



Suicidal Ideation and Sexual Orientation in College Students: The Roles of Perceived Burdensomeness, Thwarted Belongingness, and Perceived Rejection Due to Sexual Orientation

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A theoretical model in which perceived burdensomeness and thwarted belongingness were hypothesized to account for the association between sexual orientation and suicidal ideation among college students was tested. Among 198 college students (mean age 21.28 years), gay, lesbian, and bisexual students ($n = 50$) reported significantly higher levels of perceived burdensomeness and suicidal ideation than heterosexual students. The relationship between sexual orientation and suicidal ideation was partially accounted for by perceived burdensomeness, but not thwarted belongingness. This indirect effect was stronger at higher levels of perceived or anticipated rejection due to one's sexual orientation. Implications for intervention and prevention science are discussed.

A growing body of evidence has established having a gay, lesbian, or bisexual (GLB) orientation as a risk factor for suicide-related behaviors. A recent meta-analysis concluded that GLB people had 2.45 times the risk of making a suicide attempt over the life span than their heterosexual counterparts (King et al., 2008). A representative longitudinal study of New Zealand young adults revealed an ever greater disparity, with gay/lesbian young adults having rates of suicide attempt in the previous 4 years of 28.6% (men) and 10.0% (women) compared to only 1.6% (men) and 1.5% (women) of heterosexual young adults. Similarly, rates of suicidal idea-

tion in the previous 4 years were much higher among the gay/lesbian group: 71.4% (men) and 30.0% (women) compared to only 10.9% (men) and 9.7% (women) of heterosexual young adults (Fergusson, Horwood, Ridder, & Beautrais, 2005). These findings underscore the need to understand risk factors that place GLB people at risk of suicide-related behaviors.

Some researchers have suggested that the association between sexual orientation and suicide-related behaviors may be accounted for by higher levels of general risk factors for such behaviors among GLB adolescents and young adults compared with their heterosexual peers. That is, having a GLB identity may increase the likelihood of developing these risk factors and only indirectly influence suicide-related behaviors. A leading model of suicide-related behaviors, the interpersonal-psychological theory of suicide (IPT; Joiner, 2005), proposes that two factors are necessary for an individual to die by suicide, neither of which, alone, is sufficient: the acquired capacity to enact lethal

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self-injury and the desire for death (Joiner, 2005). The acquired capacity to enact lethal self-injury is viewed as a learned capacity developed through repeated exposure to pain and injury and is posited as a static risk factor for suicide, but not for suicidal ideation. The desire for death is roughly equivalent to the definition of suicidal ideation (Van Orden, Witte, Gordon, Bender, & Joiner, 2008). Evidence indicates that desire for death results from the occurrence of two interpersonally-oriented factors: a sense of perceived burdensomeness (e.g., "My life is a drain on others") and feelings of thwarted belongingness (e.g., "I don't have a place in life;" Van Orden et al., 2008).

A sense of social isolation or disconnection from others forms the core of thwarted belongingness (Joiner, 2005) and common risk factors for suicidal ideation include poor family connectedness, a perceived absence of caring adults, and social isolation (Eisenberg & Resnick, 2006; Halpert, 2002). There is evidence in support of this view: GLB adolescents and young adults report lower levels of social support, connectedness, and self-esteem (Rosario, Schrimshaw, & Hunter, 2005; Safren & Heimberg, 1999) and higher levels of depression (Russell & Joyner, 2001; Safren & Heimberg, 1999) compared with heterosexual adolescents and young adults. In addition, adolescents who experience attraction to both sexes have reported less social support than peers who experience attraction to only the same sex or only the opposite sex (Langhinrichsen-Rohling, Lamis, & Malone, 2011). Further, the Langhinrichsen-Rohling et al. study found that adolescents who experience attraction to either same sex individuals or to both sexes reported greater mean levels of depressive symptoms than those who experience attraction only to the opposite sex. It thus seems reasonable to hypothesize that GLB adolescents and young adults may experience elevated levels of risk factors for suicide-related behaviors, such as perceived burdensomeness, thwarted belongingness, and depressive symptoms, as compared to their heterosexual peers. The relationship

between sexual orientation and suicidal ideation may be, at least in part, indirect, operating via elevated levels of risk factors for suicidal ideation; however, past studies have not been able to account fully for GLB individuals' increased risk of suicide-related behaviors.

If GLB young adults experience greater levels of risk factors for suicide-related behaviors, an explanation is required to identify why these risk factors should be elevated among this population. One possible explanation is that factors unique to this population place them at elevated risk of risk factors for suicide-related behaviors. That is, it is not sexual orientation per se that increases risk factors for suicide-related behaviors in GLB adolescents and young adults; rather, the life experiences and situations that some GLB adolescents and young adults encounter as a result of their sexual orientation may increase these non-GLB specific risk factors for suicide-related behaviors (Langhinrichsen-Rohling et al., 2011). Such GLB-specific risk factors include stressors and difficulties associated with coming to terms with an alternate sexuality, "coming out" to family and friends (i.e., making others aware of their sexual orientation; Haas et al., 2010; Yarbrough, 2003), and experiencing individual or institutional discrimination related to their sexual orientation (Haas et al., 2010; McDermott, Roen, & Scourfield, 2008). There is some support for these possibilities: research has demonstrated an association between parental rejection due to sexual orientation and suicide attempts among GLB young adults (Ryan, Huebner, Diaz, & Sanchez, 2009). Rotheram-Borus, Hunter, and Rosario (1994) reported that adolescent and young adult GLB attempters identified a greater number of gay-related stressors than did GLB nonattempters and there was no significant difference in non-gay-related stressful life events. Blossnich and Bossarte (2012) reported that sexual minority college students experienced more socially based stressors than heterosexuals. In addition, approximately 57% of GLB adolescent and young adult suicide attempters reported

their attempts to be at least somewhat related to their sexual orientation (D'Augelli, Hersherberger, & Pilkington, 2001).

