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Social Anxiety and Suicidal Ideation: Test of the Utility of the Interpersonal-Psychological Theory of Suicide

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Abstract

Social anxiety is related to greater suicidality, even after controlling for depression and other psychopathology. The Interpersonal-Psychological Theory of Suicide (IPT; Joiner, 2005) proposes that people are vulnerable to wanting to die by suicide if they experience both perceived burdensomeness (sense that one is a burden to others) and thwarted belongingness (a greater sense of alienation from others). Socially anxious persons may be especially vulnerable to these interpersonal factors. The current study tested whether interpersonal IPTS components independently and additively mediate the social anxiety-suicidal ideation (SI) relation among 780 (80.5% female) undergraduates. Social anxiety was significantly, robustly related to SI and to thwarted belongingness and perceived burdensomeness. Social anxiety was indirectly related to SI via thwarted belongingness and perceived burdensomeness. The sum of these indirect effects was significant. Moderated mediation analyses indicated that perceived burdensomeness only mediated the relation between social anxiety and SI at higher levels of thwarted belongingness. Findings highlight that difficulties in interpersonal functioning may serve as potential pathways through which social anxiety may lead to greater suicidality.

Keywords

social anxiety; suicidal ideation; suicide risk; interpersonal theory of suicide; thwarted belongingness; perceived burdensomeness

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1. Introduction

Social anxiety disorder is related to high rates of suicidal ideation (SI) even after controlling for co-occurring depression and other psychopathology (e.g., Sareen et al., 2005). Yet few studies have identified factors that may increase suicide risk among this vulnerable population. The Interpersonal-Psychological Theory of Suicide (IPT; Joiner, 2005) proposes that two factors in particular appear related to the desire to die by suicide: perceived burdensomeness (i.e., sense that one is a burden to others) and thwarted belongingness (i.e., a greater sense of alienation from others). Perceived burdensomeness and thwarted belongingness are robustly related to SI (see Van Orden et al., 2010). In fact, loneliness was not predictive of suicidal behavior after accounting for variance attributable to other variables (Conner, Britton, Sworts, & Joiner, 2007), suggesting perceived burdensomeness and thwarted belongingness may be more robust suicide vulnerability factors than other putative risk factors.

Socially anxious persons may be especially vulnerable to perceived burdensomeness and thwarted belongingness. Social avoidance could result in thwarted belongingness (i.e., a greater sense of alienation from others). In fact, socially anxious adults are 73% more likely to live alone and are more likely to be unmarried/unpartnered than depressed individuals than the general population (Teo, Lerrigo, & Rogers, 2013). Low self-esteem, which is associated with social anxiety (Ritter, Ertel, Beil, Steffens, & Stangier, 2013; Westenberg, 1998) and perceived burdensomeness (Van Orden, Cukrowicz, Witte, & Joiner, 2012), could lead to feeling underserving of others' support, resulting in a feeling of perceived burdensomeness.

Despite theoretical and indirect evidence, the utility of the interpersonal components of the IPTS in understanding SI among high-risk socially anxious persons has not been tested in a comprehensive theoretical context and the extant data are somewhat mixed. Social anxiety is significantly related to both perceived burdensomeness and thwarted belongingness (Davidson, Wingate, Grant, Judah, & Mills, 2011). In fact, social anxiety is robustly related to thwarted belongingness after controlling for theoretically relevant variables (e.g., demographics, co-occurring psychopathology) but may not be to perceived burdensomeness (Davidson et al., 2011; Silva, Ribeiro, & Joiner, 2015). Thwarted belongingness mediated the relation between social anxiety and SI in one study (Chu, Buchman-Schmitt, Moberg, & Joiner, 2016) but not another (Davidson et al., 2011). In the only known mediational test of perceived burdensomeness, this component did not mediate the social anxiety-SI relation (Davidson et al., 2011).

