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Examining Proximal Risk Factors for Suicide in a Sample of Mexican Adults in Rehabilitation Centers

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The cross-cultural generalizability of the interpersonal theory of suicide was examined in this study. One hundred ninety-nine adults in an inpatient setting in Mexico completed the Personal Resources Questionnaire, Beck Hopelessness Scale, Interpersonal Needs Questionnaire, Acquired Capability for Suicide Scale, and Suicide Behaviors Questionnaire-Revised. Analyses revealed the interaction between perceived burdensomeness and thwarted belongingness did not predict suicide ideation. The interactions between perceived burdensomeness and thwarted belongingness and between perceived burdensomeness and acquired capacity significantly predicted suicidal behaviors, whereas the hypothesized three-way interaction did not. These findings highlight the importance of perceived burdensomeness in the development of suicidal behaviors among Mexican-origin adults.

Suicide rates in Mexico increased significantly, from 3.5 to 5.2 deaths per 100,000 individuals, between 2000 and 2014 (Instituto Nacional de Estadistica y Geografia [INEGI], 2015). As suicide is a growing public health problem in Mexico, development of effective prevention efforts must be prioritized. In this study we aimed to examine some of the well-established risk factors proposed by the interpersonal theory of suicide among a sample of Mexican individuals in rehabilitation centers in Mexico, in the hopes of informing future prevention and intervention efforts in clinics that provide care to at-risk individuals.

This study was conducted with Mexican nationals; however, due to the limited research available regarding the constructs proposed by the interpersonal theory of suicide with Mexican individuals, studies conducted in the United States were also used to guide the hypotheses in this study. Research has found that there are some similarities regarding risk and protective factors for suicidal behaviors among Mexican nationals and Mexican Americans living in the United States (e.g., Garza & Pettit, 2010). Even though these groups have significant differences in their daily experiences (e.g., acculturating processes, historical immigration patterns), the findings from the available studies that have examined well-established predictors (i.e., internalizing symptomatology, hopelessness) and protective factors (i.e., social support) of suicidal behaviors among individuals

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living in Mexico (Almanzar, Valadez, Fausto, & de García Alba, 2003; Monge, Cubillas Rodríguez, Román Pérez, & y Abril Valdez, 2007) are consistent with the findings from studies conducted in the United States (e.g., Hovey & Magaña, 2000). For example, just as in US samples, depressive symptoms and hopelessness are significantly associated with suicide ideation in Mexican samples, while social support is associated with lower suicide ideation and a decreased likelihood of suicide attempts (Valadez-Figueroa, Amezcua-Fernandez, Quintanilla-Montoya, & Gonzalez-Gallegos, 2005). Of note, the sample in this study involved individuals receiving inpatient treatment in Mexico, which might contribute to differences in the chronicity and presentation of their symptoms.

INTERPERSONAL THEORY OF SUICIDE

The interpersonal–psychological theory of suicide (IPTS) aims to identify the most proximal risk factors for suicidal behaviors (Van Orden et al., 2010). The IPTS predicts that for suicidal behavior to occur, suicidal desire and fearlessness of death must be present. According to this theory, suicide ideation occurs when perceived burdensomeness (i.e., the perception that one is a burden for family and friends) and thwarted belongingness (i.e., feelings of social alienation) are experienced at the same time; therefore, the theory highlights that the interaction of perceived burdensomeness and thwarted belongingness will be stronger than the impact of each factor separately. However, according to the IPTS, an individual will not attempt suicide unless a decreased need for self-preservation is also present. Joiner (2005) referred to the fearlessness of death as the acquired capability to die. An individual acquires this fearlessness of death through repeated exposure and habituation to painful experiences (e.g., exposure to violence, aggression, nonsuicidal self-injury).