It is likely that both general and GLB-specific risk processes are at work; having a GLB orientation may be associated with unique stressors and experiences which then increase general risk factors for suicide-related behaviors, rather than influencing suicide-related behaviors directly. For example, given evidence that GLB adolescents and young adults experience institutional and personal discrimination (Haas et al., 2010; McDermott et al., 2008) and that society often grants them a lower social status (Halpert, 2002), it may be that GLB adolescents and young adults interpret these messages as implying that they are a burden on others and are not meeting others' expectations. This may lead them to experience more perceived burdensomeness than their heterosexual peers. Also, Ryan et al. (2009) demonstrated a relationship between parental rejection due to sexual orientation and suicide attempts. Rejection from parents (and other important individuals) may be interpreted by an individual in at least two ways: first, as social rejection, leading to increased feelings of thwarted belongingness; and second, as an indication that one is not meeting the expectations of family and important others, leading to perceived burdensomeness. These would, in turn, be associated with elevated rates of suicidal ideation. However, not all GLB adolescents and young adults engage in suicide-related behaviors, nor do all GLB adolescents and young adults experience negative consequences due to their sexual orientation. Thus, GLB-specific risk factors, such as perceived rejection due to one's sexual orientation, may act as moderators; when GLB adolescents and young adults experience perceived rejection due to their sexual orientation, they may be more likely to develop general risk factors (such as perceived burdensomeness and thwarted belongingness), which, in turn, increase risk for suicide-related behaviors. In the

absence of GLB-specific risk factors, GLB adolescents and young adults (like their heterosexual peers) may not be at elevated risk for these general risk factors, and thus not be at increased risk for suicide-related behaviors.

In an effort to integrate past research into the IPT framework, we tested a theoretical model among college students in which sexual orientation is associated with suicidal ideation via its overlap with perceived burdensomeness and thwarted belongingness (see Figure 1; for a review of empirical findings related to the IPT constructs among college students, see Hill, Meinzer, Dominguez, & Pettit, 2011). Based on past research and the IPT, we hypothesized that sexual orientation and suicidal ideation would be significantly associated with each other. Specifically, we expected that GLB students would report higher mean levels of suicidal ideation than heterosexual students. We also hypothesized that there would be a significant indirect effect of sexual orientation on suicidal ideation through perceived burdensomeness and thwarted belongingness, such that GLB students would report higher mean levels of perceived burdensomeness and thwarted belongingness than heterosexual students and that higher levels of perceived burdensomeness and thwarted belongingness would be associated with greater suicidal ideation. Furthermore, we hypothesized that the indirect effects of sexual orientation on suicidal ideation via perceived burdensomeness and thwarted belongingness would be conditional, such that the strength of the

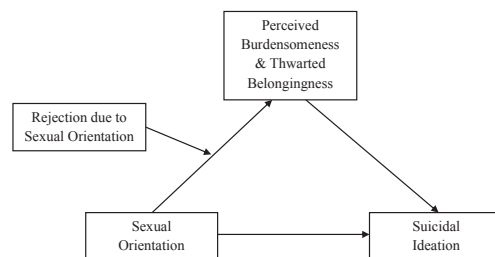


Figure 1. Proposed conditional indirect effect model predicting suicidal ideation.

indirect effects would differ as a function of perceived or anticipated rejection because of one's sexual orientation. Specifically, we hypothesized that the GLB students who report greater perceived or anticipated rejection due to sexual orientation would experience greater perceived burdensomeness and thwarted belongingness as compared with non-GLB students and GLB students who report lower perceived or anticipated rejection due to sexual orientation.

METHOD

Participants and Procedures

This was a cross-sectional study of 198 college students. Participants were recruited primarily via participation in an undergraduate psychology subject pool. To oversample students with a GLB orientation, flyers were passed out to campus GLB groups. Participants were not screened based on their sexual orientation, but were required to be at least 18 years of age, and able to read and complete study measures in English. Participants were provided compensation for their time: those enrolled via the psychology subject pool ($n = 160$) received course credit for their participation; those recruited via flyers ($n = 38$) were offered \$10 remuneration for completing the study, which required approximately 1 hour.¹ Upon completing the study, a research team member reviewed suicidal ideation items and further suicide risk assessment was conducted if necessary. Participants endorsing suicidal ideation at any level were encouraged to seek help and all participants received a list of resources for mental health care and suicide prevention. No participants were deemed to be in need

of emergency services. Participants (59.6% women) ranged in age from 18 to 46 years ($M = 21.28$, $SD = 4.46$), with 96% between the ages of 18 and 28 years.² The majority self-identified ethnicity as Hispanic (74.2%) and race as Caucasian (67.2%) or African American (13.6%), with the remainder identifying as Asian (5.6%), Native Hawaiian or Pacific Islander (0.5%), Native American or Alaskan Native (1.5%), and other (12.6%). Participants were able to select multiple responses for race, thus the percentages sum to over 100%.

