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Problematic Smartphone Use and Communication in Families with Adolescents

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Abstract: Research examining the relations among adolescent's problematic smartphone use, parent–adolescent conflicts about smartphone use, family communication, and adolescent communication skills is scarce. Thus, the study empirically examined a model of the direct and indirect effects of adolescents' problematic smartphone use on adolescent communication skills via family communication and parent–adolescent conflicts about smartphone use. The data used for the creation of this paper came from a sample of 284 adolescents (59.4% girls), aged 10 to 15, who participated in a four-wave longitudinal study (2021–2023) examining the effects of smartphone use on well-being and development. Adolescents rated their problematic smartphone use (wave 1), conflicts with parents about their smartphone use (wave 2), family communication (wave 3), and communication skills (wave 4). There was no support for the direct effect of problematic smartphone use on communication skills. Our path analysis showed a significant indirect effect of problematic smartphone use on communication skills via family communication. Our analysis also showed a significant direct effect of problematic smartphone use on conflicts between parents and adolescents about the time spent using smartphones and balancing activities with smartphone use. The findings of this study imply that excessive and extensive smartphone use may pose a risk factor for frequent parent–adolescent conflicts, poor family communication, and poor adolescent communication skills.

Keywords: problematic smartphone use; family communication; parent–adolescent conflict; communication skills; longitudinal study

Citation: Merkaš, M.; Bodrožić Selak, M.; Žulec Ivanković, A. Problematic Smartphone Use and Communication in Families with Adolescents. *Adolescents* **2024**, *4*, 107–119. https://doi.org/10.3390/adolescents4010008

Academic Editor: Daniel T.L. Shek

Received: 5 December 2023
Revised: 26 January 2024
Accepted: 2 February 2024
Published: 7 February 2024

1. Introduction

Smartphones are preferred mobile digital devices among adolescents around the world, and they are used for different purposes, e.g., to communicate, have fun, or rest [1]. In the U.S. and Western Europe, the prevalence of smartphone use among adolescents is similar [2]. Most adolescents aged 13 to 17 (95%) have access to smartphones in the U.S. [3]. Some data show that around 60% of U.S. teens (11–17 years old) spent more than 3 h a day using smartphones as of November 2022 [4]. Almost 8 out of 10 children aged 11 to 15 engage in screen-based activities more than recommended (up to 2 h of daily screen-time) during the workweek, weekend, and whole week in Croatia [5]. There are no clear guidelines about the use of smartphones among adolescents, and we still do not know much about the long-term effects of smartphone use on adolescents' development. Thus, researching adolescents' smartphone use in a constantly tech-changing world is needed for a better understanding of its effects on development and well-being, especially because, according to the 'digital Goldilocks hypothesis', adolescents who use digital technology in moderation might benefit from it in today's connected world, meaning that digital technology use is not inherently detrimental [6].

Smartphone use, indicated by the time of use, can predict smartphone dependency in late adolescence [7]. Along with excessive smartphone use, for example, not taking breaks from the smartphone, constantly checking for notifications, feeling empty without a

smartphone, and having problems concentrating on one's daily assignments because of smartphone use, are all smartphone-related addictive behaviors labeled in the literature as 'smartphone addiction' [8–10], 'problem mobile phone use' [11], 'problematic smartphone use' [12], and 'smartphone dependency' [7]. Although debate exists about whether these behaviors can or should be labelled under smartphone 'addiction' [12,13], studies have found some evidence for the effect of excessive and harmful smartphone use on well-being and quality of life in adolescence [14,15]. This excessive and harmful use of smartphones, namely smartphone-related addictive behaviors, will be labeled as problematic smartphone use (PSU) in this study.

PSU is operationalized in a way that includes tolerance, withdrawal, preoccupation, neglecting other activities, subjective loss of control, and continuing to use one's smartphone despite it causing them harm, all smartphone-related addictive behaviors [8–12,16]. Still, it is our choice not to use the term 'smartphone addiction' since 'addiction' is a clinical diagnosis of psychopathology that cannot be assessed and assigned to studied adolescents. In addition, when considering the development of addiction, it could be stated that problematic use is one of the stages of addiction development and cannot be used alternatively with the term "addiction". Moreover, it seems important not to over-pathologize smartphone use [17] because it can also have positive effects on some adolescents [15]. Conceptualizing excessive behaviors (e.g., Internet-related activities) within the addiction model can be a simplification of an individual's psychological functioning, offering only limited clinical relevance and potentially leading to nonrelevant standardized treatments [17].