The IPTS may be particularly relevant to Mexican individuals because Mexican culture is highly interdependent. Therefore, when social support systems are disrupted, an especially strong sense of disconnection (i.e., thwarted belongingness) and burdensomeness might occur (Van Orden, Cukrowicz, Witte, & Joiner, 2012). Indeed, family conflict has been established as a robust predictor of suicide ideation and attempts in this population (Aguila, 2010; Quintanilla-Montoya et al., 2015; Valadez-Figueroa et al., 2005). There have been two studies that have examined the interpersonal theory of suicide in Latinos. In an initial study by Garza and Pettit (2010), the authors examined the role of perceived burdensomeness in predicting suicide ideation among adult Mexican-origin and Mexican American women ($N = 73$) at a community health center in the United States. The findings showed that perceived burdensomeness significantly predicted suicide ideation above and beyond depression. In fact, women were 96% more likely to experience suicide ideation in the presence of high levels of perceived burdensomeness. In a more recent study, Hurtado (2013) examined the interpersonal theory of suicide among Mexican adolescents living in Mexico ($N = 152$). The findings in this study showed that family conflict and depression were the most significant predictors of suicidal behaviors. Further analyses showed that perceived burdensomeness and thwarted belongingness significantly moderated the relationship between depression and suicidal behaviors in this study. The discrepancy in the results among these studies regarding the role of the interpersonal needs factors could be due to the diversity in the outcome measures used (i.e., suicide ideation compared to general measures of suicidal behaviors, self-harm, and suicidal desire) or other differences between the study samples (e.g., community vs. clinical). However, further research is necessary to clarify the differences found in these studies.

PURPOSE OF THIS STUDY

The interpersonal theory of suicide has received a lot of attention within the past few years. Several studies have examined the factors proposed in this theory with samples in the United States (e.g., Joiner et al., 2009) and have found that this theory successfully predicts suicidal behaviors. Previous studies that have examined the risk factors proposed by this theory among Mexican samples have focused primarily on healthy community samples (Hurtado, 2013), where proximal risk factors for suicidal behaviors might not be as salient as they would be in a clinical sample. As such, this study aimed to examine the proximal risk factors proposed by the interpersonal theory of suicide among a sample of inpatient Mexican individuals.

METHOD

Participants

A total of 200 adults participated in this study. Data from one participant were removed based on inconsistent responses to the questionnaires (i.e., contradictory endorsement of previous suicide attempts across questions), so the final sample consisted of 199 participants. Participants were on average 27.56 years of age (*SD* = 10.70), and 9% of the sample was female. Thirty-two percent of the participants indicated that they were unable to cover their basic needs overall each month. In addition, 78% of the participants indicated that they were unable to cover their health needs.

Participants were recruited from seven substance use rehabilitation centers near Ciudad Obregon, Sonora, in Northern Mexico. These clinics provide long-term substance use treatment in an inpatient setting with a diverse quality of care: two facilities conduct empirically supported treatment for substance use; three of the clinics provide long-term inpatient stays to individuals diagnosed with substance use disorders; and two of the clinics are inpatient clinics associated with a government hospital that provides time-limited care for individuals with substance use and mood disorders. The latter five clinics have scarce economic resources and provide mostly support (i.e., peer-to-peer, religious-based) for their patients.

Measures

Demographic Form. The demographic form included items on participants' age, gender, ethnicity, family income, and living accommodations (e.g., access to health care, number of people living in the household). Unfortunately, due to the limitations of the clinics in which the study was conducted, it was not possible to obtain detailed medical records, health conditions, details regarding patient's substance use, or information on progress in the program.

Personal Resources Questionnaire (PRQ-85; Weinert & Brandt, 1987). This measure consists of 25 items that assess the dimensions of social relationships and an individual's personal resources and satisfaction with these resources. The respondents use a 7-point Likert scale ranging from 0 (*strongly agree*) to 6 (*strongly disagree*). The highest score of the PRQ-85 can be 150, with higher scores indicating higher levels of social support. The reported reliability of this measure has been $\alpha = .87$ among Mexican individuals (Hurtado, 2013). In this study, the reliability was also $\alpha = .87$.

