

GENDER AND THE INTERPERSONAL- PSYCHOLOGICAL THEORY OF SUICIDE: A THREE-WAY INTERACTION BETWEEN PERCEIVED BURDENSONENESS, THWARTED BELONGINGNESS, AND GENDER

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Few studies have examined the role of gender in the interpersonal-psychological theory of suicide. Aims: The present study evaluated whether the three-way interaction between perceived burdensomeness, thwarted belongingness, and gender was significantly associated with suicidal ideation in an ethno-racially diverse adolescent inpatient sample. Method: Data were drawn from a cross-sectional sample of 311 inpatients (63.3% girls) ages 12 to 17 years ($M = 14.74$, $SD = 1.49$). Findings indicated that the three-way interaction was significant: Among girls, thwarted belongingness was associated with suicidal ideation only at low levels of perceived burdensomeness. Among boys, thwarted belongingness was associated with suicidal ideation only at high levels of perceived burdensomeness. Data were cross-sectional, precluding causal conclusions, and the use of

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a clinical sample may not generalize to nonclinical populations. Findings have implications for the development of efficacious suicide prevention initiatives for adolescent boys and girls and stress the importance of interventions targeting perceived burdensomeness.

Keywords: adolescence, burdensomeness, belongingness, gender

The interpersonal-psychological theory of suicide (IPTS; Joiner, 2005; Van Orden et al., 2010) has received considerable attention and empirical support in recent years, with growing evidence for the validity of the IPTS in adolescent samples (for a review, see Stewart, Eddy, Horton, Hughes, & Kennard, 2015). The IPTS proposes that, in order to die by suicide or make suicide attempts of high lethality, an individual must have both the desire for death and the acquired capability to enact lethal self-injury (Joiner, 2005). The desire for death is considered to result from the joint presence of thwarted belongingness and perceived burdensomeness (Van Orden et al., 2010). Thwarted belongingness is comprised primarily of a perception of social isolation or disconnection from others (Joiner, 2005) and has been operationalized as chronically strained relationships with family, close friends, and romantic partners, all of which have been associated with more severe suicidal behaviors in adolescence (e.g., Pettit, Roberts, Lewinsohn, Seeley, & Yaroslavsky, 2011). Perceived burdensomeness is primarily conceptualized as the belief that one has become a burden on others (Van Orden et al., 2010) or that one's existence is a drain on the resources of others (Joiner, 2005). Perceived burdensomeness has consistently been associated with suicidal ideation in a range of samples (for a review see, Hill & Pettit, 2014). The desire for death is thought to be strongest in the joint presence of perceived burdensomeness and thwarted belongingness (Joiner, 2005). That is, the IPTS proposes that perceived burdensomeness and thwarted belongingness interact to predict suicidal ideation.

A recent meta-analysis of empirical literature on the IPTS provides support for the interaction hypothesis (Chu et al., 2017). Even so, within the extant literature, support for this hypothesis has been mixed in adult samples with some studies finding a significant interaction and others failing to confirm that finding (Cero, Zuromski, Witte, Ribeiro, & Joiner, 2015; Hill et al.,

2015; Joiner et al., 2009; Monteith, Menefee, Pettit, Leopoulos, & Vincent, 2013). Evidence for the interaction hypothesis in adolescent samples is also mixed: Among a school-based sample of Israeli adolescents, support for the perceived burdensomeness/thwarted belongingness interaction was found using a measure of parental belongingness, but not when using a measure of peer-based belongingness (Barzilay et al., 2015). A second study examined the perceived burdensomeness/thwarted belongingness interaction among a sample of 147 adolescent psychiatric inpatients and found that the interaction differentiated between adolescents with active suicidal ideation from those with passive suicidal ideation, but only at a marginal level (Horton et al., 2015). The presence of mixed evidence regarding whether the perceived burdensomeness/thwarted belongingness interaction is associated with suicidal ideation, despite a positive meta-analysis, indicates the possibility of additional moderators of this association. Thus, further examination of this hypothesis is needed in adolescents.

GENDER DIFFERENCES IN THE IPTS

Rates of suicide-related behaviors differ markedly among adolescent girls and boys, with adolescent girls reporting significantly greater rates of suicidal ideation and suicide attempts (Centers for Disease Control and Prevention, 2016) than adolescent boys, as well as greater rates of suicidal plans (Nock et al., 2013). Even so, adolescent boys are about five times more likely to die by suicide than adolescent girls (Centers for Disease Control and Prevention, 2017). Further, adolescent males are less likely to utilize health care services (Marcell, Klein, Fischer, Allan, & Kokotailo, 2002) and are less likely screen positive for suicide risk (King, O'Mara, Hayward, & Cunningham, 2009). Thus, potential gender differences in risk factors for suicide-related behaviors should be carefully considered as they may provide insight into methods for improving suicide risk screening and prevention for adolescent boys.