Measures

Sexual Orientation. Self-identified sexual orientation was assessed as recommended by the Lesbian Gay and Bisexual (LGB) Youth Sexual Orientation Measurement Work Group (2003), and involved two questions: one addressing the participants' orientation identification (options included "heterosexual/straight," "gay/lesbian," "bisexual," "unsure/questioning," and "other, please specify") and another assessing sexual attraction rated on a 7-point Likert scale from 1 (*Exclusively attracted to women*) to 7 (*Exclusively attracted to men*). For the sexual attraction item, scores were reverse coded for women so that the resulting scale could be analyzed across sexes, with responses of one or two indicative of a heterosexual orientation, three through five indicative of a bisexual orientation, and six or seven indicative of a gay or lesbian orientation. The majority of participants ($n = 148$) identified as heterosexual, 14 identified as gay/lesbian, 26 as bisexual, 4 as unsure/questioning (all of whom reported bisexual or gay/lesbian sexual attraction), and 6 identified as other (five of whom reported a bisexual or gay/lesbian sexual attraction, with the remaining individual identifying as "queer"). Answers to sexual

¹Demographic and clinical characteristics of GLB students recruited via the psychology subject pool were compared with those of GLB students recruited via flyers using t tests and chi-squared tests. No significant differences were found.

²Analyses were conducted with both the full sample of 198 participants as well as an age-restricted sample of 18–24-year-old students. All conclusions remained the same and so the results of the full sample are reported.

orientation items were highly consistent across the two items (self-identification of sexual orientation identity and ratings of attraction to men or women). Only four participants provided inconsistent responses: three participants identified as heterosexual but reported attraction to same sex individuals, and one reported an "other" sexual orientation but attraction to opposite sex individuals. Because other measures in this study included reference to an individual's sexual orientation, rather than sexual attractions, self-identified sexual orientation was selected for further analysis, with 50 participants selecting gay/lesbian, bisexual, unsure/questioning, or "other" responses. Consistent with decisions of previous research (LGB Youth Sexual Orientation Measurement Work Group, 2003) and due to sample size restrictions, responses other than heterosexual were analyzed together and designated GLB throughout this article. Thus, sexual orientation was analyzed as a dichotomous variable (heterosexual vs GLB).

Suicidal Ideation. The Adult Suicidal Ideation Questionnaire (ASIQ; Reynolds, 1991) is a 25-item self-report measure assessing suicidal ideation among adults. Participants rate the frequency of specific suicide-related thoughts over the past month on a 7-point scale. A score greater than 14 has differentiated suicide attempters from psychiatric controls (Osman et al., 1999). Sample items include "I think about how to kill myself" and "I think about whether I could kill myself." Psychometric evaluations of the ASIQ show it to have excellent reliability and validity in samples of adults and college students (Pettit et al., 2009; Reynolds, 1991). Internal consistency in this sample was excellent, $\alpha = .95$.

Thwarted Belongingness and Perceived Burdensomeness. The Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2008) is a 12-item questionnaire assessing both perceived burdensomeness (seven items) and thwarted belongingness (five items). Items are rated on a 7-point Likert scale. Sample perceived burdensomeness items include "These days, I feel like a bur-

den on the people in my life" and "These days, I think I make things worse for the people in my life." Sample thwarted belongingness items include "These days, I am close to other people" and "These days, I feel that there are people I can turn to in times of need." Prior research has supported the reliability and convergent validity of the subscales (Freedenthal, Lamis, Osman, Kahlo, & Gutierrez, 2011; Van Orden, 2009). Internal consistency coefficients in this study were $\alpha = .82$ for belongingness and $\alpha = .86$ for burdensomeness.

Perceived Acceptance of Sexual Orientation. The Acceptance-Rejection Scale (ARS; Ross, 1985) assesses participants' perceptions of others' responses on learning about their sexual orientation. The original scale was used to assess perceived and anticipated responses to the participants' homosexuality by 20 various family members, friends, and important others (including mother, brother, aunts, best heterosexual friend [same sex], teachers, grandparents, other people at work, neighbors, customers or clients, most other heterosexual friends [same sex], father, sister, uncles, best heterosexual friend [opposite sex], ministers of religion, work associates, boss, heterosexuals in general, most other heterosexual friends [opposite sex], and friends of parents), but the instructions were minimally modified for the present study to refer to sexual orientation rather than homosexuality. This modification was made to allow all participants to complete the scale, regardless of their sexual orientation. Participants responded to the statement "Please consider each of the following individuals in your life and rate how they have responded to learning about your sexual orientation, or how they would respond, if they are not aware of your sexual orientation" on a 9-point semantic differential scale, ranging from 0 *accept* to 8 *reject*. A "not applicable" option was also available. As participants were not expected to have individuals representative of every relationship (e.g., a participant may not have an aunt, uncle, or coworkers), scores are based on the average of all ratings provided and

range from 0 to 8. A reliability coefficient is not reported as the items are not expected to correlate meaningfully.