Sohn et al. (2019) indicated that approximately one in four children and youth suffer from PSU, with those aged 17 to 19 having the highest odds for engaging in PSU [18]. PSU can manifest in several ways among adolescents (for example, through compulsive checking, excessive social media use, excessive messaging, information overload, sleep disturbances, withdrawal symptoms, and neglecting real-life activities). This excessive and extensive smartphone use can create problems for adolescents' relationships with their parents. For example, higher smartphone use in Korean adolescents aged 12–18 years was related to conflicts with family, conflicts with friends, poor academic performance, and suicide attempts in [19]. Furthermore, in this study, Kim et al. (2019) also showed that time spent on a smartphone was positively related to suicide attempts, even after adjusting for conflicts with family members or friends and poor academic performance due to smartphone use [19]. Another study showed a similar pattern of a positive relationship between the intensity of adolescents' smartphone use and parent–adolescent conflicts about smartphone use among adolescents in China [20].

Conflicts over screen use frequently stem from the long-standing developmental struggle between parents who want to keep their authority and autonomy-seeking adolescents [21]. Research clearly shows that frequent and intense conflicts are not normative in adolescence [22–24]. Generally, most parent–adolescent conflicts relate to everyday events in family life, such as tidying up one's room, dressing neatly, coming home on time, the duration of telephone conversations, and similar everyday issues. The origins of such conflicts may lie in the differences in the definition of these issues between parents and adolescents [22]. Parents may perceive such issues as a matter of social custom or convention, that is, as a matter of good or bad, and adolescents may perceive them as a matter of personal choice. In adolescence, the expectations of parents and adolescents also change, and failure to meet expectations can lead to conflict [22]. For example, the child may expect to have more freedom in adolescence, and parents may believe that more control over their child is needed in adolescence.

However, not all conflicts and quarrels are the same, especially in today's constantly changing tech world. Studies in the literature suggest that parents and adolescents quarrel about screen time, the effects of screen use, balance, rules, and reasons for screen use [21]. Most findings on the parent–child media debate are based on television viewing [25]. Families are facing increasingly challenging times because of disputes about constantly changing technology and screen time. Screen-use disputes can take many different forms,

such as deciding the right age to trust their child to have a smartphone; creating social media profiles on sites like Facebook, Instagram, and Snapchat; and using screen devices in the right way. These conflicts can potentially harm family communication, worsening family well-being and functioning. Families with good parent–adolescent communication perceive themselves as superior in terms of family cohesion, adaptability, and satisfaction [26]. Moreover, some evidence suggests that PSU is negatively associated with family well-being but partially mediated by family communication [27].

All the verbal and nonverbal behavior that takes place both inside the family and between the family and its social surroundings is referred to as family communication. Family communication is an important factor in family functioning because good family communication can balance a lot of problems in the family and help families adapt to new challenges [28]. Families are defined by their communication styles, which also teach members how to form meaning and how to communicate [29]. Research has shown that the quality of family communication is associated with adolescents' social competence, including their communication skills [28], which are related to the psychological well-being of adolescents [30]. Communication skills are socially learned behaviors that, when used in appropriate social contexts, encourage positive interactions while concurrently discouraging negative ones. Communication skills are the ability to verbally and nonverbally convey or share ideas and feelings effectively and efficiently.

Although some studies point to the small effects of digital media use on adolescents' well-being [2,31], we posit that these effects are not neglectful in the long run, because the accumulation of these short-term, potentially bad effects over a longer period can harm the mental health and well-being of adolescents. Gender and age differences have emerged in some previous studies regarding PSU, with studies reporting adolescent girls and older adolescents being more vulnerable to PSU [32–34], thus prompting us to explore the role of these variables in this study as well. Longitudinal studies examining the use of smartphones in adolescents and linking it to well-being are still scarce [14,35].