Gender differences have also been evidenced among risk markers for suicide-related behaviors, such as anxiety disorders (Lewinsohn, Gotlib, Lewinsohn, Seeley, & Allen, 1998), adoles-

cent depression (Nolen-Hoeksema & Girgus, 1994) and borderline personality disorder (Merikangas et al., 2010). A gender-moderated association has been hypothesized for interpersonally-based self-esteem as well (Cambron, Acitelli, & Pettit, 2009). Given gender differences in risk factors for suicide-related behaviors and socially-related constructs, potential gender differences in IPTS factors may also be important to understanding the interplay of gender and suicidal ideation.

One study of the IPTS in adolescents identified gender differences in prospective risk for suicide attempts among a sample of inpatients (Czyz, Berona, & King, 2015). Specifically, Czyz and colleagues (2015) identified a significant interaction between the acquired capability to enact lethal self-injury and perceived burdensomeness as a predictor of suicide attempts over the subsequent 12 months among boys. In contrast, among girls, there was a significant interaction between the acquired capability to enact lethal self-injury and thwarted belongingness as a predictor of suicide attempts. Thus, there is preliminary evidence for gender differences in the expression of risk for suicide-related behaviors among the IPTS constructs. While that study examined gender differences in relation to risk for suicide attempts, potential gender differences may also exist in the expression of the IPTS constructs with regard to suicidal ideation.

The extant theoretical and empirical literature indicates that an unmet need to belong may pose a particularly salient risk for suicidal ideation in adolescent girls. Existing literature suggests that girls are often more attuned to the emotions and thoughts of others (Baron-Cohen, 2004; Sharp & Vanwoerden, 2014), focused on social relationships and peer status (Eder, 1985), and experience greater distress when faced with events that may catalyze thwarted belongingness (e.g., social aggression; Paquette & Underwood, 1999). In contrast, adolescent boys may be more likely to experience severe suicidal ideation in response to feelings of burdensomeness, given that this emotion may threaten a male youth's sense of autonomy and self-reliance (Czyz et al., 2015). Indeed, the hypothesis that perceived burdensomeness may be more salient to suicide ideation risk in boys builds on an existing base of theoretical literature on gender, as well as suggested gender differences in interpersonal socialization. Work on social-

ization (see Leaper, 1991, 2000; Leaper & Friedman, 2007) indicates that environment and gendered play during development result in increased emphasis on interpersonal responsiveness and affiliation for girls, and assertiveness and self-reliance for boys (Leaper & Friedman, 2007). Thus boys may place greater value on independence, personal autonomy, and contribution. In extension to the IPTS, we specifically hypothesize that for adolescent boys, suicidal ideation will be more strongly associated with perceived burdensomeness, such that at low levels of perceived burdensomeness, boys will experience little or no suicidal ideation. That is, we expect that, among boys, perceived burdensomeness is necessary for suicidal ideation. In contrast, for girls, we hypothesize that either risk factor (perceived burdensomeness or thwarted belongingness) will be sufficient to produce suicidal ideation.

THE PRESENT STUDY

The purpose of this study was to examine gender differences in the hypothesized associations between perceived burdensomeness, thwarted belongingness, and suicidal ideation in a sample of adolescent inpatients recruited from a public, acute-care inpatient setting. In addition, the present study hypothesized that the perceived burdensomeness by thwarted belongingness interaction would be further moderated by gender, such that a three-way interaction would be significantly associated with suicidal ideation, cross-sectionally.

METHOD

PARTICIPANTS AND PROCEDURES

This study was conducted as approved by the appropriate institutional review boards. Adolescent participants were recruited from consecutively admitted inpatients at a university-affiliated acute-care psychiatric hospital in a large urban area. After the nature of the study was explained, parents provided informed consent for their adolescent child to participate. Of those with parental consent, 398 provided assent to participate, 67 declined

to participate, 41 were excluded due to severe psychosis and/or intellectual disability, and 168 were discharged prior to completion of the research protocol due to the acute nature of this inpatient unit. Data for the present analysis were drawn from a subset of adolescents ($n = 313$) who were administered the measures used in this analysis. Two withdrew assent/consent from the research protocol, resulting in a final sample of 311 adolescents.

