Comparing the Effect of Stigma on the Recognition of Suicide Risk in Others between Australia and Brazil

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Abstract—Few studies have considered how suicide is perceived and impacted by stigma across cultures. A sample of 478 participants from Australia and Brazil was used to investigate cross-cultural perceptions of suicide and the impact of stigma on the recognition of suicide risk in others. The Interpersonal-Psychological Theory of Suicide framed a mixed method within and between groups design. English and Portuguese versions of an online survey were developed to assess perception of thwarted belongingness, perceived burdensomeness, acquired capability for suicide, suicide stigma, and demographic characteristics. A significant model was identified predicting recognition of suicide risk in Australia and Brazil. However, not all constructs contributed uniquely. Suicide stigma was found to blind perception of suicide risk in others across cultures. Theoretical implications and future directions for research are outlined.

Keywords-suicide; culture; stigma

I. INTRODUCTION

Suicide studies have generated a great deal of research interest, however it remains a complex, controversial and largely misunderstood phenomena [1]. Evidence has been found to support theories that explain how the desire for suicide is formed [2]. Nevertheless, in seeking to understand capability to complete suicide researches are still challenged by the gap between the desire to die and ability to inflict self-injury with the intent to cause death [3].

The present study aimed to reconsider the contemporary Interpersonal-Psychological Theory of Suicide [IPTS; 4, 5] to examine recognition of suicide desire and capability in culturally diverse contexts. More specifically, we compared Australian and Brazilian participants' recognition of suicidal behavior in others with suicide stigma as a contributing factor.

II. INTERPERSONAL-PSYCHOLOGICAL THEORY OF SUICIDE

The enactment of suicidal behavior is the central theme of the IPTS. There are two distinctive phases which leads to suicide: suicide ideation and suicide attempt. Various authors [6-9] have noted that suicide ideation (thinking about suicide) and suicide attempt (engaging in deliberate self-injury with the intention to cause death) are separate phenomena that are not always experienced by the same person. That is to say that although an individual might have suicide desire, they might not have capability to complete suicide. The opposite is also true. Capability to complete suicide alone does not account for forming suicide desire [10].

To address the gap between suicide desire and attempt, Van Orden et al. [5] proposed three constructs which combined lead someone to take their life. These constructs are thwarted belongingness (an expressed desire to die because the need to belong was not met), perceived burdensomeness (self-perception that one is a burden to others), and acquired capability for suicide [the ability to enact lethal or near lethal self-injury developed through life experiences; 4, 5, 11].

According to the IPTS, thwarted belongingness and perceived burdensomeness are two of the proximal causes of desire to die, while acquired capability for suicide is understood to be the missing element leading to suicide attempt. It is proposed that the ability to inflict self-injury might serve to differentiate between people who desire to die and those who attempt suicide [4, 5]. The acquired capability for suicide construct is comprised of two latent variables – elevated pain tolerance and fearlessness about death.

Although thwarted belongingness is well established as a construct leading to suicide, it does not always contribute uniquely to the prediction of suicidal ideation. A psychometric evaluation conducted by Freedenthal et al. [12] has shown that thwarted belongingness is only a statistically significant predictor of suicidal ideation when in combination with perceived burdensomeness, especially in quantitative studies. Perceived burdensomeness is a better predictor of suicide ideation because individuals who self-perceive as a burden to others tend to experience this emotion on an intrapersonal and interpersonal level. Furthermore, there is compelling evidence showing that perceived burdensomeness accounts for greater unique variance on both (current and past) suicide ideation and choice of more lethal means of suicide method when compared to other constructs such as hopelessness [13-16].

Qualitative studies have presented a different outcome regarding the prediction of suicide desire. Lester and Gunn III's [17] qualitative study which reviewed 664 suicide notes showed that thwarted belongingness is a stronger predictor of suicidal ideation when compared with perceived burdensomeness. Comments about lack of belongingness (42%) were presented more frequently than comments about burdensomeness (15%), but these two types of comments were rarely present in the same report (9.5%). Such inconsistencies between quantitative and qualitative studies suggest there remains more to learn about causal attributions and the enactment of suicidal behavior.

III. SUICIDE STIGMA

Suicide stigma is one of the main reasons why people experiencing suicide desire do not engage with health services [18-21]. Stewart et al. [22] explained that stigmatizing views contribute to perceiving help seeking as a sign of weakness, which in turn prevents individuals from getting care. Two types of stigma have been identified – perceived public stigma and anticipated self-stigma [22-24]. Perceived public stigma (stigma of others) is the perception of the stigmatized group, based on stereotypes, prejudice, and discrimination. Anticipated self-stigma, on the other hand, is the way in which individuals understand the perceived public stigma in respect to themselves. Additionally, anticipated self-stigma is based on the individual's own internalized negative attitudes, which can lead them to have deflated views of the self [22, 24].