The present study aims to fill a gap in the literature by, for the very first time, exploring the relations among adolescent PSU, parent–adolescent conflicts about smartphone use, family communication, and adolescent communication skills. The aim of this study was to empirically examine a model of the direct and indirect effects of PSU on adolescent communication skills (Figure 1). Based on the model, we postulated and tested four hypotheses: H1: PSU directly negatively affects adolescent communication skills; H2: PSU use indirectly, via family communication, negatively affects adolescent communication skills; H3: PSU indirectly, via conflicts about smartphone use (conflicts related to content and activities, as well as conflicts related to time of use and the management of activities) between parents and adolescents, negatively affects adolescent communication skills; H4: PSU indirectly, via conflicts about smartphone use between parents and adolescents and family communication, negatively affects adolescent communication skills.

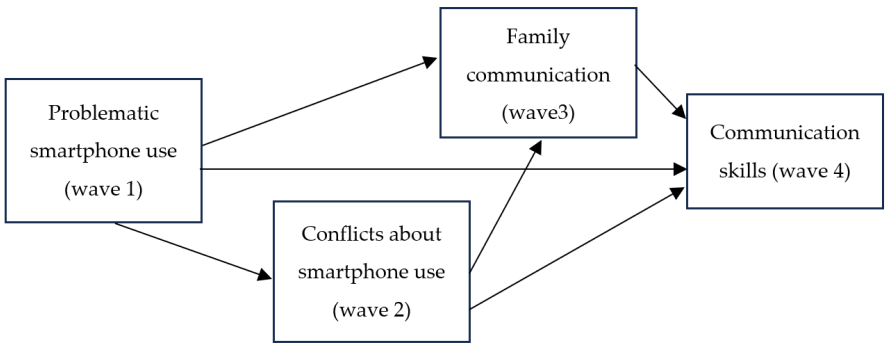

Figure 1. Proposed model of the direct and indirect effects of problematic smartphone use on adolescent communication skills.

2. Materials and Methods

2.1. Participants

The baseline sample consisted of 284 children (59.4% girls, 40.6% boys) from the longitudinal study (S2) of the research project "Digital technology in the family: patterns of behavior and effects on child development" (Table 1). The children were aged 10 to 15, with a mean age of 12.23 (*SD* = 1.21) in the first wave of the study, meaning that they were in early (10–13 years) and middle (14–17 years) adolescence. The sample used in this paper comprises the same children (*n* = 277; 59.8% of girls and 40.2% of boys), with their age at wave 4 ranging from 11.58 to 16.58 years, with a mean age of 13.81 (*SD* = 1.21). Further details on the sample are presented in Table 1.

Table 1. Sociodemographic and other relevant characteristics of participants at baseline (*N* = 284).

	n	**% (Valid)**
Gender [a]		
Girls	168	59.4
Boys	115	40.6
School grade		
Fifth	83	29.2
Sixth	61	21.5
Seventh	83	29.2
Eighth	57	20.1
Family structure [b]		
Two-parent	240	85.7
Single-parent	40	14.3
Mothers' education [c]		
Incomplete or completed elementary school	7	2.5
Completed high school	136	49.1
College and faculty	111	40.1
Postgraduate degree (master's degree or doctorate)	23	8.3
Fathers' education [c]		
Incomplete or completed elementary school	12	4.3
Completed high school	162	58.3
College and faculty	80	28.7
Postgraduate degree (master's degree or doctorate)	24	8.6
Mothers' employment status [d]		
Employed	235	85.1
Unemployed	39	14.1
Retired	2	0.7
Fathers' employment status [d]		
Employed	250	91.2
Unemployed	14	5.1
Retired	10	3.6

Table 1. *Cont.*

	n	% (Valid)
Family's monthly income per family member/person *		
Less than EUR 465	92	35.1
EUR 465–995	122	46.6
More than EUR 995	48	18.3

Note. [a] One child did not indicate gender. [b] Four children did not indicate family structure. [c] Six parents did not indicate fathers' education, and seven did not indicate mothers' education. [d] Ten parents did not indicate fathers' employment status, and seven did not indicate mothers' employment status. * Twenty-two parents did not respond to the question. In the first wave of data collection, the average Croatian net salary was EUR 946–1000, and the minimum Croatian net salary was EUR 454–498.