Interviewers were advanced clinical psychology graduate students with training in the interview procedures and supervised administration. Participants were remunerated for their time. Participants (63.3% female) ranged in age from 12 to 17 years ($M = 14.74$, $SD = 1.49$) and identified themselves as Hispanic (39.4%), Caucasian (26.1%), African American or Black (24.8%), multiracial (7.2%), Southeast Asian (2.3%), and Native American (0.3%).

MEASURES

Thwarted Belongingness and Perceived Burdensomeness. The Interpersonal Needs Questionnaire-15 (INQ; Van Orden, 2009; Van Orden, Cukrowicz, Witte, & Joiner, 2012) is a 15-item measure of perceived burdensomeness (6 items) and thwarted belongingness (9 items). Participants rate the extent to which each item describes how they have felt recently, using a 7-point Likert scale. Higher scores indicate greater perceptions that one is a burden to others (perceived burdensomeness) and does not feel connected to others (thwarted belongingness). Prior research has supported the factor structure, internal consistency, and convergent validity of the subscales in adolescents (Hill et al., 2015). Internal consistency coefficients in the present sample were $\alpha = .91$ for perceived burdensomeness and $\alpha = .82$ for thwarted belongingness.

Suicidal Ideation. The Modified Scale for Suicide Ideation (MSSI) is an 18-item clinician rating scale of the severity of suicidal ideation (Miller, Norman, Bishop, & Dow, 1986). Each item is rated from 0 to 3 and the total score ranges from 0 to 54 (higher scores represent greater suicidal ideation). The internal consistency, interrater reliability, and factor structure of the MSSI have been supported among adolescents (Pettit et al., 2009). Concur-

TABLE 1. Means and Standard Deviations of, and Correlations Between, Study Variables

Full Sample	1	2	3
1. Perceived burdensomeness	—		
2 Thwarted belongingness	.54***	—	
3. Suicidal ideation	.64***	.46***	—
Mean	22.62	33.91	18.51
(<i>SD</i>)	(11.19)	(11.58)	(13.44)
Girls			
1. Perceived burdensomeness	—		
2 Thwarted belongingness	.58***	—	
3. Suicidal ideation	.67***	.49***	—
Mean	24.09	35.32	21.42
(<i>SD</i>)	(11.27)	(11.42)	(13.65)
Boys			
1. Perceived burdensomeness	—		
2 Thwarted belongingness	.43***	—	
3. Suicidal ideation	.53***	.34**	—
Mean	20.09	31.47	13.48
(<i>SD</i>)	(10.64)	(11.48)	(11.57)

Note. ***p* < .01; ****p* < .001.

rent and discriminant validity have been adequately supported (Miller et al., 1986; Pettit et al., 2009). Internal consistency in the present sample was $\alpha = .93$.

DATA ANALYSIS

Missing data occurred at a low frequency for the MSSI (4.5%) and INQ (10.0%). Little's MCAR test was not statistically significant, $\chi^2(8) = 9.91$, *p* = .27; thus, data were assumed to be at least missing at random (MAR). An expectation maximization algorithm was used to account for missing data prior to analysis. The data were then evaluated for multivariate outliers by examining leverage indices for each individual and influence values for each predictor and individual. An outlier was defined as a leverage score four times greater than the mean leverage or a df-Beta greater than one for any variable. One case was identified as a statistical outlier; identical conclusions were drawn both with and without the outlier in the analysis and the results presented

TABLE 2. Regression Models of the Interaction Between Perceived Burdensomeness, Thwarted Belongingness, and Gender Predicting Suicidal Ideation

Variable	Estimate	SE	t	p	95% CI of Estimate	
					LL	UL
PB	2.00	0.51	3.96	<.001	1.01	2.99
TB	0.86	0.34	2.53	.01	0.19	1.53
Gender	14.96	6.88	2.18	.03	1.43	28.50
PB × TB	-0.03	0.01	-2.30	.02	-0.06	-0.00
PB × Gender	-0.98	0.34	-2.86	.005	-1.66	-0.31
TB × Gender	-0.49	0.22	-2.21	.03	-0.92	-0.05
PB × TB × Gender	0.02	0.01	2.42	.02	0.004	0.04

include the outlier to better represent the population of interest. Data were evaluated using the PROCESS macro for SPSS (Hayes, 2013), which specifies interaction models with all main effects and two-way interactions in the model.

RESULTS

DESCRIPTIVE RESULTS

Means and standard deviations of study variables, and the correlations between them, are shown in Table 1 for the full sample, as well as for girls and boys. For both boys and girls, suicidal ideation was significantly and positively correlated with perceived burdensomeness, thwarted belongingness, and depressive symptoms. Of note, there were no significant differences in the strength of the correlations between boys and girls. Girls reported greater levels of thwarted belongingness, $t(309) = 2.86$, $p < .01$, perceived burdensomeness, $t(309) = 3.07$, $p < .01$, and suicidal ideation, $t(268.99) = 5.47$, $p < .001$, than boys.