Stigma studies have identified some of the effects of negative attitudes and beliefs on individuals' sense of self [25, 26]. More specifically, Plöderl et al. [27] and Kim and Yang's [28] studies used the IPTS to investigate suicide ideation in gays and lesbians who had experienced anticipated self-stigma. Plöderl et al. [27] found that those who have suffered homophobia had higher self-perception of acquired capability for suicide, while Kim and Yang [28] suggested that stigma might be a predictor of thwarted belongingness and perceived burdensomeness. However, the effects of stigma on suicidal individuals remains largely unknown.

IV. CROSS-CULTURAL RESEARCH

Few studies have considered how suicide is perceived and impacted by stigma across cultures. O'Keefe et al.'s [29] investigation of Native American students showed that although thwarted belongingness and perceived burdensomeness together could significantly predict suicide ideation, thwarted belongingness was not a unique predictor of suicide ideation. In the same year, a German study conducted by Wachtel et al. [30] found that although fearlessness about death was a significant predictor of suicidal behaviors, the role of acquired capability for suicide (i.e., elevated pain tolerance) was unclear. Taken together, the present study was designed in response to the proposition that future studies should continue to investigate the IPTS model in diverse cultural contexts with the added element of stigma [3, 5, 29-31].

While suicide theories have gained prominence in the United States, little attention has been given to other countries colonized by Europeans [1, 32], such as Australia and Brazil. It is suggested that this lack results from limited insight into how differences in cultural values and attitudes affect the perception of suicide [32]. For instance, suicide stigma is argued to differ from one social-cultural context to another [33], which affects the ability to raise public awareness and prevent death by deliberate self-injury [34, 35].

V. AUSTRALIA AND BRAZIL

According to the World Health Organization [36], Australia and Brazil have registered high absolute numbers of suicide per year. In Australia, records show that approximately 2,000 people die yearly from suicide, which is between 10-15 deaths per 100,000 populous [37]. In Brazil, records indicate that approximately 9,852 people die yearly from suicide, which is between 5-10 deaths per 100,000 populous [38].

Studies of at risk populations in Australia and Brazil have shown that younger and older males; people of indigenous descent; people living in rural and remote areas; and lesbian, gay, bisexual, transgender and intersex people are at higher risk of suicide [38-41]. Additionally, psychopathologies such as depression, bipolar disorder and substance abuse are predicted to be present in most cases of suicide [38, 40].

Although the World Health Organization [36] census presented high mortality rates, research has speculated that suicide statistics are underestimated [1, 37, 38, 42]. For instance, it was found that in Brazil approximately 15.6% of deaths are not registered, and 13.7% annually are not notified [38]. Botega [38] noted that some cases of suicide are hidden in the form of other types of death (e.g., single motor vehicle accidents, drowning, accidental poisoning, and unidentifiable cause of deaths). Furthermore, it is argued that every country has different criteria, which makes it difficult to accurately estimate and compare suicide rates.

VI. THE PRESENT STUDY

The present study surveyed participants in Australia and Brazil to compare cross-cultural perceptions of suicide and investigate the effect of stigma on recognition of suicide risk in others. Based on the reviewed literature, five hypotheses were proposed: (I) In accordance with the original research conducted by Van Orden et al. [5], it was hypothesized that the IPTS model would predict recognition of suicide risk in others across samples; (II) To test a new perspective based on the work of Plöderl et al. [27] and Kim and Yang [28], it was hypothesized that suicide stigma would predict variance across the IPTS's constructs; (III) Based on the argument that stigmatizing attitudes result from lack of knowledge and understanding about suicide [25], it was hypothesized that individuals with mental health literacy (e.g., mental health workers and psychology students) would have less stigmatizing attitudes compared to individuals with no mental health literacy; (IV) Regarding gender differences, males were hypothesized to show higher stigmatizing views when compared to females [25, 43]; and (V) Regarding age differences, younger males were hypothesized to show higher stigmatizing views when compared to older males.

A. Participants

A sample of 478 participants (270 from Australia, and 208 from Brazil) was recruited. There were 133 (27.8%) males and 345 (72.2%) females, aged between 15-85 years (M=34.21, SD=15.39). Participants self-identified as Australian (47.9%), Brazilian (38.3%), and *other* (13.8%). Additionally, 26.6% of participants reported mental health literacy, while 73.4% did not. Lastly, religiosity was measured on a scale of zero (atheist) to ten (religious), where participants in Brazil scored a mean of 5.45 (SD=3.01), while participants in Australia scored a mean of 4.53 (SD=2.72).

B. Materials

1) Alex's Vignette. This vignette was created to measure perception of suicide risk according to known risk factors for suicide [38-41], as shown in Fig. 1.

Alex is 24-years-old and is a professional black belt jiu-jitsu competitor. Alex's father is successful in his profession and a respected member of the community. Alex's mother died in a car accident when he was really young, and because his father will not talk about the accident, Alex still does not know the full story about how his mother died. Since dropping out of law school, Alex's relationship with his father has become distant, they do not see each very other often, and whenever they try to reconnect, Alex's father criticises Alex's lifestyle.

