliance with a rigorous systematic review protocol with clearly-defined inclusion and exclusion criteria. Indeed, a careful research strategy carried out by two independent evaluators was employed to acquire all relevant articles. Another strength is the high reviewer reliability during the screening process, reflecting a transparent selection methodology. Uniquely, the review represents the first study to synthesize the literature on happiness in the family context during development, filling a significant gap in the literature pertaining to the possible impact of family functioning on children's and adolescents' happiness. Finally, the review identified heterogeneous measurements of happiness and family functioning during development, suggesting that future studies should develop a more standardized approach to obtain more consistent results.

5. Conclusions

The present review included studies that investigated the relationship between family functioning and happiness. The reviewed studies found a positive relation between happiness and family functioning in different cultures and age groups. Thus, family factors seem to play an essential role in increasing or diminishing the happiness of children and adolescents. However, many aspects remained largely unexplored, and more research is needed to determine how family variables (and particularly family functioning) affect children's and adolescents' happiness. Finally, more longitudinal studies are required to test causal relationships. Increased evidence of the potential direction of causality of these variables would extend our knowledge of happiness, as it is currently unclear whether family variables affect levels of happiness, positive affect, and life satisfaction, and whether these relationships are bidirectional.

Author Contributions: Conceptualization, R.B., F.I. and J.P. methodology, R.B., F.I. and J.P; validation, R.B., F.I. and J.P., formal analysis, R.B., F.I. and J.P; investigation, F.I.; resources, R.B., F.I. and J.P.; data curation, R.B., F.I. and J.P.; writing—original draft preparation, F.I.; writing—review and editing, R.B., F.I. and J.P.; supervision, R.B. and J.P.; project administration, R.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Ethics Committee of the Department of Developmental and Social Psychology, Sapienza University of Rome.

Informed Consent Statement: Not applicable.

Data Availability Statement: Articles and data will be made available to the corresponding author upon reasonable request.

Conflicts of Interest: The authors declare no conflict of interest.

References

Note: References [1,3,7,12,18,20–22,24,25,27–30,33,35–38,42–44,46,71,73,77,89–91,101,110–203] are the studies included in the systematic review.

1. Gómez, D.O.; Aznar, F.C.; Inzunza, J.A. Family, school, and Neighbourhood microsystems influence on children's life satisfaction in Chile. *Child Indic. Res.* **2019**, *12*, 1915–1933. [CrossRef]
2. Baiocco, R.; Verrastro, V.; Fontanesi, L.; Ferrara, M.P.; Pistella, J. The contributions of self-esteem, loneliness, and friendship to children's happiness: The roles of gender and age. *Child Indic. Res.* **2019**, *12*, 1413–1433. [CrossRef]
3. Park, N.; Huebner, E.S. A cross-cultural study of the levels and correlates of life satisfaction among adolescents. *J. Cross-Cult. Psychol.* **2005**, *36*, 444–456. [CrossRef]
4. Holder, M.D.; Klassen, A. Temperament and happiness in children. *J. Happiness Stud.* **2010**, *11*, 419–439. [CrossRef]
5. Kamp Dush, C.M.; Taylor, M.G.; Kroeger, R.A. Marital happiness and psychological well-being across the life course. *Fam. Relat.* **2008**, *57*, 211–226. [CrossRef] [PubMed]
6. Diener, E.; Lucas, R.E.; Oishi, S. Advances and open questions in the science of subjective well-being. *Collabra Psychol.* **2018**, *4*, 15. [CrossRef]
7. Leto, I.V.; Petrenko, E.N.; Slobodskaya, H.R. Life satisfaction in Russian primary schoolchildren: Links with personality and family environment. *J. Happiness Stud.* **2019**, *20*, 1893–1912. [CrossRef]
