



## Integrating Minority Stress Theory and the Interpersonal Theory of Suicide among Sexual Minority Youth Who Engage Crisis Services

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*Objective:* The present study sought to integrate minority stress theory (MST) and the interpersonal theory of suicide (ITS) to better understand high rates of suicide among sexual minority youth (SMY). To date, the ITS and MST have largely advanced independently from one another even though the research base for each theory contains gaps that the other theory may help fill.

*Method:* Using data from a national sample of 564 SMY (aged 12–24) recruited from an LGBTQ youth-focused suicide crisis prevention provider, we examined structural equation models to understand how perceived burdensomeness and thwarted belongingness mediate the relationship between minority stress and suicidal ideation and attempt.

*Results:* Sexual minority stress was significantly associated with both perceived burdensomeness and thwarted belongingness in models predicting suicidal ideation and attempt. Moreover, minority stress had a direct effect on suicide attempt and an indirect effect on both suicidal ideation and suicide attempt through burdensomeness.

*Conclusions:* Given that minority stress is associated with greater thwarted belongingness, perceived burdensomeness, and suicide attempts, there should be greater demand for continuing education centered on sexual minority populations and population-specific services. Identifying burdensomeness as a minority stress–suicide mechanism highlights the potential gains of piloting recently developed burdensomeness interventions among SMY.

**Keywords:** minority stress theory, interpersonal theory of suicide, sexual minority youth

Suicide is an enduring public health crisis among youth (Bridge, Greenhouse, Weldon, Campo, & Kelleher, 2008), but sexual

minority youth (SMY) are at disproportionately elevated risk for suicide (Marshal et al., 2011; Miranda-Mendizábal et al., 2017).

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Statewide and nationwide surveys of adolescents have shown higher rates of suicidal ideation and attempts among SMY (e.g., Bouris et al., 2016; Kann et al., 2018; Silenzio, Pena, Duberstein, Cerel, & Knox, 2007). For example, the recent Youth Risk Behavior Survey (Kann et al., 2018) found that nearly 48% of gay, lesbian, and bisexual students reported experiencing suicidal ideation in the past year, compared to 13% of heterosexual students. A similar pattern of disparity between SMY and heterosexual students was observed for suicide attempts in the same time frame (23% vs. 5%, respectively). Meta-analytic work found that SMY had almost three times the odds of experiencing suicidal ideation or attempts compared to their heterosexual counterparts (average  $OR = 2.92$ ). Furthermore, the disparity was greater for outcomes that confer greater risk of suicide; for instance, the disparity for suicide attempt necessitating medical attention ( $OR = 4.17$ ) was more than double that of suicidal ideation ( $OR = 1.96$ ) (Marshall et al., 2011).

To date, the leading framework for explaining disparities in mental health and suicide based on sexual minority status is minority stress theory (MST; Meyer, 2003; Meyer, Frost, & Nezhad, 2015). Endorsed by the National Academy of Medicine (Adler et al., 2016) and Healthy People 2020 (2016), MST argues that discrimination, violence, and victimization that stem from a pervasive homophobic culture (i.e., minority stress) are primary drivers of poor mental health and suicide among sexual minority populations. A robust body of work supports a link between different facets of minority stress and suicide among SMY (e.g., Aranmolate, Bogan, Hoard, & Mawson, 2017). For example, perceived stigma (Lea, de Wit, & Reynolds, 2014); homophobic abuse, harassment, or victimization (Bouris et al., 2016; House, Van Horn, Coppeans, & Stepleman, 2011; Lea et al., 2014); internalized homophobia or shame (Skerrett, Kølves, & De Leo, 2016); and family or peer rejection (Pompili et al., 2014; Puckett et al., 2017) have all been associated with suicidal ideation or suicide attempts. However, most studies have only

included one or two facets of what is a highly complex minority stress construct (e.g., Bouris et al., 2016), which limits insight about the individual and collective value of a comprehensive set of minority stressors for predicting suicidal ideation and suicide attempts. Relatedly, no psychometrically sound, multi-dimensional measures of sexual minority stress have been designed with consideration of adolescent development (Morrison, Bishop, Morrison, & Parker-Taneo, 2016; Schrager, Goldbach, & Mamey, 2018). Further, the extant research has only sparingly endeavored to test prospective pathways linking sexual minority stress to suicide, and MST-informed research has not leveraged other suicide theories that identify such pathways. Therefore, others have reasoned that minority stress theories are necessary but insufficient for explaining suicide disparities among sexual minority populations (Plöderl et al., 2014).

Separately, the general population literature has relied heavily on the interpersonal theory of suicide (ITS) to understand suicidal ideation and behavior among both youth and adults. The ITS is renowned for parsimony and well-defined, proximal pathways whereby traditional risk factors are purported to exert influence on severe suicide outcomes (Van Orden et al., 2010). The ITS argues that serious suicidal behavior results from the convergence of thwarted belongingness (i.e., unmet need for positive, reciprocal relationships), perceived burdensomeness (i.e., misperception of self as liability to others), and acquired capability for suicide (i.e., reduced fear of death and increased pain tolerance; Joiner, 2007). More specifically, thwarted belonging and burdensomeness are posited to influence suicidal desire and hence suicidal ideation but only result in suicidal behavior when combined with high levels of acquired capability (Van Orden et al., 2010). Although the ITS has garnered unparalleled attention compared to other suicide theories in the recent past, the research on it is also limited in several meaningful ways (Chu et al., 2017; Ma, Batterham, Calear, & Han, 2016). First, although the central ITS constructs are

relevant for adolescents and youth, studies in younger age groups have been infrequent relative to adults (Barzilay et al., 2015; Stewart, Eaddy, Horton, Hughes, & Kennard, 2017). Second, the ITS is underinvestigated in sexual minority populations, which is a critical oversight given that the ITS's explanatory power may vary across different groups (Ma et al., 2016). Third, the small to moderate effect sizes for ITS constructs (Chu et al., 2017; Ma et al., 2016) and substantial amount of unexplained variance with ITS models in sexual minority populations (e.g., Hill & Pettit, 2012; Silva, Chu, Monahan, & Joiner, 2015) may signal a need to expand or reconfigure the model (e.g., Stewart et al., 2017). In the same vein, a recent systematic review called for further research that tests the mediating effects of ITS factors between a broader range of distal risk factors (e.g., minority stress) and suicide (Chu et al., 2017).

