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Social Anxiety and Interpersonal Stress Generation: The Moderating Role of Interpersonal Distress

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Abstract

Background and Objectives: Existing models of social anxiety scarcely account for interpersonal stress generation. These models also seldom include interpersonal factors that compound the effects of social anxiety. Given recent findings that two forms of interpersonal distress, perceived burdensomeness and thwarted belongingness, intensify social anxiety and cause interpersonal stress generation, these two constructs may be especially relevant to examining social anxiety and interpersonal stress generation together.

Design: The current study extended prior research by examining the role of social anxiety in the occurrence of negative and positive interpersonal events and evaluated whether interpersonal distress moderated these associations.

Methods: Undergraduate students ($N = 243$; $M = 20.46$ years; 83% female) completed self-report measures of social anxiety, perceived burdensomeness, and thwarted belongingness, as well as a self-report measure and clinician-rated interview assessing negative and positive interpersonal events that occurred over the past six weeks.

Results: Higher levels of social anxiety were associated only with a higher occurrence of negative interpersonal dependent events, after controlling for depressive symptoms. This relationship was stronger among individuals who also reported higher levels of perceived burdensomeness, but not thwarted belongingness.

Conclusions: It may be important to more strongly consider interpersonal stress generation in models of social anxiety.

Keywords

Stress generation; Social anxiety; Interpersonal distress; Perceived burdensomeness; Thwarted belongingness

Given the significant role of stress in negative physical and mental health outcomes (Beautris, 2003; Kendler et al., 2003; Stanley & Burrows, 2008), researchers have

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investigated factors that contribute to the occurrence of stressful events. Coined “stress generation,” Hammen (1991) found that the occurrence of negative events is, at least, in part, *dependent* on an individual’s own actions. This study distinguished between *dependent* events that occur due to an individual’s personal characteristics or behaviors (i.e., fight or conflict with a family member) and *independent* events that are out of an individual’s control (i.e., break-up of parents’ marriage). Stress generation theory has received consistent empirical support (for review, see Liu & Alloy, 2010). Although it was originally studied among individuals with depression (Hammen, 1991), it has been studied in other clinical disorders and transdiagnostic vulnerabilities, such as negative cognitive and personality styles (Liu & Alloy, 2010).

Relationship between Social Anxiety and Interpersonal Dependent Events

Despite the recent extension of stress generation theory beyond depression, there is scarce mention of stress generation in prominent models of social anxiety disorder (Hofmann, 2007; Heimberg & Morrison, 2013). This is surprising for several reasons. First, well-known models of social anxiety disorder include factors that have been found to be associated with the occurrence of greater negative interpersonal dependent events (i.e., interpersonal stress generation). Indeed, Hofmann’s (2007) model of social anxiety includes several established risk factors for interpersonal stress generation, such as social apprehension, social skills deficits, negative self-perception, and rumination (Liu, 2013; Liu & Alloy, 2010; Hamilton et al., 2017; Hammen 1991). Given the many shared risk factors between social anxiety disorder and interpersonal stress generation, individuals vulnerable to social anxiety disorder may also be susceptible to interpersonal stress generation. Second, social anxiety disorder and elevated social anxiety symptoms are highly comorbid with depression (Belzer et al., 2004; Kessler et al., 1999; Pini et al., 1997), which is a well-documented antecedent of interpersonal stress generation (Hammen 1991; Liu, 2013). It is possible that individuals with depression experience interpersonal stress generation not only stemming from depression-related symptoms and vulnerability factors, but also resulting from comorbid social anxiety. Finally, a growing body of research indicates that there may be a relationship between social anxiety symptomatology and interpersonal stress generation (Farmer & Kashdan, 2012; 2015). For instance, one study found that adults with social anxiety disorder reported more frequent negative dependent interpersonal events than those without the disorder (Farmer & Kashdan, 2015). Additionally, in an undergraduate sample, individuals with higher levels of social anxiety symptoms reported a greater number of negative interpersonal dependent events (Farmer & Kashdan, 2012). Thus, although existing models of social anxiety have not incorporated interpersonal stress generation into their frameworks, there is some empirical support for the relationship between social anxiety symptomatology and interpersonal stress generation.

