



Individual differences in interpersonal security predict suicidal ideation and problem gambling

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ARTICLE INFO

Keywords:

Suicide
Gambling
Attachment
Interpersonal security
Emotional intelligence

ABSTRACT

Suicidality and problem gambling represent global health issues. Based on evidence from recent literature, the aim of the present study was to test a theoretical model, in which: (1) Emotional Intelligence and Self and Other Representations of adult attachment combine into a latent factor representing Interpersonal Security; (2) Interpersonal Security negatively predicts Problem Gambling and Suicidal Ideation, respectively; (3) Problem Gambling positively predicts Suicidal Ideation. We used Structural Equation Modelling to test the study hypotheses. The model showed good fit to the data. Factor loadings were high and statistically significant. We found that the hypothesis of Emotional Intelligence and Self and Other Representations combining into a common factor, Interpersonal Security, is empirically supported. The joint effect of Interpersonal Security and Problem Gambling explains about the 63% of variance of Suicidal ideation. The path from Interpersonal Security to Suicidal Ideation is significant and high, whilst the path from Problem Gambling to Suicidal Ideation is not significant. Interpersonal Security explains about 16% of the variance of Problem Gambling. These results outline an integrated model of Suicidal Ideation and Problem Gambling in the community from an interpersonal-psychological perspective, with important implications for researchers, mental health practitioners, and policymakers.

1. Introduction

Suicidality and Problem Gambling represent two major global health issues (World Health Organisation, 2014, 2018). Suicidal Ideation is defined as “thinking about, considering, or planning suicide” (Klonsky, May, & Saffer, 2016, p. 309). Problem Gambling refers to the early stage of experiencing intense and frequent urges to gamble despite harmful negative consequences or desire to stop (Bickel, Jarmolowicz, Mueller, Koffarnus, & Gatchalian, 2012, p. 291), encompassing a wide range of difficulties but not meeting the diagnostic criteria of pathological gambling (Loo, Raylu, & Oei, 2008; Raylu & Oei, 2002; Rosenthal, 1989). Research indicates a relation between Suicidal Ideation and Problem Gambling (Bischof et al., 2015; Blaszczynski & Farrell, 1998; Iliceto et al., 2016; Ronzitti et al., 2017; Testa et al., 2017a; Testa et al., 2017b) and higher suicide mortality in pathological gamblers compared to the rest of the population (Karlsson & Håkansson, 2018; Manning et al., 2015; Thon et al., 2014; Wardle, Dymond, John, & McManus, 2019).

The Interpersonal-Psychological Theory of Suicide highlights the role of individuals' perception of security in interpersonal relationships as a protective factor against hopelessness, suicidal ideation and behavior (Joiner, 2005; Joiner et al., 2009; Joiner, Buchman-Schmitt, & Chu, 2017; Tucker et al., 2018; Van Orden et al., 2010). According to the theory, the simultaneous occurrence of two interpersonal-psychological states, namely perceived burdensomeness and thwarted belongingness, predicts Suicidal Ideation (Joiner et al., 2009; Joiner et al., 2017). Joiner et al. (2009) defined perceived burdensomeness as “the view that one's existence burdens family, friends, and/or society” (p. 2) and thwarted belongingness as the “experience that one is alienated from others, not an integral part of a family, circle of friends, or other valued group” (p. 2). Iliceto et al. (2016) found that Problem Gambling, in association with negative Representations of the Self and the Others and emotion dysregulation, contributes to explain Suicidal Ideation. However, to the best of our knowledge, no prior studies have attempted to investigate suicidality in problem gamblers using the Interpersonal-Psychological Theory of Suicide.