8. Greco, C.; Ison, M. What makes you happy? Appreciating the reasons that bring happiness to Argentine children living in vulnerable social contexts. *J. Lat./Lat. Am. Stud.* **2014**, *6*, 4–18. [CrossRef]
9. Maftei, A.; Holman, A.C.; Cârlig, E.R. Does your child think you're happy? Exploring the associations between children's happiness and parenting styles. *Child. Youth Serv. Rev.* **2020**, *115*, 105074. [CrossRef]
10. Vera, E.; Thakral, C.; Gonzales, R.; Morgan, M.; Conner, W.; Caskey, E.; Bauer, A.; Mattera, L.A.; Clark, S.; Bena, K.; et al. Subjective well-being in urban adolescents of color. *Cult. Divers. Ethn. Minor. Psychol.* **2008**, *14*, 224–233. [CrossRef]
11. Diener, E.; Scollon, C.N.; Lucas, R.E. The evolving concept of subjective well-being: The multifaceted nature of happiness. In *Assessing Well-Being: The Collected Works of Ed Diener*; Diener, E., Ed.; Springer: Dordrecht, The Netherlands, 2009; pp. 67–100.
12. Ben-Zur, H. Happy adolescents: The link between subjective well-being, internal resources, and parental factors. *J. Youth Adolesc.* **2003**, *32*, 67–79. [CrossRef]
13. Frisch, M.B.; Cornell, J.; Villanueva, M.; Retzlaff, P.J. Clinical validation of the Quality of Life Inventory. A measure of life satisfaction for use in treatment planning and outcome assessment. *Psychol. Assess.* **1992**, *4*, 92–101. [CrossRef]
14. Leung, J.T.; Shek, D.T.; Li, L. Mother–child discrepancy in perceived family functioning and adolescent developmental outcomes in families experiencing economic disadvantage in Hong Kong. *J. Youth Adolesc.* **2016**, *45*, 2036–2048. [CrossRef] [PubMed]
15. Olson, D.H. Circumplex Model of Marital and Family System. *J. Fam. Ther.* **2000**, *22*, 144–167. [CrossRef]
16. Epstein, N.B.; Bishop, D.S.; Levin, S. The McMaster model of family functioning. *J. Marital Fam. Ther.* **1978**, *4*, 19–31. [CrossRef]
17. Fang, X.; Xu, J.; Sun, L.; Zhang, J. Family functioning: Theory, influencing factors, and its relationship with adolescent social adjustment. *Adv. Psychol. Sci.* **2004**, *12*, 544–553.
18. Chui, W.H.; Wong, M.Y. Avoiding disappointment or fulfilling expectation: A study of gender, academic achievement, and family functioning among Hong Kong adolescents. *J. Child Fam. Stud.* **2017**, *26*, 48–56. [CrossRef]
19. Morris, M.L.; Blanton, P. Predictors of family functioning among clergy and spouses: Influences of social context and perceptions of work-related stressors. *J. Child Fam. Stud.* **1998**, *7*, 27–41. [CrossRef]
20. Yuan, X.; Zhuo, R.; Li, G. Migration patterns, family functioning, and life satisfaction among migrant children in China: A mediation model. *Asian J. Soc. Psychol.* **2019**, *22*, 113–120. [CrossRef]
21. Schnettler, B.; Miranda-Zapata, E.; Grunert, K.G.; Grønhøj, A.; Jiménez, P.; Lobos, G.; Orellana, L.; Hueche, C. Satisfaction with life, family and food in adolescents: Exploring moderating roles of family-related factors. *Curr. Psychol.* **2020**, *41*, 802–815. [CrossRef]
22. Shek, D.T.; Liu, T.T. Life satisfaction in junior secondary school students in Hong Kong: A 3-year longitudinal study. *Soc. Indic. Res.* **2014**, *117*, 777–794. [CrossRef]
23. Epstein, N.; Baldwin, L.; Bishop, D. The McMaster Family Assessment Device. *J. Marital Fam. Ther.* **1983**, *9*, 171–180. [CrossRef]
24. Shek, D.T. A longitudinal study of perceived family functioning and adolescent adjustment in Chinese adolescents with economic disadvantage. *J. Fam. Issues* **2005**, *26*, 518–543. [CrossRef]
25. Bennefield, Z. School and family correlates of positive affect in a nationally representative sample of US adolescents. *Child Adolesc. Soc. Work J.* **2018**, *35*, 541–548. [CrossRef]
26. Holder, M.D.; Coleman, B. The contribution of social relationships to children's happiness. *J. Happiness Stud.* **2009**, *10*, 329–349. [CrossRef]