Notably, few researchers have examined whether interpersonal stress generation extends to positive events, such that individuals with elevated social anxiety may also inadvertently contribute to fewer positive interpersonal dependent events (i.e., interpersonal positive event generation; Hamilton et al., 2017). Although the absence of negative events is important to life satisfaction, so too is the presence of positive events. Fear of judgment in social situations may make individuals with problematic social anxiety less likely to enjoy

potentially rewarding activities or more likely to avoid them altogether (Heimberg & Morrison, 2013). Additionally, individuals with elevated social anxiety may be prone to interpret positive or ambiguous social events and signals as negative (Heimberg & Morrison, 2013). Indeed, Farmer and Kashdan (2015) found that adults with social anxiety disorder experienced less frequent daily positive interpersonal dependent events than those without the disorder. Thus, although limited, there is evidence to suggest that social anxiety symptomatology is also related to a reduced number of positive interpersonal dependent events. Taken together, the extant literature suggests a need for researchers to examine the extent to which negative and positive interpersonal dependent events (collectively, interpersonal dependent events) contribute to existing models of social anxiety.

Interpersonal Distress as a Moderator of Social Anxiety and Interpersonal Dependent Events

Interpersonal distress may be an additional factor relevant to the relationship between interpersonal dependent events and social anxiety symptomatology. Interpersonal distress exacerbates and perpetuates social anxiety symptomatology (Alden & Fung, 2016; Alden & Taylor, 2004; Epkins & Heckler, 2011). In particular, the relationship between social anxiety and interpersonal dependent events may be impacted by two specific forms of interpersonal distress: perceived burdensomeness and thwarted belongingness. Perceived burdensomeness refers to beliefs that the self is so inadequate as to be a burden on others (Van Orden et al., 2010). Thwarted belongingness is defined as a lack of social connection that results in an unmet need to belong (Van Orden et al., 2010). These constructs were originally described in the interpersonal psychological theory of suicide (IPTS; Van Orden et al., 2010) and have been most closely linked to depression and suicidal outcomes. Given that depression and social anxiety are highly comorbid (Belzer et al., 2004; Kessler et al., 1999; Pini et al., 1997), it is not surprising that researchers also have begun to examine these constructs in relation to social anxiety (Arditte et al., 2016; Buckner et al., 2017; Chu et al., 2016; Davidson et al., 2011; Silva et al., 2015). Indeed, researchers have found associations between social anxiety and thwarted belongingness after accounting for the presence of other relevant forms of psychopathology (Arditte et al., 2016; Buckner et al., 2017; Chu et al., 2016; Davidson et al., 2011; Silva et al., 2015). Further, social anxiety is associated with many key components of perceived burdensomeness, including low self-esteem (Ritter et al., 2013; Westenberg, 1998), shame (Hedman et al., 2013; Matos et al., 2013; Scheel et al., 2014), and fear of causing discomfort to others (Heimberg & Morrison, 2013). Based on the growing body of research that suggests that perceived burdensomeness and thwarted belongingness are related to social anxiety, it may be important to examine whether these types of interpersonal distress increase the likelihood that social anxiety symptoms contribute to interpersonal dependent events.

Indeed, thwarted belongingness and perceived burdensomeness, as well as components of each construct, have been associated with interpersonal dependent events (Buitron et al., 2016). Lack of social support, an important aspect of thwarted belongingness, has been demonstrated to contribute to more frequent negative interpersonal dependent events (Auerbach et al., 2010). Thwarted belongingness may increase social avoidance, which, in

turn, may limit the initiation of positive new relationships. Indeed, Chu and colleagues (2016) found that individuals experiencing both elevated social anxiety and thwarted belongingness lack the satisfying interpersonal relationships that they desire. Similarly, one key aspect of experiencing perceived burdensomeness is negative cognitive style (Van Orden et al., 2010), which is also an established risk factor for interpersonal stress generation (Hamilton et al., 2013; Safford et al., 2007). Cognitive distortions that one is a social burden on others may lead to off-putting behaviors (e.g., controlling behaviors and an overreliance on others). Such behaviors, although intended to avoid anticipated rejection, may have the opposite effect and actually lead to negative interactions and conflicts with family and friends. This is consistent with studies that have found off-putting behaviors associated with social anxiety contribute to interpersonal stress generation (Alden et al., 2014; Liu, 2013). Thus, individuals with higher levels of social anxiety may be particularly susceptible to the occurrence of more negative and fewer positive interpersonal dependent events if they also experience thwarted belongingness and perceived burdensomeness.

The Current Study

Given the dearth of social anxiety models that account for the occurrence of interpersonal dependent events, the present study sought to examine the interaction between social anxiety and interpersonal distress in the generation of negative and positive interpersonal dependent events. Thus, we hypothesized that (1) individuals with higher levels of social anxiety would experience more negative interpersonal dependent events, (2) individuals with higher levels of social anxiety would experience fewer positive interpersonal dependent events and, (3) the association between social anxiety and negative and positive interpersonal dependent events would be moderated by perceived burdensomeness and thwarted belongingness, such that at higher levels of interpersonal distress, higher levels of social anxiety would be most likely to be associated with greater negative and fewer positive interpersonal dependent events. Finally, non-interpersonal and independent events were examined to affirm that the effects of higher levels of social anxiety were specific to interpersonal and dependent events, respectively.