Although these studies lend partial support for the utility of the IPTS in understanding SI among socially anxious persons, the IPTS model theorizes that it is not the IPTS components in isolation that predict SI but rather their combination that predict SI (Joiner, 2005; Van Orden et al., 2010). Thus, the current study is the first known study to test whether the combination of perceived burdensomeness and thwarted belongingness mediates the relation between social anxiety and SI. This hypothesis was examined among undergraduate students given that 12% of college students experience SI (Wilcox et al., 2010) and 31% of students who visit counseling centers endorsed seriously considering

suicide (Center for Collegiate Mental Health, 2015). In fact, suicide is the second leading cause of death for this age group (Centers for Disease Control and Prevention, 2015). Social anxiety was assessed continuously given that social anxiety exists on a continuum (Crome, Baillie, Slade, & Ruscio, 2010) and individuals higher on this continuum are vulnerable to greater SI (e.g., Chu et al., 2016; Davidson et al., 2011).

2. Method

2.1 Participants and Procedures

Participants were recruited through the psychology participant pool from at a large state university in the southern United States. The university's Institutional Review Board approved the study and participants provided informed consent prior to data collection. The consent form explained that participants' names would not be linked to their responses, assuring anonymity of responses. Participants completed computerized self-report measures using a secure, on-line data collection website ([surveymonkey.com](https://www.surveymonkey.com)). All participants received referrals to university-affiliated psychological outpatient clinics and the telephone number for the local crisis intervention hotline as well as research credit for completion of the survey.

Of the 789 students who completed the survey, 3 were excluded due to reporting their ages as under 18 and 6 due to questionable validity of their responses (described below). The final sample of 780 was predominately female (80.5%) and the racial/ethnic composition was 11.3% non-Hispanic African American, 0.1% Hispanic African American, 4.7% Asian American, 74.9% Non-Hispanic Caucasian, 3.6% Hispanic Caucasian, 0.4% non-Hispanic Native American, 0.1% Hispanic Native American, 2.8% multiracial, and 2.1% "other". The mean age was 19.9 ($SD=2.0$). Regarding suicidality, 40.0% endorsed lifetime SI, 27.8% endorsed past-year SI, 11.4% endorsed past-two week SI, and 3.2% endorsed lifetime suicide attempt.

2.2 Measures

2.2.1—The *Social Interaction Anxiety Scale* (SIAS; Mattick & Clarke, 1998) was used to assess social anxiety. The SIAS contains 20 items scored from 0 (*not at all characteristic or true of me*) to 4 (*extremely characteristic or true of me*). The SIAS has shown adequate specificity for social anxiety relative to other forms of anxiety (e.g., trait anxiety; Brown et al., 1997). Internal consistency of the SIAS was excellent in the current sample ($\alpha=.94$).

2.2.2—The *Interpersonal Needs Questionnaire* (INQ; Van Orden et al., 2012) was used to assess perceived burdensomeness and thwarted belongingness. The measure contains 15 items (6 assessing perceived burdensomeness, 9 assessing thwarted belongingness) scored from 1 (*not at all true for me*) to 7 (*very true for me*). Internal consistency for the perceived burdensomeness ($\alpha=.94$) and thwarted belongingness ($\alpha=.89$) subscales were good in the current sample.

2.2.3—The *Inventory of Depression and Anxiety Symptoms* (IDAS; Watson et al., 2007) was used to assess SI in the past two weeks with the question, "I had thoughts of suicide".

The 20-item depression subscale was used to assess current depression. IDAS items were rated from 1 (*not at all*) to 5 (*extremely*). The depression subscale of the IDAS demonstrated excellent internal consistency in the current sample ($\alpha=.92$).

2.2.4 Other Covariates—The *Marijuana Problems Scale* (MPS; Stephens et al., 2004) is a 19-item questionnaire used to assess problems associated with cannabis use experienced in the past 90 days from 0 (*no problem*) to 2 (*serious problem*). The MPS demonstrated adequate internal consistency ($\alpha=.85$). The *Rutgers Alcohol Problem Index* (RAPI; White & Labouvie, 1989) is a 23-item questionnaire used to assess problems associated with alcohol use in the past 30 days from 0 (*never*) to 4 (*more than 10 times*). The RAPI demonstrated good internal consistency ($\alpha=.85$). Number of problems was calculated by totaling the number of problems participants endorsed for each measure.

