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Testing the interpersonal theory of suicide in a sample of sexual minority young adults: Attention to within-group differences

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Abstract

Introduction: This study investigated demographic differences in interpersonal theory of suicide factors and their associations with suicide attempts among sexual minority young adults.

Methods: 784 sexual minority young adults ages 18–29 (42.7% cisgender men, 42.2% cisgender women, 15.1% transgender/gender diverse; 62.2% non-Hispanic White; 50.5% gay/lesbian, 49.5% bisexual+) completed an online survey assessing lifetime suicide attempts and interpersonal theory of suicide factors.

Results: Demographic differences included (1) greater perceived burdensomeness among transgender/gender diverse participants compared to other gender groups; (2) greater acquired capability for suicide and suicide attempts among cisgender men compared to cisgender women; (3) greater acquired capability for suicide among bisexual+ compared to gay/lesbian participants; and (4) a lower number of suicide attempts among Asian/Asian American sexual minority participants compared to most other sexual minority participants. All interpersonal theory of suicide factors were significantly associated with a higher number of suicide attempts, though only perceived burdensomeness and acquired capability for suicide remained significant when examining all three simultaneously. No two- or three-way interactions between interpersonal theory of suicide factors were significant.

Conclusion: The interpersonal theory of suicide may be useful for understanding suicide attempts in this population, with perceived burdensomeness and acquired capability being particularly relevant to consider.

KEYWORDS

interpersonal theory of suicide, LGB, sexual minority, suicide

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INTRODUCTION

Suicide is the second leading cause of death among adolescents and young adults (Center for Disease Control and Prevention, 2017). For sexual minority (e.g., lesbian, gay, and bisexual) people, the risk for suicide is even higher. Specifically, sexual minority people are two-to-four times more likely to attempt suicide compared to heterosexual people (Hottes et al., 2016; King et al., 2008; Marshal et al., 2011; Plöderl & Tremblay, 2015). According to a recent systematic review and meta-analysis, approximately one in five lesbian, gay, and bisexual adults have attempted suicide in their lifetime (Hottes et al., 2016). Furthermore, 31% of sexual minority young adults aged 18–25 have attempted suicide (Williams Institute, 2021). These staggering numbers suggest that suicide is a major public health crisis among sexual minority young adults, and understanding how suicide risk develops in sexual minority populations is imperative for addressing this problem. Compared to research on suicide risk in the general population, relatively few studies have examined risk factors related to suicide attempt (e.g., perceived burdensomeness, thwarted belongingness, and acquired capability of suicide) among sexual minority people, especially at the intersections of sexual orientation, gender identity, race, and ethnicity.

The interpersonal theory of suicide, developed by Joiner (2005), is one of the most well-studied frameworks for understanding suicidal thoughts and behaviors. According to the interpersonal theory of suicide, there are four factors that make individuals more likely to engage in suicidal behavior: (1) perceived burdensomeness, or a view that one's existence burdens family, friends, and/or society; (2) thwarted belongingness, or a feeling of loneliness and lack of reciprocal care; (3) acquired capability for suicide, or a decreased fear of death and increased tolerance for physical pain; and (4) hopelessness about the immutable nature of perceived burdensomeness and thwarted belongingness (Chu et al., 2017; Tucker et al., 2018). According to the theory, suicidal desire occurs when one experiences perceived burdensomeness and thwarted belongingness and experiences them as stable and unchanging. When individuals experience suicidal desire in the presence of acquired capability, they may act on this desire by attempting suicide. The theory has received substantial empirical support in the general population (e.g., Christensen et al., 2013), including meta-analytic support (Chu et al., 2017). In particular, this meta-analysis found that the interaction between thwarted belongingness and perceived burdensomeness (i.e., higher levels of both factors) was associated with greater suicidal ideation, and the interaction between all three factors (i.e., higher levels of all three factors) was significantly related to more prior suicide attempts (Chu et al., 2017). However, there

are several studies that did not find support for predictions of the theory (Christensen et al., 2013; Ribeiro et al., 2021; Wolford-Clevenger et al., 2017). Understanding for whom and in what contexts this theory is most relevant is critical for refining suicide prevention interventions to be more targeted and theory-driven.