2.2. Measures

From the data set of the 4-wave longitudinal study, certain measures were taken to test the assumed model and the hypotheses mentioned earlier in this paper. A special aspect of the study is that not all measures were applied four times; some were applied only once or twice, given the proposed test hypotheses in the project. However, the same children participated in all four waves of the study.

2.2.1. Problematic Smartphone Use at Wave 1

The Smartphone Addiction Scale–Short Version for Adolescents (SAS-SV) [9] was used. This scale is a short version of the Smartphone Addiction Scale measuring smartphone addiction [10]. The SAS-SV was translated into Croatian and back-translated to English by project team members skilled in the translation of psychological instruments and proficient in the English language. The SAS-SV includes 10 items (e.g., "Using my smartphone longer than I had intended.", and "Having my smartphone in my mind even when I am not using it.") for the easy screening of vulnerable adolescents and those at risk of smartphone addiction. Adolescents rated 10 items on a 6-point scale (1—"strongly disagree"; 6—"strongly agree") at wave 1. Principal component analysis (PCA) yielded one component, explaining 40.50% of the variance with loading ranging from 0.36 to 0.73. The Cronbach alpha coefficient was $\alpha = 0.83$. All items were combined into an average score, with higher scores indicating higher smartphone-related addictive behavior, or as labeled in this study, PSU.

2.2.2. Conflicts about Smartphone Use at Wave 2

Conflicts about smartphone use between adolescents and parents were measured using a new scale constructed for the purpose of the project. The scale consists of 12 items measuring the frequency of conflicts about adolescent smartphone use between parents and adolescents. The items were derived based on the qualitative study with adolescents and parents (S1) in the project and applied in the second wave of the longitudinal study. Adolescents rated the frequency of conflicts on a 5-point scale (1—"never"; 5—"always"). PCA with Oblimin rotation showed a two-component solution for the scale. The first component, explaining the 29.91% of the variance, was loaded with six items measuring arguments related to content and activities on smartphones (e.g., watching series and movies, listening to music, texting). The second component, explaining 28.2% of the variance, was loaded with six items measuring arguments related to time of use and managing smartphone use with other activities (e.g., how much time the adolescent uses their phone rather than addressing the other obligations he or she has). The Cronbach alpha coefficient was $\alpha = 0.85$ for both components. Items were averaged into a total score for each component, with higher scores indicating (a) higher conflicts related to content and activities and (b) higher conflicts related to time of use and management of activities.

2.2.3. Family Communication at Wave 3

The family communication subscale of the Family Functioning Scale [28,36] was used to measure the quality of family communication. The definition of family communication was based on the Circumplex Model of Marital and Family Systems [37]. This subscale consists of seven items (e.g., "Members of my family talk to each other very little."). Adolescents rated each item on a 4-point scale (1—"completely untrue for my family"; 4—"completely true for my family") at wave 3. PCA showed a one-component solution explaining 50.19% of the variance. Loading ranged from 0.63 to 0.79. The Cronbach alpha coefficient was $\alpha = 0.83$. All items were combined into an average score, with higher scores indicating a higher quality of family communication.

2.2.4. Communication Skills at Wave 4

Communication skills were measured using a subset of six communication items (e.g., "Takes turns in conversation.") from the Social Skills Improvement System (SSIS) [38]. Communication skills, as a subdomain of social skills, include taking turns and making eye contact during a conversation, using an appropriate tone of voice and gestures, and being polite by, for example, saying "thank you" and "please". The SSIS was translated into Croatian and back-translated to English by project team members skilled in the translation of psychological instruments and proficient in the English language. Adolescents rated how true each sentence is for them on a scale from 1—"not true" to 4—"very true". PCA showed a one-component solution explaining 46.91% of the variance, with loading ranging from 0.51 to 0.80. Items were averaged into a total score, with higher scores indicating better communication skills.

2.2.5. Time of Smartphone Use at Wave 1

Time of smartphone use was measured using a time lent constructed for the purpose of the project. The adolescent's task was to circle the number that best assesses their daily time of smartphone use.