2.2.5—Four questions from the *Infrequency Scale* (IS; Chapman & Chapman, 1983) were used to identify random responders who provided random or grossly invalid responses. As in prior online studies (Cohen, Iglesias, & Minor, 2009), individuals who endorsed three or more items were excluded ($n=6$).

2.3 Data Analyses

As has occurred in other studies of INQ subscales and SI (e.g., Davidson et al., 2011), inspection of the data (Table 1) revealed that some variables were not normally distributed (skew > 3.0; kurtosis > 10; Kline, 2005).

Hypotheses were tested using maximum likelihood bootstrapping (10,000 samples were drawn) within the structural equation modeling program AMOS 22, which is robust against violations of assumptions of normality (Erceg-Hurn & Mirosevich, 2008). First, we tested whether social anxiety was related to SI after controlling for the following covariates: age, gender, depression, cannabis problems, and alcohol problems. Second, we tested whether social anxiety was related to thwarted belongingness and perceived burdensomeness after controlling for the covariates. The two IPTS components were entered simultaneously to control for shared variance. Third, we tested whether the interpersonal components of the IPTS mediated the relations of social anxiety with SI, which was treated as a continuous variable (per Torra, Domingo-Ferrer, Mateo-Sanz, & Ng, 2006) (Figure 1). Effects of social anxiety on IPTS components and from IPTS components to SI represent unique associations after controlling for shared variance. Model fit were calculated via χ^2 , Comparative Fit Index (CFI), and Standardized Root Mean Square Residual (SRMR). A non-significant χ^2 indicates good model fit; however, χ^2 is sensitive to sample size. A CFI value of .95 or higher and an SRMR value of .08 or lower are indicative of good model fit (Hu & Bentler, 1999). Covariances were estimated among IPTS components to control for shared variance. Mediation is present if the indirect effect *CI* does not contain zero (Hayes, 2013). To examine whether the two proposed mediators additively mediated the relations between social anxiety group and SI, the sum of the indirect effects was tested. To examine whether one indirect effect was greater than the other, the difference between the indirect effects was tested.

3. Results

After controlling for covariates (age, gender, depression, cannabis problems, alcohol problems), social anxiety was significantly related to SI, $\beta=.224$, $p < .001$. After controlling for covariates and shared variance among IPTS components, social anxiety was significantly related to thwarted belongingness, $\beta=.453$, $p < .001$, and perceived burdensomeness, $\beta=.347$, $p < .001$. The hypothesized mediational model (Figure 1) was a good fit to the data, $\chi^2(1)=1.53$, $p=.216$, CFI=1.00, SRMR=.01. As hypothesized, social anxiety was significantly, positively related to thwarted belongingness and perceived burdensomeness. Social anxiety was indirectly related to SI via thwarted belongingness, $b=.005$, $SE=.001$, 95% CI: .003, .007, $p < .001$, and via perceived burdensomeness, $b=.003$, $SE=.001$, 95% CI: .001, .005, $p < .001$. The sum of these indirect effects was significant, $b=.008$, $SE=.001$, 95% CI: .006, .010, $p < .001$. Although the size of the indirect effect of thwarted belongingness was larger than that of perceived burdensomeness, this difference was not significant, $b=.002$, $SE=.001$, 95% CI: -.001, .005, $p=.186$. Social anxiety was no longer significantly related to SI after accounting for the indirect effects, $\beta=.046$, $p=.216$.

Given the limitations of conducting mediational analyses using cross-sectional data, one method of increasing confidence in the observed effects is to conduct additional analyses after reversing the proposed mediator with the criterion variable (Kenny, 2014). Thus, we tested whether SI mediated the association between social anxiety and thwarted belongingness and perceived burdensomeness. This model was not a good fit, $\chi^2=162.51$, $p < .001$, CFI=.70, SRMR=.15.