The constructs outlined by the interpersonal theory of suicide may be particularly relevant for sexual minority people. Sexual minority people may experience perceived burdensomeness as a result of discrimination and rejection from family and peers, resulting in a belief that one is a burden on others or society (Pate & Anestis, 2020). Similarly, feelings of thwarted belongingness may arise due to being excluded by others and consequently feeling disconnected from one's community (Pate & Anestis, 2020). Sexual minority people may be more likely to experience these risk factors as immutable given societal contributors. Lastly, they may be more likely to experience acquired capability for suicide, as they are more likely to experience the types of events (e.g., physical abuse, combat exposure, and past self-injurious behavior) that tend to lower one's fear of death (Batejan et al., 2015; Friedman et al., 2011; Lehavot & Simpson, 2014). The extent to which each of these risk factors, individually and combined, is associated with suicide attempt risk is particularly important during young adulthood, a period in which sexual orientation disparities in certain mental health outcomes, including depression and anxiety, are greatest (Rice et al., 2019). Young adulthood is thought to be a period of higher risk due to the stress of "coming out" and residual consequences of school-based victimization from childhood (Rice et al., 2019).

A growing body of research has examined the interpersonal theory of suicide for understanding how suicidal thoughts and behavior develop among sexual minority people. These studies have primarily focused on suicidal ideation as an outcome, demonstrating that either perceived burdensomeness (Baams et al., 2015, 2018; Hill & Pettit, 2012; Silva et al., 2015; Woodward et al., 2014) or both perceived burdensomeness and thwarted belongingness (Chang et al., 2021, 2022; Fulginiti et al., 2020; Pate & Anestis, 2020; Plöderl et al., 2014; Wolford-Clevenger et al., 2020) are associated with suicidal ideation. Several of these studies also provide evidence that minority stress (e.g., discrimination) is associated with greater perceived burdensomeness and/or thwarted belongingness (Baams et al., 2015, 2018; Chang et al., 2022; Fulginiti et al., 2020; Hill & Pettit, 2012; Salentine et al., 2020). This growing body of research suggests that the constructs outlined by the interpersonal theory of suicide may be especially relevant to understanding how suicidal ideation develops among sexual minority people. Of these, only a small handful focus on sexual minority young adults (Chang et al., 2022; Hill & Pettit, 2012; Silva et al., 2015).

However, much less research has investigated acquired capability for suicide or examined the theory in relation to suicidal *behavior*, which is rarer and more closely tied to actual death by suicide than suicidal ideation alone (Klonsky et al., 2016). To date, only three studies have examined the interpersonal theory of suicide in relation to suicidal behavior among sexual minority people. One study found that neither perceived burdensomeness nor thwarted belongingness mediated the relationships between discrimination and suicide ideation and attempts among sexual and gender minority youth (Wyman Battalen et al., 2021), though they did not examine acquired capability. In addition, a study of Bavarian sexual minority adults found that those who had attempted suicide reported higher perceived burdensomeness, thwarted belongingness, and acquired capability for suicide compared to those who had not (Plöderl et al., 2014). The relationship between acquired capability and suicide attempts may be further elucidated through qualitative data, which suggests that sexual and gender minority people may acquire capacity for suicide through identity invalidation during sensitive developmental periods, normalization of suicide in sexual and gender minority networks, and structural stigma and community trauma as habituating sources of pain (Clark et al., 2022). However, this study had a small sample size and included adults of all ages, despite risk varying across age (Rice et al., 2019). Therefore, it remains unknown to what extent the interpersonal theory of suicide can be generalized to understanding suicide attempt among sexual minority young people.

Finally, while there is a general need for additional research on the interpersonal theory of suicide in relation to suicide attempt in sexual minority samples, there is a particular need for research that attends to the diversity of the sexual minority population by examining potential differences in suicide attempt and risk factors across specific sexual identities as well as intersecting identities. With respect to sexual identity, ample research suggests that bisexual individuals exhibit elevated suicide risk compared to gay/lesbian individuals (Salway et al., 2019). This disparity is often attributed to bisexual-specific stressors, including unique forms of prejudice and discrimination from both heterosexual and gay/lesbian communities (Hayfield, 2020). Furthermore, intersectionality theory acknowledges that identities are dynamic and mutually influential (Crenshaw, 1991). Because of this, individuals who hold multiple minoritized identities have unique experiences that are distinct from those who hold only one minoritized identity (e.g., intersectional minority stress) (Cyrus, 2017). Therefore, it is important to consider how one's sexual minority identity intersects with other aspects of one's identity (e.g., gender, race, and ethnicity).