Taken together, the ITS and MST have largely advanced in isolation despite the fact that the research base for each theory contains gaps that the other theory may help fill. In fact, only three known studies have included central concepts of both MST and ITS in relation to suicide-related outcomes among sexual minority populations. Baams et al. (2015) found that perceived burdensomeness mediated the relationship between sexual orientation victimization and suicidal ideation. Yet, the researchers relied on only two facets of minority stress (i.e., disclosure stress and minority victimization) and focused on suicidal ideation. Hill and Pettit (2012) found that perceived burdensomeness mediated the relationship between sexual orientation and suicidal ideation, but observed that perceived rejection moderated that indirect effect. This study similarly had a narrow scope with respect to minority stress and suicide-related outcomes. Velkoff et al. (2016) found that sexual identity disclosure was associated with greater perceived burdensomeness for individuals with low identity affirmation. However, sexual minority experiences and ITS constructs were not in the same models for predicting suicide attempts, limiting conclusions about theory

integration. Given that different factors predict suicidal ideation and attempt, it is important to highlight that none of the previous theory integration studies tested pathways for *both* suicide-related outcomes. An additional consideration is that prior studies have not tested competing model configurations for integrating MST and ITS; as in other public health work (e.g., Jones et al., 2015), this can include parallel mediation (e.g., Baams et al., 2015), moderated mediation (e.g., Hill & Pettit, 2012), and serial mediation, which has yet to be investigated despite the possibility that novel ITS model configurations may improve our ability to explain suicidal phenomena (e.g., Stewart et al., 2017). The reality is that SMY often struggle with feelings of not belonging (e.g., alienation, rejection, isolation; Sullivan & Wodarski, 2002) and being a burden (e.g., Diaz, Ayala, Bein, Henne, & Marin, 2001), but no prior work has examined the viable process whereby one may lead to the other (e.g., Coming out about my sexual identity to my family makes me feel like I don't belong which, in turn, makes me feel like a burden). Moreover, testing different model configurations can help to reconcile conflictual findings in a field (e.g., Jones et al., 2015).

Broadly speaking, the present study sought to integrate MST and ITS to better understand high rates of suicidal ideation and behavior in SMY populations. In doing so, we aimed to address the previously noted limitations that have been observed in MST (e.g., absence of well-defined mediators), ITS (e.g., variance unexplained), and integrated MST-ITS (e.g., narrow scope of minority stress and suicide-related outcomes; competing models) work. Notably, this is the first known study to use a comprehensive measure of sexual minority stress, which is especially relevant because valid and reliable measurement is a necessary antecedent to explanatory research, intervention efforts, and clinical assessment of mental health needs (Schrager et al., 2018). Also, our partnership with a national suicide crisis prevention service provider for LGBTQ youth allowed us to recruit a particularly high-risk sample of SMY. Informed by

MST and ITS research, we expected that (1) higher levels of minority stress would be associated with higher severity of suicidal ideation and likelihood of suicide attempt; (2) higher levels of minority stress would be associated with higher levels of perceived burdensomeness and thwarted belongingness; (3) higher levels of perceived burdensomeness and thwarted belongingness would be associated with higher severity of suicidal ideation and likelihood of suicide attempt; and (4) the effect of minority stress on suicidal ideation and suicide attempt would be mediated by perceived burdensomeness and thwarted belongingness. These hypotheses were tested in the context of different model configurations.

## METHODS

### *Participants*

The present study included a national sample of 564 youth (aged 12–24) recruited from an LGBTQ youth-focused suicide crisis prevention provider during an 18-month period (September 2015 to April 2017). Participants ranged in age from 12 to 24 years ( $M = 17.63$ ,  $SD = 3.12$ ). Most participants identified as cisgender male (26%) or female (35%), with the remaining 39% reporting another gender identity, and the most common sexual orientations were gay (25%), bisexual (17%), and pansexual (17%).

### *Procedures*

After crisis contact with the collaborating suicide crisis prevention organization, eligible individuals were transferred to an automated survey where they provided their demographic and contact information as well as their agreement to be contacted about the study. Of those referred to the automated survey, 2,008 participants were found eligible (nonheterosexual identity, aged 12–24) and agreed to be contacted by the research team. Research team members reviewed an assent form with the participant and requested

verbal (for participants on the phone) or written (for chat, text, and e-mail participants) consent. The Institutional Review Board (IRB) waived parental consent due to safety concerns related to potentially outing participants. All participants completed a suicide risk assessment before survey participation. Participants received a \$15 gift card incentive for involvement in the study. Overall, 33% of youth referred to the study completed the survey ( $n = 657$ ; for detailed procedures, refer to Rhoades et al., 2018). Ninety-three responses were dropped due to incomplete information on minority stress and other outcome variables. This resulted in an analytic sample of 564 for the present study. The IRB at the principal investigator's home institution approved the study.