2.2.6. Sociodemographic Data

Adolescents provided data on their age and gender and information on who they live with. The parents who participated in the project provided data on their education and work status, as well as their family's financial status. The data were collected at the first wave of the longitudinal study.

2.3. Procedure

The data used for the creation of this paper came from the first, second, third, and fourth waves of the longitudinal study (Study 2) (wave 1: December 2021–March 2022; wave 2: May–June 2022; wave 3: November–December 2022; wave 4: April–June 2023) of the research project "Digital technology in the family: patterns of behavior and effects on child development". This study received ethical approval from the Ethical Committee of the Catholic University of Croatia and approval to be conducted in elementary schools from the Ministry of Science and Education of Croatia. The sample of schools and participants is convenient given that participation was voluntary. A total of 22 schools located in the research area, the city of Zagreb and Zagreb County, Croatia, were contacted via e-mail, 6 of which agreed to participate in the study via their principals signing a consent form. Participants, children, and their parents were recruited from these six elementary schools. A total of 1096 children were contacted through the participating schools by giving them informed consent forms and questionnaires for the parents of the school children. After the consent forms were signed by the participating parents (83% were mothers) and children ($N = 284$; 59.4% of girls and 40.6% of boys) at their homes, data were collected in part in schools during regular classes and in part by children and parents filling out the questionnaires at home due to the length of the questionnaires at each wave. School psychologists and project members administered the questionnaire, and group

administration took approximately 20 to 30 min. Each child and parent who participated in the study received a gift voucher for the local zoo.

2.4. Statistical Analysis

Means, standard deviations, minimum and maximum observed results, and medians were calculated for the study variables (Table 2). For correlations among the study variables, the Pearson correlation coefficient was calculated (Table 3). To test the four proposed hypotheses, path analysis was used. Namely, to empirically test the direct and indirect effects of PSU on communication skills via conflicts and family communication (Figure 1), path analysis (MLR) was carried out using Mplus 7.11 [39]. Observed-centered scores (z-scores) from imputed data sets were used in the analysis. The tested model implied the direct effect of PSU on communication skills (one direct effect) as well as the indirect effects of problematic smartphone use, via family communication and two measures of conflicts, on communication skills (five indirect effects). Age, gender, and time of smartphone use were entered as control variables since they showed significant correlations with the variables in the model (Table 2). The bootstrap method (N = 1000 samples) was used to estimate the size of the effects and related confidence intervals in the final model.

Table 2. Descriptive statistics for the study variables.

Variable	*N*	M	*SD*	Min–Max	Med
Time of smartphone use (hours)—1 [a]	277 (277)	2.93 (2.96)	1.50 (1.50)	0–7	2.75
Problematic smartphone use—1 [a]	272 (283)	2.25 (2.25)	0.79 (0.79)	1–5.2	2.10
Conflicts (time of use)—2 [a]	223 (283)	2.11 (2.12)	0.89 (0.91)	1–4.83	2.00
Conflicts (content and activities)—2 [a]	232 (283)	1.62 (1.62)	0.78 (0.80)	1–5	1.33
Family communication—3 [a]	223 (283)	3.46 (3.46)	0.49 (0.51)	1.43–4	3.57
Communication skills—4 [a]	188 (283)	3.31 (3.31)	0.48 (0.50)	1–4	3.50

[a] The numbers written in the first column, along with the names of the variables, denote the waves of data collection in the study. The values in parentheses are based on imputed data.

Table 3. Correlations among the study variables.

Variable	1	2	3.	4.	5.	6.	7.
1. Time of smartphone use (hours)—1 [a]	1						
2. Problematic smartphone use—1 [a]	0.27 **	1					
3. Conflicts (time of use)—2 [a]	0.08	0.23 **	1				
4. Conflicts (content and activities)—2 [a]	0.09	0.06	0.58 **	1			
5. Family communication—3 [a]	−0.09	−0.35 **	−0.11	−0.10	1		
6. Communication skills—4 [a]	−0.12	−0.23 **	−0.13 *	−0.12 *	0.52 **	1	
7. Age	0.17 **	0.09	−0.03	0.05	−0.19 *	−0.06	1
8. Gender	−0.12 *	−0.08	0.04	0.05	−0.07	−0.10	0.07

Note. [a] The numbers written in the first column, along with the names of the variables, denote the waves of data collection in the study. ** $p < 0.01$; * $p < 0.05$. Gender—1 = girls; 2 = boys. n for correlations 277.