Method

Procedure

XX University (blinded for review) students were recruited by advertising (e.g., via announcements in classes, flyers) for a study designed to understand responses to stress and psychopathology. Interested individuals were instructed to complete an online questionnaire hosted by Fluid Surveys and were considered enrolled once consent was obtained. The study consisted of two sessions. In the first session, students responded to the self-report questionnaire online. In the second session, students were contacted by trained research assistants over the phone to complete a life events interview to review and determine the accuracy of the online self-report life events measure. The interviewers probe for events that have been incorrectly reported by participants (e.g., events that do not meet the interview's strict criteria, lack tangible evidence, or are distorted by cognitive vulnerability). Upon completion of both the online questionnaire and the phone interview, students received

research credits required for course fulfillment. XX University's Institutional Review Board approved the procedures.

Participants

The present sample included 243 university students. The mean age of the sample was 20.46 years ($SD = 2.37$; range = 18-35). Of the 243 participating students, 83% were female ($n = 201$). The racial background of the sample was 62% Caucasian ($n = 150$), 20% African American ($n = 49$), 6% East Asian ($n = 14$), and 4% South Asian ($n = 9$). Of the total sample, 6% ($n = 15$) identified as biracial, and 3% ($n = 6$) identified with another racial background. Of note, there were 440 individuals who enrolled in the study and completed an initial online questionnaire, however only 252 of this larger group subsequently completed the interview component of the study. The final sample consisted of 243 individuals as 9 participants were excluded from analyses due to incomplete data. There was a significant difference in gender between the two groups, with a greater proportion of females among those who completed both the questionnaire and interview (83%) relative to those who only completed the questionnaire (72%), $X^2(1) = 6.24, p = .01$.

Measures

Interpersonal Dependent Events—In the present study, an abridged version of the Life Events Scale (LES; Safford, Alloy, Abramson, & Crossfield, 2007) and Life Events Interview (LEI; Safford et al., 2007) were administered to participants. The shortened version of the LES is a self-report questionnaire that includes 95 major and minor life events across a variety of domains that are pertinent to college students (e.g., school, work, finances, family, social, and romantic relationships). Of the 95 events, 42 were categorized as interpersonal dependent events and these events were the primary focus in the present analyses. The LEI is a clinician-rated interview to further probe events endorsed by participants in the LES. The life events and categorizations in the LES and LEI have evidenced excellent reliability and validity (Safford et al., 2007) and are frequently used to measure stressful life events.

At the onset of the study, participants reported all events that had occurred during the prior six weeks in an online survey. Trained research assistants then administered the LEI via a phone interview, to review and determine the accuracy of the self-reported events from the LES. This additional phone interview mitigated the potential for self-report biases or errors (e.g., incorrect self-report due to misremembering, misinterpretation, or cognitive vulnerability). The research assistants received thorough training on how to rate reported life events in accordance with LEI criteria and to record the precise dates on which the life events transpired. Any endorsed events that did not meet the strict event definition criteria or occurred outside of the six-week period were disqualified. Research assistants also probed for events that may have occurred during the six-week timeframe but were not reported or were misclassified.

Life events from the LES and LEI were *a priori* categorized with the following descriptors: interpersonal/non-interpersonal, positive/negative, and independent/dependent. The 42 interpersonal dependent events were the primary focus of the final dataset. There were 29

negative interpersonal dependent events and 13 positive interpersonal dependent events. Examples of negative and positive dependent interpersonal events are “fight involving yelling or name calling with a family member” and “initiation of a new friendship,” respectively.

Additionally, non-interpersonal and independent events were tested to affirm that the effects of higher levels of social anxiety were specific to interpersonal and dependent events, respectively. There were 11 negative interpersonal independent events. An example of a negative interpersonal independent event is “break-up of or serious threat to parents’ marriage.” Positive interpersonal independent events were not included in the analyses, as this category had too few events for there to be significant variability in outcomes. There also were 33 non-interpersonal events. These non-interpersonal events were comprised of 13 negative non-interpersonal dependent events (e.g. “Did poorly on or failed an exam or major project in an important class”), 9 negative non-interpersonal independent events (e.g. Minor illness or injury), and 11 positive non-interpersonal dependent events (e.g. “Received a scholarship or fellowship or won an award for your achievements at school”).