27. Verrastro, V.; Ritella, G.; Saladino, V.; Pistella, J.; Baiocco, R.; Fontanesi, L. Personal and family correlates to happiness amongst Italian children and preadolescents. *Int. J. Emot. Educ.* **2020**, *12*, 48–64.
28. Raboteg-Šarić, Z.; Brajša-Žganec, A.; Šakić, M. Life satisfaction in adolescents: The effects of perceived family economic status, self-esteem and quality of family and peer relationships. *Društvena Istraživanja Časopis Za Opća Društvena Pitanja* **2009**, *18*, 547–564.
29. Huebner, E.S. Correlates of life satisfaction in children. *Sch. Psychol. Q.* **1991**, *6*, 103–111. [CrossRef]
30. Jackson, S.; Bijstra, J.; Oostra, L.; Bosma, H. Adolescents' perceptions of communication with parents relative to specific aspects of relationships with parents and personal development. *J. Adolesc.* **1998**, *21*, 305–322. [CrossRef]
31. Barnes, H.L.; Olson, D.H. Parent-adolescent communication and the circumplex model. *Child Dev.* **1985**, *56*, 438–447. [CrossRef]
32. Navarro, D.; Montserrat, C.; Malo, S.; Gonzàlez, M.; Casas, F.; Crous, G. Subjective well-being: What do adolescents say? *Child Fam. Soc. Work* **2017**, *22*, 175–184. [CrossRef]
33. Bradley, R.; Corwyn, R. Life satisfaction among European American, African American, Chinese American, Mexican American, and Dominican American adolescents. *Int. J. Behav. Dev.* **2004**, *28*, 385–400. [CrossRef]
34. Huebner, E.S. Further validation of the Students' Life Satisfaction Scale: The independence of satisfaction and affect ratings. *J. Psychoeduc. Assess.* **1991**, *9*, 363–368. [CrossRef]
35. Alcantara, S.C.; González-Carrasco, M.; Montserrat, C.; Viñas, F.; Casas, F.; Abreu, D.P. Peer violence in the school environment and its relationship with subjective well-being and perceived social support among children and adolescents in Northeastern Brazil. *J. Happiness Stud.* **2017**, *18*, 1507–1532. [CrossRef]
36. Bernal, A.C.A.L.; Arocena, F.A.L.; Ceballos, J.C.M. Bienestar subjetivo y satisfacción con la vida de familia en adolescentes mexicanos de bachillerato. *Psicol. Iberoam.* **2011**, *19*, 17–26. [CrossRef]
37. Vera, E.M.; Moallem, B.I.; Vacek, K.R.; Blackmon, S.K.; Coyle, L.D.; Gomez, K.L.; Lamp, K.; Langrehr, K.J.; Luginbuhl, P.; Mull, M.K.; et al. Gender differences in contextual predictors of urban, early adolescents' subjective well-being. *J. Multicult. Couns. Dev.* **2012**, *40*, 174–183. [CrossRef]
38. Veronese, G.; Castiglioni, M.; Barola, G.; Said, M. Living in the shadow of occupation: Life satisfaction and positive emotion as protective factors in a group of Palestinian school children. *Child. Youth Serv. Rev.* **2012**, *34*, 225–233. [CrossRef]
39. Sabolova, K.; Birdsey, N.; Stuart-Hamilton, I.; Cousins, A.L. A cross-cultural exploration of children's perceptions of well-being: Understanding protective and risk factors. *Child. Youth Serv. Rev.* **2020**, *110*, 104771. [CrossRef]
40. Bronfenbrenner, U. *The Ecology of Human Development. Experiments by Nature and Design*; Harvard University Press: Cambridge, MA, USA, 1979.
41. López-Pérez, B.; Fernández-Castilla, B. Children's and adolescents' conceptions of happiness at school and its relation with their own happiness and their academic performance. *J. Happiness Stud.* **2018**, *19*, 1811–1830. [CrossRef]
42. Rees, G. Family structure and children's subjective well-being: A comparative analysis in eight European countries. *Enfance* **2017**, *1*, 13–35. [CrossRef]
43. Shek, D.T.; Liang, L.Y. Psychosocial factors influencing individual well-being in Chinese adolescents in Hong Kong: A six-year longitudinal study. *Appl. Res. Qual. Life* **2018**, *13*, 561–584. [CrossRef] [PubMed]
44. Song, J.; Ma, C.; Gu, C.; Zuo, B. What matters most to the left-behind children's life satisfaction and school engagement: Parent or grandparent? *J. Child Fam. Stud.* **2018**, *27*, 2481–2490. [CrossRef]
45. Diener, E.; Seligman, M.E. Very happy people. *Psychol. Sci.* **2002**, *13*, 81–84. [CrossRef] [PubMed]
46. Shek, D.T. Family environment and adolescent psychological well-being, school adjustment, and problem behavior: A pioneer study in a Chinese context. *J. Genet. Psychol.* **1997**, *158*, 113–128. [CrossRef]
47. Paradis, A.D.; Reinherz, H.Z.; Giaconia, R.M.; Beardslee, W.R.; Ward, K.; Fitzmaurice, G.M. Long-term impact of family arguments and physical violence on adult functioning at age 30 years: Findings from the Simmons Longitudinal Study. *J. Am. Acad. Child Adolesc. Psychiatry* **2009**, *48*, 290–298. [CrossRef]
48. Goldbeck, L.; Schmitz, T.G.; Besier, T.; Herschbach, P.; Henrich, G. Life satisfaction decreases during adolescence. *Qual. Life Res.* **2007**, *16*, 969–979. [CrossRef]
49. Gilman, R.; Huebner, S. A review of life satisfaction research with children and adolescents. *Sch. Psychol. Q.* **2003**, *18*, 192–205. [CrossRef]
50. Moher, D.; Shamseer, L.; Clarke, M.; Ghersi, D.; Liberati, A.; Petticrew, M.; Shekelle, P.; Stewart, L.A.; PRISMA-P Group. Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Syst. Rev.* **2015**, *4*, 1. [CrossRef]
51. Piers, E.V.; Herzberg, D.S. *Piers-Harris 2. Piers-Harris Children's Self-Concept Scale*, 2nd ed.; Western Psychological Services (WPS): Los Angeles, CA, USA, 2002.
52. Lyubomirsky, S.; Sheldon, K.M.; Schkade, D. Pursuing happiness: The architecture of sustainable change. *Rev. Gen. Psychol.* **2005**, *9*, 111–131. [CrossRef]
53. Lu, L. "Cultural fit": Individual and societal discrepancies in values, beliefs, and subjective well-being. *J. Soc. Psychol.* **2006**, *146*, 203–221. [CrossRef]
54. Argyle, M. *The Psychology of Happiness*, 2nd ed.; Routledge: London, UK, 2001.
55. Fordyce, M.W. A review of research on the happiness measures: A sixty second index of happiness and mental health. *Soc. Indic. Res.* **1988**, *20*, 355–381. [CrossRef]
56. Abdel-Khalek, A.M. Measuring happiness with a single-item scale. *Soc. Behav. Personal. Int. J.* **2006**, *34*, 139–150. [CrossRef]

