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Understanding Suicide in Young Adults: Comparative Insights from Spain and Japan Through the Interpersonal Theory of Suicide

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Abstract

Background: (1) Cultural differences at the interpersonal level among young adults are evident; however, how the application of the interpersonal theory of suicide (ITS) varies between different populations remains to be evaluated. This exploratory study investigated the cross-cultural relevance of the ITS constructs in young adults from Spain n = 260 and Japan n = 177. (2) Methods: All participants completed self-report questionnaires assessing thwarted belongingness, perceived burdensomeness, and acquired capability for suicide. We explored whether each construct was associated with suicide risk severity in both samples and whether the strength of the effects of thwarted belongingness and perceived burdensomeness differed between groups. (3) Results: Stepwise multiple regression analyses suggested that 'perceived burdensomeness' may be a key predictor of suicide risk in both samples, while the joint effect of ITS variables showed no significant contribution. (4) Conclusions: These preliminary findings offer insights into the possible cultural adaptation of suicide prevention strategies for young adults from Spain and Japan, highlighting areas for future confirmatory research.

Keywords: suicide; Spain; Japan; perceived burdensomeness; thwarted belongingness; psychological; desensitization

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1. Introduction

1.1. Relevance of Joiner's Interpersonal Theory of Suicide

Joiner's interpersonal theory of suicide (ITS) (Joiner 2005) has been considered one of the most relevant theories in recent times to explain the factors that can lead to suicidal behavior ('thwarted belongingness', 'perceived burdensomeness', and 'acquired capability for suicide'). This theory proposes suicidal behavior due to a convergence of these interpersonal states: a profound sense of social disconnection and the belief of being a burden to others, together with a developed decrease in the fear of death and an increased pain tolerance. It was later expanded (Van Orden et al. 2010), with further details added about the risk factors that are included within these components and empirical evidence supporting its main concepts, and it is also supported by other authors like Klonsky et al. (2021), who highlighted its relevance in suicide prevention. In subsequent studies, Joiner et al. (2021)

continued exploring and refining this theory, providing new insights and findings that strengthened its validity. Another study about this theory also explored the importance of interpersonal hopelessness (Tucker et al. 2018) as an extension of the ITS, finding a significant interaction between thwarted belongingness and perceived burdensomeness together with 'hopelessness' as a predictor of suicidal behavior. Since then, there have been many studies seeking to examine the contribution of three core variables of the ITS together with others that also predict suicide risk. Authors such as Stanley et al. (2018) also supported the importance of this emotional disconnection in suicidal behavior, and Ribeiro et al. (2021) showed that anticipated desirable consequences of suicide can significantly increase engagement in suicidal behavior, aligning with the conceptual foundation of the 'acquired capability for suicide' construct, as individuals who perceived suicide as desirable may gradually become more emotionally and cognitively desensitized to the act of dying.

A systematic review and meta-analysis (Chu et al. 2017) provided empirical support for the ITS, showing that the combination of thwarted belongingness and perceived burdensomeness had a significant association with suicidal thoughts, and considered together with the capability for suicide, their interaction was significantly linked to a higher number of suicide attempts, with alternative configurations also found as useful for predicting suicide risk. Although depression has been widely documented as a frequently present condition in people with suicidal behavior (Ernst et al. 2020), various studies have indicated that it is not on its own a direct or sufficient predictor of suicidal risk following the ITS (Zullo et al. 2017). In many cases, depression can intensify or be associated with these interpersonal variables, especially burdensomeness, thus increasing the risk, but its presence does not guarantee the onset of suicidal behavior (Janackovski et al. 2022). Specifically in Japan, depression was pointed out as the leading cause of suicide by the Ministry of Health, Labour and Welfare (2024), often related to economic problems.

Studies have also been conducted on samples from different countries and in different age groups, like young adults (Joiner et al. 2009) and adolescents in Spain (Caro-Cañizares et al. 2024), as well as cross-cultural comparisons between countries as different as the USA and Korea (Suh et al. 2017) or Australia and China (Lai 2019). Comparing such diverse cultures allows us to evaluate whether the ITS is universal or whether some of its components have a greater weight depending on the cultural context. As Japan has a higher suicide rate than Spain (World Population Review 2025), it suggests differences in risk and protection factors that could be explained by the ITS.

1.2. Suicide Incidence and Situation in Spain and Japan

From the first half of 2024, the latest data in Spain through the Instituto Nacional de Estadística (2024), although provisionally, showed 1842 deaths by suicide in both sexes. The latest definitive data are those of the year 2023, which had 4116 deaths (3044 men and 1072 women), with the highest figure in the age range of 29–39 years old at 461 cases (Instituto Nacional de Estadística 2023). In addition to suicide deaths, there are also suicide attempts and suicidal ideation cases, which are not accounted for, at least not officially. According to the World Health Organization (2024a), for every suicide, there are approximately 20 attempts. Various epidemiological studies indicate that between 5% and 10% of the Spanish population (between 2 or 4 million people) will experience suicidal ideation at some point in their lives. This implies that in Spain, there could be around 80,000 suicide attempts per year (Madrid + Salud 2025).

In Japan, the latest data from Statista (2024a) show that in 2023, over 21.8 thousand died by suicide, and this was the leading cause of death in males between 20 and 44 years

old and females between 15 and 34 years old (World Population Review 2025). Regarding attempts, 1100 people attempt suicide every day in Japan, according to TELL Japan (2025).

In the latest nationwide survey of the young population on suicidal ideation, conducted by The Nippon Foundation (2023) in Japan, it was found that 44.8% of people had suicidal overall thoughts, changing the ratio from 1 in 3 to 1 in 2 young people between 15 and 29 years old since the last survey. Between 30% and 50% of people surveyed confessed to not telling anyone their worries about suicidal thoughts.

Especially in young adults, unstable emotional relationships, including emotional failure, emotional trauma, and loss of emotional resilience, can lead to feelings like burdensomeness, worthlessness, and insignificance, among others, increasing suicide risk (Fallahi-Khoshknab et al. 2023). The 'acquired capability for suicide' involves a greater tolerance for pain and a reduced fear of death and can be developed with age as people accumulate experiences of exposure to pain and potentially traumatic situations; in some cases, young people may have been exposed to events that increase this capacity early in life (Trejo-Cruz et al. 2023). In addition, individual factors such as impulsiveness may cause young people to develop capability for suicide more quickly than others, regardless of age (Auerbach et al. 2017; McHugh et al. 2019; Sanz-Gómez et al. 2024).

In collectivist societies, such as Japan, where the emphasis is on interconnectedness and unity, individuals' identities are shaped by their relationships with others, and their value is determined by how well they fit within their social group; social belonging plays a central role in defining a sense of identity and overall well-being (Cho 2007; Lester 2013; Watanabe et al. 2023). In this context, the frustration of not feeling part of the group (thwarted belongingness) can lead to deep emotional distress, so in the Japanese sample, it is expected that the levels of this variable will be higher in relation to suicidal behavior compared to the Spanish sample.

1.3. Objectives

Given the public health relevance of suicidal behavior, particularly in young adults, where suicidal ideation and attempts are especially prevalent, and the limited evidence on how the interpersonal factors proposed by Joiner's interpersonal theory of suicide (Joiner 2005) operate across cultural contexts, the objective of this study was to explore the relationships between the variables included in it among young adults and to analyze potential cultural differences in these associations by comparing samples from Spain and Japan. This knowledge may help refine prevention strategies by identifying both universal and culture-specific predictors of suicidal behavior. As a secondary objective, we examined the influence of sociodemographic variables (e.g., sex or marital status) on 'depression' and 'suicide risk' in each cultural group in order to control for their potential confounding effects in subsequent analyses.