A three-way interaction model was examined using the PROCESS macro for SPSS, in which the association of interest was the effect of the perceived burdensomeness by thwarted belongingness by gender interaction on suicidal ideation. Results of the PROCESS regression model are provided in Table 2. The overall model was statistically significant $F(7, 303) = 39.24$, $p < .001$, $R^2 = 0.48$. The model indicated a statistically significant increase in R^2 of 0.01 due to the addition of the three way interaction (p

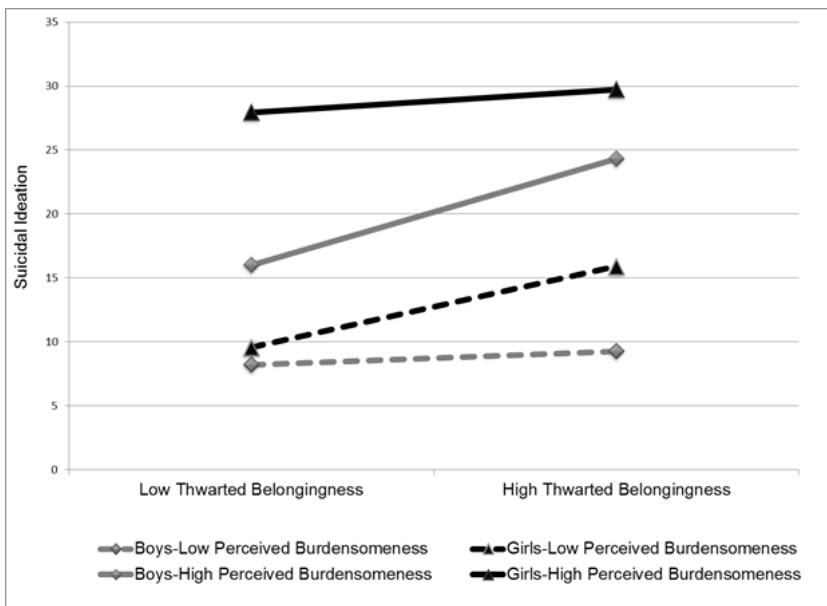


FIGURE 1. Three-Way Interaction Between Perceived Burdeness, Thwarted Belongingness, and Gender

$= .02$). The form of the interaction is depicted in Figure 1. The conditional effect of the PB \times TB interaction was not statistically significant for either girls ($p = .13$) or boys ($p = .06$). However, the conditional effect of thwarted belongingness on suicidal ideation was dependent on the combination of perceived burdeness and gender.

For girls, when perceived burdeness was low (one standard deviation below the mean), the regression coefficient for thwarted belongingness predicting suicidal ideation was statistically significant. That is, at low levels of perceived burdeness, suicidal ideation increased as thwarted belongingness increased. When girls perceived burdeness was high (one standard deviation above the mean), the regression coefficient for thwarted belongingness was not statistically significant. As can be seen in Figure 1, for girls with high perceived burdeness, suicidal ideation was high, regardless of thwarted belongingness score.

For boys, when perceived burdeness was low, the regression coefficient for thwarted belongingness predicting sui-

cidal ideation was not statistically significant. Thus, as depicted in Figure 1, for boys, low perceived burdensomeness was associated with low suicidal ideation, regardless of thwarted belongingness score. When boys' perceived burdensomeness was high, the regression coefficient for thwarted belongingness was statistically significant. That is, at high levels of perceived burdensomeness, suicidal ideation increased as thwarted belongingness increased.

DISCUSSION

The present study evaluated whether the three-way interaction between perceived burdensomeness, thwarted belongingness, and gender was significantly associated with suicidal ideation in a racially diverse adolescent inpatient sample. Findings indicated that the three-way interaction was significant, such that the interactive relations between IPTS constructs and suicidal ideation differed by gender. These findings concur with a recent meta-analytic findings (Chu et al., 2017), demonstrating support for the interaction between perceived burdensomeness and thwarted belongingness associating with suicidal ideation in existing IPTS research. They may also help clarify the existence of mixed findings in the adolescent literature with regard to the hypothesized interaction (e.g., Barzilay et al., 2015; Horton et al., 2015). The present study indicates that the association between perceived burdensomeness, thwarted belongingness, and suicidal ideation differs across gender.