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<https://doi.org/10.1016/j.paid.2020.110031>

Received 24 January 2020; Received in revised form 27 March 2020; Accepted 28 March 2020

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Recent studies have highlighted the role of Emotional Intelligence (Petrides & Furnham, 2001; Petrides, Pita, & Kokkinaki, 2007; Wong & Law, 2002) and Self and Other Representations of adult attachment (Ainsworth, 1989; Bowlby, 1969; Candilera, 2007) in protecting individuals from the risk of Suicidal Ideation and Problem Gambling (Abdollahi, Carlbring, Khanbani, & Ghahfarokhi, 2016; Boroujerdi, Kimiaee, Yazdi, & Safa, 2019; Fino, Iliceto, Sabatello, Petrucci, & Candilera, 2014; Goodman et al., 2018; Iliceto et al., 2016; Keough, Penniston, Vilhena-Churchill, Michael Bagby, & Quilty, 2018; Korkmaz et al., 2020; Parker, Summerfeldt, Taylor, Kloosterman, & Keefer, 2013). These two constructs share commonalities with the conceptual framework of the Interpersonal-Psychological Theory of Suicide. Particularly, they point out to the sense of interpersonal security derived from individuals' emotion regulation and self/other representation, respectively, as a buffer against desiring and ideating suicide.

Emotional Intelligence is defined by Petrides and Furnham (2001) as "a constellation of traits" (p. 425) and emotional self-perceptions (Petrides et al., 2007). Currently, two distinct constructs are available: (1) trait Emotional Intelligence and (2) ability Emotional Intelligence. The two involve different measurement approaches, whereas trait Emotional Intelligence is measured through self-reports and ability Emotional Intelligence is measured through maximum performance tests (Siegling, Saklofske, & Petrides, 2015). Petrides and Furnham (2001; as cited in Siegling et al., 2015) argued that despite claims of operationalising the same construct, measurement differences underly incommensurable constructs. In particular, the trait Emotional Intelligence model proposed by Wong and Law (2002; Law, Wong, & Song, 2004) conceptualizes Emotional Intelligence as multi-dimensional, including: (1) self-emotional appraisal; (2) others' emotion appraisal; (3) use of emotion; (4) regulation of emotions. The authors developed a self-report instrument named *Wong and Law Emotional Intelligence Scale* (Wong & Law, 2002). Their model is empirically supported, and the instrument was successfully validated and adapted to a variety of contexts and populations (Di Fabio & Saklofske, 2014a; Di Fabio & Saklofske, 2014b; Iliceto & Fino, 2017; LaPalme, Wang, Joseph, Saklofske, & Yan, 2016). Studies show that Emotional Intelligence protect individuals against the risk for Suicidal Ideation (Abdollahi et al., 2016; Korkmaz et al., 2020) and Problem Gambling (Parker et al., 2013).

Self and Other Representations of adult attachment are internalized models of self and others developing through early childhood interactions with caregivers, ultimately exerting a key influence on the development of individuals' attachment style, emotional regulation, and overall interpersonal functioning across the lifespan (Ainsworth, 1989; Fino et al., 2014; Gallo, Smith, & Ruiz, 2003). A vast literature based on the Attachment Theory (Bowlby, 1969) focusses on the role of negative attachment experiences in the consolidation of dysfunctional models of self and others in adulthood and their impact onto individuals' mental health (Ainsworth, 1989; Bartholomew, 1990; Bartholomew & Horowitz, 1991; Bowlby, 1969; Dykas & Cassidy, 2011; Main, Kaplan, & Cassidy, 1985; Mikulincer & Shaver, 2016; Stepp et al., 2008; Venta, Mellick, Schatte, & Sharp, 2014). Fraley and Shaver (2000) argued that adults with positive representations of the self and the others are effective in regulating emotions and in developing and maintaining interpersonal relationships. Studies show that negative Self and Other Representations predict Suicidal Ideation (Boroujerdi et al., 2019; Fino et al., 2014; Goodman et al., 2018) and Problem Gambling (Iliceto et al., 2016; Keough et al., 2018).

There is increasing evidence that Emotional Intelligence and Self and Other Representations are correlated constructs (Doinita, 2015; Iliceto & Fino, 2017; Kafetsios, 2004). In this regard, Marks, Horrocks, and Schutte (2016) recently hypothesized that Self and Other Representations influence the development of Emotional Intelligence and the authors recommended further exploration of the association between the two constructs. Based on the conceptual commonalities between trait Emotional Intelligence theory, the Attachment Theory, and

the Interpersonal Theory of Suicide, and evidence from recent literature discussing the role of Emotional Intelligence and Self and Other Representations in Suicidal Ideation and Problem Gambling, in the present study we aimed to test the following hypotheses: (1) Emotional Intelligence and Self and Other Representations of adult attachment combine into a latent factor representing Interpersonal Security; (2) Interpersonal Security negatively predicts Problem Gambling and Suicidal Ideation, respectively, the latter defined from an interpersonal-psychological perspective; (3) Problem Gambling positively predicts Suicidal Ideation.