Team research meetings were held to reach a consensus on appropriate categorization of ambiguous life events. Additionally, team members reviewed determinations made by other interviewers. Internal consistency in this sample was $\alpha = .77$. Number of interpersonal dependent events of each type, as measured by the LES and LEI, was used as the main outcome variables in this study.

Social anxiety—The Social Interaction Anxiety Scale (SIAS; Mattick & Clarke, 1998) is a 20-item self-report measure that assesses severity of social interaction anxiety. As this study measured aspects of stressful interpersonal interactions, the SIAS was used, as opposed to other measures of social anxiety symptomatology. Example SIAS items include, “I worry about expressing myself in case I feel awkward,” “I have difficulty talking with other people,” and “I am nervous mixing with people I don’t know well.” Participants rated each item using a 5-point Likert scale ranging from 0 (*Not at all characteristic or true of me*) to 4 (*Extremely characteristic or true of me*). Rodebaugh et al. (2007) found that the 17 straightforwardly worded items of the SIAS are more valid indicators of social interaction anxiety than the 3 reverse scored items in both undergraduate and clinical samples. Thus, only the 17 straightforward items were included in the study analyses. Good construct and factorial validity have been demonstrated for the straightforward items from the SIAS (Rodebaugh et al., 2007; Rodebaugh et al., 2011). Internal consistency in this sample was $\alpha = .95$. Levels of social anxiety were examined as a main predictor of number of interpersonal dependent events.

Depressive symptoms—The Beck Depression Inventory-II (BDI-II; Beck et al., 1996) is a 21-item self-report measure that assesses depressive symptoms during the past two weeks. The BDI-II assesses a variety of cognitive symptoms, such as hopelessness and worthlessness, as well as somatic-affective symptoms, such as anhedonia and crying. Items are rated on a 4-point Likert scale with higher aggregate scores indicating more severe depressive symptoms. The BDI-II is a widely used measure of depressive symptoms. It has demonstrated excellent test-retest reliability as well as strong convergent validity specifically

in college samples (Beck et al., 1996; Storch et al., 2004). Internal consistency in this sample was $\alpha = 0.94$. Levels of depressive symptoms were tested as a predictor of number of interpersonal dependent events.

Thwarted belongingness and perceived burdensomeness—The Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012) is a 15-item self-report questionnaire that measures perceived burdensomeness and thwarted belongingness. The questionnaire was originally developed to examine the etiology of suicidal desire and behavior specifically within the context of the IPTS (Van Orden et al., 2012). The questionnaire is comprised of 6 items that focus on perceived burdensomeness and 9 items that focus on thwarted belongingness. Examples of items that assess perceived burdensomeness include, “These days I think I am a burden on society” and “These days I think the people in my life wish they could get rid of me.” Examples of items that assess thwarted belongingness include, “These days I rarely interact with people who care about me” and “These days I often feel like an outsider in social gatherings.” Participants rate each item using a 7-point Likert scale ranging from 1 (*Not at all true for me*) to 7 (*Very true for me*). The INQ has been shown to be a reliable measure with good internal consistency and concurrent predictive validity (Hill et al., 2015). Additionally, each sub-scale, perceived burdensomeness and thwarted belongingness, has individually been found to have convergent validity and good reliability (Van Orden et al., 2012). Internal consistency for the perceived burdensomeness and thwarted belongingness subscales in this sample were $\alpha = 0.95$ and $\alpha = 0.88$, respectively. Levels of perceived burdensomeness and thwarted belongingness were tested as moderators of the relationship between levels of social anxiety and number of interpersonal dependent events.

Statistical method—A series of hierarchical linear regressions was used to test the associations between social anxiety and interpersonal dependent events. Negative binomial regressions also were conducted for these analyses, given outcome variables were counts of event subtypes. As these parallel analyses produced substantively the same results, only the results from the linear regressions are presented for ease of interpretation (negative binomial results are available upon request to the first author). We examined levels of social anxiety as a predictor of the number of negative interpersonal dependent events and number of positive interpersonal dependent events. We included depressive symptoms and gender as predictors in the first step of the hierarchical linear regression model to account for the effect of depressive symptoms and gender on these relationships. Social anxiety was specified in the second step of the hierarchical linear regressions. In addition, we also examined levels of social anxiety as a predictor of number of negative interpersonal independent events and non-interpersonal event categories to determine specificity. To evaluate the main effects of interpersonal distress on interpersonal dependent events, we also ran a series of hierarchical linear regressions to examine whether either of the moderator variables, perceived burdensomeness and thwarted belongingness, was associated with the main outcome variables.