### *Measures*

*Suicidal Ideation Severity.* Severity of suicidal ideation was assessed using five items adapted for self-report from the Columbia-Suicide Severity Rating Scale (Posner et al., 2011). The questions ask about five different types of lifetime suicidal ideation (passive ideation; active ideation; method; plan; and intent) that are ordered in terms of their severity. A score is assigned based on the *most severe* type of suicidal ideation that is endorsed (0 = none; 1 = passive ideation; 2 = active ideation; 3 = method; 4 = intent; and 5 = intent with plan). Therefore, the score can range from 0 (i.e., no suicidal ideation = lowest risk) to 5 (i.e., suicidal intent with plan = highest risk).

*Suicide Attempt.* Suicide attempt was assessed with a single question that asked "Have you ever tried to kill yourself?" Response options were dichotomous (0 = no; 1 = yes).

*Sexual Minority Stress.* Lifetime experiences of sexual minority stress were assessed using the 54-item Sexual Minority Adolescent Stress Inventory (SMASI; Schrage et al., 2018). Subscales of the main measure include 10 factors that focus on social marginalization ("Other youth refuse to hang out with me because I am LGBTQ," eight items); family

rejection experiences (“I have to lie to my family about being LGBTQ,” 11 items); beliefs associated with internalized homonegativity (“There are times when I do not want to be LGBTQ,” seven items); difficulties with identity management (“I am having trouble accepting that I am LGBTQ,” three items); experiences of a homonegative climate (“It’s hard to be an LGBTQ person at my school,” four items); intersectionality between multiple minority statuses (“Other people who are in my racial/ethnic community judge me for being LGBTQ,” three items); negative disclosure experiences (“I was forced to come out to someone because I got ‘caught,’” five items); stress associated with religion (“My family is part of a religion that has homophobic beliefs,” five items); negative expectancies about future treatment (“I expect people to reject me when they find out that I am LGBTQ,” three items); and experiences of homonegative communication (“My friends make jokes about LGBTQ people,” five items). Prior work has shown that the total scale and subscales demonstrated good to excellent reliability (scale  $\alpha = .98$ ; subscale  $\alpha = .75-.96$ ; Goldbach, Schrager, & Mamey, 2017). Notably, the reliability of the total scale in the present study was similar for SMY (scale  $\alpha = .886$ ) as well as transgender and gender diverse youth (scale  $\alpha = .885$ ). The SMASI has been validated as a latent construct with its 10 corresponding subscales acting as continuous, manifest variables (Goldbach et al., 2017).

*Interpersonal Theory of Suicide Constructs.* Thwarted belongingness and perceived burdensomeness—central constructs in the interpersonal theory of suicide—were assessed with the 10-item Interpersonal Needs Questionnaire (Hill et al., 2015; Van Orden, Cukrowicz, Witte, & Joiner, 2012). Thwarted belongingness (e.g., “These days, I feel disconnected from other people”) and perceived burdensomeness (e.g., “These days, the people in my life would be better off if I were gone”) were each measured using a 5-item subscale. Respondents rated endorsements of 10 statements on a scale from *not at all true for me* (1) to *very true for me* (7).

Subscale totals can range from 5 to 35, with higher scores indicating greater thwarted belongingness or perceived burdensomeness. Cronbach’s alphas for thwarted belongingness and perceived burdensomeness subscales were .77 and .95, respectively.

### *Analysis*

Our goal was to understand the relationship between sexual minority stress and suicide-related outcomes (i.e., suicidal ideation and suicide attempts) through ITS constructs of perceived burdensomeness and thwarted belongingness. To this end, we constructed a series of models to first examine the relationships among sexual minority stress, ITS constructs, and severity of suicidal ideation and next to examine the relationships among sexual minority stress, ITS constructs, and suicide attempt. We subsequently examined the direct and indirect effects of minority stress on each of the suicide-related outcomes to determine whether perceived burdensomeness and/or thwarted belongingness mediated those relationships.

Because of the large number of parameters being estimated in such a model (e.g., number of correlations among subscales, number of pathways), we modeled minority stress as a latent variable, using the 10 SMASI subscale scores as indicators. We considered modeling the subscales separately but did not do so for several reasons. A model with ten subscales and two mediators would be overly complex to fit and interpret; this is even more so the case given that we are testing three competing model configurations. Additionally, the subscales are all correlated, and multicollinearity can lead to biased estimates (via inflation, suppression, etc.). Moreover, SMASI was developed to be modeled as a latent variable. Correlations between SMASI subscales were driven by modification indexes, one at a time, as recommended by Mplus, until the global fit index indicated a good overall fit. For this study, we used standard cutoffs of CFI > .95, RMSEA < .05, and SRMR < .05 (Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996). Of

note, we also computed descriptive statistics and performed bivariate correlational analyses between different facets of minority stress, ITS factors, and our two suicide-related outcomes. SPSS version 24 was used for descriptive statistics and correlational analyses, and all structural equation models were built in Mplus version 7.11.

## RESULTS

Descriptive statistics for focal study variables are available in Table 1. Scores on ITS constructs of thwarted belongingness ( $M = 21.05$ ,  $SD = 7.00$ ;  $\alpha = .771$ ) and perceived burdensomeness ( $M = 14.74$ ,  $SD = 9.26$ ;  $\alpha = .948$ ) exceeded established clinical cutoffs for detecting suicidal ideation (Bryan, 2011). Most youth endorsed having active suicidal thoughts or a more severe type of suicidal ideation ( $M = 2.22$ ,  $SD = 2.07$ ). Nearly one-fifth ( $n = 101$ ; 18%) of participants reported making a suicide attempt within the past year. Bivariate correlations among predictor, mediator, and outcome variables can be found in Table 2.