2. Material and methods

2.1. Participants and procedure

Participants were recruited from May 2018 to January 2019 in two non-randomly selected Italian regions that are highly representative of the demographic and socio-economic background of Italy, namely Lombardy (north) and Lazio (mid), with overlapping characteristics to those of the residents in Italy as reported in the labour market stock indicators published by the Italian National Institute of Statistics (2019) in the HumanCapital.Stat data warehouse.

Two interviewers approached potential participants individually, face-to-face, in public places as universities, parks, shops, senior centres, markets, banks, and post offices. One interviewer operated in Lombardy and one in Lazio, respectively. Both interviewers were professional psychologists trained on the research protocol. Interviewers verbally introduced themselves, the study and its purposes, and invited individuals to participate on a voluntary basis. In order to proceed, they asked potential participants to read a detailed participant information sheet, and in case of interest to participate to the study, to accept and sign a written informed consent form. Following, interviewers screened those who signed informed consent on the basis of one inclusion criterion and one exclusion criterion. The inclusion criterion was to have gambled at least more than once in the past six months, even if just occasionally. The exclusion criterion was the inability to speak and read Italian. Those who met both inclusion and exclusion criteria were then administered a number of paper-and-pencil self-report measures. All participants received adequate debriefing following the completion of the study procedure.

The study procedure was reviewed and approved by an internal ethical committee, composed of a psychometrician and a clinical psychologist, and two external reviewers with expertise in the field of psychology and psychometrics. The committee oversaw compliance of the study with ethical standards, in particular with the Code of Ethics of the World Medical Association (2013), Declaration of Helsinki for research involving humans.

In summary, 417 Italian-speaking adult individuals were approached, of which 19 declined the invite to participate, 44 reported that they had not gambled at least more than once in the past six months, and 11 did not complete the procedure. Overall, 343 individuals agreed to participate, completed the study procedure, and were included in the study. Those were 157 women (45.8%) and 186 men (54.2%), with age comprised between 18 and 61 years ($M = 30.9$, $SD = 9.7$), coming from various educational and socio-economic backgrounds. Table 1 reports the characteristics of participants.

We found no differences between women ($M = 30.1$; $SD = 9.6$) and men ($M = 31.5$; $SD = 9.7$) in age ($t_{(341)} = 1.29$; $p = .19$), years of education ($\chi^2_{(2)} = 0.23$; $p = .89$), and marital status ($\chi^2_{(1)} = 0.33$; $p = .56$).

2.2. Measures

We used the *Wong and Law Emotional Intelligence Scale* (WLEIS; Wong & Law, 2002), Italian version (Iliceto & Fino, 2017), to measure trait EI. The WLEIS consists of 16 items, measuring four sub-dimensions

Table 1
Demographic characteristics of the participants ($N = 343$).

		Males ($N = 186$)	Females ($N = 157$)	Statistics	p
Age ^a		31.5 (9.7)	30.1 (9.6)	$t_{(341)} = 1.29$.19
Working status ^b	Housewives	0	6 (3.8)	$\chi^2_{(8)} = 21.7$.006
	University students	41 (22.0)	26 (16.6)		
	Unemployed	13 (7.0)	28 (17.8)		
	Industry workers	22 (11.8)	18 (11.5)		
	Employees	63 (33.9)	51 (32.5)		
	Retailers	19 (10.2)	6 (3.8)		
	Professionals	5 (2.7)	4 (2.5)		
	Entrepreneurs	19 (10.2)	15 (9.6)		
	Teachers	4 (2.2)	3 (1.9)		
	Non-occupied	69 (25.0)	112 (47.3)	$\chi^2_{(1)} = 27.6$	
Education ^b	Occupied	207 (75.0)	125 (52.7)	$\chi^2_{(2)} = 0.23$.89
	≤ 8 years	6 (3.2)	4 (2.5)		
	≤ 13 years	77 (41.4)	68 (43.3)		
Marital status ^b	≤ 18 years	103 (55.4)	85 (54.1)	$\chi^2_{(1)} = 0.33$.56
	Unmarried	106 (64.2)	96 (61.1)		
	Married	59 (35.8)	61 (38.9)		

^a Values expressed as Mean (SD).