Beck Hopelessness Scale (BHS; Beck, Weissman, Lester, & Trexler, 1974). The BHS is a 20-item true-false measure assessing negative attitudes toward the future. To note, a score of 9 or higher has been associated with an increased risk in suicidality (Beck & Steer, 1988). The BHS has excellent reported reliability and validity in previous studies (Chang, Sanna, Hirsch, & Jeglic, 2010), and $\alpha = .80$ among Latinos (Chang et al., 2010). The reliability was $\alpha = .83$ in this study.

Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996). The BDI-II

consists of 21 items assessing the participant's depressive symptomatology. This measure has shown an excellent reliability among Latinos (α = .91; Wiebe & Penley, 2005). The reliability in this study was consistent with previous studies (α = .90).

Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2008). The INQ consists of 15 items that examine the extent to which individuals feel connected to others and the extent to which they feel like a burden to their family and friends (e.g., "these days the people in my life would be happier without me"; "these days, I feel that there are people I can turn to in times of need"). This measure uses a scale that ranges from 0 (*not true for me*) to 6 (*very true for me*). Higher scores in the subscales reflect higher levels of perceived burdensomeness and thwarted belongingness. This measure has shown excellent reliability with Latino samples (α = .82 and α = .72 for the perceived burdensomeness and thwarted belongingness subscales respectively; Hurtado, 2013). The reliability in this study was α= .83 for perceived burdensomeness and α = .82 for thwarted belongingness.

Acquired Capability for Suicide Scale (ACSS; Ribeiro et al., 2014). The ACSS is a 5-item self-report measure that assesses the participant's fearlessness of death. This scale uses a 5-point Likert scale ranging from 0 (*Not at all like me*) to 4 (*Very much like me*). This measure has demonstrated adequate reliability (α = .67) in previous studies. The reliability of this measure was α = .70 in this study.

Suicidal Behaviors Questionnaire-Revised (SBQ-R; Osman et al., 2001). The SBQ-R consists of four items assessing the history of suicide behaviors, suicide ideation within the past year, previous suicide attempts, and the likelihood of future attempts. Higher frequency of suicide ideation and behaviors is reflected in higher scores. The reported reliability of this measure is α = .88 (Bryan, Cukrowicz, West, & Morrow, 2010; Osman et al., 2001). The reliability in this study was α = .80.

Procedures

The participants were approached in a group setting by lay staff members (typically on-site psychologists) at each of the clinics, provided with a brief description of the study, and then invited to participate in the study. All of the potential participants were provided with an informed consent form. Individuals who were interested in participating in the study returned their completed forms to the research staff, which consisted of one medical professional and one clinical psychologist. Participants completed the survey packet in paper–pencil format. Although the INQ, ACSS, and SBQ had not yet been validated in Spanish at the time of this study, they had been translated and back-translated by this research team for the purposes of a previous study, using the method proposed by Brislin (1970). The research staff were consulted to assess the face validity of the measures, and the reliability of all of the measures used in this study was calculated through Cronbach's alpha.

The estimated time for completion of the questionnaire packet was approximately 40 minutes. Upon completion of the packet, research staff debriefed the participants and provided them with educational information and resources regarding suicidal behaviors and depression. The handouts given to participants included signs and symptoms of suicidal behaviors and depression, as well as community resources (i.e., places that provide psychological services). Participants reported they found it helpful to learn about the purpose of the study and to receive information regarding available services. None of the participants were reimbursed for their participation.

RESULTS

Power Analysis

A power analysis was conducted using G*Power based on previous studies

examining the IPTS (Bryan et al., 2010; Van Orden et al., 2008). We assumed a large effect consistent with previous research. Setting the parameters of alpha at .05 and power at .80, the analyses revealed that a minimum of 72 participants were needed. Therefore, this study has an adequate level of power.

Descriptive Statistics

The means and standard deviations of all study variables are shown in Table 1. Participants reported a moderate level of social support, comparable to levels observed in adult community samples (Hovey & Magaña, 2000). A substantial minority of participants endorsed a high level of hopelessness. Using the criteria proposed by Beck and Steer (1988), which has associated a cut-off score of 9 or above with higher suicidal risk, 82% were classified at a minimal level of hopelessness, and 18% at a high level of hopelessness. The sample also endorsed a moderate level of depression. Specifically, using the clinical cut-off scores proposed by Beck et al. (1996), 33.7% were classified as minimally depressed, 22.8% as mildly depressed, 33.7% as moderately depressed, 7.2% as severely depressed, and 2.1% as extremely depressed.