57. Campbell, A.; Converse, P.E.; Rogers, W.L. *The Quality of American Life: Perceptions, Evaluations, and Satisfactions*; Russell Sage: New York, NY, USA, 1976.
58. Russell, J.A. Core affect and the psychological construction of emotion. *Psychol. Rev.* **2003**, *110*, 145–172. [CrossRef]
59. Watson, D.; Clark, L.A.; Tellegen, A. Development and validation of brief measures of positive and negative affect: The PANAS scales. *J. Personal. Soc. Psychol.* **1988**, *54*, 1063–1070. [CrossRef] [PubMed]
60. Heuchert, J.P.; McNair, D.M. *Profile of Mood States (POMS-2)*, 2nd ed.; Multi-Health Systems: North Tonawanda, NY, USA, 2012.
61. Segabinazi, J.D.; Zortea, M.; Zanon, C.; Bandeira, D.R.; Giacomoni, C.H.; Hutz, C.S. Escala de afetos positivos e negativos para adolescentes: Adaptação, normatização e evidências de validade. *Avaliação Psicol.* **2012**, *11*, 1–12.
62. Bradburn, N.M. *The Structure of Psychological Well-Being*; Aldine: Chicago, IL, USA, 1969.
63. Curran, S.L.; Andrykowski, M.A.; Studts, J.L. Short form of the profile of mood states (POMS-SF): Psychometric information. *Psychol. Assess.* **1995**, *7*, 80–83. [CrossRef]
64. Lorr, M.; McNair, D.M. *The Profile of Mood States Manual*; Educational and Industrial Testing Service: San Francisco, CA, USA, 1971.
65. Cummins, R.A.; Lau, A.L.D. *Personal Well-Being Index—School Children (PWI-SC) (English) Manual*; Deakin University, School of Psychology: Melbourne, AU, USA, 2005.
66. Grob, A.; Lüthi, R.; Kaiser, F.G.; Flammer, A. Berner Fragebogen zum Wohlbefinden Jugendlicher (BFW) [The Bern Subjective Well-Being Questionnaire for Adolescents (BFW)]. *Diagnostica* **1991**, *37*, 66–75.
67. Diener, E.D.; Emmons, R.A.; Larsen, R.J.; Griffin, S. The satisfaction with life scale. *J. Personal. Assess.* **1985**, *49*, 71–75. [CrossRef]
68. Cantril, H. *The Pattern of Human Concerns*; Rutgers University Press: New Brunswick, NJ, USA, 1965.
69. Olson, D.H.; Barnes, H.L. *Quality of Life, Adolescent Form*; Family Social Science, University of Minnesota: St. Paul, MN, USA, 1982.
70. Huebner, E.S. Preliminary development and validation of a multidimensional life satisfaction scale for children. *Psychol. Assess.* **1994**, *6*, 149–158. [CrossRef]
71. Seligson, J.L.; Huebner, E.S.; Valois, R.F. Preliminary validation of the brief multidimensional students' life satisfaction scale (BMSLSS). *Soc. Indic. Res.* **2003**, *61*, 121–145. [CrossRef]
72. Andrews, F.M.; Robinson, J.P. Measures of subjective well-being. In *Measures of Personality and Social Psychological Attitudes*; Robinson, J.P., Shaver, P.R., Wrightsman, L.S., Eds.; Academic Press: San Diego, CA, USA, 1991; pp. 61–114.
73. Ljubetić, M.; Reić Ercegovac, I. The relationship between mindful parenting, cognitive parental awareness, and the subjective well-being of adolescents. *Metod. Ogl.* **2020**, *27*, 103–126. [CrossRef]
74. Topp, C.W.; Østergaard, S.D.; Søndergaard, S.; Bech, P. The WHO-5 Well-Being Index: A systematic review of the literature. *Psychother. Psychosom.* **2015**, *84*, 167–176. [CrossRef]
75. Grob, A. Subjective well-being and significant life-events across the life span. *Swiss J. Psychol.* **1995**, *54*, 3–18.
76. Anguas, A. Identificación y validación del significado del bienestar subjetivo en México: Fundamentos para el desarrollo de un instrumento de medición. *Interam. J. Psychol.* **2001**, *35*, 163–183.
77. Yun, Y.; Choi, J. A child's family relationship and emotional well-being through self-regulated learning in South Korea. *Can. J. Fam. Youth* **2018**, *10*, 1–23. [CrossRef]
78. Shek, D.T. Assessment of family functioning in Chinese adolescents: The Chinese Family Assessment Instrument. In *International Perspectives on Child and Adolescent Mental Health*; Singh, N.N., Ollendick, T.H., Singh, A.N., Eds.; Elsevier: Amsterdam, The Netherlands, 2002; pp. 297–316.
79. Beavers, W.R.; Hampson, R.B. *Successful Families: Assessment and Intervention*; Norton: New York, NY, USA, 1990.
80. Reynolds, C.R.; Kamphaus, R.W. *Manual for the Behavioral Assessment System for Children*; American Guidance Service: Circle Pines, MN, USA, 1992.
81. Ellonen, N.; Kääriäinen, J.; Salmi, V.; Sariola, H. *Lasten ja Nuorten Väkivaltakokemukset [The Experiences of Violence among Children and Young People]*; Police College of Finland: Tampere, Finland, 2008.
82. Dinisman, T.; Rees, G. *Findings from the First Wave of Data Collection*; Children's Worlds: International Survey of Children's Well-Being (ISCWeB); Jacobs Foundation: Zürich, Switzerland, 2014; Available online: http://www.isciweb.org (accessed on 23 September 2022).
83. Ren, Y.; Lin, M.P.; Liu, Y.H.; Zhang, X.; Wu, J.Y.W.; Hu, W.H.; Xu, S.; You, J. The mediating role of coping strategy in the association between family functioning and nonsuicidal self-injury among Taiwanese adolescents. *J. Clin. Psychol.* **2018**, *74*, 1246–1257. [CrossRef]
84. Smilkstein, G. The family APGAR: A proposal for a family function test and its use by physicians. *J. Fam. Pract.* **1978**, *6*, 1231–1239.
85. Barnhill, L.R. Healthy family systems. *Fam. Coord.* **1979**, *28*, 94–100. [CrossRef]
86. Hovestadt, A.J.; Anderson, W.T.; Piercy, F.P.; Cochran, S.W.; Fine, M. A family of-origin scale. *J. Marital Fam. Ther.* **1985**, *11*, 287–297. [CrossRef]
87. Flouri, E.; Buchanan, A. Life satisfaction in teenage boys: The moderating role of father involvement and bullying. *Aggress. Behav.* **2002**, *28*, 126–133. [CrossRef]
88. Mayseless, O.; Wiseman, H.; Hai, I. Adolescents' relationships with father, mother, and same-gender friend. *J. Adolesc. Res.* **1998**, *13*, 101–123. [CrossRef]
89. Shek, D.T. A longitudinal study of the relations of family factors to adolescent psychological symptoms, coping resources, school behavior, and substance abuse. *Int. J. Adolesc. Med. Health* **1998**, *10*, 155–184. [CrossRef] [PubMed]