Depressive Symptoms. Depressive symptoms, although not a part of the theoretical model, were measured and included as a covariate in analyses. This provided a more stringent test of the theoretical model as depressive symptoms correlated with perceived burdensomeness, thwarted belongingness, and suicidal ideation and have been associated with sexual orientation in past research (Russell & Joyner, 2001; Safren & Heimberg, 1999). Although a number of other covariates could have been selected, depressive symptoms were chosen to demonstrate the incremental validity of the model over the most well-replicated predictor of suicidal ideation. Depressive symptoms were measured with the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), a 20-item self-report scale. Participants rate the frequency of depressive symptoms experienced in the past week on a 4-point scale, from 0 to 3. A score greater than 15 has been recommended as possibly indicating clinically significant levels of depression (Radloff, 1977). Sample items include "I felt depressed" and "I felt that everything I did was an effort." The CES-D has demonstrated excellent reliability and validity in many samples, including young adults (Joiner, Walker, Pettit, Perez, & Cukrowicz, 2005). Internal consistency in this sample was good, $\alpha = .86$.

Data Analysis

Missing data due to skipped items occurred at a low frequency for the CES-D (0.2%) and ASIQ (<0.1%). There were no missing data on the INQ, ARS, or measures of sexual orientation. Analysis of missing data patterns was consistent with the assumption of data missing completely at random. An expectation maximization (EM) algorithm was used to model missing data for the individual missing items, before scale calculations were computed. After the EM algorithm was executed and scale scores calculated, there were no missing

data. Positively skewed data were transformed using square root transformations. Where transformations made noticeable improvements toward normalizing distributions (CES-D and ASIQ scales), analyses were conducted with transformed variables. Conclusions did not differ across transformed and untransformed variables, thus untransformed variables are reported for ease of interpretation.

T tests were used to compare GLB and heterosexual participants on dimensional variables and chi-square tests were used on categorical variables. Cohen's *d* is reported as a measure of effect size for *t* tests and odds ratios (OR) with 95% confidence intervals (CI) are reported as a measure of effect size for chi-square tests. For analysis of indirect effects, SPSS macros for multiple mediation (i.e., indirect effects) and moderated mediation (i.e., conditional indirect effects) were used (Preacher & Hayes, 2008; Preacher, Rucker, & Hayes, 2007). All tests were two-tailed and alpha was set at .05. The macro for multiple mediation utilizes ordinary least squares regression to calculate direct, indirect, and total effects for single or multiple mediators while controlling for possible covariates. It calculates normal theory tests (Sobel tests) for each indirect effect while controlling for each other indirect effect and provides bootstrapped 95% bias corrected and accelerated CIs for the indirect effects based on an a priori specified number of bootstrap draws (5,000, for the present analysis; Preacher & Hayes, 2008). The macro for moderated mediation estimates the indirect effect of the independent variable on the dependent variable via a mediator variable, when a moderator is present (here, hypothesized to moderate the association between the independent variable and the mediator). It calculates the Sobel test for the indirect effect at different levels of the moderator variable and generates bootstrapped 95% bias corrected and accelerated confidence intervals for the indirect effect. It allows for the indirect effect to be conditional upon a categorical or continuous moderator and produces

values of the moderator at which the indirect effect is significant using the Johnson-Neyman technique (Preacher et al., 2007).

RESULTS

Comparison of GLB and heterosexual participants revealed a significant difference by gender with a greater percentage of GLB participants being male (62.0%) than heterosexual participants (33.1%), $\chi^2_{(1)} = 12.96$, $p < .001$, OR = 3.30, 95% CI 1.69–6.42. In addition, heterosexual participants were less likely to be black/African American (7.40%) than were GLB participants (22.0%), $\chi^2_{(1)} = 6.67$, $p = .01$, OR = 0.34, 95% CI 0.15–0.79. There were no significant differences between GLB and heterosexual participants on any other demographic variable.

Suicidal ideation was positively and significantly correlated with depression, perceived burdensomeness, thwarted belongingness, and scores on the ARS. Correlations between study variables, presented separately for GLB and heterosexual participants, are provided in Table 1. Differences between GLB and heterosexual participants on clinical variables are presented in Table 2. GLB participants displayed significantly higher mean scores than heterosexual participants on suicidal ideation, confirming the first hypothesis, as well as perceived burdensomeness and rejection due to sexual orientation. GLB and heterosexual participants did not sig-

nificantly differ on depressive symptom or thwarted belongingness scores.

Does Sexual Orientation Indirectly Effect Suicidal Ideation through Thwarted Belongingness and Perceived Burdensomeness?

To test the hypothesized indirect effects of sexual orientation on suicidal ideation via perceived burdensomeness and thwarted belongingness, a multiple indirect effects analysis was performed with sexual orientation as the independent variable, perceived burdensomeness and thwarted belongingness as the mediating variables, and suicidal ideation as the dependent variable. Participant gender and race were entered as covariates, as they significantly differed as a function of sexual orientation. In addition, though depressive symptom scores did not significantly associate with sexual orientation, analyses were performed before and after entering depressive symptoms as a covariate to provide a more stringent test of the theoretical model. Of note, conclusions did not differ when depressive symptom scores were excluded from the model. The results presented include depressive symptoms as a covariate.