Prior research points to possible gender and racial and ethnic differences in suicide attempts and risk factors among sexual minority people. Specifically, transgender/gender diverse individuals consistently demonstrate elevated rates of suicide attempts compared to cisgender individuals (Marshall et al., 2016). Furthermore, prior research has found that perceived burdensomeness and thwarted belongingness were higher for transgender/gender diverse youth compared to cisgender sexual minority youth (Chang et al., 2021) and for individuals whose gender identity was neither male nor female compared to individuals whose gender identity was (Pate & Anestis, 2020). Past research has also found greater levels of acquired capability for men compared to women and nonbinary people (Pate & Anestis, 2020). With regard to race and ethnicity, White sexual minority adults demonstrate elevated rates of suicide attempt not only compared to White heterosexual adults, but also compared to Black and Hispanic adults of all sexual orientations during early adulthood (Layland et al., 2020). Findings are equivocal as to whether there are racial and ethnic differences in perceived burdensomeness and thwarted belongingness among sexual minority people. One study found that heterosexual and sexual minority individuals who identified as a race other than White or Black/African American reported greater perceived burdensomeness and thwarted belongingness than those who identified as one of those two races (Pate & Anestis, 2020), but another study found that race and ethnicity were not significantly associated with these constructs (Chang et al., 2022).

To address these existing gaps, the current study aimed to examine the interpersonal theory of suicide in relation to suicide attempts in a sample of sexual minority young adults. Specifically, we examined (1) whether the number of suicide attempts, and levels of perceived burdensomeness, thwarted belongingness, and acquired capability for suicide varied by gender, sexual orientation, and race and ethnicity in this population; (2) whether interpersonal theory of suicide risk factors was associated with number of suicide attempts when examined independently and simultaneously; and (3) whether interpersonal theory of suicide factors interacted with one another in relation to number of suicide attempts. Based on past research, we hypothesized that transgender/gender diverse sexual minority young adults would report greater perceived burdensomeness, thwarted belongingness, acquired capability for suicide, and suicide attempts compared to cisgender counterparts, and that bisexual+ (e.g., bisexual, pansexual, and queer) participants would report more suicide attempts and greater perceived burdensomeness, thwarted belongingness, and acquired capability compared to gay/lesbian participants. We did not have *a priori* hypotheses regarding race and ethnicity due to mixed findings in the literature. We also hypothesized that greater perceived

burdensomeness, thwarted belongingness, and acquired capability for suicide would be significantly associated with more suicide attempts, and that all two- and three-way interactions between the three risk factors would be associated with number of suicide attempts (with higher levels of two or three factors being associated with more suicide attempts).

METHODS

Procedures

The present study used baseline data from an online longitudinal study on suicide risk among sexual minority young adults (Chang et al., 2022), approved by the Institutional Review Board at Rutgers University. Participants were recruited online through Prolific (Palan & Schitter, 2018), which employs data quality protections so participants cannot change their demographic information to meet eligibility criteria and has more equitable payment practices than other online research platforms (Palan & Schitter, 2018). The study was titled “Stress and Mental Health in Sexual Minority Young Adults,” and there were no requirements based on suicide risk. Participants were required to be 18–29 years old; identify as gay, lesbian, or bisexual; live in the United States; and be able to read English. Data collection occurred between January and November of 2020.

After providing informed consent, participants completed a 30-min self-report battery of questionnaires via Qualtrics. One and two months after baseline, participants were re-contacted for an abbreviated 15-min survey and then an abbreviated 5-min survey, respectively. Participants were compensated \$3.25 for the baseline assessment, \$1.62 for the one-month follow-up assessment, and \$0.54 for the two-month follow-up assessment, as well as a \$1.00 bonus incentive for completing all time points. Few suicide attempts were reported at follow-up assessments, so we examined baseline levels of risk factors in relation to lifetime suicide attempts reported at baseline.

Participants

At baseline, 1006 individuals completed the survey, with 214 individuals excluded due to duplicate entries, failed attention checks, and/or not meeting eligibility criteria. In addition, we removed an additional eight participants who selected a race and ethnicity category that was not listed because there were too few people in that group for analyses. The final analytic sample included 784 participants, who were English-speaking sexual minority young adults ages 18–29 ($M = 23.17$, $SD = 3.20$) and residing in the

United States. Pre-screening procedures were employed to ensure even proportions of lesbian/gay and bisexual+ (bisexual, pansexual, queer, fluid) individuals, as well as even proportions of cisgender men, cisgender women, and transgender/gender diverse individuals within each subgroup. As a result, 50.5% the analytic sample identified as gay or lesbian ($n = 396$) and 49.5% identified as bisexual+ ($n = 388$). A total of 42.7% of participants were cisgender men ($n = 335$), 42.2% were cisgender women ($n = 331$), and 15.1% were transgender/gender diverse ($n = 118$). The most commonly reported race and ethnicity was non-Latinx White (61.2%, $n = 488$). Full demographic characteristics are presented in Table 1.