3. Results

3.1. Participant Flow and Missing Data

Table 1 contains the sociodemographic characteristics of the sample at the first wave. Most of the adolescents lived in two-parent families. Most of the adolescents' mothers completed high school, then attended college, and then pursued higher education. Most of the adolescents' fathers completed high school, then attended college, and then pursued higher education. Most mothers and fathers of adolescents were employed at the time. Most of the adolescents come from families with a monthly income of EUR 465–995 per family member. The sample of adolescents can be classified as coming from middle- to upper-socioeconomic status families living with both parents.

Since there were dropouts from the longitudinal study, missing data were screened. Our missing data analysis showed that data were not missing at random (Little's MCAR; X^2 = 1191.26, df = 1011, p = 0.000), and our missing value analysis also showed 15.01% missing values in the data set for analysis. The missing data on study variables were input using the multiple imputation (input missing data values) option in IBM SPSS Statistics for Windows, Version 23.0 [40], and the imputed data (n = 277) set was used for correlation analysis and path analysis in Mplus.

3.2. Descriptive and Correlation Analysis

In Table 2, descriptive statistics for the study variables are shown. The adolescents included in this study reported that they spent around 3 h a day on average using a smartphone. On average, they reported low levels of PSU. They also reported that they rarely have conflicts with their parents about smartphone use. On average, family communication is at higher levels in their families. They rated their communication skills as very good on average.

In Table 3, the correlations between the study variables are shown. The time of smartphone use is positively correlated with PSU and adolescents' age and gender. Namely, older adolescents and girls spend more time using smartphones. PSU is positively correlated with conflicts between parents and adolescents about the time of smartphone use. Family communication and communication skills were negatively correlated with PSU. Conflicts about the time of smartphone use are positively associated with conflicts about activities and the content consumed on smartphones. Both types of conflicts are negatively related to adolescents' communication skills. The quality of communication in the family is positively correlated with adolescent communication skills and negatively correlated with the adolescent's age.

3.3. Path Analysis

We first tested the model according to the hypotheses by allowing all direct and indirect effects and covariance between two measures of conflict. The model showed good fitting to the data (n = 277; X^2 = 16.87, df = 12, p = 0.154, CFI = 0.976, TLI = 0.943, SRMR = 0.039, RMSEA = 0.038). The results showed that there are no significant paths (a) from PSU to communication skills ($\beta = -0.042$, p = 0.482); (b) from PSU to conflicts regarding content and activities (β = 0.058, p = 0.314); (c) from conflicts regarding content and activities to communication skills ($\beta = -0.031$, p = 0.551) and to family communication ($\beta = -0.097$, p = 0.214); and (d) from conflicts regarding time of use and managing activities to communication skills ($\beta = -0.051$, p = 0.434) and to family communication (β = 0.027, p = 0.697). Age (β = 0.093, p = 0.198) and gender ($\beta = -0.075$, p = 0.198) did not have a significant effect on PSU. All these paths were removed from the model, and the trimmed model was tested again.

The final model, trimmed by excluding insignificant paths and covariances, is shown in Figure 2. This model (Figure 2) showed a good fit with the data (n = 277; X^2 = 4.46, df = 6, p = 0.615, CFI = 1.000, TLI = 1.017, SRMR = 0.029, RMSEA = 0.000). The indirect effect of PSU on adolescent communication skills via family communication was found to be significant ($\beta = -0.183$, p = 0.000; 95% CI [−0.238, −0.128]).