Results indicated a significant overall model, adjusted $R^2 = .46$, $F(6, 184) = 28.25$, $p < .001$ (Table 3). There was a significant indirect effect of sexual orientation on suicidal ideation through perceived burdensomeness, with significant paths from sexual orientation to perceived burdensomeness

TABLE 1
Correlations between Study Variables for Gay, Lesbian, or Bisexual (GLB) and Heterosexual Samples

	1	2	3	4	5
1. Suicidal ideation		.49***	.60***	.55***	.49***
2. Depressive symptoms	.56***		.64***	.64***	.14
3. Perceived burdensomeness	.56***	.56***		.75***	.48***
4. Thwarted belongingness	.42***	.63***	.53***		.34*
5. Acceptance of sexual orientation	.01	.08	-.07	.07	

* $p < .05$; *** $p < .001$; correlations for GLB participants are located above the diagonal, with correlations for heterosexual participants below the diagonal.

TABLE 2
Comparison of Gay, Lesbian, or Bisexual (GLB) and Heterosexual Samples

	Total sample mean (SD)	GLB mean (SD)	Heterosexual mean (SD)	<i>p</i> value	95% CI of the difference	Effect size <i>d</i>	Range
Depressive symptoms	13.12 (8.31)	13.98 (8.18)	12.84 (8.37)	.40	-3.83 to 1.54	0.14	0-43
Suicidal ideation	10.52 (13.61)	19.66 (18.60)	7.43 (9.75)	<.001***	-17.73 to -6.72	0.82	0-83
Perceived burdensomeness	11.58 (5.87)	13.98 (7.23)	10.76 (5.11)	.001**	-5.06 to -1.37	0.51	7-33
Thwarted belongingness	11.04 (6.11)	12.30 (6.16)	10.61 (6.05)	.09	-3.65 to 0.27	0.28	5-32
Acceptance of sexual orientation	0.90 (1.48)	2.62 (1.53)	0.30 (0.88)	<.001***	-2.66 to -1.96	1.86	0.0-7.2

p* < .05; *p* < .01; ****p* < .001; *p* values indicate significance of *t* tests comparing GLB and heterosexual samples.

TABLE 3
Test of a Multiple Indirect Effects Model between Sexual Orientation and Suicidal Ideation Controlling for Participant Gender, Race, and Depressive Symptom Scores

Mediating variable (<i>M</i>)	Effect of IV on <i>M</i> (<i>a</i>)	Effect of <i>M</i> on DV (<i>b</i>)	Direct effects of IV on DV (<i>c'</i>)	Total effects of IV on DV (<i>c</i>)	Indirect effects (<i>a</i> × <i>b</i>)	BCa of 95% CI	
						Lower	Upper
Thwarted belongingness	0.16 (0.89)	0.06 (0.14)	0.62*** (8.51***)	0.79*** (10.95***)	0.01 (0.12)	-0.01 (-0.13)	0.09 (1.19)
Perceived burdensomeness	0.41** (2.63**)	0.39*** (0.88***)	0.62*** (8.51***)	0.79*** (10.95***)	0.16 ^a (2.32 ^a)	0.04 (0.73)	0.40 (5.53)

Unstandardized coefficients are in parentheses.

IV, independent variable (sexual orientation); DV, dependent variable (suicidal ideation); *M*, mediating variable (thwarted belongingness and perceived burdensomeness); BCa of 95% CI, bias corrected and accelerated 95% confidence interval.

For the indirect effects, confidence intervals that include zero are interpreted as nonsignificant; **p* < .05; ***p* < .01; ****p* < .001; ^asignifies significant indirect effect; 5,000 bootstrap samples.

and from perceived burdensomeness to suicidal ideation. Sexual orientation continued to have a significant direct effect on suicidal ideation, indicating that perceived burdensomeness accounted for a portion, but not all, of the association between sexual orientation and suicidal ideation. There was not a significant indirect effect through thwarted belongingness (Table 3). The second hypothesis was partially supported.

Is the Indirect Effect Conditional on Perceived Rejection?

A conditional indirect effect refers to an indirect effect that varies in strength across levels of another variable (i.e., a moderator; Muller, Judd, & Yzerbyt, 2005). In this instance, we hypothesized that the indirect effect of sexual orientation on suicidal ideation via perceived burdensomeness and thwarted belongingness would vary across levels of perceived rejection due to sexual orientation. More specifically, we expected significant conditional effects on the paths from sexual orientation to perceived burdensomeness and thwarted belongingness (i.e., perceived burdensomeness and thwarted belongingness would account for the association between sexual orientation and suicidal ideation only in the presence of perceived rejection due to one's sexual orientation). To test this hypothesis, scores on the ARS, which assessed perceived and anticipated rejection from others due to one's sexual orientation, were included in two conditional indirect effect models as a potential moderator of the association between sexual orientation and perceived burdensomeness scores (Figure 1). Participant sex, race, and depressive symptoms scores were included in the models as covariates. Both perceived burdensomeness and thwarted belongingness were included at this step even though thwarted belongingness did not demonstrate a significant overall indirect effect, as it is possible an indirect effect was only present at certain levels of the conditional variable.