^b Values expressed as N (%).

of EI: (1) Self-emotional appraisal; (2) others' emotion appraisal; (3) use of emotion; (4) regulation of emotions.

We measured Self and Other representations through the 9 *Attachment Profile* (9AP: Candilera, 2007). The 9AP is a semi-projective test assessing the quality of interpersonal relationships based on Bowlby's (1969) model of Self and Other Representations and internal working models of attachment. The 9AP measures one's set of representations and expectations in relation to the self and significant others, along two orientations (positive vs. negative). The sum of the scores of the 9 self-related items and the 9 other-related items summarizes the two general indicators of self-representation and other-representation, respectively.

Based on the evidence that no single scale can predict who will ideate or commit suicide to any useful degree (Lotito & Cook, 2015) and literature recommending the use of a combination of scales rather than one scale alone to measure Suicidal Ideation (Simon & Hales, 2012), we used the following, four scales.

The *Interpersonal Needs Questionnaire-15* (INQ-15: Van Orden, Cukrowicz, Witte, & Joiner, 2012), Italian version (Iliceto et al., 2020). The INQ-15 is a 15-item self-report measure of individuals' current beliefs and experiences regarding their interpersonal needs. Previous studies found a latent structure represented by a perceived burdensomeness dimension (items 1 to 6) and a thwarted belongingness dimension (items 7 to 15), with higher scores indicating higher levels in each construct.

The *Beck Depression Inventory-II* (BDI-II: Beck, Steer, & Brown, 1996), Italian version (Ghisi, Flebus, Montano, Sanavio, & Sica, 2006). The BDI-II is a 21-item self-report measure of symptoms of depression, assessing the severity of depressive symptoms and Suicidal Ideation (Lotito & Cook, 2015). BDI-II scores range between 0 and 63.

The *Beck Hopelessness Scale* (BHS: Beck & Steer, 1988), Italian version (Pompili et al., 2009). The BHS is a 20-item self-report scale developed to operationalize the construct of Hopelessness, considered as a proxy of Suicidal Ideation (Fino et al., 2014).

The *Beck Scale for Suicide Ideation* (BSS: Beck & Steer, 1991). The BSS is a 21-item self-report scale assessing the severity of Suicidal Ideation and behavior. Only the first 19 items are scored to measure Suicidal Ideation, whilst the last 2 items are designed to capture the individual's history of suicide attempts.

Similarly, we used multiple scales to assess Problem Gambling, based on recent research highlighting the role of several dimensions

involved in the development and maintenance of Problem Gambling (Iliceto, Fino, & Schiavella, 2018; Loo, Tsai, Raylu, & Oei, 2014; Oei & Goh, 2015) and the need for a combination of scales to measure it (Guillou-Landreat et al., 2016). In particular, we measured negative outcomes of gambling, gambling-related cognitions, gambling urges, and gambling functions, and we used the following four scales, respectively.

The *South Oaks Gambling Screen* (SOGS: Lesieur & Blume, 1987), Italian version (Capitanucci & Carlevaro, 2004). The SOGS is a 20-item questionnaire assessing probable pathological gambling, identifying outcomes such as negative interpersonal and occupational consequences, difficulty in controlling gambling, hiding and/or lying about gambling.

The *Gambling-Related Cognitions Scale* (GRCS: Raylu & Oei, 2004b), Italian version (Iliceto et al., 2015). The GRCS is a multidimensional, 23-item self-report questionnaire designed to assess gambling-related cognitions, in particular: (1) Gambling-related expectancies; (2) illusion of control; (3) predictive control; (4) perceived inability to stop gambling; (5) interpretative bias.