Specifically, among girls, thwarted belongingness was associated with suicidal ideation only at low levels of perceived burdensomeness. For girls, addressing perceived burdensomeness appears to be essential for reducing suicidal ideation, as high levels of perceived burdensomeness were associated with high levels of suicidal ideation. Among girls, however, thwarted belongingness must also be addressed. Critically, addressing thwarted belongingness alone may have little impact among adolescent girls if perceived burdensomeness remains elevated.

While these data do not point toward mechanisms that may be driving the interaction, future research should consider circumstances and factors that may be producing this unexpected

finding. The significant impact of thwarted belongingness at low levels of perceived burdensomeness may indicate that girls who perceive they are needed (i.e., have low perceived burdensomeness) are filling a role that results in rejection or isolation. If gendered societal pressures and financial/environmental stressors push teenage girls toward less social forms of contribution (e.g., helping at home or baby-sitting vs. working retail), the result may be elevated thwarted belongingness. For example, a girl whose parents work late and have little free time may create a sense of contribution to her family by helping her parents with housework after school. In this case, building a sense of contribution may occur at the cost of regular social interaction with peers, resulting in isolation and thwarted belongingness. In addition, girls with elevated perceived burdensomeness had elevated suicidal ideation, irrespective of their level of thwarted belongingness. This could indicate that the development of burdensome cognitions in girls, in and of itself, is indicative of such an intense state of distress that thwarted belongingness does not confer additional risk (or, conversely, that social support and connectedness are not sufficiently protective at such high levels of perceived burdensomeness). This may also be aligned with existing social-cognitive work, suggesting that adolescent females are more attuned to the thoughts and emotions of others (Sharp & Vanwoerden, 2014), and may subsequently be more affected by perceived social disruptions (resulting in thwarted belongingness) even when participating in contributory activities.

Among boys, findings indicate that thwarted belongingness is salient only when perceived burdensomeness is high. Thus, if perceived burdensomeness can be addressed successfully, suicidal ideation might be reduced to such a degree that additional interventions targeting thwarted belongingness are unnecessary. In line with the findings of Czyz et al. (2015), the three-way interaction suggests that perceived burdensomeness may play a particularly critical role in interpersonal risk for suicidal ideation in teen boys, perhaps given that elevations in perceived burdensomeness threaten a young male's sense of autonomy and self-efficacy during an important developmental period. Indeed, the current sample is placed within a westernized culture, where adolescent boys are frequently socialized and expected to de-

velop autonomy, independence, and occupy roles in which they reduce burden on the family (e.g., by working jobs). For suicide risk screening, this may indicate a greater need to incorporate perceived burdensomeness into screening programs in order to better detect risk among adolescent boys.

In terms of treatment, for both boys and girls findings indicate that reductions in perceived burdensomeness have the potential to reduce suicidal ideation among adolescents. A number of suicide prevention programs have been developed with a focus on thwarted belongingness-related constructs, including social support and connectedness (e.g., King et al., 2006, 2009), yet programs focused on perceived burdensomeness have only recently been developed (Hill & Pettit, 2016). Further development of prevention programs targeting reductions in perceived burdensomeness may be necessary to more effectively address suicidal ideation among adolescent boys and to enhance suicide prevention among adolescent girls.

STRENGTHS AND LIMITATIONS

These findings should be interpreted within the context of the study's strengths and limitations: One strength of the present study was the use of a diverse sample of psychiatric inpatients, which provided high variability on each of the study measures. However, these results may not generalize to nonclinical samples of adolescents. Additional research is needed to replicate these preliminary findings in additional samples and further explore this interaction. Another strength of the present study was the use of the Interpersonal Needs Questionnaire, which has been validated using an adolescent sample (Hill et al., 2015), as opposed to ad hoc measures of perceived burdensomeness and thwarted belongingness, which have frequently been used in previous studies (see Stewart et al., 2015). However, data in the present study were cross-sectional and so evaluation of these hypotheses in the context of longitudinal research is needed to strengthen the conclusions drawn here. Moreover, future research examining this three-way interaction should take into account the possible role of gender-relevant covariates (e.g., autonomy, self-efficacy, peer inclusion).

CONCLUSIONS

The present study evaluated whether the three-way interaction between perceived burdensomeness, thwarted belongingness, and gender was significantly associated with suicidal ideation in an adolescent inpatient sample. The three-way interaction was significantly associated with suicidal ideation, revealing gender differences in the manifestation of the interpersonal-psychological theory. These findings have implications for the development of efficacious suicide prevention initiatives for adolescent boys and girls and stress the importance of interventions targeting perceived burdensomeness.

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