The SPSS macro was used to estimate the coefficients of the conditional indirect

effect model.³ Controlling for sexual orientation, ARS scores (centered), as well as sex, race, and depressive symptoms, the interaction term significantly predicted the mediator (perceived burdensomeness), $B = 0.69$ (2.61), $SE(B) = 0.15$ (0.59), $p < .001$, whereas sexual orientation and ARS scores (centered) did not, $p > .05$ (unstandardized values in parentheses). In addition, the mediator (perceived burdensomeness) significantly predicted the dependent variable (suicidal ideation), $B = 0.32$ (0.73), $SE(B) = 0.07$ (0.15), $p < .001$ (unstandardized values in parentheses). Results indicated a significant conditional indirect effect for the perceived burdensomeness model, but not the thwarted belongingness model, with the interaction between sexual orientation and perceived rejection scores significantly predicting perceived burdensomeness. The Johnson-Neyman regions of significance test indicated that the indirect effect of sexual orientation on suicidal ideation via perceived burdensomeness was statistically significant when ARS scores were at or above 1.98 (uncentered value). When ARS scores were below 1.98, the indirect effect was not significant. Thus, the indirect effect through perceived burdensomeness (but not thwarted belongingness) varied according to the level of perceived rejection due to sexual orientation, providing partial support for the third hypothesis.

To further investigate the nature of the interaction, separate models of the indirect effect of perceived rejection of sexual orientation on suicidal ideation via perceived burdensomeness were created for GLB and heterosexual students. For the GLB students, the overall model was significant, adjusted $R^2 = .39$, $F(2, 47) = 16.81$, $p < .001$, and the indirect effect of the ARS on suicidal ideation via perceived burdensomeness was significant (2.74, 95% CI 1.11–4.99). For the heterosexual students, the overall model was significant, adjusted $R^2 = .33$, $F(2, 142) =$

³Full output from the SPSS macro used to test the conditional indirect effects hypothesis is available upon request to the corresponding author.

35.64, $p < .001$, but the indirect effect of the ARS on suicidal ideation via perceived burdensomeness was not significant (-0.40 , 95% CI -0.98 to 0.21). Thus, the indirect effect of ARS scores on suicidal ideation via perceived burdensomeness was significant among GLB students, but not among heterosexual students.

DISCUSSION

In this study we examined the relationship between sexual orientation and suicidal ideation using the framework of the IPT. GLB students endorsed greater levels of suicidal ideation and perceived burdensomeness than heterosexual students, but did not endorse greater levels of thwarted belongingness. These findings are consistent with those of Faulkner and Cranston (1998), Fergusson et al. (2005), Russell and Joyner (2001), and Safren and Heimberg (1999), who demonstrated higher rates of suicidal ideation among GLB adolescents and young adults. Furthermore, a test of the indirect effects of sexual orientation on suicidal ideation revealed a significant indirect effect via perceived burdensomeness but not thwarted belongingness, which indicates that the elevated level of suicidal ideation in GLB college students could be partially attributed to perceived burdensomeness. It may be that something unique to the experience of GLB individuals makes them prone to the experience of perceived burdensomeness, which leads to higher levels of suicidal ideation. For example, such GLB-specific risk factors may include personal or institutional discrimination due to sexual orientation, rejection due to sexual orientation, or difficulties “coming out” or coming to terms with an alternative sexual orientation (Haas et al., 2010; McDermott et al., 2008; Yarbrough, 2003), among others. Screening for potential suicide risk based on perceived burdensomeness may help identify both GLB and heterosexual students at elevated risk for suicidal ideation. This also provides a partial extension of the IPT model of suicide to a GLB population,

as the model was able to partially account for the elevated level of suicidal ideation among these individuals.

The finding that thwarted belongingness did not significantly account for variance in the association between sexual orientation and suicidal ideation concurs with other findings that thwarted belongingness did not significantly predict suicidal ideation when perceived burdensomeness was included in the same model (Bryan, Morrow, Anestis, & Joiner, 2010; Monteith, Menefee, Pettit, Smitherman, & Vincent, 2012; Van Orden et al., 2008). It must be noted, however, that thwarted belongingness did not display a significant bivariate association with sexual orientation in the present sample. Although it is not entirely clear why this bivariate association was not statistically significant, as pointed out by Lamis and Malone (2011), it may be partially attributable to college students having ample opportunities to meet belongingness needs, possibly resulting in lower overall thwarted belongingness in college student samples as compared with the general population.

Consistent with our theoretical model, analyses revealed that the indirect effect of sexual orientation on suicidal ideation via perceived burdensomeness was conditional on the level of perceived or anticipated rejection due to sexual orientation. This indicates that GLB college students who perceived or anticipated rejection from others due to their sexual orientation were especially likely to experience perceived burdensomeness that was, in turn, associated with higher levels of suicidal ideation. It is possible that perceived rejection from important individuals is interpreted as a failure to meet the expectations of family and important others or as an indicator that others are ashamed of the individual's sexual orientation and thus the individual is burdening significant others with shameful feelings. GLB college students who had been rejected in the past or who anticipated being rejected because of their sexual orientation experienced greater levels of per-

ceived burdensomeness than GLB students with fewer such experiences or expectations and heterosexual students in general. This may indicate that perceived burdensomeness can be influenced by past experiences or expectations of the future, though we were unable to separate these influences in the present study. Although this study was not able to investigate why or how perceived burdensomeness might be influenced by past experiences or anticipation of future rejection, it is possible that anticipated or experienced rejection induces a perception that "My worth to others is conditional upon my sexual orientation," or "If people discover my sexual orientation they will consider me a burden." Future research should consider and test this possibility.