Finally, we performed moderation analyses to assess whether the relationship between levels of social anxiety and number of negative and positive interpersonal dependent events would

be moderated by levels of perceived burdensomeness and thwarted belongingness. Given the relationship between interpersonal distress variables, we included each measure of interpersonal distress (perceived burdensomeness; thwarted belongingness) as a covariate when analyzing the interaction between social anxiety and the other measure of interpersonal distress (e.g., controlled for thwarted belongingness when the interaction between social anxiety and perceived burdensomeness was specified). We also controlled for the interaction between social anxiety and each measure of interpersonal distress (social anxiety and perceived burdensomeness; social anxiety and thwarted belongingness) when the interaction between social anxiety and the other measure of interpersonal distress was examined. The inclusion of both distinct interactions in one model accounted for any shared variance from the interactions and reduced the risk of a Type 1 error. Moderation analyses then were conducted using the SPSS Macro, PROCESS (Hayes, 2013). Significant interactions were further explored using the Johnson-Neyman technique at one standard deviation above and below the mean of each study variable (Hayes & Matthes, 2009). Levels of each variable above the sample mean were defined as “higher” and levels of each variable below the sample mean were defined as “lower.” To further examine interactions, the Johnson-Neyman output was graphed to demonstrate the conditional effects of each moderator at designated levels of social anxiety (Figure 1).

Results

Preliminary Analyses

Descriptive statistics for the overall sample are presented in Table 1. We examined whether key demographic characteristics (sex, ethnicity, age) were significantly associated with primary outcome variables, categories of events, by conducting analyses of variance (ANOVA) and independent t-tests. Female participants ($M = 2.22$, $SD = 2.56$) experienced a significantly higher number of negative interpersonal dependent events than male participants ($M = 1.31$, $SD = 1.47$), $t(241) = 2.25$, $p < .01$. There were no significant differences in ethnicity and age on any of the outcome variables. Finally, higher levels of depressive symptoms on the BDI-II significantly predicted a greater number of negative interpersonal dependent events, $\beta = .41$, $t(242) = 7.12$, $p < .001$. Given these findings, we included gender and depressive symptoms as covariates in all study analyses (Miller & Chapman, 2001).

We also conducted bivariate correlation analyses to examine associations between study variables. Information on the bivariate correlations among primary study variables can be found in Table 1. As expected, depression, social anxiety, and negative interpersonal dependent events all displayed significant positive correlations with each other, consistent with previous literature. In contrast, negative interpersonal independent events displayed no significant correlations with any other study variables. Further, both social anxiety and depression were significantly positively correlated with perceived burdensomeness and thwarted belongingness.

Main effects of social anxiety, interpersonal distress, and interpersonal stress generation

As shown in Table 2, the overall model examining social anxiety as a predictor of negative interpersonal dependent events was significant. Higher levels of social anxiety were significantly associated with a higher number of negative interpersonal dependent events, even after accounting for the effects of concurrent depressive symptoms and all other covariates (Table 2). In addition, higher levels of social anxiety were not associated with a lower number of positive interpersonal dependent events (Table 2). Consistent with stress generation theory, higher levels of social anxiety were not significantly associated with a higher number of negative interpersonal independent events ($\beta = -.03$, $t(242) = -.35$, $p = .72$). Notably, higher levels of social anxiety also were not associated with negative dependent non-interpersonal events ($\beta = .00$, $t(242) = -0.33$, $p = .97$), positive dependent non-interpersonal events ($\beta = -.08$, $t(242) = -1.11$, $p = .27$), or negative independent non-interpersonal events ($\beta = .02$, $t(242) = .32$, $p = .75$).

In addition, hierarchical regressions examining interpersonal distress as predictors of stressors indicated that perceived burdensomeness, but not thwarted belongingness, was significantly associated with number of negative interpersonal dependent events, controlling for depression, $\beta = .27$, $t(242) = 4.21$, $p < .001$.

Perceived burdensomeness and thwarted belongingness as moderators of the relationship between social anxiety and interpersonal dependent events

We conducted moderation analyses to evaluate our third hypothesis that interpersonal distress would amplify the association between social anxiety and interpersonal dependent events.

As shown in Table 3, the overall model of perceived burdensomeness as a moderator of the relationship between social anxiety and negative interpersonal dependent events was significant. Specifically, there was a significant interaction between social anxiety and perceived burdensomeness in predicting negative interpersonal dependent events, controlling for all covariates (Table 3). At lower levels of reported perceived burdensomeness, social anxiety and negative interpersonal dependent events were not significantly related ($\beta = .01$, $p = .47$; Figure 1). However, as levels of perceived burdensomeness increased, the relationship between social anxiety and negative interpersonal dependent events strengthened, with the relationship becoming significant at higher levels of perceived burdensomeness ($\beta = .05$, $p < .01$; Figure 1). Notably, there was not a significant interaction between social anxiety and thwarted belongingness.