In addition to suicide risk, depressive symptoms were analyzed as a comparative outcome variable. Including this variable allowed us to examine whether the same risk factors differentially predict depression and suicidal outcomes, thereby strengthening the interpretative contrast between general psychological distress and suicide-specific processes.

Based on these objectives, the following hypotheses were formulated:

H1. *The associations between 'perceived burdensomeness', 'thwarted belongingness', and 'acquired capability for suicide' will be positively related to suicide risk in young adults in both samples but may differ in magnitude depending on the culture (Spain vs. Japan).*

H2. *Japanese participants with higher depressive symptoms and suicide risk will also present significantly higher levels of 'perceived burdensomeness' and 'thwarted belongingness' compared to Spanish participants.*

H3. *'Acquired capacity for suicide' will be greater in the Japanese sample than in the Spanish one, but it will be less significant in predicting suicide risk due to cultural differences in the normalization of suicide.*

H4. *'Acquired capability for suicide' will be a significant predictor of 'suicide risk' but not of 'depression' in both samples.*

2. Materials and Methods

2.1. Study Design and Setting

This study has a non-experimental, descriptive, correlational, and cross-sectional design since relationships between variables were analyzed with a quantitative approach at a single point in time from September 2024 to January 2025.

2.2. Inclusion and Exclusion Criteria

The following criteria were selected for inclusion in this study: young adults between 18–40 years old and from Spain and Japan. The exclusion criteria were as follows: young adults with Spanish or Japanese descent who were born and are residing in other countries and are under 18 years old or over 40.

2.3. Participants and Procedures

The samples used in this study (177 participants in Japan and 260 in Spain) were determined based on practical considerations, including access to participants and feasibility of data collection. While larger samples would allow for greater generalizability, the current sample sizes are consistent with typical practices in cross-cultural psychological research and allowed for robust analyses, following conventional standards for psychological and social science research after performing a post hoc analysis for a point-biserial correlation (Cohen 1992). Most effect size values offered statistical power above 80% in both samples. Nevertheless, for the hierarchical regression models, the conducted post hoc power analysis revealed a statistical power less than 0.4 for the added predictors, indicating a limited sensitivity to detect very small incremental effects of added predictors, so the findings related to these specific effects should be interpreted with caution.

Participants were recruited from Spain and Japan through two techniques: snowball through the authors' academic institutions and contacts and through publication on public platforms at the national level with an economic reward in the platform 'Profilic'. The informed consent and its exclusive use for academic purposes was obtained online with a self-completed survey on Google Forms prior to participation by clicking the 'I accept' box. The study was carried out in accordance with the Declaration of Helsinki, and it was approved by the Ethics Committee of the University of Murcia (ID: 4080/2022) as a part of a doctoral thesis: a cross-cultural study of suicide in young adults in Spain and Japan.

The Spanish sample consisted of 260 young adults (51.5% female) who were on average 31.08 years old (SD = 5.54). Approximately 45% of participants lived with their partner and children, 23.8% with their parents and/or siblings, 16.2% alone, 8.1% with flat mates, 3.5% with extended family, and the other lower percentages with friends, other relatives, or in different circumstances. Marital status was also recorded, finding 73.1% were single, 13.1% married, 13.1% common-law couples, and 0.8% divorced or separated. Regarding educational level, 32.7% had a degree, 33.1% a master's degree, 14.6% a higher vocational training, 9.2% high school studies and baccalaureate, 6.5% Ph.D. studies, 1.9% basic school studies, 1.5% intermediate vocational training, and 0.4% other. As for occupation, 63.5% were working, 19.2% working and studying, 11.9% just studying, and 5.4% were unemployed.

The Japanese sample consisted of 177 participants (52% female) who were on average 29.08 years old (SD = 5.65). Approximately 39.5% lived alone, 23.7% only with their partner, 11.3% with their partner and children, 10.7% only with their parents, 6.2% with their parents and brothers or/and sisters, 5.1% with friends or flat mates, 0.6% with extended family, 1.2% with other relatives, 0.6% with their brothers and/or sisters, 0.6% with their partner and family, and 0.6% only with their children. As for marital status, 63.8% were single, 28.8% married, 4% common-law couples, another 2.3% divorced/separated, 1.1% preferred not to answer, and 0.6% were separated.

Although the way of classifying the educational level differs from the Spanish to the Japanese, we found in the Japanese sample that 16.4% had a master's degree or were in the process to obtain it, 54.2% a degree, 7.9% had a bachelor's, 0.6% had higher vocational training, 1.7% were basic secondary school graduates, 8.5% were higher secondary school graduates, 0.6% had a baccalaureate, and 2.3% were engaged in Ph.D. studies, 5.1% intermediate vocational training, and 2.8% other. As for occupation, 45.2% were working a full-time job, 18.1% just studying, 15.3% were freelance, 7.4% had other conditions, 5.6% had a part-time job, 4% were public servants, 3.4% were working and studying, and 1.1% were unemployed.

2.4. Variables and Measures

For sociodemographic data, variables such as age (18 to 40 years), sex (female, male, or 'other'), country of residence, cohabitation unit and years of residence there (in years), marital status, educational level (basic studies to Ph.D. studies), and occupation were recorded. As independent variables, we considered 'thwarted belongingness', 'perceived burdensomeness', and 'acquired capability for suicide', and as a dependent variable, we considered 'suicide risk', which was be measured through the Columbia-Suicide Severity Rating Scale (C-SSRS) Screen Version, and with the Patient Health Questionnaire-9 (PHQ-9), we evaluated suicide risk in a more indirect way since depression has been strongly associated with suicide risk (Bachmann 2018; Brådvik 2018), and the PHQ-9 has proven efficacy in evaluating suicidal ideation (Kim et al. 2021).

Interpersonal Needs Questionnaire (INQ; Van Orden et al. 2012)

The variables included in the ITS namely, 'thwarted belongingness', and 'perceived burdensomeness', were assessed with the INQ through its subscales: INQ-TB (nine items) and INQ-PB (six items). It has a 7-point Likert scale for responses (1 = not at all true for me to 7 = very true for me), and reverse items scored the opposite (items 7, 8, 10, 13, 14, and 15).

In the Spanish version, INQ-15 showed high consistency in the 'burdensomeness' factor (r = 0.97 to 1.00) and in 'belongingness' but with greater variability (r = 0.59 to 0.92). Reliability values were excellent for both factors: $\alpha = 0.96$ for 'perceived burdensomeness' and $\alpha = 0.78$ for 'thwarted belongingness'. Another value that carries a good reliability for this questionnaire is the inter-item correlation for 'perceived burdensomeness' at 0.85, while the 'thwarted belongingness' subscale might benefit from further refinement, with a value of 0.35. Regarding test–retest reliability, the intraclass correlation coefficient (ICC) for perceived burdensomeness and thwarted belongingness was very high, with values of 0.98 and 0.89 (95% CI, $p < 0.01$), respectively (Silva et al. 2018).