CLINICAL IMPLICATIONS

Implications for prevention and intervention work should also be considered. Perceived burdensomeness has consistently been associated with suicidal ideation in a number of samples (Bryan et al., 2010; Van Orden et al., 2008), and partially accounted for the elevated level of suicidal ideation among the GLB college students in the present study. As such, it may be a potent target for selected prevention programs irrespective of the sexual orientations of individuals in the program. For example, prevention programs may engage students in activities that benefit others (e.g., community service) and explicitly emphasize the students' contributions to others and to society. Alternatively, clinicians might utilize cognitive restructuring techniques with the goal of modifying clients' perceptions of burdensomeness. Given the conditional nature of the indirect effect found in this study, such programs may be especially potent for GLB students who have fears of rejection associated with coming out or who struggle with past and/or ongoing rejection due to their sexual orientation. For GLB students, it is possible that reducing fears and expectations of future rejection

may also help reduce perceived burdensomeness. For those who have experienced rejection in the past, programs like the one mentioned above may help reduce present perceptions of perceived burdensomeness.

LIMITATIONS

It is important to consider the results of this study in the context of its limitations. First, this study used a cross-sectional design and so could not assess temporal relations between factors. Second, a targeted recruitment strategy was used to oversample GLB students. This strategy, which specifically drew on GLB-affiliated student groups, may have resulted in a GLB subsample that was not representative of the broader population of GLB college students. However, the recruitment of GLB students (from the psychology subject pool compared with those recruited via flyers) was not significantly associated with any measured variables in this study, suggesting that the recruitment method likely had a negligible impact on our study findings. This oversampling procedure resulted in a sample of $n = 50$ GLB students, which is still a relatively small sample for many statistical procedures and may have limited the statistical power for detecting small effect sizes. In addition, all data were collected via self-report, creating the possibility that some respondents may have been answering in a socially desirable manner. Finally, there was limited variability in responses to the accept-reject scale among heterosexual participants and so interpretations of the conditional indirect effect should be made cautiously.

CONCLUSIONS

This study replicated previous findings that GLB college students experience greater levels of suicidal ideation compared with their heterosexual peers. In addition, it demonstrated a conditional indirect effect of sexual orientation on suicidal ideation via

perceived burdensomeness, a construct derived from the IPT of suicide (Joiner, 2005). This indirect effect was shown to be conditional on levels of perceived or anticipated rejection from others due to one's sexual orientation, such that the indirect effect was stronger for those with greater perceived

or anticipated rejection scores. These findings suggest that, for those GLB students with high expectations or perceptions of rejection, perceived burdensomeness may be an especially salient target for suicide prevention programs.