90. Lawler, M.J.; Choi, C.; Yoo, J.; Lee, J.; Roh, S.; Newland, L.A.; Giger, J.Y.; Sudhagoni, R.; Brockevelt, B.L.; Lee, B.J. Children's subjective well-being in rural communities of South Korea and the United States. *Child. Youth Serv. Rev.* **2018**, *85*, 158–164. [CrossRef]
91. Newland, L.A.; Giger, J.T.; Lawler, M.J.; Roh, S.; Brockevelt, B.L.; Schweinle, A. Multilevel analysis of child and adolescent subjective well-being across 14 countries: Child-and country-level predictors. *Child Dev.* **2019**, *90*, 395–413. [CrossRef] [PubMed]
92. Olson, D.H.; Portner, J.; Lavee, Y. *FACES II Manual*; University of Minnesota at St Paul, Department of Family Social Science: Saint Paul, MN, USA, 1985.
93. Olson, D.H. Circumplex model VII: Validation studies and FACES III. *Fam. Process* **1986**, *25*, 337–351. [CrossRef]
94. Baiocco, R.; Cacioppo, M.; Laghi, F.; Tafà, M. Factorial and construct validity of FACES IV among Italian adolescents. *J. Child Fam. Stud.* **2013**, *22*, 962–970. [CrossRef]
95. Olson, D.H. FACES IV and the circumplex model: Validation study. *J. Marital Fam. Ther.* **2011**, *37*, 64–80. [CrossRef]
96. Bloom, B.L. A factor analysis of self-report measures of family functioning. *Fam. Process* **1985**, *24*, 225–239. [CrossRef]
97. Fok, C.C.T.; Allen, J.; Henry, D.; Team, P.A. The Brief Family Relationship Scale: A brief measure of the relationship dimension in family functioning. *Assessment* **2014**, *21*, 67–72. [CrossRef]
98. Cooper, J.E.; Holman, J.; Braithwaite, V.A. Self-esteem and family cohesion: The child's perspective and adjustment. *J. Marriage Fam.* **1983**, *45*, 153–159. [CrossRef]
99. Search Institute. User Guide for the Attitudes & Behaviors Survey. 2016. Available online: https://www.search-institute.org/wp-content/uploads/2017/11/AB-Survey-User-Guide-1.pdf (accessed on 23 September 2022).
100. Segabinazi, J.D.; Giacomoni, C.H.; Dias, A.C.G.; Teixeira, M.A.P.; Moraes, D.A.D.O. Desenvolvimento e validação preliminar de uma escala multidimensional de satisfação de vida para adolescentes. *Psicol. Teor. E Pesqui.* **2010**, *26*, 653–659. [CrossRef]
101. Casas, F.; Bello, A.; González, M.; Aligué, M. Children's subjective well-being measured using a composite index: What impacts Spanish first-year secondary education students' subjective well-being? *Child Indic. Res.* **2013**, *6*, 433–460. [CrossRef]
102. Zabriskie, R.B.; McCormick, B.P. Parent and child perspectives of family leisure involvement and satisfaction with family life. *J. Leis. Res.* **2003**, *35*, 163–189. [CrossRef]
103. Barraca, J.; Yarto, L.L.; Olea, J. Psychometric properties of a new family life satisfaction scale. *Eur. J. Psychol. Assess.* **2000**, *16*, 98–106. [CrossRef]
104. Cummins, R.A.; Eckersley, R.; Pallant, J.; Van Vugt, J.; Misajon, R. Developing a national index of subjective well-being: The Australian Unity Wellbeing Index. *Soc. Indic. Res.* **2003**, *64*, 159–190. [CrossRef]
105. Vulić-Prtorić, A. Skala kvalitete obiteljskih interakcija-KOBI. U: A. Proroković i sur.(Ur.). *Zbir. Psihol. Skala I Upitnika* **2004**, *2*, 24–33.
106. Robin, A.L.; Foster, S.L. *Negotiating Parent-Adolescent Conflict*; Guilford: New York, NY, USA, 1989.
107. Lee, R.M.; Choe, J.; Kim, G.; Ngo, V. Construction of the Asian American Family Conflicts Scale. *J. Couns. Psychol.* **2000**, *47*, 211–222. [CrossRef]
108. Reynolds, B.M.; Robles, T.F.; Repetti, R.L. Measurement reactivity and fatigue effects in daily diary research with families. *Dev. Psychol.* **2016**, *52*, 442–456. [CrossRef]
109. Furman, W.; Buhrmester, D. Methods and measures: The network of relationships inventory: Behavioral systems version. *Int. J. Behav. Dev.* **2009**, *33*, 470–478. [CrossRef]
110. Gao, M.; Potwarka, L. Investigating the role of family travel and family functioning in promoting Chinese adolescents' subjective well-being. *J. Leis. Res.* **2021**, *52*, 487–507. [CrossRef]
111. Hamama, L.; Arazi, Y. Aggressive behaviour in at-risk children: Contribution of subjective well-being and family cohesion. *Child Fam. Soc. Work* **2012**, *17*, 284–295. [CrossRef]
112. Lietz, P.; Dix, K.L.; Tarabashkina, L.; O'Grady, E.; Ahmed, S.K. Family fun: A vital ingredient of early adolescents having a good life. *J. Fam. Stud.* **2020**, *26*, 459–476. [CrossRef]
113. Fosco, G.M.; Lydon-Staley, D.M. Implications of family cohesion and conflict for adolescent mood and well-being: Examining within-and between-family processes on a daily timescale. *Fam. Process* **2020**, *59*, 1672–1689. [CrossRef] [PubMed]
114. Estévez López, E.; Jiménez Gutiérrez, T.I.; Moreno Ruiz, D. Aggressive behavior in adolescence as a predictor of personal, family, and school adjustment problems. *Psicothema* **2018**, *30*, 66–73.
115. Braithwaite, V.; Devine, C. Life satisfaction and adjustment of children of alcoholics: The effects of parental drinking, family disorganization and survival roles. *Br. J. Clin. Psychol.* **1993**, *32*, 417–429. [CrossRef]
116. Dost-Gözkan, A. The gratification of psychological needs and well-being among turkish adolescents: An examination of direct and indirect links. *J. Res. Adolesc.* **2021**, *31*, 52–70. [CrossRef]
117. Lin, W.H.; Yi, C.C. The effect of family cohesion and life satisfaction during adolescence on later adolescent outcomes: A prospective study. *Youth Soc.* **2019**, *51*, 680–706. [CrossRef]
118. Manzi, C.; Vignoles, V.L.; Regalia, C.; Scabini, E. Cohesion and enmeshment revisited: Differentiation, identity, and well-being in two European cultures. *J. Marriage Fam.* **2006**, *68*, 673–689. [CrossRef]
119. Merkaš, M.; Brajša-Žganec, A. Children with different levels of hope: Are there differences in their self-esteem, life satisfaction, social support, and family cohesion? *Child Indic. Res.* **2011**, *4*, 499–514. [CrossRef]
120. Sun, X.; Tian, Y.; Zhang, Y.; Xie, X.; Heath, M.A.; Zhou, Z. Psychological development and educational problems of left-behind children in rural China. *Sch. Psychol. Int.* **2015**, *36*, 227–252. [CrossRef]