### *Measurement Model*

Prior to explanatory model building, we ran a confirmatory factor analysis of the SMASI subscales to form a latent sexual minority stress variable. Each of the 10 subscales loaded significantly onto the latent variable, but with poor overall model fit. After adding covariances between subscales (based on Mplus modification index score  $> 10$ ), the final latent minority stress variable demonstrated good global fit,  $CFI = .963$ ;  $RMSEA = .048$ ;  $SRMR = .035$ .

### *Structural Models*

We next examined a series of models to test whether perceived burdensomeness and thwarted belongingness mediated the relationship between sexual minority stress and two suicide-related outcomes (i.e., suicidal ideation and suicide attempt). Figure 1

demonstrates three tested models for each outcome: a model with parallel mediators (Figure 1a); a model with interacting mediators (moderated mediation; Figure 1b); and a model with sequential/serial mediators (Figure 1c).

*Suicidal Ideation.* The first model tested for parallel mediation (Figure 1a), where ITS factors were situated as individual mediators between minority stress and suicide-related outcomes. Sexual minority stress was associated with the ITS mediators of thwarted belongingness ( $\beta = .39$ ,  $p < .001$ ) and perceived burdensomeness ( $\beta = .42$ ,  $p < .001$ ). However, although perceived burdensomeness ( $\beta = .35$ ,  $p < .001$ ) was significantly associated with suicidal ideation, thwarted belongingness ( $\beta = .03$ ,  $p = .580$ ) and sexual minority stress ( $\beta = .09$ ,  $p = .119$ ) were not. This model also evidenced poor fit,  $CFI = .898$ ;  $RMSEA = .064$ ;  $SRMR = .049$ ;  $\chi^2(56) = 187.381$ ,  $p < .001$ .

The second model tested for moderated mediation (Figure 1b), where an interaction between the ITS mediators was added to the model. This model resulted in poor global fit:  $CFI = .794$ ;  $RMSEA = .124$ ;  $SRMR = .150$ ;  $\chi^2(67) = 650.206$ ,  $p = .001$ , with no significant relationships between sexual minority stress ( $\beta = -.09$ ,  $p = .780$ ) and suicidal ideation, nor between thwarted belongingness ( $\beta = .03$ ,  $p = .958$ ), perceived burdensomeness ( $\beta = .32$ ,  $p = .778$ ), and the interaction of the two ( $\beta = .15$ ,  $p < .932$ ) and suicidal ideation.

The third model tested for sequential/serial mediation (Figure 1c), where one ITS mediator preceded the other. Informed by modification indices, a new path was added that situated thwarted belongingness between sexual minority stress and perceived burdensomeness to improve model performance. This final model had excellent global fit,  $CFI = .970$ ;  $RMSEA = .035$ ;  $SRMR = .034$ ;  $\chi^2(55) = 93.798$ ,  $p = .001$ . Sexual minority stress was associated with thwarted belongingness ( $\beta = .32$ ,  $p < .001$ ) and perceived burdensomeness ( $\beta = .23$ ,  $p < .001$ ); thwarted belongingness was associated with perceived burdensomeness ( $\beta = .40$ ,  $p < .001$ ); and

**TABLE 1**  
*Overall Descriptives for Crisis-Service-Engaged LGBTQIA Youth (n = 564)*

	N	%
Age (in years)		
12 – 15	164	29.1
16 – 17	139	24.6
18 – 19	104	18.4
20 – 21	68	12.1
22 – 24	89	15.8
Gender identity		
Male	144	25.5
Female	197	34.9
Transgender male	68	12.1
Transgender female	18	3.2
Genderqueer	50	8.9
Questioning	35	6.2
Gender identity Other/Not listed	52	9.2
Sexual orientation		
Gay	138	24.5
Lesbian	86	15.2
Bisexual	96	17.0
Queer	46	8.2
Pansexual	96	17.0
Questioning	44	7.8
Asexual	31	5.5
Sexual orientation Other/Not listed	27	4.8
Suicidality		
No Suicidal Ideation	187	33.2
Suicide Passive Ideation	70	12.4
Suicide Active Ideation	36	6.4
Suicide Method	35	6.2
Suicide Intent	52	9.2
Suicide Plan	83	14.7
Suicide attempt	101	17.9
	Mean	SD
Minority Stress (SMASI)		
Social Marginalization	14.15	19.14
Family Rejection	44.83	30.11
Internalized Homonegativity	23.72	25.08
Identity Management	41.19	33.82
Homonegative Climate	36.42	32.92
Intersectionality	27.66	34.24
Negative Disclosure Experiences	36.06	29.49
Religion	33.27	27.73
Negative Expectancies	55.94	34.81
Homonegative Communication	73.07	22.31
Interpersonal theory of suicide		
Perceived Burdensomeness	14.74	9.26
Thwarted Belongingness	21.05	7.00

perceived burdensomeness was associated with suicidal ideation ( $\beta = .35, p < .001$ ). This fully mediated model had significant indirect effects of sexual minority stress and suicidal ideation through perceived burdensomeness ( $\beta = .08, p < .001$ ) and through both thwarted belongingness and perceived burdensomeness ( $\beta = .05, p < .001$ ). This final model is shown in Figure 2.

*Suicide Attempt.* The first model tested for parallel mediation (Figure 1a). The model had good global fit (CFI = .929; RMSEA = .043; WRMR = 5.85;  $\chi^2(56) = 113.469, p = .001$ ) but was locally ill-fitting. Sexual minority stress was associated with thwarted belongingness ( $\beta = .34, p < .001$ ), perceived burdensomeness ( $\beta = .37, p < .001$ ), and suicide attempt ( $\beta = .27, p = .001$ ). While perceived burdensomeness was associated with suicide attempt ( $\beta = .25, p < .001$ ), thwarted belongingness was not ( $\beta = .03, p = .660$ ).