Discussion

Existing conceptualizations of social anxiety seldom emphasize the role of interpersonal stress generation. We found that social anxiety was a significant predictor of negative interpersonal dependent events, after accounting for depressive symptoms. These findings were in keeping with study hypotheses. Additionally, social anxiety was not associated with any category of non-interpersonal or independent events. Also, consistent with our hypotheses, we found that levels of perceived burdensomeness moderated the association

between social anxiety symptoms and negative interpersonal dependent events. Contrary to our expectations, levels of thwarted belongingness did not moderate the association between social anxiety symptomatology and negative interpersonal dependent events. Finally, social anxiety was not associated with the occurrence of fewer positive interpersonal dependent events.

Our finding that higher social anxiety was associated with greater rates of negative interpersonal dependent events is consistent with prior research (Farmer & Kashdan, 2012; Farmer & Kashdan, 2015; Uliaszek et al., 2010). This suggests that the construct of interpersonal stress generation may be a useful addition to existing models of social anxiety. Hofmann (2007) outlines the cognitive factors that maintain social anxiety disorder, such as perceived poor social skills and anticipation of social mishap. Although these fears are often not grounded in reality, they still may result in actual negative interpersonal dependent events, including relationship conflicts, negative interpersonal interactions, and lack of participation in social activities. These actual events, in turn, may then provide evidence for the original pathological fears. Given that stress generation is postulated to function as a vicious cycle (e.g., one's psychopathology and negative events reciprocally feed one another; Hammen, 1991), pathological fears about social interactions and negative interpersonal dependent events may perpetuate one another. Thus, additional research is necessary to determine whether the relationship between social anxiety symptomatology and interpersonal stress generation is bi-directional.

Further, our findings suggest that perceived burdensomeness moderated the association between levels of social anxiety and interpersonal dependent stress generation. Specifically, only at higher levels of perceived burdensomeness was social anxiety associated with negative interpersonal dependent events. This finding is consistent with the extant theoretical literature that has identified the negative impact of interpersonal vulnerabilities on social anxiety disorder (Alden & Fung, 2016; Alden & Taylor, 2004). One interpretation of the observed interaction is that to individuals with higher levels of social anxiety, feeling as though one is also a burden intensifies anticipation that social interactions will have negative consequences. Individuals with elevated social anxiety are deeply afraid that their perceived social ineptitude will have devastating social costs, such as decreased status, self-worth, and rejection (Hofmann, 2007; Morgan et al., 2014). Individuals who experience perceived burdensomeness may believe that there is a higher likelihood of these social costs if their self-perceived lack of social skills is a drain on others. Thus, these findings suggest that perceived burdensomeness may compound social fears and hamper social performance, resulting in cognitions and behaviors that contribute to interpersonal stress generation.

Contrary to the interaction between social anxiety and perceived burdensomeness, the interaction between social anxiety and thwarted belongingness did not predict negative interpersonal dependent events. There may be several reasons for this finding. First, there is mounting evidence that thwarted belongingness does not independently predict negative psychological outcomes after controlling for perceived burdensomeness (Anestis & Joiner, 2011; Buitron et al., 2016; Bryan et al., 2012; Monteith et al., 2013). Thus, consistent with this growing body of research, thwarted belongingness may be a weaker predictor of interpersonal stress generation than perceived burdensomeness, particularly when

controlling for the latter variable. Second, given that this study was cross-sectional, the temporal relations between these variables in interpersonal stress generation are unclear. Thwarted belongingness may not concurrently exacerbate social anxiety, but rather may be a later response that takes place after social anxiety has already contributed to the occurrence of new negative dependent interpersonal events.

Finally, contrary to our hypothesis and prior research (Farmer & Kashdan, 2015), individuals in our sample with higher levels of social anxiety did not experience fewer positive interpersonal dependent events. One explanation for this finding is that the individuals in this sample may not have avoided social situations to the same extent as a clinical population, resulting in more frequent positive experiences. It is also possible that in an undergraduate setting, there are more opportunities for potentially rewarding extracurricular activities, organizations, and relationships than is the case among non-undergraduate individuals with increased social anxiety, who may be more susceptible to isolation and withdrawal from positive social influences. Likewise, depressive symptoms did not predict fewer positive interpersonal dependent events in our sample. Future researchers should further examine the role of sample type and developmental period in this hypothesis.