For the Japanese INQ-15, the validity of content was high, as the mean (SD) of comprehensibility of each item was also high at 4.37–5.21 (0.94–1.53) for all versions, and the overall mean value for INQ-15 was 4.85 for the version that was used in this study. The values of the Comparative Fit Index (CFI) (0.967), the Tucker–Lewis Index (TLI) (0.946) and the root mean square error of approximation (RMSEA) (0.068) indicate a robust and well-fitted model although with a small acceptable margin of error. Its internal consistency

was very high (ω = 0.92; 95% CI; test–retest α = 0.73) and the temporal reliability was also acceptable (r = 0.75) (Aiba et al. 2019).

Acquired Capability for Suicide Scale-Fearlessness About Death (ACSS-FAD; Ribeiro et al. 2014).

The 'acquired capability for suicide' was assessed through a version of ACSS-FAD, namely a 7-item scale derived from the original 20 items of the ACSS (Van Orden et al. 2008), which also measures physical pain tolerance. It has a 5-point Likert scale for responses (0 = not at all like me to 4 = very much like me), and reverse items scored the opposite (items 2, 3, and 5).

The Spanish version of the ACSS-FAD showed a better fit of model indicators than the other versions, with values of CFI = 0.99 and TLI = 0.97, a proper fit with an SRMR = 0.03 and am RMSEA = 0.06 [90% CI], and an acceptable reliability with values α = 0.80. Spearman correlations between the ACSS-FAD with other tests that measure similar constructs were significant and positive ($p < 0.001$). Across the Cox regression analyses and bivariate analyses, it was found that the presence of suicidal behavior during the follow-up was significantly related to the interaction of the three components of the ITS (hazard ratio = 1.00; CI = 1.00–1.01) (Canal-Rivero et al. 2024).

The Japanese version of the ACSS-FAD turned out to be more suitable than the general version of the ACSS, with seven items, with the values of the Comparative Fit Index (CFI) (0.996), the Tucker–Lewis Index (TLI) (0.985) and the root mean square error of approximation (RMSEA) (0.045) indicating the excellent fit of the model with minimal inaccuracy. The validity of content was also high, with scores 4.88–5.30 (0.88–1.14) indicating a high comprehensibility of each item and an overall mean value of 5.03 and the confirmatory factor analysis of the ACSS-FAD having a value of 0.40, indicating moderate validity and proving more adequate in terms of factor structure than other versions of the ACSS. It also showed high validity in terms of internal consistency (ω = 0.85; 95% CI; test–retest α = 0.71) and good temporal reliability with a value of r = 0.78. Regarding gender differences using this scale, the effect size r = 0.12 showed a statistically significant difference, revealing that it is not relevant enough to have a significant impact on the validity of the questionnaire (Aiba et al. 2019).

Patient Health Questionnaire-9 (PHQ-9; Kroenke et al. 2001)

Depressive symptoms, which are frequently associated with suicidal ideation and behavior (Bryan et al. 2023), were measured through the PHQ-9, a 9-item questionnaire with a 4-point Likert response scale. Item 9 specifically assesses suicidal ideation, asking about the frequency of thoughts of suicide or self-harm (Kroenke et al. 2001), but it has shown itself to be insufficient for suicide risk and ideation measurement although convenient to use together with another validated test to measure suicide risk, like the C-SSRS (Na et al. 2018).

The PHQ-9 was validated in Spanish adolescents, showing values of the Comparative Fit Index of 0.993, TLI of 0.991, and an RMSEA of 0.054 (90% IC), indicating an excellent fit of the model; it had also adequate indices for both males and females. Regarding internal consistency, ω of 0.89 (95% CI) and item discrimination indices higher than 0.30 indicated that the scale is reliable and measures the construct well. Pearson's correlations' values for concurrent and discriminant validity showed a positively and statistically significant correlation between PHQ-9 and measures of anxiety, emotional problems, and behavioral problems and a negative correlation with measures of prosocial behavior and quality of life (Fonseca-Pedrero et al. 2023).

The Japanese version of the PHQ-9 was validated through the Mini-International Neuropsychiatric Interview-Plus (Muramatsu et al. 2008), showing a high concordance with it, especially in the diagnosis of depression, and between other disorders, with kappa

values of 0.70–1.0. Its sensitivity, specificity, and predictive values were very good (0.84–1.0). The J-PHQ-9 has shown a good discrimination capacity to detect depression (AUC = 0.895; 95% CI = 0.851–0.939) (Muramatsu et al. 2008), with good sensitivity (0.86) and specificity (0.85), and the item that refers to suicidal ideation has a sensitivity of 0.70 and a specificity of 0.97 (Inagaki et al. 2013).

Columbia-Suicide Severity Rating Scale, Screen Version (C-SSRS; Posner et al. 2011)

The C-SSRS Screen Version is a scale designed to assess suicide severity and risk by identifying previous suicidal behaviors and current symptoms (within the last 3 months) related to suicide. This scale has six items with 'yes/no' response, where the suicide risk goes from low to high risk depending on the positive response to each of the items (items 1–2 indicate low risk; items 3 and 6, 'in the course of life', indicate moderate risk; and items 4–5 and 6, 'in the last 3 months', indicate high risk). This screen version is a simplification derived from the original full-length C-SSRS (Posner et al. 2011). It has been a useful and feasible tool for identifying suicide risk, at least in psychiatric settings (Bjureberg et al. 2021). When using the C-SSRS Screen Version as a measure for the dependent variable, we coded the results as follows: '0 = low risk', '1 = moderate risk', and '2 = high risk', depending on whether the participants answered 'yes' to the items that indicate a certain level of suicide risk.

The C-SSRS has been validated in Spanish, showing construct validity with a Pearson coefficient = 0.44 ($p < 0.01$) between the severity and intensity subscales and good results with scales measuring the same, like the Beck Suicide Intent Scale (r = 0.22; $p = 0.01$). Linear regression showed good sensitivity to change, and Cronbach's alpha was 0.53 (Al-Halabí et al. 2016).

Although the formal validation of the C-SSRS and its screen version in Japanese has not been published, they are both available through The Columbia Lighthouse Project (2016), allowing for its use in clinical and research settings in Japan. Its authoritative translation and application in previous studies justify its use, such as for the development of the Japanese versions of the INQ and the ACSS (Aiba et al. 2019).

2.5. Data Analysis

For data analysis, IBM SPSS Statistics software version 25 (64-bit) (IBM Corp., Armonk, NY, USA) was used. Descriptive analyses were performed to characterize both samples from Spain and Japan. For statistical analysis, the original dichotomous response variable (yes/no) of the C-SSRS was encoded into numerical values as follows: 'yes = 1' and 'no = 0' for the items corresponding to low risk; for moderate-risk items, 'yes = 2' and 'no = 0'; and for high-risk items, 'yes = 3' and 'no = 0'. Based on the total scores in each risk category, participants were then assigned a final risk level on a scale from 0 to 2 (0 = low risk, 1 = moderate risk, and 2 = high risk), according to the category in which they obtained the highest score. To assess suicide risk, two distinct approaches were applied: PHQ-9 and C-SSRS, reducing biases by relying solely on one measure and considering both depressive symptoms (including suicidal ideation) and suicidal behavior.

ChatGPT (GPT-4.5 version) was used (OpenAI 2024) to receive guidance on data analysis strategies.

2.6. Measurement Model

Levene's test was used for equality of variances regarding age distribution and Student's *t*-test for sex mean differences. To observe differences in the dependent variables (suicide risk and depression) based on the other sociodemographic variables evaluated (age, educational level, occupation, cohabitants, and marital status) in both samples, a univariate general linear model was used to perform an ANCOVA. To perform the regression analysis

with all the covariates and the independent variables on the dependent variables, the values of the categorical covariates were transformed into numerical variables to avoid errors.