121. Salewski, C. Illness representations in families with a chronically ill adolescent: Differences between family members and impact on patients' outcome variables. *J. Health Psychol.* **2003**, *8*, 587–598. [CrossRef] [PubMed]
122. Mallette, J.K.; O'Neal, C.W.; Winkelman Richardson, E.; Mancini, J.A. When fathers are involved: Examining relational and psychosocial health among military families. *Fam. Process* **2021**, *60*, 602–622. [CrossRef] [PubMed]
123. Rhatigan, K.J. The Relationships between Family Functioning, Adolescent Delinquent Behavior, and Life Satisfaction in Single- and Dual-Career Families. Ph.D. Dissertation, Hofstra University, Hempstead, NY, USA, 2001.
124. Silva, K.; Ford, C.A.; Miller, V.A. Daily parent–teen conflict and parent and adolescent well-being: The moderating role of daily and person-level warmth. *J. Youth Adolesc.* **2020**, *49*, 1601–1616. [CrossRef]
125. Wang, M.T.; Henry, D.A.; Del Toro, J.; Scanlon, C.L.; Schall, J.D. COVID-19 employment status, dyadic family relationships, and child psychological well-being. *J. Adolesc. Health* **2021**, *69*, 705–712. [CrossRef]
126. Khurana, N. Adolescent Life Satisfaction in Relation to Stress Coping Parental Bonding and Family Conflict. Ph.D. Dissertation, Panjab University, Chandigarh, India, 2011.
127. Cruz, A.; Piña-Watson, B. *Family Conflict & Latina/o Youth Depressive Symptoms, Hopelessness, Suicidality, & Life Satisfaction: An Examination of Gender Role Values*; Research Posters; Texas Tech University: Lubbock, TX, USA, 2017.
128. Rodríguez-Rivas, M.; Varela, J.J.; González, C.; Chuecas, M.J. The Role of Family Support and Conflict as Predictors of Cyberbullying and Subjective Well-Being during the COVID-19 Period for Chilean Adolescents. *Heliyon* **2021**, *8*. [CrossRef]
129. Shek, D.T. A longitudinal study of the relations between parent-adolescent conflict and adolescent psychological well-being. *J. Genet. Psychol.* **1998**, *159*, 53–67. [CrossRef] [PubMed]
130. Shek, D.T.; Tsoi, K.W.; Lau, P.S.; Tsang, S.K.; Lam, M.C.; Lam, C.M. Psychological well-being, school adjustment and problem behavior in Chinese adolescents: Do parental qualities matter? *Int. J. Adolesc. Med. Health* **2001**, *13*, 231–244. [CrossRef]
131. Shek, D.T. The relation of parent-adolescent conflict to adolescent psychological well-being, school adjustment, and problem behavior. *Soc. Behav. Personal. Int. J.* **1997**, *25*, 277–290. [CrossRef]
132. Bahrassa, N.F.; Syed, M.; Su, J.; Lee, R.M. Family conflict and academic performance of first-year Asian American undergraduates. *Cult. Divers. Ethn. Minor. Psychol.* **2011**, *17*, 415–426. [CrossRef]
133. Koster, N.; de Maat, D.A.; Schreur, M.; van Aken, M.A. How borderline personality characteristics affect adolescents' life satisfaction: The role of rejection sensitivity and social relations. *Eur. J. Dev. Psychol.* **2018**, *15*, 594–607. [CrossRef]
134. Shek, D.T. Psychometric properties of the Chinese version of the Family Awareness Scale. *J. Soc. Psychol.* **2002**, *142*, 61–72. [CrossRef] [PubMed]
135. Moore, G.F.; Cox, R.; Evans, R.E.; Hallingberg, B.; Hawkins, J.; Littlecott, H.J.; Long, S.J.; Murphy, S. School, peer and family relationships and adolescent substance use, subjective well-being and mental health symptoms in Wales: A cross sectional study. *Child Indic. Res.* **2018**, *11*, 1951–1965. [CrossRef] [PubMed]
136. Cacioppo, M.; Pace, U.; Zappulla, C. Parental psychological control, quality of family context and life satisfaction among Italian adolescents. *Child Indic. Res.* **2013**, *6*, 179–191. [CrossRef]
137. Park, H.S.; Koo, H.Y.; Schepp, K.G. Predictors of suicidal ideation for adolescents by gender. *J. Korean Acad. Nurs.* **2005**, *35*, 1433–1442. [CrossRef]
138. Jiménez, T.I.; Musitu, G.; Ramos, M.J.; Murgui, S. Community involvement and victimization at school: An analysis through family, personal and social adjustment. *J. Community Psychol.* **2009**, *37*, 959–974. [CrossRef]
139. Carrascosa, L.; Cava, M.J.; Buelga, S. Perfil psicosocial de adolescentes españoles agresores y víctimas de violencia de pareja. *Univ. Psychol.* **2018**, *17*, 1–10. [CrossRef]
140. Cava, M.J.; Buelga, S.; Musitu, G. Parental communication and life satisfaction in adolescence. *Span. J. Psychol.* **2014**, *17*, E98. [CrossRef]
141. Soares, A.S.; Pais-Ribeiro, J.L.; Silva, I. Developmental assets predictors of life satisfaction in adolescents. *Front. Psychol.* **2019**, *10*, 1–11. [CrossRef]
142. Caycho-Rodríguez, T.; Ventura-León, J.; Barboza-Palomino, M.; Reyes-Bossio, M.; Gallegos, W.L.A.; Cadena, C.H.G.; Cabrera-Orosco, I.; Ayala, J.; Morgado-Gallardo, K.; Cahua, J.C.H. Validez e invarianza factorial de una medida breve de Satisfacción con la Vida Familiar. *Univ. Psychol.* **2018**, *17*, 1–17. [CrossRef]
143. Kim, S.; Main, G. Comparing child subjective well-being in South Korea and the UK: Testing an ecological systems approach. *Child Indic. Res.* **2017**, *10*, 19–32. [CrossRef]
144. Sastre, M.T.M.; Ferrière, G. Family decline and the subjective well-being of adolescents. *Soc. Indic. Res.* **2000**, *49*, 69–82. [CrossRef]
145. Ingelmo, R.M.G.; Litago, J.D.U. Satisfacción vital y relaciones familiares y con iguales en la adolescencia/Life satisfaction and family relationships and with peers in adolescence. *Cauriensia. Rev. Anu. Cienc. Eclesiásticas* **2018**, *13*, 243–258.
146. Park, N. Life satisfaction among Korean children and youth: A developmental perspective. *Sch. Psychol. Int.* **2005**, *26*, 209–223. [CrossRef]
147. Bedin, L.M.; Sarriera, J.C. A comparative study of the subjective well-being of parents and adolescents considering gender, age and social class. *Soc. Indic. Res.* **2015**, *120*, 79–95. [CrossRef]
148. Froh, J.J.; Yurkewicz, C.; Kashdan, T.B. Gratitude and subjective well-being in early adolescence: Examining gender differences. *J. Adolesc.* **2009**, *32*, 633–650. [CrossRef]
149. Gomez, K.L. Family Satisfaction, Ethnic Identity, and Subjective Well-Being among Urban Youth. Ph.D. Dissertation, Loyola University Chicago, Chicago, IL, USA, 2011.