The second model tested for moderated mediation (Figure 1b). Similar to the suicidal ideation model, this had poor global fit (CFI = .487; RMSEA = .079; WRMR = 15.945;  $\chi^2(67) = 300.305, p = .001$ ). While sexual minority stress was significantly related to the interaction effect of thwarted belongingness and perceived burdensomeness ( $\beta = .51, p < .001$ ), the interaction was not associated with suicide attempt ( $\beta = .07, p = .430$ ).

The third model tested for sequential/serial mediation (Figure 1c). The model had good global fit: CFI = .931; RMSEA = .042; WRMR = 5.812;  $\chi^2(55) = 110.999, p < .001$ . Sexual minority stress was associated with thwarted belongingness ( $\beta = .34, p < .001$ ), perceived burdensomeness ( $\beta = .23, p < .001$ ), and suicide attempt ( $\beta = .30, p < .001$ ). Thwarted belongingness was associated with perceived burdensomeness ( $\beta = .41, p < .001$ ), and perceived burdensomeness was associated with suicide attempt ( $\beta = .29, p < .001$ ). Within this partial mediation model, we found significant indirect effects of sexual minority stress and suicide attempt through perceived burdensomeness ( $\beta = .07, p = .001$ ) and through

**TABLE 2**  
*Correlation Matrix for the Relationships Between Different Facets of Sexual Minority Stress, ITS Factors, and Suicide-Related Outcomes*

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Suicidal Ideation <sup>a</sup>	-												
2. Suicide Attempt <sup>b</sup>	.446***	-											
3. Social Marginalization <sup>a</sup>	.089*	.226***	-										
4. Family Rejection <sup>a</sup>	.116**	.194***	.283***	-									
5. Internalized Homonegativity <sup>a</sup>	.102*	.049	.095*	.132**	-								
6. Identity Management <sup>a</sup>	.031	.110*	.046	.061	.357***	-							
7. Homonegative Climate <sup>a</sup>	.132**	.269***	.444***	.257***	.117**	.076	-						
8. Intersectionality <sup>a</sup>	.077	.129*	.290***	.281***	.090*	.069	.186***	-					
9. Negative Disclosure Experiences <sup>a</sup>	.119*	.188***	.328***	.441***	.038	-.004	.298***	.138**	-				
10. Religion <sup>a</sup>	.088*	.066	.238***	.494***	.204***	.049	.196***	.227***	.247***	-			
11. Negative Expectancies <sup>a</sup>	.116**	.118*	.238***	.302***	.389***	.203***	.310***	.200***	.076	.204***	-		
12. Homonegative Communication <sup>a</sup>	.151***	.168**	.309***	.357***	.216***	.186***	.300***	.292***	.252***	.315***	.299***	-	
13. Thwarted Belongingness <sup>a</sup>	.224***	.126*	.182***	.175***	.153***	.119**	.166***	.139**	.047	.119**	.252***	.187***	-
14. Perceived Burdensomeness <sup>a</sup>	.396***	.284***	.186***	.253***	.103*	.057	.172***	.188***	.135**	.116**	.213***	.204***	.477***

<sup>a</sup>Correlation.

<sup>b</sup>Point biserial correlation.

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



both thwarted belongingness and perceived burdensomeness ( $\beta = .04, p = .001$ ), with a significant direct effect persisting between minority stress and suicide attempt ( $\beta = .30, p < .001$ ). This final model can be found in Figure 3.

**DISCUSSION**

The present study explored the viability of a model integrating MST and ITS constructs for understanding suicidal ideation and suicide attempts among SMY. The major