Analyses of variance (F-tests) were conducted to evaluate whether there were significant mean differences across all variables measured between both samples. In the first analysis, simple Pearson correlations were made to explore relationships between all the variables to identify general patterns prior to more complex analysis. After that, through a separate stepwise multiple regression, we analyzed how and which independent variables predict suicide risk and depression symptoms in each sample, evaluating the effect of each variable and how the model changed when some variables were added or removed. The scores of the three measures for the independent variables (INQ-PB, INQ-TB, and ACSS-FAD) were standardized to allow for further exploratory analyses. We also conducted simple linear regression analyses to assess the predictive value of these variables on PHQ-9 and C-SSRS Screen Version results. To assess the significance of the model, we used the F values of the analysis of variance (ANOVA) and the Games–Howell test for post hoc analysis. Regarding the statistically significant *p*-value range of this study, for Levene's and Games–Howell test, ANOVA, and adjusted R^2, we used $p < 0.05$; we used both $p < 0.05$ and $p < 0.01$ for Pearson correlations; and we used only $p < 0.01$ for the univariate general linear model.

3. Results

3.1. Preliminary Analysis

Prior to hypothesis testing, preliminary analyses were performed. These included cross-cultural comparisons of the main variables and bivariate associations between them to contextualize the subsequent regression models.

The scores of the standardized tests in the Spanish and Japanese samples are presented below, showing the trends of each of the samples. As we can see in Table 1 related to the PHQ-9 results, in the Spanish sample, the highest percentage was found in the scores that indicated 'mild depression', while in the Japanese sample, it was in 'moderate depression'.

Table 1. Patient Health Questionnaire-9 (PHQ-9) scores by country.

Scores	Spanish Sample	Japanese Sample
Null punctuation, no depression.	3.5% (*n* = 9)	5.6% (*n* = 10)
Between 1 and 4, 'minimum depression'.	21.31% (*n* = 55)	15.9% (*n* = 28)
Between 5 and 9, 'mild depression'.	35.26% (*n* = 92)	23.1% (*n* = 41)
Between 10 and 14, 'moderate depression'.	22.08% (*n* = 57)	30.5% (*n* = 54)
Between 15 and 19, 'moderately severe depression'.	13.11% (*n* = 34)	15.3% (*n* = 27)
Between 20 and 27, 'severe depression'.	4.87% (*n* = 13)	9.6% (*n* = 17)

In the Japanese sample, a percentage of 28.2% of the participants were out of suicide risk in the C-SSRS compared to 37.3% who presented mild risk, 9% moderate risk, and 25.4% high risk. In the Spanish sample, 46.5% showed null suicide risk, 25.8% mild risk, 11.5% moderate risk, and 16.2% high risk.

As for the scores on the variables on the INQ, the Japanese sample showed 57.6% with a score equal or greater than 12 (considered significant) in the subscale 'perceived burdensomeness' compared to 29.6% of the Spanish sample. In the subscale 'thwarted belongingness', both samples reached similar percentages in terms of participants who achieved a significant score (equal or greater than 36), with 31.5% in the Spanish sample and 30.5% in the Japanese sample. Even though exist a universally established cut-off point

that determines a specific level of suicide risk for the ACSS-FAD does not exist, we found a mean of 13.12 (SD = 6.69) in the Japanese sample and a mean of 15.24 (SD = 7.35) in the Spanish sample.

As we can see in Table 2, a high F value in the INQ-PB indicates a significant difference in the means between Spain and Japan, with a *p*-value indicating that it is highly significant. Although with a lower value, the difference in the means in the INQ-TB are also significant. The F value of C-SSRS is also relatively high, suggesting that the variability between groups is greater than the variability within groups.

Table 2. Cross-cultural differences in the measures' results in Spanish and Japanese samples.

Variable Measure	Spain M (S.D.) *n* = 260	Japan M (S.D.) *n* = 177	F	*p*-Value (<0.01)
PHQ-9	9.03 (5.73)	10.37 (6.44)	2.007	0.157
C-SSRS	0.97 (1.10)	1.31 (1.13)	9.86	0.002
INQ-PB	7.27 (4.35)	16.15 (9.79)	137.477	<0.001
INQ-TB	28.97 (13.12)	30.28 (11.32)	7.514	0.006
INQ-total	36.24 (16.04)	46.44 (18.79)	3.520	0.061
ACSS-FAD	15.24 (7.35)	13.12 (6.69)	2.549	0.111

The Pearson correlations in Table 3 show that the PHQ-9 scores correlated significantly ($p < 0.01$) with INQ-TB and INQ-PB but not with ACSS-FAD in the Japanese sample. The C-SSRS scores correlated with all these measures in this sample and to a lesser extent with INQ-TB. Table 4 shows that INQ-TB, INQ-PB, and ACSS-FAD correlated significantly with the PHQ-9 scores ($p < 0.01$) and with C-SSRS scores in the Spanish sample. INQ-TB correlated significantly with INQ-PB ($p < 0.01$) in both samples.

Table 3. Pearson correlations between all variables in the Japanese sample.

	PHQ-9	C-SSRS	INQ-PB	INQ-TB	INQ-Total	ACSS-FAD
PHQ-9	1	0.384 **	0.620 **	0.483 **	0.614 **	0.117
C-SSRS	0.384 **	1	0.372 **	0.186 *	0.306 **	0.230 **
INQ-PB	0.620 **	0.372 **	1	0.583 **	0.872 **	0.238 **
INQ-TB	0.483 **	0.186 *	0.583 **	1	0.906 **	0.122
INQ-Total	0.614 **	0.306 **	0.872 **	0.906 **	1	0.198 **
ACSS-FAD	0.117	0.230 **	0.238 **	0.122	0.198 **	1

** $p < 0.01$; * $p < 0.05$.

Table 4. Pearson correlations between all variables in the Spanish sample.

	PHQ-9	C-SSRS	INQ-PB	INQ-TB	INQ-Total	ACSS-FAD
PHQ-9	1	0.542 **	0.971 **	0.586 **	0.743 **	0.188 **
C-SSRS	0.542 **	1	0.449 **	0.502 **	0.503 **	0.364 **
INQ-PB	0.971 **	0.449 **	1	0.581 **	0.743 **	0.157 *
INQ-TB	0.586 **	0.502 **	0.581 **	1	0.975 **	0.147 *
INQ-Total	0.743 **	0.503 **	0.743 **	0.975 **	1	0.163 **
ACSS-FAD	0.188 **	0.364 **	0.157 *	0.147 *	0.163 **	1

** $p < 0.01$; * $p < 0.05$.

3.2. Regression Models

Stepwise regression models were applied to determine the relationship between the independent variables and depression and suicide risk in both cultural samples.

3.2.1. Spanish Results

Starting the stepwise multiple regression with the Spanish sample, with PHQ-9 as a measure of the dependent variable, in the first model only was the independent variable

'perceived burdensomeness' included, and in the second model, 'capability for suicide' was also included, with an adjusted R^2 that increased slightly with the inclusion of this second factor from 0.943 to 0.944 ($p < 0.05$).

To assess the significance of the model, we refer to the ANOVA table (Table 5). The F values in each model yield a significant p-value < 0.001 for both, indicating that both models are statistically significant and explain a substantial portion of the variability in the dependent variable.

Table 5. Analysis of variance (ANOVA) with depression symptoms through the PHQ-9 in the Spanish sample.