150. Seligson, J.L.; Huebner, E.S.; Valois, R.F. An investigation of a brief life satisfaction scale with elementary school children. *Soc. Indic. Res.* **2005**, *73*, 355–374. [CrossRef]
151. Bakalım, O.; Taşdelen-Karçkay, A. Positive and negative affect as predictors of family life satisfaction. *J. Hum. Sci.* **2015**, *12*, 1330–1337. [CrossRef]
152. Galarce Muñoz, M.I.; Pérez-Salas, C.P.; Sirlopú, D. Análisis comparativo de la participación escolar y bienestar subjetivo en estudiantes con y sin discapacidad en Chile. *Psykhe* **2020**, *29*, 1–16. [CrossRef]
153. Gil da Silva, D.; Dell'Aglio, D. Avaliação do bem-estar subjetivo em adolescentes: Relações com sexo e faixa etária. *Análise Psicológica* **2018**, *36*, 133–143. [CrossRef]
154. Casas, F.; Sarriera, J.C.; Alfaro, J.; González, M.; Bedin, L.; Abs, D.; Figuer, C.; Valdenegro, B. Reconsidering life domains that contribute to subjective well-being among adolescents with data from three countries. *J. Happiness Stud.* **2015**, *16*, 491–513. [CrossRef]
155. Da Costa, M.P.; Neto, F. Psychometric evaluation of the Portuguese satisfaction with family life scale. *Meas. Instrum. Soc. Sci.* **2019**, *1*, 7. [CrossRef]
156. Ercegovac, I.R.; Maglica, T.; Ljubetić, M. The relationship between self-esteem, self-efficacy, family and life satisfaction, loneliness and academic achievement during adolescence. *Croat. J. Educ.* **2021**, *23*, 65–83.
157. Irmak, S.; Kuruüzüm, A. Turkish validity examination of the multidimensional students' life satisfaction scale. *Soc. Indic. Res.* **2009**, *92*, 13–23. [CrossRef]
158. Moreno-Maldonado, C.; Jiménez-Iglesias, A.; Camacho, I.; Rivera, F.; Moreno, C.; Matos, M.G. Factors associated with life satisfaction of adolescents living with employed and unemployed parents in Spain and Portugal: A person focused approach. *Child. Youth Serv. Rev.* **2020**, *110*, 104740. [CrossRef]
159. Migliorini, L.; Tassara, T.; Rania, N. A Study of Subjective Well-Being and Life Satisfaction in Italy: How are Children doing at 8 years of Age? *Child Indic. Res.* **2019**, *12*, 49–69. [CrossRef]
160. Schnettler, B.; Grunert, K.G.; Lobos, G.; Miranda-Zapata, E.; Denegri, M.; Hueche, C. Maternal food-related practices, quality of diet, and well-being: Profiles of Chilean mother-adolescent dyads. *J. Nutr. Educ. Behav.* **2018**, *50*, 776–787. [CrossRef]
161. Schnettler, B.; Miranda, H.; Miranda-Zapata, E.; Lobos, G.; Denegri, M.; Lapo, M.; Ares, G.; Hueche, C. Diet quality and satisfaction with different domains of life in single-and dual-headed households: Comparing mother-adolescent dyads. *Child. Youth Serv. Rev.* **2018**, *89*, 124–131. [CrossRef]
162. Schnettler, B.; Miranda-Zapata, E.; Grunert, K.G.; Lobos, G.; Denegri, M.; Hueche, C. Weight fluctuation and diet concern negatively affect food-related life satisfaction in Chilean male and female adolescents. *Front. Psychol.* **2018**, *9*, 1–14. [CrossRef]
163. Schnettler, B.; Miranda-Zapata, E.; Lobos, G.; Saracostti, M.; Denegri, M.; Lapo, M.; Hueche, C. The mediating role of family and food-related life satisfaction in the relationships between family support, parent work-life balance, and adolescent life satisfaction in dual-earner families. *Int. J. Environ. Res. Public Health* **2018**, *15*, 2549. [CrossRef]
164. Schnettler, B.; Grunert, K.G.; Lobos, G.; Miranda-Zapata, E.; Denegri, M.; Hueche, C. Exploring relationships between family food behaviour and well-being in single-headed and dual-headed households with adolescent children. *Curr. Psychol.* **2021**, *40*, 585–600. [CrossRef]
165. Schnettler, B.; Grunert, K.G.; Orellana, L.; Miranda, H.; Lobos, G.; Miranda-Zapata, E.; Lapo, M.; Hueche, C. The diverging patterns of life satisfaction between families: A latent profile analysis in dual-earner parents with adolescents. *Curr. Psychol.* **2022**, *41*, 7240–7257. [CrossRef]
166. Tian, L.; Zhang, J.; Huebner, E.S. Preliminary validation of the brief multidimensional students' life satisfaction scale (BMSLSS) among Chinese elementary school students. *Child Indic. Res.* **2015**, *8*, 907–923. [CrossRef]
167. Weber, M.; Huebner, E.S. Early adolescents' personality and life satisfaction: A closer look at global vs. domain-specific satisfaction. *Personal. Individ. Differ.* **2015**, *83*, 31–36. [CrossRef]
168. Casas, F.; Figuer, C.; González, M.; Malo, S.; Alsinet, C.; Subarroca, S. The well-being of 12-to 16-year-old adolescents and their parents: Results from 1999 to 2003 Spanish samples. *Soc. Indic. Res.* **2007**, *83*, 87–115. [CrossRef]
169. Schnettler, B.; Lobos, G.; Miranda-Zapata, E.; Denegri, M.; Ares, G.; Hueche, C. Diet quality and satisfaction with life, family life, and food-related life across families: A cross-sectional pilot study with mother-father-adolescent triads. *Int. J. Environ. Res. Public Health* **2017**, *14*, 1313. [CrossRef]
170. Gross-Manos, D.; Shimoni, E.; Ben-Arieh, A. Subjective well-being measures tested with 12-year-olds in Israel. *Child Indic. Res.* **2015**, *8*, 71–92. [CrossRef]
171. Kaye-Tzadok, A.; Kim, S.S.; Main, G. Children's subjective well-being in relation to gender—What can we learn from dissatisfied children? *Child. Youth Serv. Rev.* **2017**, *80*, 96–104. [CrossRef]
172. Orejudo, S.; Balaguer, Á.; Osorio, A.; de la Rosa, P.A.; Lopez-del Burgo, C. Activities and relationships with parents as key ecological assets that encourage personal positive youth development. *J. Community Psychol.* **2021**, *50*, 896–915. [CrossRef]
173. Taşdelen-Karçkay, A. Family Life Satisfaction Scale—Turkish version: Psychometric evaluation. *Soc. Behav. Personal. Int. J.* **2016**, *44*, 631–639. [CrossRef]
174. González-Carrasco, M.; Casas, F.; Viñas, F.; Malo, S.; Gras, M.E.; Bedin, L. What leads subjective well-being to change throughout adolescence? An exploration of potential factors. *Child Indic. Res.* **2017**, *10*, 33–56. [CrossRef]
175. Jhang, F.H. Negative life events and life satisfaction: Exploring the role of family cohesion and self-efficacy among economically disadvantaged adolescents. *J. Happiness Stud.* **2021**, *22*, 2177–2195. [CrossRef]