Clinical Implications

Our findings suggest that models of social anxiety may need to more strongly address interpersonal stress generation. Although maladaptive cognitive processes remain central to the development and maintenance of social anxiety symptoms, interpersonal stress generation may be important to incorporate as well. The actual occurrence of negative events may intensify pathological cognitions experienced by individuals with social anxiety. As a result, future researchers should examine several possible considerations: whether the occurrence of interpersonal stress generation explains failures to restructure cognitions, influences the trajectory of treatment gains, and is a pathway to comorbid psychopathology. Thus, it may be useful to conceptualize more integrated models of social anxiety that include interpersonal stress generation, among other non-cognitive constructs, that may contribute to the persistence of maladaptive cognitions.

Additionally, our finding that the relationship between social anxiety and interpersonal stress generation was strengthened among individuals concurrently experiencing social anxiety and perceived burdensomeness suggests that it may be particularly important to examine the co-occurrence of these processes. This finding is consistent with the mounting literature that has found associations between these two constructs. Thus, future researchers should investigate the characteristics and possible implications of an association between social anxiety and perceived burdensomeness.

Limitations and Future Directions

There are several limitations that should be taken into account when considering the results of this study. Most importantly, this study was cross-sectional and associations were tested concurrently. As such, this study cannot determine whether social anxiety preceded negative interpersonal dependent events over time. There is a possibility that the observed association between social anxiety and negative interpersonal dependent events may be explained in part

by negative interpersonal dependent events leading to increased social anxiety. Similarly, it is important to acknowledge the likely bidirectionality of the relationship between social anxiety and perceived burdensomeness. Indeed, prior literature has demonstrated that the combination of social anxiety and interpersonal factors can negatively impact one another reciprocally, resulting in self-perpetuating cycles (Alden & Taylor, 2004). Thus, future longitudinal analyses are necessary to identify the directionality of the observed associations. Additionally, longitudinal examinations are required to examine whether interpersonal distress constructs mediate the relationship between social anxiety or depression and the occurrence of negative interpersonal dependent events.

It is also important to acknowledge that higher levels of social anxiety, and the interaction between higher levels of social anxiety and higher levels of perceived burdensomeness, accounted for a limited amount of the variability explained by their respective overall models. Thus, our ability to draw conclusions about the magnitude to which social anxiety contributes to interpersonal stress generation is somewhat constrained. Another limitation is that the LES and LEI included too few positive interpersonal independent events to test the stress generation-derived hypothesis that higher levels of social anxiety would not predict this category of life events. There also were 11 negative interpersonal independent events compared to 29 negative interpersonal dependent events, which reduced the likelihood of significant findings for negative interpersonal independent events compared to negative interpersonal dependent events. Although the relationship between social anxiety and interpersonal dependent events was the study's primary focus, analyses of negative interpersonal independent events are also important to support stress generation theory. Finally, there were a significantly greater proportion of females in the final sample that completed the questionnaire and phone interview relative to the initial group that completed only the questionnaire. This should be taken into account as it may limit the generalizability of the findings.

Conclusions

Our results suggest that social anxiety may contribute to interpersonal stress generation above and beyond the effects of depression, particularly when experienced concurrently with perceived burdensomeness. Given that social anxiety symptoms are demonstrated to precede and potentially contribute to depressive symptoms or disorders (Epkins & Heckler, 2011), interpersonal stress generation may be a harbinger for future comorbid depressive symptoms among those with problematic social anxiety. Further, interpersonal stress generation also may be a precursor for more severe outcomes, as individuals simultaneously reporting greater levels of social anxiety and perceived burdensomeness have been found to be more likely to experience suicidal ideation (Buckner et al., 2017; Chu et al., 2016). Thus, it may be important for models of social anxiety to more strongly account for interpersonal stress generation.