Measures

Demographics

Participants self-reported age, sex assigned at birth, gender identity, sexual orientation, race, and ethnicity. Responses are presented in Table 2.

Thwarted belongingness and perceived burdensomeness

The Interpersonal Needs Questionnaire (INQ; Van Orden et al., 2012) is a 15-item measure used to assess

TABLE 1 Description of sample demographics ($N = 784$).

| Demographic characteristic | <i>N</i> | % |
|---------------------------------|----------|------|
| Gender ^a | | |
| Cisgender Man | 335 | 42.7 |
| Cisgender Woman | 331 | 42.2 |
| Transgender/Gender Diverse | 118 | 15.1 |
| Sexual orientation | | |
| Gay or Lesbian | 396 | 50.5 |
| Bisexual+ | 388 | 49.5 |
| Race and Ethnicity ^b | | |
| Asian | 78 | 9.9 |
| Black or African American | 64 | 8.2 |
| White | 488 | 62.2 |
| Latinx | 97 | 12.4 |
| Biracial/Multiracial | 57 | 7.3 |

^aParticipants were asked about their sex assigned at birth and gender identity, and responses were used to create three categories (cisgender women, cisgender men, and transgender/gender diverse).

^bIndividuals who identified as Latino/Latina/Latinx were categorized as such (regardless of race), and non-Latinx individuals who selected multiple response options were categorized as “Biracial/Multiracial.”

TABLE 2 Means and standard deviations for variables of interest for the total sample and disaggregated by demographics.

| | Perceived burdensomeness | Thwarted belongingness | Acquired capability for suicide | Suicide attempts |
|--|-----------------------------|----------------------------|------------------------------------|----------------------------------|
| | <i>M (SD) or F</i> | <i>M (SD) or F</i> | <i>M (SD) or F</i> | <i>M (SD) or Wald Chi Square</i> |
| Total Sample | 14.33 (9.09) | 32.10 (12.70) | 14.69 (6.99) | 0.60 (1.55) |
| Gender | $F(2781) = 5.81, p = 0.003$ | $F(2781) = 0.60, p = 0.55$ | $F(2781) = 5.09, p = 0.006$ | $WCS = 26.64, p < 0.001$ |
| Cisgender Man | 13.52 (8.69) ^a | 32.01 (12.27) ^a | 15.60 (6.83) ^a | 0.39 (1.11) ^a |
| Cisgender Woman | 14.25 (9.32) ^a | 31.78 (13.40) ^a | 14.04 (7.09) ^b | 0.77 (1.93) ^b |
| Transgender/Gender Diverse | 16.81 (9.17) ^b | 33.25 (11.90) ^a | 13.90 (6.94) ^{a,b} | 0.70 (1.39) ^b |
| Sexual Orientation | $F(1782) = 2.60, p = 0.11$ | $F(1782) = 5.83, p = 0.02$ | $F(1782) < 0.001, p > 0.99$ | $WCS = 0.33, p = 0.56$ |
| Gay or Lesbian | 13.81 (9.02) ^a | 32.10 (12.90) ^a | 14.09 (6.79) ^a | 0.58 (1.34) ^a |
| Bisexual, Pansexual, or other Plurisexual | 14.85 (9.15) ^a | 32.10 (12.51) ^a | 15.29 (7.15) ^b | 0.62 (1.74) ^a |
| Race/Ethnicity | $F(4779) = 3.02, p = 0.02$ | $F(4779) = 2.84, p = 0.02$ | $F(4779) = 1.17, p = 0.32$ | $WCS = 7.28, p = 0.12$ |
| Asian | 15.97 (9.07) ^a | 34.33 (12.43) ^a | 15.86 (6.19) ^a | 0.37 (1.33) ^a |
| Black or African American | 16.06 (11.54) ^a | 33.58 (13.02) ^a | 15.20 (7.53) ^a | 0.48 (0.98) ^b |
| White | 13.55 (8.65) ^a | 30.95 (12.56) ^a | 14.30 (7.13) ^a | 0.62 (1.70) ^b |
| Latinx | 16.02 (9.90) ^a | 34.57 (12.82) ^a | 15.25 (6.82) ^a | 0.67 (1.34) ^b |
| Biracial/Multiracial | 13.84 (7.55) ^a | 33.05 (12.90) ^a | 14.83 (6.40) ^a | 0.72 (1.40) ^{a,b} |