For many years, Alex has had secret thoughts about how attracted he is to his male friends. When he cannot stop those thoughts, he goes drinking, or uses cocaine. He feels that if he said anything about it to his father, or anyone else, he would embarrass his family's name. Alex sometimes feels so distressed he thinks about ending his life and how to do it. Once, during training, Alex let himself get hurt on purpose and ended up in the hospital.

Since Alex met Victor, and they started training together regularly, it has become really difficult for Alex to control his feelings towards Victor. He wants to tell some of his friends about Victor, but he is scared that they will not understand. During a training session, Alex blurted out how he felt to Victor. Victor was horrified and insulted, and said to Alex he was disgusted, in front of everyone. Alex felt publicly rejected and humiliated, and immediately ran out of training. Alex wishes he had someone to turn to, but he fears they will turn on him, like Victor did.

Figure 1. Alex's Vignette.

2) Follow-up Questions. These questions were designed to further explore participants' perception of Alex based on the vignette. There were three follow-up questions: (I) "What do you think will happen next with Alex?"; (II) "What would you do and say if Alex was someone you knew?"; and (III) "Would you like to make any other comment about Alex's story?". To answer the first question participants had four multiple-choice options: (a) "Alex will attempt suicide"; (b) "Alex will seek help from a trusted friend (e.g., a medical professional, a religious person)"; (c) Alex will stop going to training; and (d) Alex will decide to get his life together". Following the first question, participants were asked to explain their answer ("Why did you choose this option"). The second and third questions were open-ended.

3) Interpersonal Needs Questionnaire-15 (INQ-15). The INQ-15 is the revised version of the original scale [i.e., INQ-25; 44]. The current version was derived from a recent study by Van Orden et al. [2], which addressed issues regarding the relationship between thwarted belongingness and perceived burdensomeness in predicting desire for suicide – it contains nine items to measure thwarted belongingness and six items to measure perceived burdensomeness. In the present study, the INQ-15 was administered by having participants score as they thought Alex would respond to each item on a 7-point Likert scale (1=*not at all true for me*, 7=*very true for me*). Higher scores indicate higher levels of thwarted belongingness and perceived burdensomeness.

A contemporary study by Hill et al. [45], which reviewed all existing versions of the scale (i.e., INQ-12, INQ-15, INQ-18 and INQ-25), determined that the INQ-15 has the best factor structure, criterion validity (concurrent and predictive), and internal consistency (i.e., thwarted belongingness items $\alpha=0.83$, perceived burdensomeness items $\alpha=0.90$). Content validity for the INQ-15 is based on Baumeister and Leary's [46] definition of belonging and Marshall's [47] investigation of mattering to others. Specifically, thwarted belongingness items were adapted from the Social Inclusionary Status [48], which examines need to belong, while items for the perceived burdensomeness subscale were adapted from the Mattering to Others Questionnaire [47], which measures mattering to others such as parents and friends. Further, criterion (predictive) validity analyses found that high summed scores of thwarted belongingness and perceived burdensomeness were associated with high scores on the Beck Scale for Suicide Ideation [49] one month later [2]. In the current study, the INQ-15 showed a high internal consistency in the whole sample for the overall scale ($\alpha=0.95$), the thwarted belongings subscale ($\alpha=0.92$) and the perceived burdensomeness subscale ($\alpha=0.95$). No substantial differences were noted between the whole sample and the Australian and Brazilian samples.

4) Acquired Capability for Suicide Scale - Fearlessness About Death (ACSS-FAD). This tool is the revised version of the original scale (i.e., ACSS-5), which was proposed by Bender, Gordon and Joiner in an unpublished manuscript [as cited in 50]. The ACSS-FAD [3] was created to address shortcomings of previous scales, and better reflect fearlessness about death in isolation [3, 30, 51, 52]. To establish the relationship between fearlessness about death and elevated pain tolerance as related but differentiable constructs, the ACSS-FAD includes one item to measure elevated pain tolerance. Overall, the scale contains seven items (i.e., one item to measure elevated pain tolerance, and six for fearlessness about death). In the present study, the ACSS-FAD was administered by having participants score as they thought Alex would respond to each item on a 7-point Likert scale (1=*not at all true for me*, 7=*very true for me*). Higher scores indicate higher levels of acquired capability for suicide.

Content and construct validity for the ACSS-FAD are based on the Linehan et al.'s [6] Reasons for Living Inventory. An example of an item derived from this adaptation is "I am very much afraid to die" [3, pp. 118]. Also, the ACSS-FAD was convergent ($r= -.51$, $n=67$, $p<.001$) with the inventory's Fear of Suicide subscale. The ACSS-FAD presented a convincing internal consistency ($\alpha=0.85$) when first published [3]. In the current study, a comparable internal consistency was shown in the whole sample for the overall scale ($\alpha=0.62$) and the fearlessness about death subscale ($\alpha=0.69$), which excludes the elevated pain tolerance item. A major difference was noted between samples. While the Australian sample showed a robust internal consistency for the overall scale ($\alpha=0.76$), with a similar result for the fearlessness about death subscale ($\alpha=0.73$), the Brazilian sample showed poor internal consistency for the overall scale ($\alpha=0.32$), with a stronger result for the fearlessness about death subscale ($\alpha=0.63$).