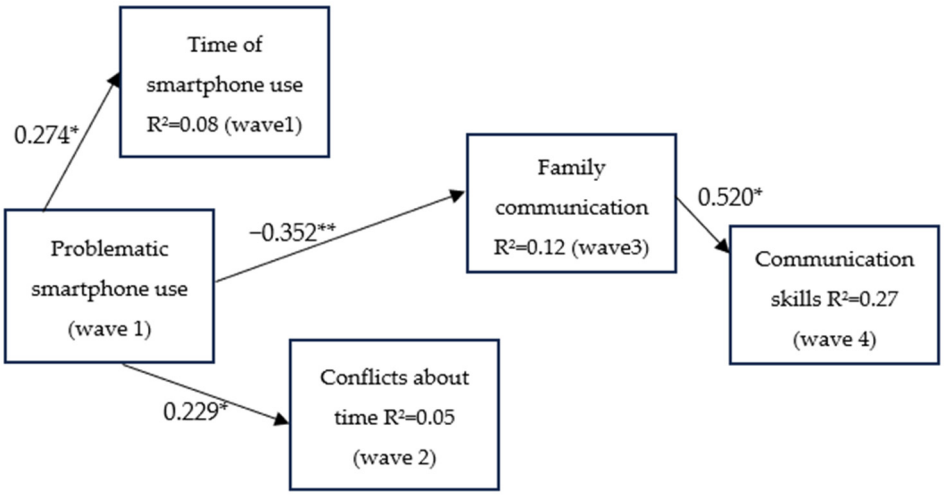

Figure 2. The effects of problematic smartphone use on adolescent communication skills: the results derived from testing the final model. Note: ** $p < 0.01$; * $p < 0.05$.

4. Discussion

The aim of this study was to empirically examine a model of the direct and indirect effects of PSU on adolescent communication skills. The results shown herein only support H2: PSU indirectly, via family communication, negatively affects adolescent communication skills. The results do not provide support for the other three hypotheses: H1: PSU directly negatively affects adolescent communication skills; H3: PSU indirectly, via conflicts about smartphone use between parents and adolescents, negatively affects adolescent communication skills; and H4: PSU indirectly, via conflicts about smartphone use between parents and adolescents and family communication, negatively affects adolescent communication skills.

The results did not support the proposition about the direct effect of PSU on the communication skills of adolescents. Although the correlation between PSU and communication skills is negative and significant, the direct contribution of PSU to poorer communication skills is not significant. Thus, it seems that prolonged smartphone use has an indirect mechanism by which it affects the development of adolescents. The results support the proposition that PSU indirectly affects adolescent communication skills through family communication. Higher levels of PSU are related to poorer family communication, which is then related to worse adolescent communication skills. The finding that adolescents' PSU negatively contributes to communication in the family is in line with a previous study on an adult population [27]. Living in families with poorer family communication does not allow adolescents to learn effective communication skills; consequently, they exhibit worse communication skills. These results are in line with previous studies that highlight the negative effect of PSU on adolescent well-being and development [14,35], even if the effect highlighted in the current study does not have an impact directly but rather through family communication.

In fact, this is the first study to show that PSU can indirectly contribute to adolescent communication skills via family functioning. It seems that adolescents' problems with smartphone use affect family dynamics. This has been noted in previous studies on adolescents' problem behaviors and family functioning [28,41,42]. However, it is also possible that family communication is basically worse in families with adolescents who extensively use smartphones. Namely, if families have ineffective and not open communication about different topics, and if adolescents have problems with social skills, it is possible that adolescents turn to the online world for social interactions via smartphones. Future studies should explore this hypothesis.

The results of this study showed that PSU directly contributes to conflicts about smartphone use between parents and adolescents, but these conflicts are seemingly only related to the topic of time management and balancing different activities rather than being about the content that adolescents consume through their smartphones. Adolescents with more PSU reported more conflicts with their parents about smartphone use. These conflicts primarily centered around the time they spend using smartphones and how they balance their activities (e.g., household chores, schoolwork) with smartphone use. This result is in line with what the authors of [22] who noted about normative everyday conflicts and quarrels between adolescents and parents since smartphone use is an everyday activity in the lives of adolescents. Parents worry about and are aware of the negative effects technology use can have on children [21]. They are more likely to frequently witness their children using smartphones and maybe neglecting other activities due to such use compared to the frequency of them gaining insight into the specific activities that adolescents engage in during their screen time. Because of this, they probably react negatively to adolescents' excessive use in terms of time, and this results in conflict. At the same time, adolescents need autonomy and feel they should manage their time by themselves, and this includes smartphone use. These different positions probably collide. The positive findings from this study are that these conflicts do not exert effects on family communication and adolescents' communication skills, as our results did not support the hypotheses related to this, namely, H3 and H4, which were about the negative indirect effect PSU may have, via parent–adolescent conflicts, on adolescent communication skills.