Model [a]		Sum of Squares (SS)	Degrees of Freedom (DF)	Mean Square (MS)	F [d] = (MSR/MSE)	Sig.
1	Regression	8041.944	1	8041.944	4253.340	<0.001 [b]
	Residue	487.810	258	1.891		
	Total	8529.754	259			
2	Regression	8052.745	2	4026.372	2169.304	<0.001 [c]
	Residue	477.009	257	1.856		
	Total	8529.754	259			

[a]—Dependent variable: PHQ-9. [b]—Predictors: (Constant) and INQ-PB. [c]—Predictors: (Constant), INQ-PB, and ACSS-FAD. [d]—Mean square regression/mean square error.

When adding ACSS-FAD in model 2, the inclusion of the 'capability for suicide' resulted in a modest increase in the sum of squares, indicating that the model remains robust and does not suggest overfitting. In model 1, only with INQ-PB, beta = 0.971 ($p < 0.001$) indicated that the variable 'perceived burdensomeness' has a large positive impact on the PHQ-9 (when 'perceived burdensomeness' increases, PHQ-9 results also tends to increase), with a very high t value of 65.218, reinforcing the idea that the coefficient is significant. In model 2, with also includes ACSS-FAD, INQ-PB has a beta = 0.965 ($p < 0.001$), indicating a highly significant and strong positive impact on the dependent variable, like the first model. ACSS-FAD, with a beta = 0.036 ($p = 0.017$), is also statistically significant ($p < 0.05$), but it exerts a smaller positive effect on PHQ-9 compared to INQ-PB.

In the first model using the C-SSRS as dependent variable, only the independent variable 'perceived burdensomeness' was included. The second model added 'capability for suicide', and in the third model, 'thwarted belongingness' was included alongside the other two variables. The highest value of the adjusted R^2 (0.358) was found in this last model with $p = 0.001$.

In the ANOVA table (Table 6), the F values in all models show a significant p-value < 0.001, indicating that the results are statistically significant with respect to the C-SSRS. Additionally, the differences in the sums of squares are more pronounced compared to those observed with the PHQ-9.

When adding ACSS-FAD in model 2, the sum of squares increased more significantly than from model 2 to 3. This suggests that the addition of the variable 'thwarted belongingness' in model 3 provides little additional explanatory value for the dependent variable (C-SSRS) and likely has a minimal impact on the model. In model 1, where only INQ-PB was included, beta = 0.502 ($p < 0.001$) indicates a strong positive impact on the C-SSRS, and the t value of 9.318 ($p < 0.001$) further supports the statistical significance of the coefficient. In model 2, adding ACSS-FAD, INQ-PB remains significant with a beta = 0.456 ($p < 0.001$), still showing a strong positive impact on the dependent variable. ACSS-FAD, however, has a beta = 0.292 ($p < 0.001$), indicating a smaller positive effect on C-SSRS compared to the first model. In model 3, the beta values are distributed across the three variables: INQ-PB = 0.334 ($p < 0.001$), ACSS-FAD = 0.280 ($p < 0.001$), and INQ-TB = 0.214 ($p < 0.001$).

As expected, thwarted belongingness' had the smallest beta value, and its significance was slightly lower.

Table 6. Analysis of variance (ANOVA) with suicidal ideation severity through C-SSRS in the Spanish sample.

Model [a]		Sum of Squares (SS)	Degrees of Freedom (DF)	Mean Square (MS)	F = (MSR/MSE)	Sig.
1	Regression	80.274	1	80.274	86.823	<0.001 [b]
	Residue	238.538	258	0.925		
	Total	318.812	259			
2	Regression	106.789	2	53.395	64.722	<0.001 [c]
	Residue	212.022	257	0.825		
	Total	318.812	259			
3	Regression	116.373	3	38.791	49.054	<0.001 [d]
	Residue	202.439	256	0.791		
	Total	318.812	259			

[a]—Dependent variable: C-SSRS. [b]—Predictors: (Constant) and INQ-PB. [c]—Predictors: (Constant), INQ-PB, and ACSS-FAD. [d]—Predictors: (Constant), INQ-PB, ACSS-FAD, and INQ-TB.

Through a simple linear regression, we examined the impact of the interaction variable on the PHQ-9 and C-SSRS results, but it had a small negative beta value (−0.003) with a p-value = 0.888 for PHQ-9. The results for C-SSRS were similar, with a beta = −0.076 and a p-value = 0.207, so the interaction did not have a statistically significant effect on the model, adding no value to it.

Regarding the influence of potential confounders (sex, age cohabitation unit, marital status, educational level, and occupation), in the Spanish sample, the F values did not reach a statistical significance for any of them using either CRSS or PHQ-9 as the dependent variable.

3.2.2. Japanese Results

Using the PHQ-9 results as the dependent variable, the first model also included only the independent variable 'perceived burdensomeness', and in the second model, 'thwarted belongingness' was also added. The adjusted R^2 increased with the inclusion of this second factor from 0.381 to 0.400 ($p < 0.05$), but the first model maintained a higher level of significance.

In the ANOVA table (Table 7), it can be seen that the differences in the sum of squares between the models are not substantial, but model 2 improves the model, as it explains more variability in PHQ-9 scores, increasing this value with the contribution of INQ-TB and reducing the error (residual values). Although the F value in the second model remains still significant, the explained variance is now divided between two predictors instead of one.

In model 1, the standardized beta had a value of 0.620 ($p < 0.001$) for INQ-PB with a t = 10.459, confirming its high contribution to the model. In model 2, the INQ-PB standardized beta reduced to 0.513, sharing its contribution with INQ-TB with beta = 0.184 ($p < 0.05$), which had a smaller impact but was still relevant with a t = 2.560 ($p = 0.011$), improving the explanation of the model.

The simple regression model including the interaction variable between the measures of the three dependent variables (INQ-PB, INQ-TB, and ACSS-FAD) in the Japanese sample yielded a value of beta = 0.180 ($p = 0.009$) with the PHQ-9, which was more significant than those for INQ-TB and ACSS-FAD individually but not more than INQ-PB (beta = 0.535; $p < 0.001$).

Table 7. Analysis of variance (ANOVA) with depression symptoms through the PHQ-9 in the Japanese sample.

Model [a]		Sum of Squares (SS)	Degrees of Freedom (DF)	Mean Square (MS)	F = (MSR/MSE)	Sig.
1	Regression	2815.636	1	2815.636	109.400	<0.001 [b]
	Residue	4504.003	175	25.737		
	Total	7319.638	176			
2	Regression	2979.074	2	1489.537	59.711	<0.001 [c]
	Residue	4340.565	174	24.946		
	Total	7319.638	176			

[a]—Dependent variable: PHQ-9. [b]—Predictors: (Constant) and INQ-PB. [c]—Predictors: (Constant), INQ-PB, and INQ-TB.

Regarding the Japanese sample, using the C-SSRS as a dependent variable, the first model included only the independent variable 'perceived burdensomeness', while the second model added 'capability for suicide'. The adjusted R^2 increased with the inclusion of this second factor, increasing from 0.133 to 0.150 ($p < 0.05$), but the first model showed a higher level of significance.

In the ANOVA table (Table 8), the F values for both models are high, with a significant p-value (<0.001), indicating that both models are statistically significant in predicting C-SSRS results. Moreover, the differences in the sums of squares increased from model 1 to model 2, suggesting that model 2 improves the overall fit by reducing unexplained variability (residual sum of squares) and increasing explained variability.