5) Stigma of Suicide Scale - Short Form (SOSS-SF). This new tool, developed by Batterham et al. [33], was used to measure individuals' attitudes towards suicide and suicidal others. The present study utilized the short form version of the scale, containing sixteen items (i.e., eight items in the stigma subscale, four in the isolation/depression subscale, and four in the glorification/normalization subscale). The SOSS-SF is administered by having participants indicate on a 5-point Likert scale (1=*strongly disagree*, 5=*strongly agree*), the degree of truth present in each item. Scores are coded such that higher numbers indicate higher levels of suicide stigma [33].

The SOSS-SF showed promising psychometric properties when first published, with a solid internal consistency for all three subscales [α=0.78-0.88; 33]. The present study also showed robust internal consistencies for all three subscales (α=0.82-0.92), with no major differences noted between the Australian and Brazilian samples. Additionally, the scale presented stable factor structure when first published [i.e., met criteria for acceptable fit regarding the suggested values for each index; 33].

6) Demographics. Demographic information included gender; age; country of birth and residence; cultural identity and recruitment sample (i.e., Australia, Brazil, or other); mental health literacy (i.e., self-report of mental health training through work or study; coded as 1=*yes* and 0=*no*); religiosity (i.e., self-report of religiosity based on a 10-point Likert scale in response to one question "Irrespective of whether you attend a place of worship or not, would you say you are a religious person, not a religious persons or a convinced atheist?"; coded as 0=*atheist* to 10=*religious*); and experience with suicide (i.e., self-report of having lost someone to suicide; coded as 1=*yes* and 0=*no*).

C. Procedure

Participants completed the online survey with measures presented in the following order: demographic information; the SOSS-SF; Alex's Vignette; the INQ-15; the ACSS-FAD; and the follow-up questions. Surveys were translated and back-translated to ensure equivalence.

VII. RESULTS

A. Recognition of Risk of Suicide across Cultures

A sequential logistic regression was performed for both the Australian and Brazilian samples to test the hypothesis that the IPTS model would predict recognition of the risk of suicide attempt in others. The INQ-15's subscales (i.e., thwarted belonging and perceived burdensomeness) and the ACSS-FAD's subscales (i.e., elevated pain tolerance and fearlessness about death) were collapsed into three levels (i.e., low, medium, and high) and used as predictors. Gender, age, identified culture, mental health literacy, experience with suicide, religiosity, and stigma were used as control variables.

In the Australian sample (*n*=270), the sequence containing the control variables (model one) was significant ($\chi^2_{(7,270)}$=17.34, *p*=0.015) and explained between 6.2% (Cox and Snell R square) and 8.4% (Nagelkerke R squared) of the

variance in suicide risk recognition. This model correctly classified 62.2% of cases. However, no variables made a unique and significant contribution. The sequence containing all predictors (model two), was also significant ($\chi^2_{(15,270)}$=56.50, *p*<0.001) and explained between 18.9% (Cox and Snell R square) and 25.6% (Nagelkerke R squared) of the variance in suicide risk recognition. This model correctly classified 65.6% of cases, however, only perceived burdensomeness (*p*<0.01) made a unique and significant contribution. High levels of perceived burdensomeness recorded an odds ratio of 5.01, indicating that the odds of recognizing risk of suicide attempt is larger for respondents who scored high levels of perceived burdensomeness.

In the Brazilian sample (*n*=208), the sequence containing the control variables (model one) was not significant ($\chi^2_{(7,208)}$=9.90, *p*=0.194). The sequence containing all predictors (model two) was significant ($\chi^2_{(15,208)}$=38.52, *p*=0.001), indicating that this model was able to distinguish between people who recognized risk of suicide attempt and those who did not. Model two explained between 16.9% (Cox and Snell R square) and 24.5% (Nagelkerke R squared) of the variance in suicide risk recognition and correctly classified 76% of cases. In this sample, mental health literacy (*p*=0.032) and perceived burdensomeness (*p*<0.001) made a unique and significant contribution. Mental health literacy recorded an odds ratio of 0.32, indicating that the odds of recognizing risk of suicide attempt is smaller for respondents who have mental health literacy. Additionally, high levels of perceived burdensomeness recorded an odds ratio of 7.6, indicating that the odds of recognizing risk of suicide attempt is larger for respondents who scored high perceived burdensomeness, as shown in Table one.