The *Gambling Urge Scale* (GUS: Raylu & Oei, 2004a), Italian version (Iliceto, Fino, & Schiavella, 2019). The GUS is a six-item self-report measure assessing individuals' gambling urges. Total scores are obtained by adding up individual items' values, so that higher scores indicate a higher urge to gamble.

The *Gambling Functional Assessment - Revised* (GFA-R: Weatherly, Miller, & Terrell, 2011; Weatherly, Miller, Montes, & Rost, 2012), Italian version (Iliceto et al., 2018). The GFA-R is a 16-item self-report instrument designed to measure two main functions of gambling, namely positive reinforcement and escape. The GFA-R represents a revised version of the Gambling Functional Assessment originally designed by Dixon and Johnson (2007). Each sub-scale includes 8 items, and responses are summed up to provide a score for that particular sub-scale.

2.3. Statistical analyses

We used Cronbach's alpha to evaluate the reliability of all measures used in the study, Student's t -test to evaluate gender differences, and χ^2 test with Yates's correction for categorical variables.

We tested for multicollinearity by estimating the Variance Inflation Factor (VIF) through a multiple regression model, with all predictors entered simultaneously. Based on previous literature (Stevens, 2002), we considered a VIF > 10 as indicating that multicollinearity affects least squares estimates.

We used Structural Equation Modelling (SEM) with Maximum Likelihood estimation to test the study hypotheses. Caution is recommended in using fit indices and liberal cut-off values for the evaluation of model fit. Sharma, Mukherjee, Kumar, and Dillon (2005) showed that sample size and magnitude of factor loadings impact fit indices and, subsequently, model acceptance/rejection. However, based on evidence emerging from their study, the authors suggested that the use of the Tucker-Lewis Index (TLI), and the Root Mean Square Error of Approximation (RMSEA) should be preferred. Particularly, they showed that the TLI is not dependent on sample size in models with factor loadings ≥ 0.50 and sample sizes ≥ 200 . The TLI highly correlates with the Comparative Fit Index (CFI) and Kenny (2015) argued that only one of the two should be reported, with the CFI being reported more often. The RMSEA is sensitive to sample size but is not affected by the size of factor loadings (Sharma et al., 2005). Similarly, another index that is not affected by model complexity is the Standardized Root Mean Square Residual (SRMR) (Kenny, 2015). Conversely, using the Goodness of Fit Index (GFI) and the χ^2 fit index is discouraged, as both are significantly affected by sample size, increasing the chances of committing a Type I error (Kenny, 2015; Sharma et al., 2005). Based on such recommendations, we considered CFI ≥ 0.95 (Bentler & Bonett, 1980), RMSEA < 0.06 (Browne & Cudeck, 1993), and SRMR < 0.08 (Kenny,

Table 2
Descriptive statistics and reliability coefficients of the whole sample ($N = 343$) and comparisons between males and females.

Scales	M	SD	Skewness	Kurtosis	Cronbach's alpha	Males (N = 186)		Females (N = 157)		$t_{(341)}$	p
						M	SD	M	SD		
						Perceived Burdensomeness (INQ-15)	2.53	1.055	0.982		
Thwarted Belongingness (INQ-15)	3.64	1.192	0.263	-0.914	0.86	3.61	1.132	3.68	1.261	0.569	.570
Depression (BDI-II)	10.69	4.800	0.864	1.071	0.85	10.60	4.905	10.80	4.686	0.395	.693
Hopelessness (BHS)	26.30	12.936	0.639	-0.748	0.81	25.72	12.830	26.99	13.068	0.903	.367
Suicidal ideation (BSS)	2.92	1.609	0.023	-0.982	0.83	2.87	1.572	2.97	1.656	0.593	.553
Self-emotion appraisal (WLEIS)	4.97	1.003	0.181	-0.341	0.84	4.89	0.984	5.06	1.021	1.532	.126
Other's emotion appraisal (WLEIS)	4.84	1.025	-0.212	0.093	0.86	4.76	1.028	4.95	1.014	1.752	.081
Use of emotion (WLEIS)	4.55	1.090	-0.040	-0.190	0.85	4.64	1.151	4.44	1.006	1.702	.090
Regulation of emotion (WLEIS)	5.13	1.028	0.100	-0.053	0.82	5.15	1.005	5.12	1.057	0.303	.762
Self (9AP)	313.34	7.560	-0.024	0.102	0.87	313.76	7.311	312.85	7.839	1.112	.267
Other (9AP)	279.38	6.340	-0.048	-0.100	0.85	279.52	6.570	278.20	6.073	0.462	.645
GUS	5.87	2.160	-0.214	-1.279	0.78	5.68	2.218	6.10	2.073	1.796	.073
GFA-R	45.89	14.134	0.525	0.416	0.81	47.05	15.318	44.50	12.497	1.671	.096
GRCS	43.99	14.111	0.622	0.375	0.84	45.27	15.928	42.47	11.463	1.839	.067
SOGS	2.97	1.566	0.044	-0.972	0.77	2.97	1.499	2.98	1.647	0.077	.938