The findings of this study should be considered while accounting for the limitations of this study. The study sample comprised adolescents with low PSU who voluntarily participated, leading to sample-biased results. We suggest cross-validating the findings using culturally and demographically diverse samples of adolescents from different family backgrounds. Although we evaluated results relating to PSU on the SAS-SV scale [9], we are aware that a consensus about the definition of the PSU construct has not been reached among researchers. For the future development and conceptualization of PSU, especially when PSU is used concerning samples of children and adolescents, we propose using qualitative methodologies (i.e., hosting interviews and focus groups with children and adolescents, as well as clinicians and school psychologists, to ascertain their views on PSU). This may be a risk factor, a marker, or a signal for adolescents' and children's development going in a negative direction, although we are not supporting the "addiction framework" for PSU with this suggestion. Concerning this, we suggest working on the theories explaining the relations between PSU and adolescent development. We recommend studies on between- and within-group differences in the obtained patterns regarding PSU and adolescent communication skills, since these research findings provide a good starting point and reference for future studies.

5. Conclusions

The hypothesis that PSU has a direct impact on adolescents' communication skills was not supported, but PSU has a significant indirect impact on adolescents' communication skills through family communication. PSU contributes to increased arguments between parents and adolescents on when to use smartphones and how to balance other activities with smartphone use. The findings of this study imply that excessive and extensive smartphone use may pose a risk factor for frequent parent–adolescent conflicts, worse family communication, and worse adolescent communication skills. The results are based on a sample of adolescents who, on average, exhibit low PSU while living in low-conflict two-parent middle-income families in urban areas of Croatia. The findings also indicate that PSU may be a risk factor for more parent–child conflicts about smartphone use, poorer family communication, and adolescent communication skills. We call for future examinations of the directions and magnitude of the association between PSU and adolescent communication skills, highlighting that the pattern of relationships obtained in this study

may be valid for some but not all adolescents. These findings serve as a starting point for future research on this topic.

Author Contributions: Conceptualization, M.M.; methodology, M.M., A.Ž.I. and M.B.S.; analysis, M.M.; investigation, A.Ž.I., M.B.S. and M.M.; writing—original draft preparation, M.M.; writing—review and editing, M.M., A.Ž.I. and M.B.S.; visualization, M.M.; supervision, M.M.; project administration, M.M.; funding acquisition, M.M. All authors have read and agreed to the published version of the manuscript.

Funding: This work was supported in part by the Croatian Science Foundation under the project number UIP-2019-04-7547 "Digital technology in the family: patterns of behavior and effects on the child development". The work was supported in part by the Catholic University of Croatia.

Institutional Review Board Statement: This study was conducted in accordance with the Declaration of Helsinki. The study was approved by the Ethical Committee of the Catholic University of Croatia (class 112-01/19-04/14, number 498-03-01-04/2-19-02, date 5 May 2019). The study was carried out in line with the Code of Ethics of the university, the Code of Ethics of the Croatian Psychological Chamber, GDPR, and the Code of Ethics for Research with Children.

Informed Consent Statement: Written informed consent for the carrying out of the project "Digital technology in the family: patterns of behavior and effects on the child development" and its studies in elementary schools was obtained from the Ministry of Science and Education of Croatia (class 602-02/20-03/00039, number 533-05-20-0004, date 24 April 2020). Written informed consent was obtained from the principals of elementary schools for the conduction of the longitudinal study in schools. Written informed consent was obtained from all children and their parents for participation in the longitudinal study.

Data Availability Statement: The data that support the findings of this study are available from the corresponding author, Marina Merkaš, upon reasonable request.

Acknowledgments: We would like to thank all children, parents, principals, teachers, professional associates, and school staff for their help in the implementation of the longitudinal study.

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

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