REFERENCES

- BLOSNIICH, J., & BOSSARTE, R. (2012). Drivers of disparity: Differences in socially based risk factors of self-injurious and suicidal behaviors among sexual minority college students. *Journal of American College Health, 60*, 141–149.
- BRYAN, C. J., MORROW, C., ANESTIS, M., & JOINER, T. (2010). A preliminary test of the interpersonal-psychological theory of suicidal behavior in a military sample. *Personality and Individual Differences, 48*, 347–350.
- D'AUGELLI, A. R., HERSHBERGER, S. L., & PILKINGTON, N. W. (2001). Suicidality patterns and sexual orientation-related factors among lesbian, gay, and bisexual youths. *Suicide and Life-Threatening Behavior, 31*, 250–264.
- EISENBERG, M. E., & RESNICK, M. D. (2006). Suicidality among gay, lesbian and bisexual youth: The role of protective factors. *Journal of Adolescent Health, 39*, 662–668.
- FAULKNER, A. H., & CRANSTON, K. (1998). Correlates of same-sex sexual behavior in a random sample of Massachusetts high school students. *American Journal of Public Health, 88*, 262–264.
- FERGUSON, D. M., HORWOOD, L. J., RIDDER, E. M., & BEAUTRAIS, A. L. (2005). Sexual orientation and mental health in a birth cohort of young adults. *Psychological Medicine, 35*, 971–981.
- FREEDENTHAL, S., LAMIS, D. A., OSMAN, A., KAHLO, D., & GUTIERREZ, P. M. (2011). Evaluation of the psychometric properties of the Interpersonal Needs Questionnaire-12 in samples of men and women. *Journal of Clinical Psychology, 67*, 609–623.
- HAAS, A. P., ELIASON, M., MAYS, V. M., MATHY, R. M., COCHRAN, S. D., D'AUGELLI, A. R., ET AL. (2010). Suicide and suicide risk in lesbian, gay, bisexual, and transgender populations: Review and recommendations. *Journal of Homosexuality, 58*, 10–51.
- HALPERT, S. C. (2002). Suicidal behavior among gay male youth. *Journal of Gay & Lesbian Psychotherapy, 6*, 53–79.
- HILL, R. M., MEINZER, M. C., DOMINGUEZ, M., & PETTIT, J. W. (2011). Interpersonal factors. In D. A. LAMIS & D. LESTER (Eds.), *Understanding and preventing college student suicide* (pp. 157–169). Springfield, IL: CC Thomas.
- JOINER, T. (2005). *Why people die by suicide*. Cambridge, MA: Harvard University Press.
- JOINER, T., WALKER, R., PETTIT, J., PEREZ, M., & CUKROWICZ, K. (2005). Evidence-based assessment of depression in adults. *Psychological Assessment, 17*, 267–277.
- KING, M., SEMLYEN, J., TAI, S. S., KILLASPY, H., OSBORN, D., POPELYUK, D., ET AL. (2008). A systematic review of mental disorder, suicide, and deliberate self harm in lesbian, gay and bisexual people. *BMC Psychiatry, 8*, doi: 10.1186/1471-244X-8-70
- LAMIS, D. A., & MALONE, P. S. (2011). Alcohol-related problems and risk of suicide among college students: The mediating roles of belongingness and burdensomeness. *Suicide and Life-Threatening Behavior, 41*, 543–553.
- LANGHINRICHSEN-ROHLING, J., LAMIS, D. A., & MALONE, P. S. (2011). Sexual attraction status and adolescent suicide proneness: The roles of hopelessness, depression, and social support. *Journal of Homosexuality, 58*, 52–82.
- LESBIAN GAY AND BISEXUAL (LGB) YOUTH SEXUAL ORIENTATION MEASUREMENT WORK GROUP. (2003). *Measuring sexual orientation of young people in health research*. San Francisco, CA: Gay and Lesbian Medical Association.
- MCDERMOTT, E., ROEN, K., & SCOURFIELD, J. (2008). Avoiding shame: Young LGBT people, homophobia and self-destructive behaviours. *Culture, Health & Sexuality, 10*, 815–829.
- MONTEITH, L. M., MENEFFEE, D. S., PETTIT, J. W., SMITHERMAN, W., & VINCENT, J. P. (2012). A test of the interpersonal-psychological theory of suicide among inpatient veterans: Perceived burdensomeness, not thwarted belongingness, predicts suicidal ideation. Unpublished manuscript.
- MULLER, D., JUDD, C. M., & YZERBYT, V. Y. (2005). When moderation is mediated and mediation is moderated. *Journal of Personality and Social Psychology, 89*, 852–863.
- OSMAN, A., KOPPER, B. A., LINEHAN, M. M., BARRIOS, F. X., GUTIERREZ, P. M., & BAGGE,

- C. L. (1999). Validation of the Adult Suicidal Ideation Questionnaire and the Reasons for Living Inventory in an adult psychiatric inpatient sample. *Psychological Assessment, 11*, 115–123.
- PETTIT, J., GARZA, M., GROVER, K., SCHATTE, D., MORGAN, S., HARPER, A., ET AL. (2009). Factor structure and psychometric properties of the Modified Scale for Suicidal Ideation among suicidal youth. *Depression and Anxiety, 26*, 769–774.
- PREACHER, K. J., & HAYES, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879–891.
- PREACHER, K. J., RUCKER, D. D., & HAYES, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42*, 185–227.
- RADLOFF, L. (1977). The CES-D scale: A self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401.
- REYNOLDS, W. M. (1991). Psychometric characteristics of the Adult Suicidal Ideation Questionnaire in college students. *Journal of Personality Assessment, 56*, 289–307.
- ROSARIO, M., SCHRIMSHAW, E. W., & HUNTER, J. (2005). Psychological distress following suicidality among gay, lesbian, and bisexual youths: Role of social relationships. *Journal of Youth and Adolescence, 34*, 149–161.
- ROSS, M. W. (1985). Actual and anticipated societal reaction to homosexuality and adjustment in two societies. *Journal of Sex Research, 21*, 40–55.
- ROTHERAM-BORUS, M. J., HUNTER, J., & ROSARIO, M. (1994). Suicidal behavior and gay-related stress among gay and bisexual male adolescents. *Journal of Adolescent Research, 9*, 498–508.
- RUSSELL, S. T. S., & JOYNER, K. K. (2001). Adolescent sexual orientation and suicide risk: Evidence from a national study. *American Journal of Public Health, 91*, 1276–1281.
- RYAN, C., HUEBNER, D., DIAZ, R. M., & SANCHEZ, J. (2009). Family rejection as a predictor of negative health outcomes in white and Latino lesbian, gay, and bisexual young adults. *Pediatrics, 123*, 346–352.
- SAFREN, S. A., & HEIMBERG, R. G. (1999). Depression, hopelessness, suicidality, and related factors in sexual minority and heterosexual adolescents. *Journal of Consulting and Clinical Psychology, 67*, 859–866.
- VAN ORDEN, K. A. (2009). *Construct validity of the Interpersonal Needs Questionnaire*. Unpublished doctoral dissertation, Florida State University, Tallahassee, FL.
- VAN ORDEN, K. A., WITTE, T., GORDON, K., BENDER, T., & JOINER, T. (2008). Suicidal desire and the capability for suicide: Tests of the interpersonal-psychological theory of suicidal behavior among adults. *Journal of Consulting and Clinical Psychology, 76*, 72–83.
- YARBROUGH, D. G. (2003). Gay adolescents in rural areas: Experiences and coping strategies. *Journal of Human Behavior in the Social Environment, 8*, 129–144.

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