2015) as indicators of acceptable model fit.

We used SPSS 19.0 (SPSS Inc., Chicago, IL, USA) for all analyses but SEM, for which we used AMOS 20.0 (AMOS: Analysis of Moment Structures).

3. Results

Table 2 reports the descriptive statistics and the Cronbach's alpha values for the whole sample, along with means and standard deviations relevant to gender groups.

The results from the multiple regression model showed VIF values comprised between 1.05 and 7.14, supporting the use of all predictors in the structural model.

Results from SEM showed satisfactory model fit indices (CFI = 0.994; RMSEA = 0.016 with 90% C.I. = 0.000, 0.035; SRMR = 0.029 with 90% C.I. = 0.001, 0.047), representing a good fit to the data and confirming that the measurement model is appropriate to describe the strength of the relations among observed variables and the hypothesized latent factors. Fig. 1 illustrates standardized structural regression coefficients from the model.

We found that the hypothesis of Emotional Intelligence and Self and Other Representations combining into a common factor, namely Interpersonal Security, is empirically supported. The joint effect of Interpersonal Security and Problem Gambling explains about the 63% of variance of Suicidal ideation. The path from Interpersonal Security to Suicidal Ideation is significant and high, whilst the path from Problem Gambling to Suicidal Ideation is not significant. Interpersonal Security explains about 16% of the variance of Problem Gambling.

4. Discussion and conclusions

The aim of the present study was to test a theoretical model based on the following hypotheses: (1) Emotional Intelligence and Self and Other Representations of adult attachment combine into a latent factor representing Interpersonal Security; (2) Interpersonal Security negatively predicts Problem Gambling and Suicidal Ideation, respectively; (3) Problem Gambling positively predicts Suicidal Ideation. We found that the structural model fit the data well. Emotional Intelligence and Self and Other Representations combine into a common, internally consistent factor of Interpersonal Security. The joint effect of Interpersonal Security and Problem Gambling explains a significant portion of variance of Suicidal Ideation, with the path from Interpersonal Security showing a higher weight than the path from Problem Gambling. Interpersonal Security explains a non-significant portion variance of Problem Gambling.

We consider our results as highly informative, with important implications in terms of protecting individuals from the community against the development and maintenance of dramatic conditions such as Suicidal Ideation and Problem Gambling. Evidence from previous study had already indicated that individual differences in Emotional Intelligence and Self and Other Representations predict interpersonal functioning and mental health in adulthood, particularly Suicidal Ideation (Abdollahi et al., 2016; Boroujerdi et al., 2019; Fino et al., 2014) and Problem Gambling (Iliceto et al., 2016; Keough et al., 2018; Korkmaz et al., 2020; Parker et al., 2013). However, to date, no studies had attempted to address the role of Emotional Intelligence and Self and Other representation as dimensions loading onto a single construct, specifically protecting individuals from the risk for Suicidal Ideation and Problem Gambling from a psychological-interpersonal theoretical framework. Our findings disclose a new perspective onto the development of Emotional Intelligence and the role of attachment representations in determining adults' perception of security in interpersonal relationships, with dramatic implications for future research, prevention, and intervention in suicidality in individuals from the community.