Table 8. Analysis of variance (ANOVA) with suicidal ideation severity through C-SSRS in the Japanese sample.

Model [a]		Sum of Squares (SS)	Degrees of Freedom (DF)	Mean Square (MS)	F = (MSR/MSE)	Sig.
1	Regression	31.544	1	31.544	28.058	<0.001 [b]
	Residue	196.739	175	1.124		
	Total	228.282	177			
2	Regression	36.383	2	18.191	16.495	<0.001 [c]
	Residue	191.900	174	1.103		
	Total	228.282	176			

[a]—Dependent variable: C-SSRS. [b]—Predictors: (Constant) and INQ-PB. [c]—Predictors: (Constant), INQ-PB, and ACSS-FAD.

The standardized beta coefficient for INQ-PB of 0.372 ($p < 0.001$) confirmed that 'perceived burdensomeness' is a relevant, positive, and moderate predictor for the model, supported by a t value of 5.297. In model 2, after adding ACSS-FAD (beta = 0.150; $p = 0.038$), the effect of INQ-PB decreased slightly (beta = 0.336; $p < 0.001$), suggesting that both variables explained part of the variability in C-SSRS. Although this second independent variable had a greater impact in the model with a t value of 4.695 ($p < 0.001$), its contribution was slightly weaker than in the first model. As for the C-SSRS, the interaction variable was not statistically significant, with a beta = 0.122 ($p = 0.141$).

3.3. Sociodemographic Variables

Final analyses were performed to examine the influence of sociodemographic factors while controlling for the independent variables. Through Levene's test for equality of variances, there was not a significant difference in age distribution across both samples (F = 0.929; $p > 0.05$), indicating that the samples are comparable in terms of age. Regarding

the differences in means in the dichotomous variable 'sex' in both dependent and independent variables, in the Spanish sample, we found statistically significant differences ($p < 0.05$) in the independent variables 'capability for suicide' (t = −4.83) and 'thwarted belongingness' (t = −1.98), which were on average higher in both cases in men. In the Japanese sample, statistically significant differences were only found in the independent variable 'capability for suicide' (t = −2.27; $p < 0.05$), which was also higher in men.

A one-way ANOVA was performed using the univariate general linear model to examine the extent to which PHQ-9 scores in the Spanish sample were related to occupation. The analysis revealed significant differences between groups: an F = 6.86 ($p < 0.001$), with an eta square of 0.097 (medium effect size) and a statistical power of 99.4%. Given these results, we proceed with the post hoc analysis, and using the Games–Howell test, we observed significant differences ($p < 0.05$) between the working participants ($\overline{x} = 0.84$) and those who were unemployed ($\overline{x} = 1.66$), those studying ($\overline{x} = 1.45$), and those working and studying at the same time ($\overline{x} = 0.92$). For the categorical variable marital status, a one-way ANOVA also indicated significant differences (F = 4.01; $p < 0.05$; eta square = 0.04) and power above 70%. Post hoc comparisons revealed that the main differences were between single and married participants. No significant differences were observed for educational level and cohabitants variables, as indicated by F values with a $p > 0.05$. Regarding the relationship of these categorical variables with the C-SSRS, significant differences were observed only with occupation, with a F = 3.27 ($p < 0.05$), eta square = 0.049, with a power of 0.832. Post hoc analysis showed differences mainly between people who were working and those studying. In contrast, in the Japanese sample, no significant differences were found between any of the categorical variables and either the C-SSRS or the PHQ-9 ($p > 0.05$).

An analysis of covariance (ANCOVA) was conducted through a univariate general linear model to examine the influence of these categorical variables on depressive symptomatology measured by the PHQ-9 and on suicide risk measured by the C-SSRS while controlling for the independent variables ('perceived burdensomeness', 'thwarted belongingness', and 'capability for suicide'). In the Spanish sample, the model showed high explanatory power with the PHQ-9 (adjusted $R^2 = 0.944$) and lower with the C-SSRS (adjusted $R^2 = 0.329$), without any of the covariates (sex, occupation, cohabitants, marital status, education, and age) having a significant effect on the dependent variables (PHQ-9 and C-SSRS results) since all the *p*-values are greater than 0.05 (Tables 9 and 10).

All categorical variables (sex, occupation, marital status, and education level) were recoded into dummy variables prior to inclusion in the ANCOVA, using one category as the reference group to avoid multicollinearity. The age was introduced as a continuous variable, along with the independent variables.

Table 9. Analysis of covariance (ANCOVA) of inter-subject effects on PHQ-9 results in the Spanish sample.

Variable	df	F	Sig.	Partial Eta^2
Sex	2	0.699	0.498	0.006
Occupation	4	1.048	0.383	0.018
Cohabitants	6	1.293	0.261	0.032
Marital status	3	1.352	0.258	0.017
Educational level	7	0.520	0.819	0.015
Age	1	0.000	0.984	0.000
ACSS-FAD	1	4.543	0.034	0.019
INQ-TB	1	1.464	0.228	0.006
INQ-PB	1	2274.129	0.000	0.907

Table 10. Analysis of covariance (ANCOVA) of inter-subject effects on C-SSRS results in the Spanish sample.

Variable	df	F	Sig.	Partial Eta^2
Sex	2	0.125	0.883	0.001
Occupation	4	0.364	0.834	0.006
Cohabitants	6	1.469	0.190	0.036
Marital status	3	0.582	0.628	0.007
Educational level	7	1.131	0.344	0.033
Age	1	0.093	0.760	0.000
ACSS-FAD	1	33.298	0.000	0.125
INQ-TB	1	17.970	0.000	0.072
INQ-PB	1	4.738	0.031	0.020

On the other hand, in the ANCOVA performed on the same covariates on the dependent variables measured by the PHQ-9 and C-SSRS in the Japanese sample, we found a statistically significant effect of sex on PHQ-9 scores, as can be seen in Table 11, indicating that depressive symptomatology varied by sex but not suicide risk (C-SSRS scores) (Table 12). Although the mean of PHQ-9 scores was higher in women (M = 11.14; SD = 6.05) compared to men (M = 9.55; SD = 6.80), Levene's test yielded results that indicated equality of variances (F = 3.134; p = 0.078), and the t-test did not show a significant difference in PHQ-9 scores between men and women (t = 1.645; df = 175; p = 0.102).

Table 11. Analysis of covariance (ANCOVA) of inter-subject effects on PHQ-9 results in the Japanese sample.

Variable	df	F	Sig.	Partial Eta^2
Sex	1	12.476	0.001	0.078
Occupation	5	0.707	0.619	0.023
Cohabitants	8	0.590	0.785	0.031
Marital status	4	1.804	0.131	0.047
Educational level	7	0.443	0.874	0.021
Age	1	0.266	0.607	0.002
ACSS-FAD	1	0.062	0.804	0.000
INQ-TB	1	6.221	0.014	0.041
INQ-PB	1	44.762	<0.001	0.233

Table 12. Analysis of covariance (ANCOVA) of inter-subject effects on C-SSRS results in the Japanese sample.