Note: Skewness and kurtosis fell within normal ranges for all variables except suicide attempts, which had a skew of 5.23 (0.09) and kurtosis of 42.34 (0.17). Therefore, the suicide attempt variable was treated as a count variable in analyses with a negative binomial distribution. Superscript letters are used to denote whether gender identity, sexual orientation, and race and ethnicity subgroups significantly differed from one another, with different letters indicating a significant difference ($p < 0.05$).

thwarted belongingness and perceived burdensomeness. Respondents were asked to rate items assessing perceived burdensomeness (e.g., “These days, people in my life would be better off if I were gone”) and thwarted belongingness (e.g., “These days, I often feel like an outsider in social gatherings”) on a 7-point Likert scale ranging from “Not at all true for me” to “Very true for me.” Subscale scores were calculated by summing the responses to items for each subscale, with higher values indicating greater perceived burdensomeness or thwarted belongingness. Both perceived burdensomeness and thwarted belongingness subscales demonstrated excellent internal consistency in our sample ($\alpha = 0.94$ and 0.91 , respectively).

Acquired capability

Acquired capability was assessed using the Acquired Capability for Suicide Scale—Fearlessness About Death (ACSS-FAD; Ribeiro et al., 2014). The ACSS-FAD is a 7-item measure that assesses fearlessness about death, a central aspect of acquired capability for suicide. Respondents are asked to rate items (e.g., “I am not at all

afraid to die”) on a scale from 0 (“Not at all like me”) to 4 (“Very much like me”). A total score is calculated by summing item scores, with higher scores indicating greater acquired capability. The ACSS-FAD demonstrated good internal consistency in our sample ($\alpha = 0.86$).

Suicide attempts

A self-report version of the Self-Injurious Thoughts and Behaviors Interview (SITBI-SF; Nock et al., 2007) was used to assess number of lifetime suicide attempts. First, participants were asked, “Have you ever made an actual attempt to kill yourself in which you had at least some intent to die?” (yes or no). Participants who selected yes were asked, “How many suicide attempts have you made in your lifetime?” For this item, individuals who reported that they had never made a suicide attempt were coded as having zero attempts in their lifetime. The SITBI-SF has demonstrated strong interrater reliability (average kappa = 0.99, $r = 1.0$) and test–retest reliability (average kappa = 0.70, intraclass correlation coefficient = 0.44), as well as strong concurrent validity via strong correspondence with measures of suicide attempt (kappa = 0.65),

suicidal ideation (average kappa = 0.54), and NSSI (average kappa = 0.87; Nock et al., 2007).

Analytic strategy

Analyses were conducted using SPSS Statistics 23. There were no missing data for any of the variables included in the analyses. Skewness and kurtosis fell within normal ranges for all variables except suicide attempts, which had a skew of 5.23 (0.09) and kurtosis of 42.34 (0.17). Therefore, the suicide attempt variable was treated as a count variable in analyses with a negative binomial distribution. First, we examined the associations between demographic characteristics (gender identity, sexual orientation, and race and ethnicity) and our primary variables of interest (perceived burdensomeness, thwarted belongingness, acquired capability, and suicide attempts). To test for demographic differences in continuous variables (perceived burdensomeness, thwarted belongingness, and acquired capability), we used one-way analysis of variance (ANOVA) tests for gender identity, sexual orientation, and race and ethnicity. To test for demographic differences in suicide attempts (a count outcome), we used generalized linear regression with a negative binomial distribution. For these analyses, groups were gender identity (cisgender men, cisgender women, transgender/gender diverse individuals), sexual orientation (gay/lesbian, bisexual+), and race and ethnicity (Asian/Asian American, Black or African American, White, Latinx, Biracial/Multiracial). These variables were then dummy-coded, with reference categories of cisgender men (for gender identity), heterosexual (for sexual orientation), and Asian/Asian American (for race and ethnicity). We calculated estimated marginal means with pairwise comparisons.

Next, we examined associations between perceived burdensomeness, thwarted belongingness, acquired capability, and suicide attempts using generalized linear regression with a negative binomial distribution and log link function, controlling for age, gender identity, sexual orientation, and race and ethnicity. These models were first examined with each factor entered separately and then simultaneously in the same model. Finally, we examined all of the two- and three-way interactions between perceived burdensomeness, thwarted belongingness, and acquired capability as predictors of suicide attempts. In all generalized models, relative risk ratios (RRs) are reported as the effect size to indicate the relative risk in the outcome relative to either the reference group or a one-unit increase in a continuous variable.