Regarding the effect of Interpersonal Security onto Suicidal Ideation, it must be noted that several studies using the Interpersonal-Psychological Theory of Suicide field had already highlighted the crucial role of social support and, more specifically, individuals' perceptions of social support and sense of belonging as protective factors against the risk for suicidality (Anestis, Bagge, Tull, & Joiner, 2011; Bryan, Morrow, Anestis, & Joiner, 2010; Joiner et al., 2009; Joiner et al., 2017; Silva, Ribeiro, & Joiner, 2015; Suh et al., 2017). However, there are at least two novelties emerging from our study: First, the high correlations observed among measures of perceived burdensomeness and thwarted belongingness and measures based on Beck's (1976) cognitive "triad" of suicide, respectively. Second, the high predictive pattern from Interpersonal Security to Suicidal Ideation, making Interpersonal Security an excellent candidate to explain individual variations in perceived burdensomeness, thwarted belongingness, depression, and hopelessness, ultimately contributing to outline an integrated model of prediction of Suicidal Ideation in individuals from the community.

Regarding Problem Gambling, the results from our model indicate that although it contributes to explain Suicidal Ideation, the relevant structural path is lower than the one observed for Interpersonal Security. Moreover, Interpersonal Security explains a non-significant portion of variance of Problem Gambling. To the best of our knowledge, the present study represents the first attempt to investigate patterns of relations between Interpersonal Security, Suicidal Ideation, and Problem Gambling in individuals from the community. For this reason,

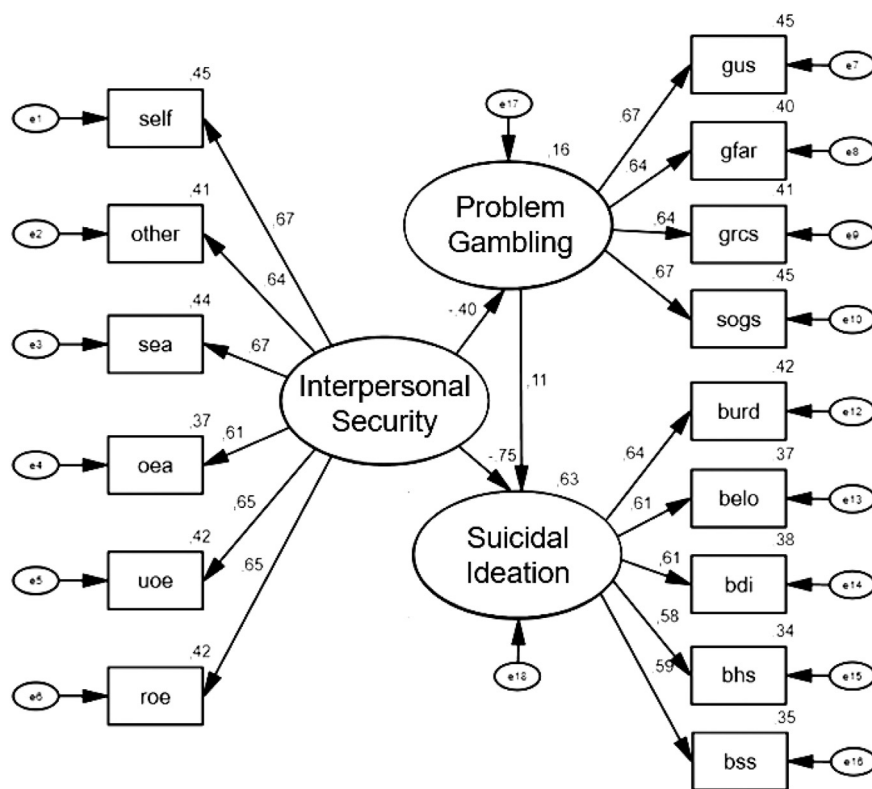


Fig. 1. The standardized solution for the hypothesized model. self= self-perception; other = other perception; sea = self-emotion appraisal; oea = other's emotion appraisal; uoe = use of emotion; roe = regulation of emotion; gus = Gambling Urge Scale; gfar = Gambling Functional Assessment - Revised; grcs = Gambling-Related Cognitions Scale; soggs = South Oaks Gambling Screen; burd = Perceived Burdensomeness; belo = Thwarted Belongingness; bdi = depression; bhs = hopelessness; bss = suicidal ideation.