An alternate way to test whether the combination of thwarted belongingness and perceived burdensomeness mediated the relation of social anxiety with SI is to test moderated mediation (i.e., whether perceived burdensomeness only mediates this relation at higher levels of thwarted belongingness). This hypothesis was tested using PROCESS, a macro used with SPSS 22.0 that utilizes an ordinary least squares regression-based path analytical framework to test for both direct and indirect effects (Hayes, 2013) using bootstrap analyses with 10,000 resamples from which bias-corrected 95-percentile confidence intervals (CI) were estimated (Hayes, 2009; Preacher & Hayes, 2004, 2008). The full model with coping motives accounted for significant variance ($R^2=.169$, $df=4$, 775 , $F=39.38$, $p < .0001$). The direct effect of social anxiety on SI was no longer significant after controlling for thwarted belongingness, perceived burdensomeness, and the thwarted belongingness X perceived burdensomeness interaction ($B = .002$, $SE = .002$, $p = .177$). The thwarted belongingness X perceived burdensomeness interaction was significantly related to SI even after accounting for variance attributable to main effects and to social anxiety ($B = .001$, $SE = .000$, $p = .004$). Social anxiety was predictive of greater SI indirectly through perceived burdensomeness only at higher levels of thwarted belongingness ($B = .0020$, $SE = .0009$, 95% CI: .0003, .0040), not at moderate ($B = .0005$, $SE = .0013$, 95% CI: -.0021, .0030) or low levels ($B = -.0011$, $SE = .0020$, 95% CI: -.0054, .0025).

4. Discussion

Social anxiety was indirectly related to SI through thwarted belongingness and perceived burdensomeness, both independently and additively. When considered in light of results from our moderated mediational analyses, the data suggest that the high rates of suicidality observed among socially anxious persons (e.g., Sareen et al., 2005) may be at least in part due to higher levels of both thwarted belongingness and perceived burdensomeness. This is an important test of IPTS (Joiner, 2005), which posits that it is the combination of thwarted belongingness and perceived burdensomeness that increases the likelihood that one may desire to die by suicide.

Social anxiety was significantly, incrementally related to both thwarted belongingness and perceived burdensomeness after controlling for demographics variables and co-occurring psychopathology (depression, substance-related problems). This finding adds to a growing corpus of work finding social anxiety to be robustly related to thwarted belongingness (Davidson et al., 2011; Silva et al., 2015). Although prior work did not find social anxiety to be incrementally related to perceived burdensomeness (Davidson et al., 2011; Silva et al., 2015), methodological differences could at least partially account for these disparate findings. Davidson et al. used the 18 item INQ, whereas we used the revised 15-item measure that removed items that cross-loaded onto both IPTS components to provide a more reliable and discriminant measure of these two related but distinct constructs (Van Orden et al., 2012). Silva et al. utilized a treatment-seeking outpatient sample with a slightly older mean age and future work is necessary to test whether age, treatment-seeking status, and/or education impact social anxiety's relation with perceived burdensomeness. For example, undergraduates may be more likely to experience perceived burdensomeness than non-college individuals given that they may be more likely to be financially dependent on others (e.g., parents).

Findings from the current study have important clinical implications. Given that social anxiety was robustly related to SI after controlling for age, depression, and substance problems, universities may consider identifying students with higher social anxiety for prevention interventions geared toward decreasing suicide risk among undergraduates. This is especially important given that most people with social anxiety disorder (SAD) do not seek psychological services (Grant et al., 2005). Clinicians are encouraged to assess suicide risk factors among patients with elevated social anxiety using empirically informed criteria that include assessment of patients' perceptions of burdensomeness and thwarted belonging (Chu et al., 2015). Clinicians may consider including therapeutic techniques that promote the importance of maintaining social connections and social contributions among socially anxious patients.