The data that support the findings of this study are available from the corresponding author upon reasonable request.

RESULTS

Demographic differences in the interpersonal theory of suicide factors

A total of 25.4% of the sample ($n = 199$) had ever attempted suicide. Of those who reported at least one attempt, the mean number of attempts was 2.36 ($SD = 2.32$, median = 1).

Means and standard deviations for variables of interest are presented in Table 1, both for the full sample and disaggregated by demographic variables, including comparison statistics. There were several differences in interpersonal theory of suicide factors. Gender identity was associated with perceived burdensomeness and acquired capability but not with thwarted belongingness. Specifically, transgender/gender diverse individuals reported greater perceived burdensomeness than cisgender men and cisgender women, who did not differ from each other. In contrast, cisgender men reported greater acquired capability compared to cisgender women and marginally greater acquired capability compared to transgender/gender diverse individuals, but cisgender women and transgender/gender diverse individuals did not significantly differ from each other. Bisexual people reported higher acquired capability compared to gay/lesbian people but did not differ on perceived burdensomeness or thwarted belongingness. There were no significant race and ethnicity differences in perceived burdensomeness, thwarted belongingness, or acquired capability.

Number of suicide attempts differed by gender identity and race/ethnicity. Cisgender women ($b = 0.67$, $SE = 0.13$, $p < 0.001$, $RR = 1.95$) and transgender/gender diverse individuals ($b = 0.58$, $SE = 0.18$, $p = 0.001$, $RR = 1.78$) reported more lifetime suicide attempts compared to cisgender men. Number of lifetime suicide attempts did not differ between cisgender women and transgender/gender diverse individuals. Furthermore, White ($b = 0.51$, $SE = 0.23$, $p = 0.03$, $RR = 1.67$), Latinx ($b = 0.59$, $SE = 0.27$, $p = 0.03$, $RR = 1.80$), and Biracial/Multiracial ($b = 0.66$, $SE = 0.30$, $p = 0.03$, $RR = 1.93$) participants reported more lifetime suicide attempts compared to Asian/Asian American participants. No other comparisons between race and ethnicity groups were significant. Bisexual+ and gay/lesbian participants did not differ on suicide attempts.

Associations between perceived burdensomeness, thwarted belongingness, acquired capability, and suicide attempts

When examined in separate models, perceived burdensomeness ($b = 0.05$, $SE = 0.01$, $p < 0.001$, $RR = 1.05$),

thwarted belongingness ($b = 0.03$, $SE = 0.004$, $p < 0.001$, $RR = 1.03$), and acquired capability ($b = 0.03$, $SE = 0.01$, $p < 0.001$, $RR = 1.03$) were each positively associated with number of lifetime suicide attempts. When all three factors were entered simultaneously, only perceived burdensomeness ($b = 0.05$, $SE = 0.01$, $p < 0.001$, $RR = 1.05$) and acquired capability ($b = 0.03$, $SE = 0.01$, $p = 0.004$, $RR = 1.03$) remained significant, while thwarted belongingness was no longer significant ($b = -0.003$, $SE = 0.01$, $p = 0.60$, $RR = 1.00$). None of the two- or three-way interactions were significant ($ps > 0.25$).

DISCUSSION

Extending well-known theories of suicide to sexual minority people is an important public health priority. Our study is the first to our knowledge to examine perceived burdensomeness, thwarted belongingness, and acquired capability for suicide in relation to suicide attempts among sexual minority young adults, including demographic differences in risk factors and suicide attempts. Our results highlighted several demographic differences among sexual minority young adults: gender identity differences in perceived burdensomeness, acquired capability, and suicide attempts; sexual orientation differences in acquired capability; and race and ethnicity differences in suicide attempts. We found that interpersonal theory of suicide risk factors may be helpful for understanding suicide attempts among sexual minority young adults, particularly perceived burdensomeness and acquired capability for suicide. Below, we discuss specific findings and their implications for future research and clinical practice with sexual minority young adults.