Variable	df	F	Sig.	Partial Eta^2
Sex	1	2.366	0.126	0.016
Occupation	5	0.261	0.934	0.009
Cohabitants	8	0.316	0.959	0.017
Marital status	4	1.521	0.199	0.040
Educational level	7	0.753	0.627	0.035
Age	1	0.406	0.525	0.003
ACSS-FAD	1	4.637	0.033	0.031
INQ-TB	1	0.260	0.611	0.002
INQ-PB	1	10.249	0.002	0.065

4. Discussion

4.1. Implications of Findings

This study explored the cultural differences in the impact of the variables cited by Joiner's interpersonal theory of suicide (Joiner 2005) on suicide risk and depression symptoms in young adults from Spain and Japan. The fact that there were such slight differences in the categorical variables in the Spanish sample and non-significant differences in the Japanese sample would reinforce the validity of the comparison between both countries.

Whereas 'perceived burdensomeness' stood out as the most relevant variable in the models of both samples, the other independent variables showed some difference by explaining part of the variability in the dependent variable and improving the model although more modestly. The relevance of 'perceived burdensomeness' in suicide risk was already highlighted in high-risk populations (Lieberman et al. 2023). The overall scores of the Japanese sample on this variable were more than double those of the Spanish sample, showing a significant difference. Although certain cultural values may protect against the 'perceived burdensomeness', like enduring challenges (Taku and Arai 2023), this did not prevent this interpersonal dimension from remaining higher in Japanese young adults, perhaps due to structural, social, or normative pressure factors. To verify H1 in the Japanese sample about the effect of the measures of the independent variables over the 'suicide risk', we performed a simple regression model with the C-SSRS, which showed similar results in explaining the model with the main influence of INQ-PB and ACSS-FAD. The same analysis with PHQ-9 results showed better outcomes of the model only including the INQ-PB, with positively statistically significant higher beta values related to 'depression symptoms'. On the other hand, in the Spanish sample, beta values of the interaction were not significant for the dependent variables. So, the association hypothesis would be partially fulfilled only in the Japanese population. These results find support in Nakamura et al.'s (2022) findings, where Japanese cultural characteristics such as self-reliance, a lower tendency to seek professional support, and limited access to psychological resources can intensify the perceptions of being a burden on acquaintances or the ability to take one's own action to resolve problems. Although the interaction variable did not provide major differences, in the stepwise regression, models each of the independent variables explained part of the variability in both samples. Answering to what extent the association of these three independent variables explain differences in suicide risk in both samples, we found similar results both in the first simple Pearson correlations and in the linear regression model to those found in comparative studies with different cultural samples (Suh et al. 2017). Despite relationships between some pairs of these three variables (e.g., INQ-TB and INQ-PB), the three-way interaction was also non-significant.

The H2 was not fully met when we compared the standardized beta coefficients of the ANOVA between Spain and Japanese samples. We found in the Spanish sample higher statistically significant beta values than in the Japanese sample, both with the PHQ-9 (B = 0.971 vs. B = 0.620) as a measure for the dependent variable and with the C-SSRS (B = 0.502 vs. B = 0.372), concluding a stronger relationship between the three independent variables and 'suicide risk' in the Spanish group. These results make sense since the ITS has been applied mostly in Western cultures, although its validation in Eastern cultures is increasingly widespread (Lai 2019; Suh et al. 2017; Zhang et al. 2013).However, 'thwarted belongingness' appeared as an important predictor (B = 0.184, $p < 0.05$) in model 2 of the Japanese sample for the dependent variable measured by the PHQ-9. In Japan, 'perceived burdensomeness' and 'thwarted belongingness' have been linked to the hikikomori phenomenon, which reflects extreme social withdrawal, suggesting that cultural factors may intensify suicide risk when comparing these variables with countries like the United States (Taku and Arai 2023). In the Spanish sample, the independent

variable 'thwarted belongingness' only appeared in the third model using the C-SSRS. From the greatest to least extent, the most relevant factor in the Spanish sample to predict 'suicide risk' was 'perceived burdensomeness', followed by 'acquired capability for suicide', and in last place 'thwarted belongingness'. In a Spanish study on ITS with university students, 'thwarted belongingness' and 'perceived burdensomeness' were found as direct predictors of suicidal ideation, but indirect pathways were also seen through the variable 'hopelessness' (Pérez Rodríguez et al. 2023) in adolescents; equally strong results were found for the variable 'perceived burdensomeness', which was relevant in the predictive model, but 'thwarted belongingness' also correlated significantly with suicide risk (Caro-Cañizares et al. 2024). Although general levels of 'thwarted belongingness' were slightly higher in the Spanish sample, this difference did not translate into a statistically robust relationship with 'suicide risk'. 'Thwarted belongingness' replaced 'acquired capability' in the importance it had in contributing to the variability in the Japanese sample, which could be explained given the collectivist nature of Japanese society. Nevertheless, studies in other countries also considered collectivist, such as China, did not find the same weight in this variable (Zhang et al. 2013), fitting better with the results of other studies that have compared samples from collectivist and individualist cultures (Korea vs. U.S.) (Suh et al. 2017), where no significant differences were found in the ways that 'thwarted belongingness', 'acquired capability', and 'perceived burdensomeness' contribute to explain suicide behavior.

The H3 was not fulfilled since in the regression model in the Spanish sample ACSS-FAD appeared as a relevant predictor, with the dependent variable's measure C-SSRS and having higher values: B = 0.292 in model 2 and B = 0.280 in model 3 ($p < 0.001$) vs. B = 0.150 ($p = 0.038$) in Japanese. This differs from the findings of studies that sought to examine the role of 'acquired capability for suicide' as an essential component of moving from suicidal ideation to suicide attempt, studying this problem first from the perspective of a traditional Asian culture, such as Korean (Park et al. 2017). Nevertheless, the Spanish results are consistent with previous research conducted in clinical Spanish population that indicated the 'acquired capacity for suicide' as a relevant factor in predicting suicide risk together with mentalizing, significantly mediating the relationship between suicidal ideation and the lethality of the suicide attempt, as well as self-harm behaviors (Andreo-Jover et al. 2024). Even mentalizing is not exclusive to individualistic societies; in these cultures, there are often more social and educational values that promote it. However, H4 was partially fulfilled, as the 'acquired capability for suicide' emerged as the second-best predictor of suicide risk in the regression models with C-SSRS, but with the dependent variable measured by the PHQ-9, in the Japanese sample, the ACSS-FAD was excluded due to a non-significant negative beta value (beta = −0.30, $p = 0.622$), and in the Spanish sample, it explained little variability (beta = 0.036).

The results of Levene's test indicated no significant differences in age distribution between the two samples as expected, since we chose a specific age range (18–40) for young adults, minimizing potential confounding effects related to this variable when comparing the samples' results. Regarding sex, we only observed significant differences in 'capability for suicide' and 'thwarted belongingness' in the Spanish sample and only in this first variable in the Japanese sample. Highlighting men in these constructs suggests that men may perceive themselves as more capable of engaging in suicidal behavior and experience higher levels of 'thwarted belongingness' compared to women, which aligns with previous research (Witte et al. 2012). The construct of 'thwarted belongingness', which is related to 'loneliness', could be explained in the Spanish sample based on the results of the Barometer Report on Unwanted Loneliness in Spain Fundación ONCE and Fundación AXA (2024),

which highlights that 20% of the national population suffers from unwanted loneliness, with a four times higher percentage of people showing suicidal behavior.