The participants endorsed an overall high level of suicidal behaviors compared to other inpatient samples (Cottler, Campbell, Krishna, Cunningham-Williams, & Ben Abdallah, 2005). Using the criterion proposed by Osman et al. (2001), in which a score of 8 or above is used to identify individuals at risk for suicide, 18.7% of the sample was classified as at high risk, whereas 81.3% was not. Furthermore, 70.1% of the sample indicated that they have never attempted suicide, 14.5% reported one previous attempt, 11.1% reported two previous attempts, and 4.3% reported three or more previous suicide attempts.

T-tests revealed that the participants differed in their rates of depression and suicidal behavior based on their age. Therefore, age was used as a covariate in both regression analyses. A MANOVA showed that participants did not differ based on the site in which data were collected. The intercorrelations between all study variables are shown in Table 1. Most of the relationships were in the hypothesized direction except for acquired capability, which was not significantly associated with any of the variables included in the study.

Regression Analyses

To measure the outcome variable (i.e., suicide ideation) in the first regression, two items from the SBQ-R assessing suicide ideation (i.e., "How often have you thought about killing yourself in the past year?" and

TABLE 1
Means, Standard Deviations, and Correlations Among All Study Variables

Variable	1	2	3	4	5	6	7	8	*M*	*SD*
1. Social Support	–								125.24	25.01
2. Hopelessness	−.28**	–							5.17	2.31
3. Depression	−.34**	.41**	–						16.55	10.99
4. PB	−.40**	.33**	.57**	–					2.53	1.48
5. TB	−.48**	.16*	.14*	.18**	–				2.80	1.54
6. ACSS	.03	.00	.10	.06	−.01	–			8.83	5.87
7. Suicidal Behaviors	−.13*	.27**	.45**	.36**	.10*	.12	–		5.72	2.31
8. Age	−.03	.04	−.06	.05	.05	−.09	−.20**	–	29.87	10.31

Note. PB, perceived burdensomeness; TB, thwarted belongingness; ACSS, Acquired Capability Suicide Scale; *M*, means; *SD*, standard deviation. For gender, men were coded as "1".

*$p < .05$, **$p < .01$.

"Have you thought about or attempted to kill yourself?") were summed. As a first step, depression, social support, hopelessness, and age were entered as covariates in the regression. In the second step, perceived burdensomeness and thwarted belongingness were entered as predictors. Finally, in the third step, the interaction between perceived burdensomeness and thwarted belongingness was entered. All of the predictors were centered prior to entry. The results revealed that the main effects for depression significantly predicted suicide ideation throughout the three steps. In step 3, the interaction between the interpersonal needs variables did not predict suicide ideation as predicted by the IPTS. These analyses are depicted in Table 2.

In the second regression analysis, the total score of the SBQ-R was used as an outcome variable. Hopelessness, depression, social support, and age were again entered as covariates in the first step of the regression equation. Perceived burdensomeness, thwarted belongingness, and acquired capability were entered as a second step. As a third step, the two-way interactions between thwarted belongingness and perceived burdensomeness; perceived burdensomeness and acquired capability; and thwarted belongingness and acquired capability were entered. Finally, the three-way interaction of perceived burdensomeness, thwarted belongingness, and acquired capability was entered as a fourth step. The results revealed that in step 1, age and depression significantly predicted suicidal behaviors. In step 2, age, depression, and perceived burdensomeness significantly predicted suicidal behaviors. In step 3, age, depression, perceived burdensomeness, the interaction between perceived burdensomeness and thwarted belongingness; and the interaction between perceived burdensomeness and the acquired capability significantly predicted suicidal behaviors. Finally, in step 4, age, depression, perceived burdensomeness, and the interaction between perceived burdensomeness and the acquired capability significantly predicted suicidal behaviors. The hypothesized three-way interaction did not predict suicidal behaviors. These analyses are depicted in Table 3.