TABLE I.   PREDICTING RISK OF SUICIDE ATTEMPT

Predictors	Australia (*n*=270)			Brazil (*n*=208)		
Model 2	*B*	*SE B*	*OR*	*B*	*SE B*	*OR*
Gender[a]	0.10	0.36	1.11	-0.35	0.39	0.70
Age	0.00	0.01	1.00	0.00	0.01	1.00
Identified Culture[b]	-0.63	0.42	0.53	0.64	0.52	1.90
Mental Health Literacy[c]	0.33	0.31	1.39	-1.14*	0.53	0.32
Experience with Suicide[c]	-0.29	0.29	0.75	0.33	0.37	1.39
Religiosity	-0.10	0.05	0.91	-0.02	0.08	0.98
Stigma	-0.03	0.03	0.97	0.02	0.03	1.02
Thwarted Belongingness [e]	0.67	0.44	1.96	-0.13	0.50	0.88
Perceived Burdensomeness [e]	1.61***	0.44	5.01	2.02**	0.52	7.55
Elevated Pain Tolerance[e]	0.34	0.39	1.40	-1.17	0.67	0.31
Fearlessness About Death[e]	0.67	0.38	1.96	0.07	0.50	1.07
Constant	-1.60*	0.77	0.20	-1.39	1.04	0.25
χ²	66.79			32.77		
df	11			11		
% Recognized Risk of Suicide Attempt	39.6			27.4		

OR = odds ratio.
a = *female* is the reference category.
b = *other* is the reference category.
c = *yes* is the reference category.
e = *high* is the reference category.
% Recognized Risk of Suicide Attempt includes participants who scored *yes* across both samples.
p < .05. **p* < .01. ***p* < .001.

A chi-square test of independence (with Yates Continuity Correction) was conducted to compare recognition of suicide attempt between the two samples. A significant association ($\chi^2_{(1,478)}$=7.79, p=0.005) between the two samples was found, where respondents in Australia (39.6%) recognized the risk of suicide more frequently than respondents in Brazil (27.4%). Respondents in Brazil predominately chose that Alex next step would be to "seek help from a confidential source" (32.2%), as shown in Table two.

TABLE II.   FREQUENCY OF RESPONSES FOR ALEX'S NEXT STEP

Next Step Responses	What do you think will happen next with Alex?	
	Australia %	*Brazil %*
Alex will attempt suicide	39.6	27.4
Alex will seek help from a confidential source	21.5	32.2
Alex will stop going to training	33.3	27.4
Alex will decide to get his life together	5.6	13

n (Australia) = 270. *n* (Brazil) = 208.

To establish a motive behind participant's answers, a thematic analysis of the question "Why did you choose this option" was performed for participants who recognized risk of suicide attempt (34.3% of the total sample). Themes were coded as per Van Orden et al.'s [5] findings for the IPTS's scales. For example, the statement "feels alone and has no one to turn to" has been coded as a theme related to thwarted belongingness [5, pp. 582]. Results in the current study indicated that subjects who recognized the risk of suicide attempt responded in five main themes: (I) loneliness; (II) lack of social support; (III) death ideation; (IV) hopelessness; and (V) previous suicide attempts. Two additional themes (not present in the original studies) were also found: (I) homosexuality, in association with lack of social support; and (II) rejection, with lack of social support and loneliness.

Across samples, lack of social support was the most commonly identified theme (35.4%), followed by hopelessness (16.5%); rejection (9.2%); previous suicide attempts (9.1%); loneliness (3%); death ideation (3%); and homosexuality (2.4%), as shown in Table three.

TABLE III.   THEMATIC ANALYSIS OF REASONS FOR ATTEMPTING SUICIDE

Themes	What do you think will happen next with Alex? Alex will attempt suicide. Why did you choose this option?		
	Examples from Respondents	*Australia %*	*Brazil %*
Thwarted Belongingness Themes			
Lack of Social Support	"He feels he has no one to turn to, not family or friends…"	44	16
Loneliness	"Because he feels alone and has no one to turn to."	3	2
Perceived Burdensomeness Themes			
Hopelessness	"Because I think Alex cannot see things in his life getting any better."	20	7
Death Ideation	"Alex has already had suicidal thoughts."	3	2
Acquired Capability for Suicide Theme			
Previous Suicide Attempt	"Ele já deixou se machucar uma vez propositalmente…" (He has already hurt himself on purpose once)	9	6
Additional Themes			
Rejection	"Alex has been rejected, hurt and humiliated. He is already isolated and marginalized…"	9	6
Homosexuality	"Because Alex feels like he has a lack of support from his family and friends and does not feel he can be honest about his homosexuality…"	1	4

n (Australia) = 107. *n* (Brazil) = 57.

An example of the main themes was given by one of the participants in the current study: "Having been in a similar situation, where I felt like life was meaningless and that killing myself was a possible solution to my problem, also thinking that there was no one I knew that I could turn to for help, I can say that Alex will attempt to commit suicide, given his many anxieties about all the people in his life".