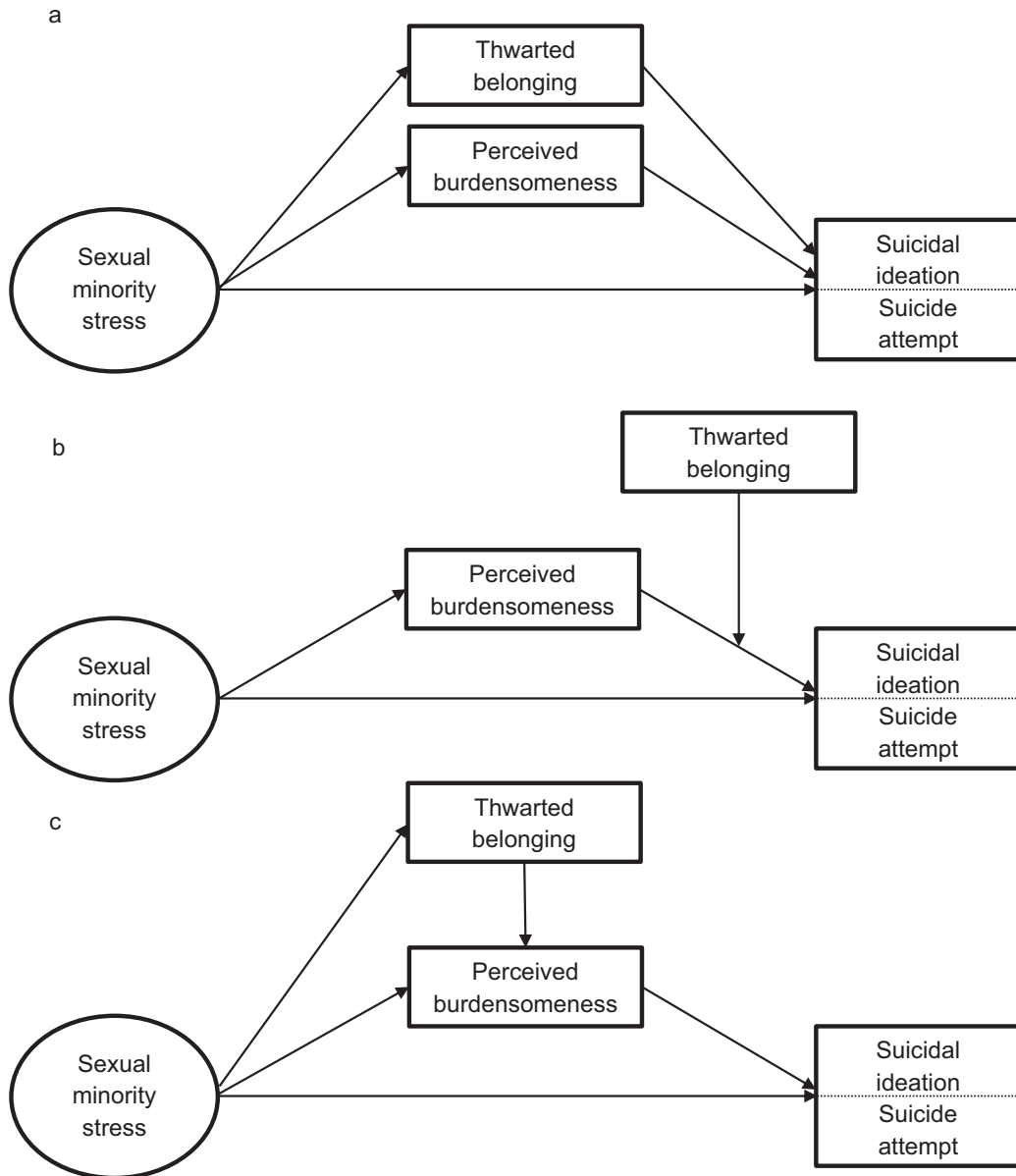


Figure 1. Three competing conceptual mediation models to describe relationships between minority stress, ITS factors (i.e., thwarted belongingness/perceived burdensomeness), and suicide-related outcomes (i.e., suicidal ideation/suicide attempt). *1a.* Parallel mediation. *1b.* Moderated mediation. *1c.* Serial mediation.

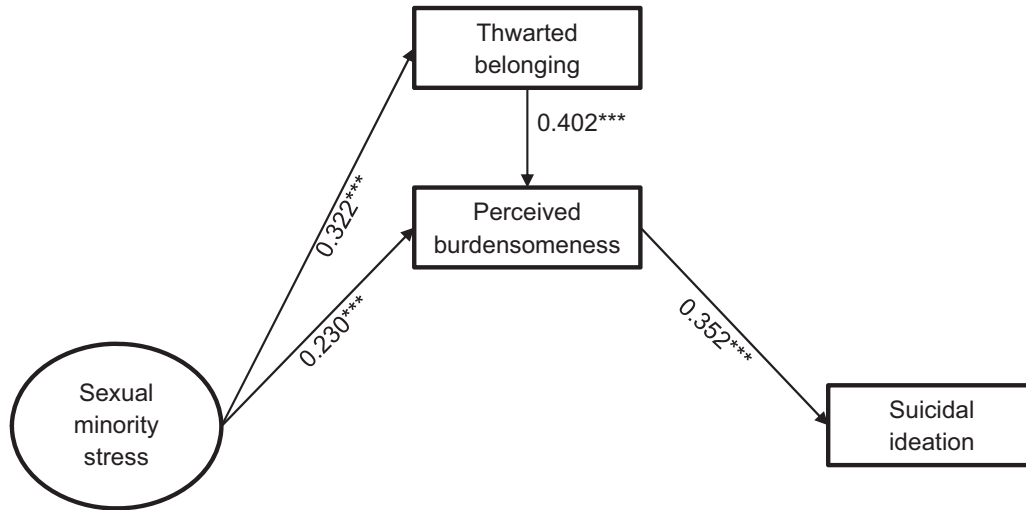


Figure 2. Final path model of the relationship of sexual minority stress, thwarted belonging, perceived burdensomeness, and suicidal ideation. Note. \*\*\* $p < .001$ .

takeaways from our study were that sexual minority stress was significantly associated with both perceived burdensomeness and thwarted belongingness. Additionally, sexual minority stress was found to have a direct effect on suicide attempt and an indirect effect on both suicide-related outcomes that operated through ITS factors.

Consistent with our hypotheses and in line with previous research, we found that minority stress was associated with thwarted belongingness, perceived burdensomeness, and suicide attempts. Research testing MST has linked greater exposure to different minority stress experiences with suicidal ideation and suicide attempts (e.g., Lea et al.,