Findings must be considered in light of limitations. First, the sample consisted largely of White female undergraduates and it will be important to test whether results replicate in other samples (e.g., non-college persons, older persons). Second, a non-clinical sample was employed and an important next step will be to test whether results generalize to clinical samples. Third, the study was cross-sectional in nature, permitting an initial test of mediation (Hayes, 2013), and prospective and experimental work will be an important next

step to test whether social anxiety leads to perceived burdensomeness and/or thwarted belongingness or whether these IPTS components lead to social anxiety (or whether there are bidirectional relations among these variables). Fourth, data were collected via retrospective self-reports and future work could benefit from multi-method approaches (e.g., ecological momentary assessment of momentary predictors of SI). Fifth, a recent meta-analysis (Ma, Batterham, Calear, & Han, 2016) indicated that the relationships of the interpersonal IPTS components with SI are not particularly robust. However, Ma et al. included studies that measured factors other than SI (e.g., “suicidal behavior”). Given that the IPTS model proposes that the interpersonal components are related to SI and not suicidal behaviors, the modest relations observed may be due to obfuscation by those studies that included indices of suicide other than SI. Nevertheless, future research is necessary to determine whether other factors (e.g., biological vulnerabilities, other psychosocial variables) also play a role in the relation of social anxiety with SI.

Despite these limitations, the current study adds to a growing corpus of work finding social anxiety to be robustly related to SI by determining that interpersonal impairment experienced by socially anxious persons may make them particularly vulnerable to SI. Future research testing whether improving interpersonal functioning (including perceptions of interpersonal function) among socially anxious persons decreases their suicide risk will be an important next step.

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Highlights

- Few studies have explored why social anxiety is related to suicidality.
- Thwarted belongingness and perceived burdensomeness are related to suicidality.
- Social anxiety was robustly related to thwarted belongingness and perceived burdensomeness.
- Social anxiety was indirectly related to suicidality via these factors.
- The sum of these indirect effects was significant.

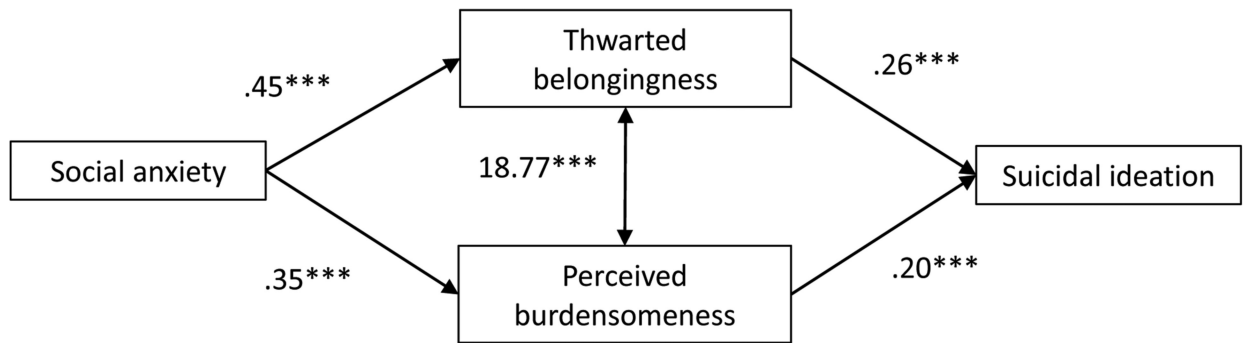


Figure 1. Structural equation model for interpersonal components of the Interpersonal-Psychological Theory of Suicide (IPTS) mediating the relation of social anxiety group to recent suicidal ideation. Standardized path estimates are presented. Paths between IPTS components are covariances.

* $p < .05$, ** $p < .01$, *** $p < .001$.

Table 1

Descriptive Data.

	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Social anxiety	22.41	14.33	0.79	0.19
Perceived burdensomeness	7.90	4.71	3.30	11.89
Thwarted belongingness	21.82	12.56	0.81	-0.58
Suicidal ideation	1.19	0.59	3.48	12.50
Depression	41.73	13.36	0.87	0.39
# Cannabis problems	2.49	3.19	1.90	4.83
# Alcohol problems	3.10	3.72	1.81	3.89

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