Two analyses were conducted to compare themes across samples and previous studies. A chi-square test of independence (with Yates Continuity Correction) showed no significant association ($\chi^2_{(7,478)}$=11.09, p=0.135) between samples and themes regarding why suicide risk was identified in the current study. Similarly, a chi-square goodness-of-fit test indicated there was no significant difference ($\chi^2_{(1,96)}$=2.44, p=0.118) in the frequency of observed thwarted belongingness (66.66%) and perceived burdensomeness related themes (33.33%) in the current study (n=96), when compared with percentages obtained in the Lester and Gunn III's [17] study.

B. The effect of Suicide Stigma across the IPTS model

Four hierarchical multiple regression analyses were performed for the whole sample (n=478) to test the hypothesis that suicide stigma would predict variance across the IPTS's constructs. The effect of gender, age, identified culture, mental health literacy, and experience with suicide were controlled. The first analysis assessed variability in thwarted belongingness. The first model, containing the control variables was significant ($F_{change\ (5,\ 472)}$=4.55, p<0.001) and accounted for 4.6% of the variance, with gender (p=0.025) and mental health literacy (p=0.004) as the contributing variables. The addition of suicide stigma (p<0.001) in the second model accounted for a further 2.4% of the variance, with a significant increase ($F_{change\ (1,\ 471)}$=12.31, p<0.001). However, gender was no longer significant (p=0.082). The second analysis assessed variability in perceived burdensomeness. The first model, containing the control variables was significant ($F_{change\ (5,\ 472)}$=5.06, p<0.001) and accounted for 5.1% of the variance, with gender (p=0.002) and mental health literacy (p=0.009) as the contributing variables. The addition of suicide stigma (p=0.001) in the second model accounted for a further 2.1% of the variance, with a significant increase ($F_{change\ (1,\ 471)}$=10.65, p=0.001). The third analysis assessed variability in elevated pain tolerance, however, suicide stigma (p=0.787) did not account for a significant model ($F_{change\ (1,\ 471)}$=0.73, p=0.787). The fourth analysis assessed variability in fearlessness about death. The first model, containing the control variables was not significant ($F_{change\ (5,\ 472)}$=.70, p<0.623). The addition of suicide stigma (p=0.05) in the second model was marginally significant ($F_{change\ (5,\ 472)}$=3.84, p<0.051) and accounted for less than 1% of the variance. See Table four for the first two analyses.

TABLE IV.   VARIABLES PREDICTING THWARTED BELONGINGNESS AND PERCEIVED BURDENSOMENESS

Variables	Model 1			Model 2		
	B	$SE\ B$	β	B	$SE\ B$	β
Thwarted Belongingness						
Gender	3.11	1.38	0.10*	2.40	1.38	0.08
Age	0.01	0.04	0.01	0.00	0.04	0.00
Identified Culture	-1.64	0.88	-0.09	-1.17	0.88	-0.06
Mental Health Literacy	4.11	1.40	0.13**	3.24	1.41	0.11*
Experience with Suicide	-1.97	1.26	-0.07	-2.05	1.24	-0.08
Stigma				-0.43	0.12	-0.16***
R^2		0.046			0.070	
F for change in R^2		4.55***			12.31***	
Perceived Burdensomeness						
Gender	3.43	1.09	0.14**	2.91	1.09	0.12**
Age	0.01	0.03	0.02	0.01	0.03	0.01
Identified Culture	-1.32	0.69	-0.09	-0.99	0.69	-0.07
Mental Health Literacy	2.90	1.10	0.12**	2.27	1.11	0.09*
Experience with Suicide	-0.76	0.99	-0.04	-0.82	0.98	-0.04
Stigma				-0.32	0.10	-0.15**
R^2		0.051			0.072	
F for change in R^2		5.06***			10.65**	

$n = 478$.
$*p < .05.\ **p < .01.\ ***p < .001.$

C. Suicide Stigma and Mental Health Literacy

A series of independent-samples t-test compared stigma scores of respondents with and without mental health literacy. A significant difference was found ($t_{(277)}$=5.04, p<.001, 95% CI [1.44, 3.29]) for the whole sample (n=478), where respondents with mental health literacy (M=11.81, SD=4.23) scored lower on stigma than respondents without mental health literacy (M=14.18, SD=5.28). In the Australian sample (n=270), a significant difference was also found ($t_{(191)}$=4.19, p<.001, 95% CI [1.24, 3.46]), where respondents with mental health literacy (M=10.96, SD=4.03) scored lower on stigma than respondents without mental health literacy (M=13.31, SD=4.78). In the Brazilian sample (n=208), no significant difference was found ($t_{(206)}$=1.74, p=.084, 95% CI [-.22, 3.45]).

D. Suicide Stigma and Gender Differences

A series of independent-samples t-test compared stigma between genders for the whole sample and across both samples. A significant difference ($t_{(476)}$=3.84, p<.001, 95% CI [.97, 2.99]) was found between male (n=133) and female (n=345) respondents for the whole sample (n=478), with males (M=14.98, SD=5.50) scoring higher on stigma compared to females (M=13.00, SD=4.87). Also, a significant difference was found between male (n=63) and female (n=107) respondents ($t_{(268)}$=3.21, p<.001, 95% CI [.83, 3.43]) in the Australian sample (n=270), with males (M=14.21, SD=4.58) scoring higher on stigma compared to females (M=12.08, SD=4.61). In the Brazilian sample, no significant difference in stigma scores was found between genders ($t_{(206)}$=1.64, p<.103, 95% CI [-.26, 2.85]).