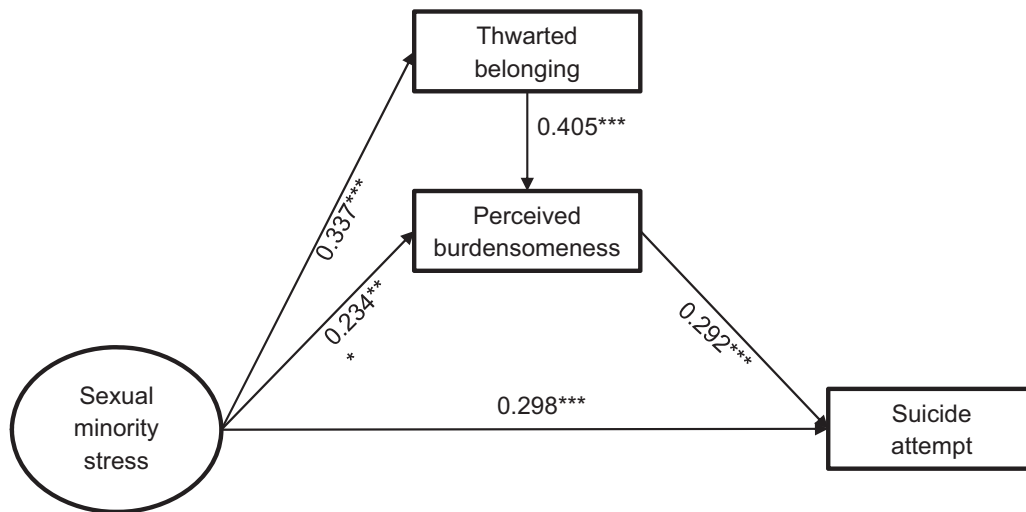


Figure 3. Final path model of the relationship of sexual minority stress, thwarted belonging, perceived burdensomeness, and suicide attempt. Note. \*\* $p < .01$ ; \*\*\* $p < .001$ .

2014; Meyer et al., 2015). Additionally, certain aspects of minority stress, such as sexual orientation victimization, have been correlated with perceived burdensomeness (Baams et al., 2015) and thwarted belongingness (Plöderl et al., 2014). Our finding that minority stress has a direct effect on suicide attempt raises the importance of addressing sexual minority stress in suicide prevention initiatives for LGBT young people. Thankfully, there is some guidance on ways to target sexual minority stress in the context of microlevel clinical practice with individuals and macrolevel practice with communities (e.g., schools, state, national strategies; Chaudoir, Wang, & Pachankis, 2017). For example, Alessi (2014) outlined an LGB-affirmative treatment approach that included clinical recommendations for sexual minority stress assessment and intervention. Toomey, Ryan, Diaz, and Russell (2018) have identified multiple coping strategies for sexual minority stress that are related to better psychosocial outcomes. That suicide risk disparities based on sexual minority status may be nearly eliminated in places with positive school climates (Hatzenbuehler et al., 2014) provides direction for macrostrategies that can include the development of safe spaces and gay-straight alliances. Given that SMY youth may prefer (Goldbach et al., 2018), but be unable to locate, LGBT-specific mental health services in the community (Haas et al., 2010), our finding also points to the added value of continuing education that focuses on working with sexual minority populations and population-specific services (e.g., The Trevor Project, 2018).

Another finding that aligned with our expectations involved the central role of burdensomeness in the suicidality process among SMY. Specifically, higher burdensomeness was associated with more severe suicidal ideation and an increased likelihood of suicide attempt. Moreover, burdensomeness was the most proximal mediator in *both* pathways from sexual minority stress to suicidal ideation and suicide attempt. This is congruent with the ITS premise that distal risk factors exert influence on suicide through proximal

ITS constructs, including perceived burdensomeness (Van Orden et al., 2010). Moreover, it is supported by prior work showing that perceived burdensomeness mediated the relationship between sexual orientation victimization and level of rejection and suicidal ideation (Baams et al., 2015; Hill & Pettit, 2012). Therefore, suicide prevention programming that is designed for SMY should prioritize the assessment and remediation of perceived burdensomeness (e.g., Woodward, Wingate, Gray, & Panalone, 2014). The good news is that brief assessment tools exist to measure burdensomeness (e.g., Interpersonal Needs Questionnaire; Hill et al., 2015) and new interventions show promising results for reducing burdensomeness (Hill & Pettit, 2016) and, in turn, suicidal ideation (Allan, Boffa, Raines, & Schmidt, 2018). Notably, efforts to target burdensomeness may be especially useful among SMY, who may be more forthcoming about their perceptions of burden than about their sexual minority stress or suicide-related experiences (e.g., Podlogar et al., 2016).

The results pertaining to thwarted belongingness were unexpected but nonetheless interesting in the context of work with SMY. Our findings were unexpected in the sense that they were inconsistent with ITS tenets—thwarted belongingness was not found to be directly associated with suicidal ideation or suicide attempts. Our findings were interesting in that we observed a novel pathway to suicidal ideation and attempts that situated thwarted belongingness *between* minority stress and perceived burdensomeness. This is a critical point because it serves as a reminder not to discount the relevance of thwarted belongingness, particularly among SMY who face societal inequities that systematically thwart them. It is also a logical serial pathway when thinking about the pressures faced by SMY during the coming out process. Many SMY want nothing more than to be socially accepted but often find themselves ostracized for their identity, which may provoke feelings of being a burden to others. Importantly, this pathway also suggests that we can prevent some SMY from suffering

painful experiences of burdensomeness by figuring out ways to meet their belongingness needs (e.g., Hatzenbuehler et al., 2014). Notably, our findings are not at odds with extant empirical work either; the majority of studies in a recent systematic review failed to demonstrate a significant relationship between thwarted belongingness and suicidal ideation as well as suicide attempts but they overwhelmingly focused on *direct* effects (Ma et al., 2016).