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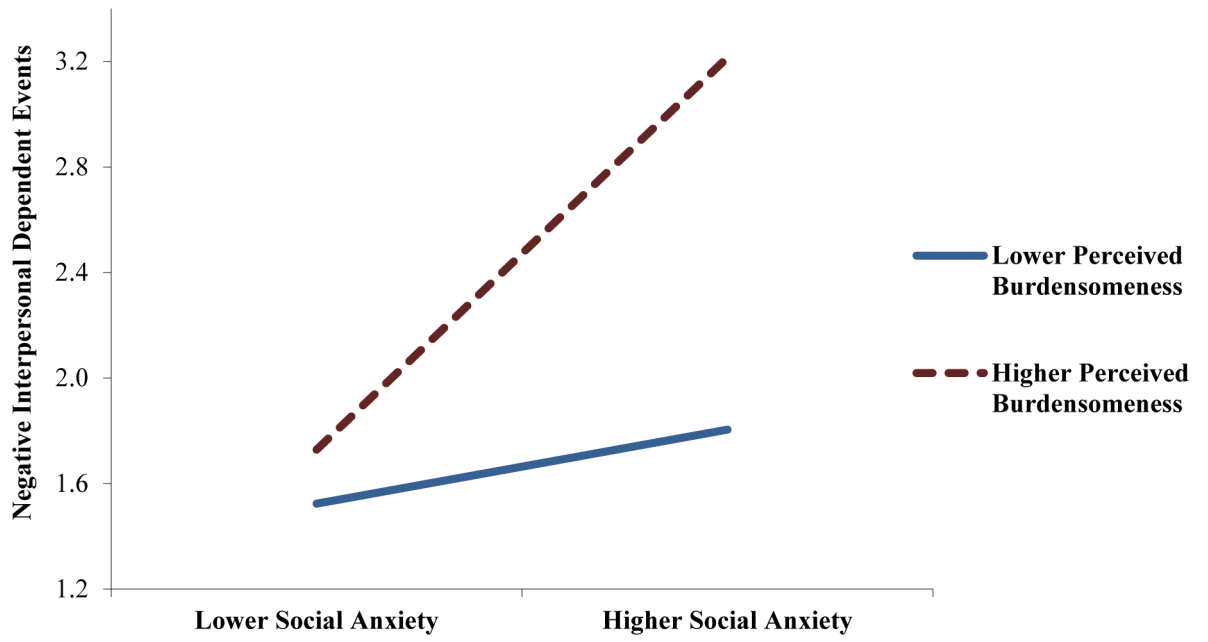


Figure 1. Perceived burdensomeness moderates the relationship between social anxiety and negative interpersonal dependent life events

Table 1

Bivariate correlations among primary study variables

	1	2	3	4	5	6
1 BDI-II	—					
2 SIAS	.51***	—				
3 NIDE	.43***	.36***	—			
4 PIDE	.03	-.05	.35***	—		
5 PB	.49***	.30***	.41***	.01	—	
6 TB	.48***	.45***	.28***	-.13*	.53***	—
Mean	10.82	21.13	2.07	1.62	10.20	23.23
(SD)	(10.41)	(15.21)	(2.43)	(1.32)	(7.56)	(11.17)

Note: $N = 243$; BDI-II = Beck Depression Inventory-II; SIAS = Social Interaction Anxiety Scale; NIDE = Negative Interpersonal Dependent Events; PIIE = Positive Interpersonal Independent Events; PIDE = Positive Interpersonal Dependent Events; PB = Perceived Burdensomeness; TB = Thwarted Belongingness

* $p < .05$.

** $p < .01$

*** $p < .001$

Table 2

Social anxiety as a predictor of interpersonal dependent events

	Negative Interpersonal Dependent				Positive Interpersonal Dependent					
	β	SE	t	R^2	R^2	β	SE	t	R^2	R^2
Block 1										
BDI-II	.42	.01	7.12***			.00	.01	.03		
Gender	.07	.38	1.23			.18	.22	2.83*		
Block 2				.19					.03	
BDI-II	.32	.02	4.81***			.05	.01	.61		
Gender	.07	.37	1.26			.18	.22	2.83*		
SIAS	.19	.01	2.87**	.22	.03	-.09	.01	-1.18	.04	.01

Negative Interpersonal Dependent Events Model: $R^2 = .22$, $t(242) = 2.87$, $p < .01$ Positive Interpersonal Dependent Events Model: $R^2 = .04$, $t(242) = -1.18$, $p = .24$ Note: BDI = Beck Depression Inventory; SIAS = Social Interaction Anxiety Scale; Linear regressions were conducted to examine these hypotheses ($N = 243$)* $p < .05$.** $p < .01$.*** $p < .001$.

Table 3

Interpersonal distress as a moderator of social anxiety and negative interpersonal dependent events

Interaction between social anxiety and perceived burdensomeness			
Predictor	β	<i>SE</i>	<i>t</i>
BDI-II	.05	.02	2.75**
Gender	.64	.36	1.80
SIAS	-.01	.02	-.68
TB	-.01	.02	-.33
PB	.00	.04	-.10
SIAS \times TB	.00	.02	-.46
SIAS \times PB	.00	.00	2.94***

SIAS x PB Model: $R^2 = .30$, $F(7,235) = 14.69$, $p < .001$

Note: BDI-II = Beck Depression Inventory-II; SIAS = Social Interaction Anxiety Scale; PB = Perceived Burdensomeness; TB = Thwarted Belongingness

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