A subsequent analysis was conducted to compare stigma between genders in the Brazilian (n=208) sample. A one-way between-groups analysis of covariance (ANCOVA) using religiosity and age as covariant variables showed a significant difference between male (n=70) and female (n=138) respondents ($F_{(1,204)}$ =5.40, p=.021, η^2 =.026), where males (M=15.67, SD=6.16) scored higher on stigma compared to females (M=14.38, SD=4.95).

E. Suicide Stigma and Age Differences

An independent-samples t-test compared stigma scores between younger males (i.e., age ≤ 24) and older males (i.e., age 39+) in the whole sample ($t_{(81)}$=.22, p=.824, 95% CI [-2.08, 2.61]), the Australian sample ($t_{(43)}$=1.48, p=.145, 95% CI [-.97, 6.36]) and the Brazilian sample ($t_{(36)}$=.35, p=.729, 95% CI [-4.52, 6.39]), however no significant differences were found. An independent-samples t-test was also conducted to compare stigma scores between younger females (i.e., age ≤ 24) and older females (i.e., age 39+), with a significant difference found in the Brazilian sample only ($t_{(90)}$=3.30, p=.001, 95% CI [1.42, 5.74]). Younger females (M=17.23, SD=5.20) scored higher on stigma than older females (M=13.64, SD=4.19). No significant differences were found between younger and older females in the whole sample ($t_{(244)}$=1.20, p=.231, 95% CI [-.47, 1.92]) and the Australian sample ($t_{(154)}$=1.57, p=.118, 95% CI [-.32, 2.85]).

VIII. DISCUSSION

The current study aimed to compare perception of suicide risk in others between Australia and Brazil to provide insight into the applicability of the IPTS model across cultures and investigate the effects of stigma on suicide risk perception.

Although the sequential logistic regression analyses showed that the IPTS model was significant across cultures, perceived burdensomeness and fearlessness about death were the only unique predictors. In accordance with these findings, past studies [e.g., 12-16, 42] have shown that thwarted belongingness could only significantly contribute to the prediction of suicidal ideation when in combination with perceived burdensomeness, indicating that the latter is a better predictor of suicidal ideation (at least in quantitative analyses).

Elevated pain tolerance is another variable that did not contribute uniquely to the IPTS model. Ribeiro [52] and Ribeiro et al. [53] suggested that for elevated pain tolerance to contribute uniquely to suicide risk recognition, its relationship with suicide ideation needs to take into consideration the intended method of suicide (i.e., those which use pressure pain or pain felt through force). Further, Ribeiro et al. [3] recommended that future research should investigate suicide methods relevant for people who are contemplating attempting, which could covary with gender and culture.

Through establishing a stronger theoretical relationship between elevated pain tolerance and acquired capability for suicide, research can potentially offer the ability to differentiate between people who have the desire to die and those who are capable of killing themselves. However, overall the complexity of influences that lead an individual to suicide ideation and attempt appears to have been replicated in the IPTS's constructs that conjointly, but not individually, coalesced into heightened suicide risk.

The thematic analysis conducted with participants who recognized the risk of suicide attempt provided contradictory evidence to the results drawn from the sequential logistic regression analyses. The most frequently cited theme did not match the significant variables contributing to the model of

suicide risk recognition (i.e., perceived burdensomeness and fearlessness about death). Lack of social support, which is a convergent variable to thwarted belongingness [5, 13, 16], was the most quoted matter. Although this was unexpected, it is possible that participants answered the follow-up questions in relation to themselves as oppose to Alex. Qualitative studies can often be more personal, allowing for participants to self-reflect on their own experiences. Nevertheless, Lester and Gunn III's [17] found that belongingness themes are cited more often than burdensomeness themes when explaining reasons for suicide ideation. Furthermore, a chi-square goodness-of-fit test indicated there was no significant difference between findings observed in the current study when compared to the percentages obtained from Lester and Gunn III's [17] original analysis of suicide notes, showing consistency across studies.

The profiles of Australia and Brazil were mostly similar. While the Australian respondents thought Alex would attempt suicide, in Brazil respondents thought Alex would seek help from a trusted confidential source (e.g., a medical professional, or a religious person). It has been proposed that religious individuals might intervene (e.g., ministry of intercession) to increase suicidal individuals' feeling of belongingness [54, 55]. Therefore, it is plausible that respondents from Brazil, a highly religious nation [56], are more likely to believe that Alex would seek help, especially from a religious person. In the Australian sample perceived burdensomeness was the only significant predictor of risk of suicide attempt, whereas in the Brazilian sample mental health literacy, as well as perceived burdensomeness contributed uniquely to the risk of suicide attempt.