Two additional features of our study deserve consideration. First, our study examined competing model configurations for the integration of MST and ITS with respect to multiple suicide-related outcomes. This has been done in other public health work (e.g., Jones et al., 2015) but is distinct from prior MST-ITS integration studies that focus on a single mediation configuration and outcome; researchers have most frequently used parallel mediation when integrating ITS with any minority stress theory (Baams et al., 2015; Muehlenkamp, Hilt, Ehlinger, & McMillan 2015; Testa et al., 2017) and focused on suicidal ideation (Baams et al., 2015; Hill & Pettit, 2012; Testa et al., 2017). Interestingly, we showed that a model with a sequential or serial configuration outperformed parallel and moderated mediation models. Moreover, the model with sequential configuration best explained suicidal ideation *and* suicide attempts. The stability of the model across outcomes adds strength to our conclusions. Notably, the effect of sexual minority stress on suicidal ideation was fully mediated by ITS factors but the effect on suicide attempt was only partially mediated by them. In other words, sexual minority stress was found to have a direct effect on suicide attempt but not suicidal ideation. Minority stress may exert an independent influence on suicide attempt but it is also reasonable to wonder whether an omitted third variable (e.g., such as capability for suicide, which is viewed as uniquely influential with respect suicide attempts) might explain this relationship. Second, our study used a comprehensive measure of minority stress. The consequences of a narrow conceptualization of minority stress (i.e., measuring

one or two facets) can be serious, in that the resulting models may be underspecified. This is particularly true because minority stress domains are often correlated with one another and with mental health outcomes, which raises the threat of omitted variable bias. Therefore, we believe the breadth of our minority stress measure permits greater confidence in our findings than other laudable but more limited interrogations of minority stress, such as with sexual orientation rejection (Hill & Pettit, 2012), disclosure stress, and victimization (Baams et al., 2015).

### LIMITATIONS

Our study had several limitations to be considered when contextualizing our findings. First, our study was restricted to a sample of SMY recruited through a single national suicide prevention crisis service provider, which constrains the generalizability of our results. It is particularly important to remember that our results may not generalize to transgender and gender diverse youth (TGDY); although the majority of our sexual minority stress items are likely to be applicable to TGDY, our measure does not fully account for unique stressors that TGDY experience (such as stress related to access to bathrooms and hormones). Second, the cross-sectional nature of our study did not allow us to establish causality between minority stress and suicide. Although we believe the directionality from minority stress to suicide to be a sensible model configuration—particularly for an inceptive suicidal event—the experience of suicidality is often stigmatized (Fulginiti & Frey, 2018), which may then exacerbate the sense of marginalization related to sexual minority status. Relatedly, our variable time frames (lifetime minority stress/suicide and current ITS measures) further complicate our ability to discern temporal sequence in the mediation models; importantly, other work that uses more ideal time frames (lifetime minority stress and current ITS/suicide measures) supports the same temporal sequence (e.g., Baams et al., 2015).

Fourth, although cross-sectional tests of mediation, including serial mediation, are common (e.g., Marshal et al., 2011; Tripp & McDevitt-Murphy, 2017), it is important to keep in mind that such tests can generate biased parameter estimates of true longitudinal processes (Maxwell & Cole, 2007); this introduces uncertainty about whether the patterns of direct and indirect effects that we observed (including variable sequencing) will hold over time—a limitation that we share with prior MST-ITS integration work (Baams et al., 2015; Hill & Pettit, 2012; Velkoff et al., 2016). Fifth, we assessed suicide attempt with a single self-report item, which can lead to misclassification (i.e., people without a history of suicide attempt classified as attempt survivors or vice versa) and may result in Type I and Type II errors (Millner, Lee, & Nock, 2015). Lastly, we did not assess capability for suicide (i.e., the third major ITS construct; Van Orden et al., 2010) or interpersonal hopelessness (i.e., Tucker et al., 2018). As a result, our models do not constitute a complete test of MST-ITS theory integration and thus may be underspecified. Based on ITS propositions, capability may be particularly germane for the attempt model and interpersonal hopelessness for the ideation model. Relatedly, a different model configuration may better explain suicidal ideation and attempt if those constructs were included.

#### FUTURE DIRECTIONS

Many prospects exist for advancing work on minority stress and suicide. The most obvious direction is to test MST-ITS integration using *all* important ITS components, including capability—which holds special relevance for suicide attempt modeling—and interpersonal hopelessness; at this point, it is feasible to do so because an interpersonal hopelessness measure was recently developed (Tucker et al., 2018). Although our concerns about model complexity and related issues (e.g., suppression) precluded us from

conducting additional domain-specific analyses (i.e., simultaneous independent modeling of all 10 minority stress domains), it may be beneficial to conduct a larger scale study to understand their relative effects. Basically, a larger sample size tends to increase variability in the model, which can offset problems, such as suppression, that can arise from high amounts of shared variance between the subscales. Perhaps combining the strengths of the present study (i.e., more inclusive minority stress measure) and the meritorious work that preceded it (i.e., domain-specific analyses; Baams et al., 2015; Hill & Pettit, 2012; Velkoff et al., 2016) will further elucidate the ways that minority stress affects suicide. Longitudinal work will allow for disentangling causal processes between minority stress, perceived burdensomeness, thwarted belongingness, and different suicide-related outcomes (e.g., ideation, attempt, death); this will also help to address the aforementioned issues related to potentially biased parameter estimates and variable sequencing that are inherent to mediation tests in cross-sectional research. Also, there is value in determining how well this integrated model predicts the transition from suicidal ideation to behavior (Klonsky & May, 2014). Given that many sexual minority youth face additional disadvantage for their other identities (e.g., gender nonconformity; person of color), theory integration studies need to be performed with youth that possess different intersecting identities. Another simple next step could be to conduct theory integration studies using more robust suicide attempt measures (i.e., multi-item measures) that include a clear suicide attempt definition to decrease the likelihood of making statistical errors (Millner et al., 2015). Lastly, MST is the most well-established theory for understanding the impact of minority stress on suicide but it is by no means the only theory. Future studies should continue exploring the integration of alternative theories of minority stress with the ITS; for example, Hatzenbuehler (2009) is a promising model that is worthy of further investigation.

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