DISCUSSION

Due to the dramatic increase of suicidal behaviors in Mexico within the last few years, it is important that immediate action is taken to improve suicide prevention efforts. As a first step to providing better

TABLE 2
Hierarchical Regression Equation Predicting Suicide Ideation

Predictors	R^2	ΔR^2	*B*	*SE B*	β	*p*
Step 1	.25	.26				
Age			−.04	.01	−.20**	.002
Social Support			.00	.01	.02	.483
Depression			.07	.01	.41***	<.001
Hopelessness			.04	.04	.01	.142
Step 2	.26	.009				
PB			.15	.11	.12	.094
TB			.04	.10	.03	.349
Step 3	.26	.001				
PB x TB			.02	.07	.02	.370

Note. PB, perceived burdensomeness; TB, thwarted belongingness; ACSS, Acquired Capability Suicide Scale.
**$p < .01$, ***$p < .001$.

TABLE 3
Hierarchical Regression Equation Predicting Suicidal Behaviors

Predictors	R^2	ΔR^2	*B*	*SE B*	β	*p*
Step 1	.36	.36				
Age			−.04	.02	−.15*	.016
Social Support			−.01	.01	−.11	.056
Depression			.13	.02	.52***	<.001
Hopelessness			.04	.05	.05	.241
Step 2	.38	.03				
PB			.34	.15	.19*	.014
TB			.15	.14	.08	.167
ACSS			.01	.03	.02	.407
Step 3	.43	.04				
PB x TB			.16	.10	.12*	.040
PB x ACSS			.06	.02	.17*	.011
TB x ACSS			.03	.02	.09	.121
Step 4	.43	.00				
PB x TB x ACSS			.01	.02	.03	.323

Note. PB, perceived burdensomeness; TB, thwarted belongingness; ACSS, Acquired Capability Suicide Scale.
*$p < .05$, ***$p < .001$.

psychiatric care for individuals at risk for suicide, a better understanding of the factors that contribute to the development of suicidal behaviors is needed. Unfortunately, the available literature is sparse with regard to studies examining risk factors for suicide among Mexican adults in inpatient settings. To our knowledge, this is the first study of suicidality in a clinical sample of Mexican adults that is based on the framework of the interpersonal theory of suicide.

Consistent with the assertions of the IPTS, it was hypothesized that the interaction between perceived burdensomeness and thwarted belongingness would predict suicide ideation. However, this hypothesis was not supported. Of note, perceived burdensomeness appeared to be the strongest predictor of suicide ideation in this sample, even when controlling for the effects of depression. This is consistent with previous findings (Hurtado, 2013; Monteith, Menefee, Pettit, Leopoulos, & Vincent, 2013; Van Orden, Lynam, Hollar, & Joiner, 2006), which have found that perceived burdensomeness is a critical predictor of suicidality above and beyond other robust predictors of suicidal behaviors. It was also hypothesized that the three-way interaction of perceived burdensomeness, thwarted belongingness, and the acquired capability would significantly predict suicidal behaviors. The findings were not consistent with this hypothesis. Of note, the interaction between perceived burdensomeness and thwarted belongingness significantly predicted suicidal behaviors such that individuals with high levels of perceived burdensomeness and high levels of thwarted belongingness reported more suicidal behaviors than those with low levels of perceived burdensomeness and thwarted belongingness. The interaction between perceived burdensomeness and the acquired capability for suicide also significantly predicted suicidal behaviors, such that individuals with high levels of perceived burdensomeness and acquired capability to die reported more suicidal behaviors than those individuals with high levels of perceived burdensomeness and low acquired capability. There are several potential explanations for these findings. It could be that perceived burdensomeness is the most salient factor when assessing immediate suicidal behaviors.

An alternative explanation is that the role of thwarted belongingness might be different than that proposed by the theory. For example, thwarted belongingness might act as moderator between perceived burdensomeness and the acquired capability to die; hence, this factor might be more salient in a sample with a lower level of perceived social support.