the results from the present study are novel and promising, but they leave a fundamental question unanswered: Why, on the one hand, Interpersonal Security significantly and highly explains Suicidal Ideation, but on the other hand, its contribution to explain Problem Gambling is low. A possible explanation might be that, because Problem Gambling involves the experience of urges to gamble at an early stage, not matching diagnostic criteria, it may serve as a form of either escape or positive reinforcement in non-pathological individuals (Dixon & Johnson, 2007; Weatherly et al., 2011; Weatherly et al., 2012), but it may not activate the motivational system associated to the need for security in interpersonal relationships, which on the other hand has a major role in the ideation of suicide and psychopathology (Liotti, 2014). Future research will need to address this important question.

Moreover, in the present study, we found that the contribution of Problem Gambling alone to explain Suicidal Ideation is low. Such finding suggests that gambling as a problematic behavior in non-clinical adults is not highly associated with depression, hopelessness, perceived burdensomeness and thwarted belongingness. Studies conducted in clinical samples showed that suicidal gamblers with psychiatric symptoms tend to be highly suicidal, whereas suicide operates as a form of escape from the burden of gambling as an overwhelming, pathological condition (Bischof et al., 2015; Petry & Kiluk, 2002; Ronzitti et al., 2017; Ronzitti, Kraus, Decker, & Ashrafioun, 2019). However, our study shows that this does not apply when gambling operates at a non-pathological level. Based on the results from the present study and the discussed evidence from the literature, we hypothesize that a test of the same structural model in clinical populations may lead to different results, and we recommend that future research aim to test such hypothesis.

In conclusion, the results from the current study outline a comprehensive model of relations between Interpersonal Security, Suicidal Ideation, and Problem Gambling in adult individuals from the community. The findings presented have three main implications: (1) They confirm the role of Interpersonal Security in predicting Suicidal Ideation, supporting the need for effective prevention, education, and

intervention strategies tackling trait Emotional Intelligence and Self and Other representations in the community; (2) they provide a new perspective in the study of Suicidal Ideation, highlighting the key role of Interpersonal Security, integrating empirically solid theoretical framework such as trait Emotional Intelligence theory, the Attachment Theory, and the Interpersonal-Psychological Theory of Suicide, contributing to overcome a common partialism in suicide research (Maung, 2020); (3) they indicate a weak association between Interpersonal Security and Problem Gambling, and between Problem Gambling and Suicidal Ideation in individuals from the community, in contraposition to results found previously in clinical samples, suggesting the existence of different patterns of risk between those from the community at the early phases of developing gambling as a problematic behavior and those for which gambling represents a diagnosed condition.

This study has limitations. First, all measures are participants' self-reports, with potential implications in terms of acquiescence and social desirability of responses. Second, the sample size is limited, given the ratio of indicator variables to latent factors and the fact that sampling was based on convenience rather than a function of minimum effect, power and significance (Westland, 2010). Third, robust estimators were not used to address the random dispersion coming from heterogeneous participants. Fourth, we did not test for moderation, and future studies will benefit from addressing whether low Interpersonal Security and high Problem Gambling significantly interact to predict Suicidal Ideation, beyond the main effects, and whether Interpersonal Security serves as a buffer for Problem Gambling against Suicidal Ideation.

Financial support

This research received no specific grant from any funding agency, commercial or not-for-profit sectors.

Ethical approval statement

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional

research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

CRedit authorship contribution statement

Paolo Iliceto: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Software, Writing - original draft, Project administration, Supervision. **Emanuele Fino:** Conceptualization, Investigation, Writing - original draft, Writing - review & editing, Validation. **Mauro Schiavella:** Writing - original draft. **Gabriella Candilera:** Conceptualization, Investigation, Supervision.

Declaration of competing interest

Authors declare none.

Acknowledgements

This research was realized under the guidance and supervision of Statistics & Psychometrics, Ltd. We thank all our colleagues who provided insight and expertise that greatly assisted the research.

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