As for the other categorical variables we examined, significant differences were only found in the Spanish sample. The univariate general linear model revealed that the PHQ-9 and C-SSRS values in the Spanish sample were significantly related to occupation, playing a key role in explaining variance in depression scores, with a moderate effect size that indicated a relatively strong relationship between occupation and depression. These findings suggest that employment is associated with lower levels of depression, while individuals who are unemployed or balancing work and study reported higher levels of depressive symptoms, consistent with World Health Organization (2024b) findings on mental health that describe decent work as aiding integration and improving social functioning. This could be due to various factors, such as stability compared to the potential stress and financial insecurity associated with unemployment (Sinyor et al. 2024) or managing both work and study simultaneously.

Regarding the marital status variable, significant differences were also observed in PHQ-9 results between single individuals and married individuals, indicating that marital status may influence mental health, fitting in with the literature indicating that married individuals report lower risk of suicidal thoughts (Stephenson et al. 2023).

The findings from the Spanish and Japanese samples revealed noteworthy similarities and differences in the prevalence of depression based on PHQ-9 scores: 35.26% of the Spanish sample reported experiencing mild depressive symptoms compared to 30.5% of the Japanese sample who reported moderate symptoms, suggesting that while the prevalence of depressive symptoms in both populations is notable, the severity of depression may vary between the two groups, so the comparison can reflect relative differences. The greater prevalence of moderate depressive symptoms in the Japanese sample could reflect a different cultural understanding of depression or varying thresholds for what is considered 'moderate' (Kitanaka 2012). The higher levels of depression may reflect a general increase in the prevalence of major depressive disorders in that country, especially among young people, in the post-COVID-19 pandemic context. Recent data based on real-life health records showed that the prevalence of depression in people under 20 years of age in Japan increased from 3.7% to 4.8% between 2019 and 2020 (Demiya et al. 2022), suggesting an upward trend, as well as in Spain, where according to official data, in 2022, more than 2.4 million cases of depression were treated in primary care (Statista 2024b).

When comparing suicide risk findings using the C-SSRS, the Spanish sample showed a higher proportion of participants reporting no risk, whereas the Japanese sample exhibited more individuals with elevated levels of risk, which aligns with the national suicide rates of both countries (World Population Review 2025). This suggests that the magnitude of these indicators cannot be attributed to sample size but may reflect cultural, social, or structural differences specific to the Japanese context. As Japan has a population approximately three times that of Spain, the number of suicides is more than five times higher (Instituto Nacional de Estadística 2023; Statista 2024a), demonstrating a disproportionate burden of this phenomenon in Japanese society.

In terms of the 'perceived burdensomeness' subscale of the INQ, the Japanese sample had a significantly higher percentage (57.6%) of participants scoring above the threshold compared to the Spanish sample (29.6%). Recent research demonstrated that 'perceived burdensomeness' is a significant predictor of a pre-suicidal cognitive–affective state, mediating the effect of emotional dysregulation (Lidia et al. 2025). This difference could be indicative of cultural variations in how individuals in each country view their personal impact on others, with Japanese individuals potentially more likely to internalize feelings of burden due to social and cultural norms (Gross 1998). On the other hand, the subscale of

'thwarted belongingness' showed similar percentages between the two groups although with significant differences, showing the feeling of not belonging or being isolated may be a cross-cultural experience for both populations albeit to a slightly different extent (Badman et al. 2022; Fundación ONCE and Fundación AXA 2024). Lastly, in the ACSS-FAD, the Japanese sample had a lower mean compared to the Spanish sample, contrary to what was expected given the attitude towards this problem in Japanese society (Otsuka et al. 2020).

4.2. Limitations and Strengths of the Study

One of the main limitations was the difficulty of recruiting large samples, affecting data collection (low response rate and difficulties accessing people), especially in Japan, even though the survey was anonymous. Perhaps the participants who responded were more open to talking about the topic, although in 2006, the Basic Act on Suicide Countermeasures in Japan allowed suicide to be recognized as a social issue; until then, it was considered taboo and reserved for personal matters (World Health Organization 2024c). Even though our sample size may be adequate, the restricted age range (18–40 years) provides greater homogeneity, which facilitates the detection of associations among the core variables of the theory without being confounded by broader age-related effects. However, we must be cautious when generalizing the results, and future research should attempt to achieve a larger sample size to strengthen external validity.

Another limitation could be associated with the type of design; this cross-sectional study, did not allow establishing robust causal relationships between the variables. Even though the fact of measuring it in two different samples may have compensated in some way for the confirmation of the results found by coincidence, there will be differences in how suicide and mental health are expressed and understood in each culture.

Finally, there is no universal consensus on cut-off points for one of the scales used for the dependent variable (ACSS-FAD), which could affect the comparison between samples, with the use of another parallel test (PHQ-9) indicating a highly related construct can compensate for this bias.

4.3. Future Research Lines

This study highlights cultural differences between Spanish and Japanese populations regarding suicide risk in young people. While the findings are insightful, future research should focus on gathering larger and more diverse samples to enhance the reliability and applicability of the results by evaluating these constructs longitudinally and across different populations. Given that the current study did not apply the ITS variables in their original interactive form (testing moderation effects) but rather treated suicide risk as a continuous outcome, we employed simpler regression models. This approach allowed assessment of the additive contribution of 'capability for suicide' to suicide risk rather than assessing the full interactional structure proposed by this theory. Therefore, the analysis offered an initial approximation of the applicability of the interpersonal theory of suicide (ITS) in diverse cultural contexts but does not constitute a formal validation of the model. It would be relevant to examine in greater depth how interpersonal variables affect distinct levels of suicide risk severity, thus allowing for better adjustment of preventive strategies and specific interventions according to the risk profile. For that, it would be interesting to collaborate with mental health institutions to utilize more accessible methodologies for data collection.

5. Conclusions

The importance of exploring theoretical frameworks such as the interpersonal theory of suicide across different countries lies in the need to verify its universalization or whether it needs adjustment, tailoring prevention strategies, and improving understanding of the culture-specific pathways that can influence suicide (identifying potential risk modifiers and their effects). Although this study did not aim to validate the ITS, it contributes to the cross-cultural examination of some of its core constructs, offering insights into how they may operate differently depending on cultural context. Additionally, comparing it with specific age groups (as in this case in young adults) is key, as risk factors can vary significantly depending on physical and psychological developmental stage, life experiences, and social context.

In sum, by bridging descriptive and explanatory approaches, this study contributes to filling a research gap by moving beyond previous descriptive studies that have primarily focused on reporting rates of suicidal ideation and behavior.

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Informed Consent Statement: Prior to participation in the survey, informed consent was obtained digitally from all subjects involved in the study. Participants were directed to a home page containing detailed information about the study, including its purpose, the voluntary nature of participation, the confidentiality of data collected, and the possibility to withdraw from the study at any time without penalty. To proceed with the survey, participants were required to tick a box stating: 'I have read and understood the in-formation provided and agree to participate in this study'. Only after selecting this option were they allowed to access the content of the questionnaire. This process complies with the ethical standards for online research set by the Organic Law 15/1999 of 13 December on the Protection of Personal Data.

Data Availability Statement: Research data are not shared as part of an ongoing study. The statistical data as well as the sociodemographic data obtained through the survey administered to the participants remain in the custody of the authors for reasons of confidentiality unless externally requested to the corresponding author, which would be delivered encoding all pertinent socio-demographic data to preserve the identity of these. The original contributions presented in the study are included in the article, and further inquiries can be directed to the corresponding author. All data relating to this research, which is part of the doctoral thesis of the main researcher of this study, will be part of the repository of the University of Murcia, and this institution undertakes their safeguarding for the stipulated period conveniently. Protocol registration code: https://doi.org/10.17605/OSF.IO/D7YRG.

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