The findings from this study indicate that of the factors highlighted by the interpersonal theory of suicide, perceived burdensomeness seems to be the risk factor most strongly related to suicide ideation and behaviors among this sample. The emphasis of this theory on interpersonal constructs is congruent with the sense of obligation toward one's family and social group in the Latin culture. When these expectations are not fulfilled this can cause high levels of distress, and eventually lead to suicidal behaviors. It could be that in this sample thwarted belongingness was not a salient risk factor because participants reported a moderate to high level of social support.

Clinical Implications

Due to the limitations in the extant knowledge base, identification of proximal factors that contribute to risk for suicidal behaviors is a crucial first step in providing adequate mental health services for those in need. In addition to standard risk assessment questions about depression and social support, including questions about perceived burdensomeness, thwarted belongingness, and fearlessness of death can provide clinicians with important additional information for determining the level of risk of a patient. The findings of the present study suggest clinicians should pay particular attention to any indication that the individual in question feels like a burden upon others and should work to challenge these perceptions if they do arise.

The identification of factors that provide the most protection to individuals can also inform the development of effective prevention programs in which interpersonal factors can be promoted. Most commonly, prevention efforts are applied when individuals are receiving psychotherapy. Cognitive-behavioral approaches can emphasize cognitive restructuring around suicidal cognitions, as well as perceptions of burden and social alienation. Additionally, dialectical behavioral therapy can apply these findings when conducting chain analyses of suicidal behaviors. Specifically, these constructs can be used to identify an individual's vulnerabilities for suicidal behavior. Clients can then be educated about these factors and taught to apply behavioral skills when they find themselves at a high risk for suicide.

Limitations and Future Directions

The results and contributions of this study are considered in light of its limitations. First, the cross-sectional nature of this study limits the generalizability of our findings. Future studies should use longitudinal studies to explore the changes from passive suicide ideation to immediate suicide behavior before and after receiving treatment, as well as the role of relapse in suicidal behaviors. Another limitation of the present study was the lack of access to the medical records of the participants. This data would have provided us with more detailed descriptive information about the participants. For example, it would have been helpful to distinguish between different substance use disorders, as some of them might be closely linked to an increased acquired capability to die (i.e., heroine). In addition, the majority of our sample (91.3%) was male; therefore, these findings might not reflect the experience of Mexican women. Future studies should examine the applicability of the interpersonal theory to Latinas and/or women living in Mexico. A third limitation of the study was that three of the seven measures utilized had not yet been validated in Spanish. Assessing the applicability of the measures of interpersonal constructs and the acquired capability to die in other languages is important.

Specifically, future studies should assess the factor structure and the fit of the proposed models in languages other than English so that the measures can be used in these groups and the generalizability of the theory can be further assessed. Finally, a suicide ideation–specific measure would have been helpful to provide a comprehensive assessment of suicide ideation in this sample. Specifically, it would be important to measure suicide ideation beyond and above its frequency. Information regarding chronicity, intensity, control (i.e., how difficult it is to stop the thoughts of suicide?), and distinction between passive and active ideation is needed to address the hypothesized relationship between the interpersonal constructs and suicide ideation. This information can aid in differentiating between suicide ideation and suicidal desire such that the relationship between suicide ideation and eventual suicide is clarified.

Future research should examine the applicability of the IPTS to other populations, such as other ethnic, age, and clinical (i.e., outpatient, intense outpatient) groups. Some of these groups have been included in previous studies; however, such studies have not tested the constructs proposed by the interpersonal theory altogether. Furthermore, it is important for research to examine the role of thwarted belongingness in the etiology of suicide ideation more deeply. As mentioned earlier, some studies have found that it is not a significant factor in predicting suicide ideation in inpatient settings when perceived burdensomeness is also considered. It is important to note that other studies only found partial support for this construct in community and outpatient settings. Therefore, future studies should assess the role of thwarted belongingness as a moderator between perceived burdensomeness and the acquired capability to die.

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