Hierarchical multiple regression analyses partially supported the prediction that suicide stigma would be a significant predictor across all IPTS's constructs. Suicide stigma was found to be a significant predictor of variability in thwarted belongingness and perceived burdensomeness, which suggested that while anticipated self-stigma has a role in increasing self-perception of thwarted belongingness and perceived burdensomeness, perceived public stigma might influence how people recognize suicide desire in others [43]. Results also indicate that stigmatizing attitudes have the potential to hinder the promotion of public awareness and prevention of death by deliberate self-injury [34, 35, 43]. However, stigma did not show unique variance in elevated pain tolerance and fearlessness about death, which suggests that the revised latent variables need further development to demonstrate acquired capability for suicide, especially in diverse cultural contexts.

Individuals with mental health literacy scored significantly lower on stigma in the Australian sample, but not in the Brazilian sample. It is proposed that this contradictory finding is due to the fact that the present study did not accurately differentiate between type and degree of mental health literacy. For instance, the sequential logistic regression analysis conducted in the Brazilian sample showed that the odds of recognizing risk of suicide attempt is smaller for respondents who have mental health literacy compared to those without.

However, this finding is a result of a marginal odds ratio (.32) and possibility represents a Type one error if interpreted as conclusive evidence of differences [57].

Previous studies [e.g., 18, 20, 22, 26, 58-60] have presented evidence of trained mental health professionals stigmatizing mental health patients. As Botega et al. [18], Lauber, Nordt, Braunschweig, and Rössler [61], and Batterham et al. [25] discussed, there are many reasons why mental health providers stigmatize suicide, such as level of professional qualification, cultural background, religious views, gender and age. Further, Kopera et al. [59] explained that regardless of training mental health professionals hold just as much negative implicit attitudes towards patients when compared with non-mental health professionals. Therefore, while generalized measures might be a solution to decrease stigma of mental health and suicide in the public, these might not be as effective for trained professionals [25, 60]. This evidence raises a conundrum for mental health treatment and suicide prevention, as the major premise of community initiatives is to decrease stigma and increase mental health and suicide literacy.

The final two hypotheses investigated gender and age differences across the distribution of stigma scores. A significant difference was found with males scoring higher on stigma than females in both the Australian and Brazilian samples. However, the significant difference between males and females in Brazil was only found when the effect of religiosity and age was controlled for. This finding supports previous studies [e.g., 25, 43] and the assertion that religiosity impacts on suicide stigma [18].

Regarding age, no significant difference was found in any of the samples. This finding is contrary to previous studies [e.g., 25, 43] that showed younger men as more stigmatizing than older man. Older people are hypothesized to be less stigmatizing than younger people due to more years of general education and mental health training. As the present study did not assess years of general education and mental health training, giving the lack of uniform comparison between Australia and Brazil, no further inference can be made regarding the results found for males. Further analysis showed a significant difference between younger and older females in the Brazilian sample. This difference was in the expected direction, as younger females were more stigmatizing than older females. Therefore, these findings offer partial support to the argument that gender, age and religiosity influences stigma scores.

A. Suicide Research Implications.

The present study has implications for adapting the IPTS's scales to be used cross-culturally. The study showed that suicide stigma affects the recognition of suicidal behaviors in others. Overall, it provided support for suicide stigma as a distinguishing variable for comparing cultural values and attitudes towards suicide across cultures. Continued research could enhance public awareness of suicide risk and prevention within and between nations as one size does not appear to fit all. There is also a cogent argument for the need to tailor programs for culturally diverse individuals [34, 35].

B. Research Limitations

Although the current study has presented evidence for adapting the IPTS's scales cross-culturally, several limitations were found. Participants in this study were predominantly females, which Ribeiro et al. [3] argued could impact results, particularly regarding the elevated pain tolerance and fearlessness about death subscales. Other groups such as young people (≤17) and older adults (60+) were underrepresented, which means that age effect (an important consideration regarding stigma) could not be accurately analyzed [25, 33]. Additionally, Australia and Brazil have large indigenous populations (at high risk of suicide), which were not targeted in this study [32]. Thus, the current study cannot be reliably applied to at-risk indigenous people.

C. Summary and Future Directions

The comparison of cultural values and attitudes to suicide between Australia and Brazil in the present study has opened a discussion for future cross-cultural studies, especially regarding adapting the IPTS model to predict suicide risk. The IPTS model was significant in predicting recognition of suicide risk in Australia and Brazil. Stigma was found to hinder the perception of suicide risk in others. Not all constructs in this study contributed uniquely, which suggests future research should consider weighted constructs or additional culturally relevant variables to increase the model effectiveness. Specifically, future investigations should consider the impact of religiosity, years of education, and indigenous culture with attention to assessments of equivalence between countries to provide a better representation of the population. Overall, a cross-cultural suicide study provides additive empirical evidence reconceptualising prevention with a beneficial effect on death statistics through deliberate self-injury.

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