176. Jiménez, T.I.; Estévez, E.; Murgui, S. Ambiente comunitario y actitud hacia la autoridad: Relaciones con la calidad de las relaciones familiares y con la agresión hacia los iguales en adolescentes. *An. De Psicol./Ann. Psychol.* **2014**, *30*, 1086–1095. [CrossRef]
177. Shek, D.T. The relation of parental qualities to psychological well-being, school adjustment, and problem behavior in Chinese adolescents with economic disadvantage. *Am. J. Fam. Ther.* **2002**, *30*, 215–230. [CrossRef]
178. Zhao, J.; Liu, X.; Wang, M. Parent–child cohesion, friend companionship and left-behind children's emotional adaptation in rural China. *Child Abus. Negl.* **2015**, *48*, 190–199. [CrossRef] [PubMed]
179. Shek, D.T. The relation of family functioning to adolescent psychological well-being, school adjustment, and problem behavior. *J. Genet. Psychol.* **1997**, *158*, 467–479. [CrossRef] [PubMed]
180. Shek, D.T. A longitudinal study of Hong Kong adolescents' and parents' perceptions of family functioning and well-being. *J. Genet. Psychol.* **1998**, *159*, 389–403. [CrossRef]
181. Shek, D.T. Individual and dyadic predictors of family functioning in a Chinese context. *Am. J. Fam. Ther.* **1999**, *27*, 49–61. [CrossRef]
182. Shek, D.T. Family functioning and psychological well-being, school adjustment, and problem behavior in Chinese adolescents with and without economic disadvantage. *J. Genet. Psychol.* **2002**, *163*, 497–502. [CrossRef]
183. Tang, W.C.; Lin, M.P.; You, J.; Wu, J.Y.W.; Chen, K.C. Prevalence and psychosocial risk factors of nonsuicidal self-injury among adolescents during the COVID-19 outbreak. *Curr. Psychol.* **2021**, 1–10. [CrossRef]
184. Zhou, J.; Fang, H.U.; Jing, W.U.; Zou, Z.Y.; Wang, Y.X.; Peng, H.C.; Vermund, S.H.; Hu, Y.F.; Ma, Y.H. Subjective well-being and family functioning among adolescents left behind by migrating parents in Jiangxi Province, China. *Biomed. Environ. Sci.* **2018**, *31*, 382–388.
185. Sari, E.P.; Dahlia, W. Family functioning and subjective well-being among adolescents. *Malays. Online J. Psychol. Couns.* **2018**, *5*, 43–51.
186. Heaven, P.; Searight, H.R.; Chastain, J.; Skitka, L.J. The relationship between perceived family health and personality functioning among Australian adolescents. *Am. J. Fam. Ther.* **1996**, *24*, 358–366. [CrossRef]
187. Syanti, W.R.; Rahmania, A.M. Does family functioning has correlation with Subjective Well-being? A study among Adolescent in Coastal Surabaya. In Proceedings of the International Conference of Psychology, Malang City, East Java, Indonesia, 6–7 September 2019.
188. Gilman, R.; Huebner, E.S. Characteristics of adolescents who report very high life satisfaction. *J. Youth Adolesc.* **2006**, *35*, 293–301. [CrossRef]
189. Lawler, M.J.; Newland, L.A.; Giger, J.T.; Roh, S. Ecological, relationship-based model of 12-year-old children's subjective well-being in the United States and ten other countries. *J. Soc. Res. Policy* **2015**, *6*, 57–70.
190. Lawler, M.J.; Newland, L.A.; Giger, J.T.; Roh, S.; Brockevelt, B.L. Ecological, relationship-based model of children's subjective well-being: Perspectives of 10-year-old children in the United States and 10 other countries. *Child Indic. Res.* **2017**, *10*, 1–18. [CrossRef]
191. Nevin, S.; Carr, A.; Shevlin, M.; Dooley, B.; Breaden, C. Factors related to well-being in Irish adolescents. *Ir. J. Psychol.* **2005**, *26*, 123–136. [CrossRef]
192. Newland, L.A.; Giger, J.T.; Lawler, M.J.; Carr, E.R.; Dykstra, E.A.; Roh, S. Subjective well-being for children in a rural community. *J. Soc. Serv. Res.* **2014**, *40*, 642–661. [CrossRef]
193. Newland, L.A.; Lawler, M.J.; Giger, J.T.; Roh, S.; Carr, E.R. Predictors of children's subjective well-being in rural communities of the United States. *Child Indic. Res.* **2015**, *8*, 177–198. [CrossRef]
194. Sarriera, J.C.; Casas, F.; dos Santos, B.R.; Bedin, L.M.; Gonzàlez, M. Subjective well-being and personal relationships in childhood: Comparison of Brazilian and Spanish children. *Interpersona Int. J. Pers. Relatsh.* **2018**, *12*, 91–106. [CrossRef]
195. Uusitalo-Malmivaara, L. Global and school-related happiness in Finnish children. *J. Happiness Stud.* **2012**, *13*, 601–619. [CrossRef]
196. Uusitalo-Malmivaara, L.; Lehto, J.E. Social factors explaining children's subjective happiness and depressive symptoms. *Soc. Indic. Res.* **2013**, *111*, 603–615. [CrossRef]
197. Willroth, E.C.; Atherton, O.E.; Robins, R.W. Life satisfaction trajectories during adolescence and the transition to young adulthood: Findings from a longitudinal study of Mexican-origin youth. *J. Personal. Soc. Psychol.* **2021**, *120*, 192–205. [CrossRef] [PubMed]
198. Goswami, H. Social relationships and children's subjective well-being. *Soc. Indic. Res.* **2012**, *107*, 575–588. [CrossRef]
199. Huebner, E.S.; Funk III, B.A.; Gilman, R. Cross-sectional and longitudinal psychosocial correlates of adolescent life satisfaction reports. *Can. J. Sch. Psychol.* **2000**, *16*, 53–64. [CrossRef]
200. Rask, K.; Åstedt-Kurki, P.; Paavilainen, E.; Laippala, P. Adolescent subjective well-being and family dynamics. *Scand. J. Caring Sci.* **2003**, *17*, 129–138. [PubMed]
201. Flouri, E.; Buchanan, A. The role of father involvement and mother involvement in adolescents' psychological well-being. *Br. J. Soc. Work* **2003**, *33*, 399–406. [CrossRef]
202. Shek, D.T. Psychological well-being, school adjustment, and problem behavior among Chinese adolescent boys from poor families: Does family functioning matter. In *Adolescent Boys: Exploring Diverse Cultures of Boyhood*; Way, N., Chu, J.Y., Eds.; New York University Press: New York, NY, USA, 2004; pp. 129–143.
203. Wang, J.; Gu, S.; Ye, B.; Gao, J.; Wang, F.; Dai, J.; Fu, H. The effect of migration and the hukou registration system on psychosocial domains and family functioning of children in Shanghai, China. *Int. Health* **2019**, *11* (Suppl. 1), 24–32. [CrossRef] [PubMed]

204. Garaigordobil, M.; Aliri, J. Parental socialization styles, parents' educational level, and sexist attitudes in adolescence. *Span. J. Psychol.* **2012**, *15*, 592–603. [CrossRef]
205. Altenburger, L.E.; Schoppe-Sullivan, S.J.; Kamp Dush, C.M. Associations between maternal gatekeeping and fathers' parenting quality. *J. Child Fam. Stud.* **2018**, *27*, 2678–2689. [CrossRef]

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ISBN 978-3-0365-6821-8