The results of our study help to clarify differences *within* the sexual minority population. Understanding these demographic differences helps to refine models of suicide risk development such that they can be applied in a more nuanced way. First, we found that bisexual+ people reported higher acquired capability for suicide compared to gay/lesbian people. Past research has demonstrated that bisexual people report greater rates of self-injurious behaviors compared to both heterosexual and gay/lesbian people (Dunlop et al., 2020). Suicide experts have described how self-injurious behaviors are directly linked to acquired capability and, subsequently, suicidal behavior. Moreover, bisexual people exhibit elevated rates of trauma (Alessi et al., 2013), which is associated with acquired capability for suicide (Burke et al., 2018). The elevated rates of mental health problems in this population are often attributed to the unique stressors that bisexual people face, including “double discrimination” from both

heterosexual and gay/lesbian people (Hayfield, 2020). Due to higher propensity to self-injure and greater rates of trauma, bisexual young adults may be more likely to have developed the fearlessness and pain insensitivity that characterize acquired capability for suicide.

Second, transgender/gender diverse individuals reported greater perceived burdensomeness than both cisgender sexual minority men and women, whereas cisgender sexual minority men reported greater acquired capability and more lifetime suicide attempts compared to cisgender sexual minority women. Our findings are consistent with past research demonstrating that transgender/gender diverse people report greater perceived burdensomeness compared to cisgender sexual minority youth (Chang et al., 2021), and with research demonstrating that nonbinary/genderqueer individuals may be at greater risk for perceived burdensomeness (Pate & Anestis, 2020). Transgender/gender diverse sexual minority young adults may be more likely to feel like a burden, given both heterosexist and cissexist messages they may receive from family and friends, and society at large (Velez et al., 2021). Despite this difference, cisgender men reported more lifetime suicide attempts compared to cisgender women, possibly due to their greater levels of acquired capability for suicide. This findings is consistent with research with the general population finding that men in general report greater acquired capability for suicide and higher risk for death by suicide (Granato et al., 2015).

Third, Asian/Asian American sexual minority young adults reported fewer lifetime suicide attempts than non-Hispanic White, Latinx, and Multiracial groups; yet they did not differ on risk factors outlined by the interpersonal theory of suicide. The relatively lower rates of suicide attempts among Asian/Asian American sexual minority young adults mirror patterns in the general population, which demonstrate that Asian and Pacific Islander people report lower rates than many other racial and ethnic groups (Ramchand et al., 2021). Although rates are lower than other racial and ethnic groups, it is important to note that suicide rates among Asian and Pacific Islander people have been growing in recent years (Ramchand et al., 2021). Asian/Asian American sexual minority young adults may be at even greater risk given the recent surge in Asian American/Pacific Islander discrimination during the COVID-19 pandemic (Gao & Liu, 2021). For Asian/Asian American sexual minority young adults, systems of racism and heterosexism may work in tandem to increase risk for suicide and other mental health problems (Velez et al., 2021). Future research should examine whether the interpersonal theory of suicide functions differently across groups to better understand differences in patterns of suicidal thoughts and behaviors, considering evidence that sociocultural factors play a role in suicide differences

between East Asian and the West among the general population (Snowdon, 2018).

Overall, our results suggest that risk factors from the interpersonal theory of suicide are useful for understanding suicide attempts among sexual minority young adults, though there was no evidence of interactions between the different factors. Each of the three factors was associated with greater lifetime suicide attempts, though perceived burdensomeness and acquired capability may be particularly important, as they were the only two factors that remained significant when all three factors were simultaneously examined. Similar to some prior research (Chang et al., 2021; Woodward et al., 2014), perceived burdensomeness may play a larger role than thwarted belongingness. This finding may be a result of perceived burdensomeness being experienced as less likely to change compared to thwarted belongingness. Our findings are similar to multiple past studies that have found that perceived burdensomeness and thwarted belongingness are associated with greater suicidal ideation (Chang et al., 2021, 2022; Fulginiti et al., 2020; Pate & Anestis, 2020; Plöderl et al., 2014; Wolford-Clevenger et al., 2020), and that acquired capability for suicide is associated with suicide attempt among sexual minority people (Plöderl et al., 2014). Our study extends this literature by examining all three factors from the interpersonal theory of suicide simultaneously and suggesting that these factors may play a role not only in ideation but also action.

Surprisingly, there was no evidence of the interpersonal theory of suicide factors interacting with one another. This finding is contradictory to prior research suggesting that perceived burdensomeness and thwarted belongingness interact with each other, and that acquired capability interacts with each of those two (Chu et al., 2017). It also contradicts past findings indicating that acquired capacity for suicide does not have a direct influence on suicide attempt, but instead moderates the associations between other risk factors (perceived burdensomeness and thwarted belongingness) and suicide attempt (Chu et al., 2017). However, it is important to note that a minority of past research in the general population has failed to find evidence of significant interactions between factors (e.g., Christensen et al., 2013; Ribeiro et al., 2021; Wolford-Clevenger et al., 2017). It is possible that acquired capability for suicide functions differently for sexual minority young adults compared to heterosexual young adults. Perhaps sexual minority young adults experience a greater baseline of stress due to heterosexism, such that any level of acquired capability itself is more likely to increase risk for suicide attempt regardless of whether or not the individual feels like a burden or like they do not belong. In other words, it is possible that minority stress experiences themselves

function similarly to perceived burdensomeness and thwarted belongingness by increasing suicidal desire, such that they may interact with acquired capability for suicide. It was also unexpected that there was not a three-way interaction among perceived burdensomeness, thwarted belongingness, and acquired capability, given findings that these three factors interact such that those with higher levels of all three factors have the highest level of suicidal behavior (Joiner, 2005; Van Orden et al., 2010). A past systematic review of the interpersonal theory of suicide found that the relationship between the three-way interaction and suicide attempt is diminished in online studies (Chu et al., 2017). We may also have been underpowered to detect a significant three-way interaction effect.

The primary limitation of our study is that our analyses were cross-sectional. Our measures of risk factors were focused on the present, whereas our measure of suicide attempts was focused on one's lifetime. As a result, suicide attempts may have occurred prior to the currently reported levels of the risk factors. Although the data came from a longitudinal study, the incidence of suicide attempts was too low at one-month follow-up ($n = 6$) and two-month follow-up ($n = 1$) to conduct longitudinal analyses. Still, findings from this large and diverse sample provide information that may inform hypotheses for future longitudinal research. Future longitudinal research with longer timeframes in between assessments and that intentionally recruit individuals at high risk of suicide is needed (Kleiman et al., 2019). Second, we did not collect data on *hopelessness* regarding perceived burdensomeness and thwarted belongingness, which is an important factor to study in future research (Chu et al., 2017; Tucker et al., 2018). Whether individuals feel hopeless about perceived burdensomeness and thwarted belongingness may play an important role in how these factors are related to suicide attempts. Third, we only included individuals who were gay, lesbian, and bisexual+ because the parent study that these data were derived from sought to examine the differences between gay/lesbian and bisexual+ participants. More research is needed to understand the interpersonal theory of suicide for asexual, questioning, and individuals with other sexual orientations not represented in this study. Our sample was also primarily non-Latinx White, consisted of a large percentage of students, and was recruited entirely online. Therefore, more work is needed to determine whether findings generalize to other groups of sexual minority young adults. Finally, because of the exploratory nature of this study we did not correct for potential Type 1 error, so some findings identified here should be viewed as preliminary and still in need of further replication with future studies.

Overall, our results suggest that the interpersonal theory of suicide may be a useful framework for understanding suicide attempts among sexual minority young adults. This developmental period represents a time in which individuals are at increased risk for negative mental health outcomes (Rice et al., 2019), and our findings suggest that factors outlined by the interpersonal theory of suicide may be useful for understanding risk for suicide at this age. As suggested by prior research that has examined the interpersonal theory of suicide in relation to suicidal ideation among sexual minority people (e.g., Baams et al., 2018; Chang et al., 2021), suicide prevention and intervention efforts should include assessment and treatment of interpersonal theory of suicide risk factors. For instance, suicide awareness campaigns and gatekeeper training may aid with identifying individuals at risk of suicide, given the normalization and increased acceptability of suicide within LGBTQ+ social networks (Clark et al., 2022). On a larger scale, policies and laws that affirm LGBTQ+ identities and reduce identity-related oppression (e.g., protections against discrimination and hate crimes, access to affirming healthcare) may reduce feelings of perceived burdensomeness and thwarted belongingness and, subsequently, suicidal behaviors. Public health policies limiting firearm access (e.g., waiting periods, mental health screenings) and other lethal means accessibility policies may be essential for addressing risk factors for suicide, such as elevated acquired capability for suicide. Finally, our findings highlight the importance of considering differences within the heterogeneous sexual minority population. An intersectional approach that considers how multiple sources of privilege and oppression interact (e.g., heterosexism, racism) is needed to meet the needs of the diverse sexual minority young adult population. Clinicians, researchers, and policymakers must consider how to target interpersonal theory of suicide risk factors while continuing to refine theoretical knowledge to be better tailored or more nuanced.

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CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflicts of interest.

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