

Gender Minority Resilience and Suicidal Ideation: A Longitudinal and Daily Examination of Transgender and Nonbinary Adults

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SUICIDE REMAINS a leading cause of death in the United States, with rates rising in recent decades (Hedegaard et al., 2018). Despite garnering significant attention in research in the past 50 years, accuracy of predicting suicide remains only slightly better than chance (Franklin et al., 2017). Understanding near-term predictors of suicidal ideation (SI) is critical to understanding suicide risk as it fluctuates over time. Difficulties in predicting suicide deaths and nonlethal suicide attempts are compounded for populations whose unique experiences with SI have only recently garnered adequate empirical attention, such as sexual and gender minority people.

Transgender and nonbinary (TNB) people experience elevated rates of suicidal thoughts and behaviors, and are more likely to die by suicide, compared to their cisgender heterosexual and sexual minority (e.g., lesbian, gay, bisexual) counterparts (Guz et al., 2021; Surace et al., 2021). This is perhaps unsurprising given the degree and pervasiveness of discrimination, microaggressions, violence, and victimization that TNB people face across the lifespan (Grant et al., 2010; Truszczynski et al., 2022), which have been linked with increased risk for suicidal behavior (Clements-Nolle et al., 2006; Maguen & Shipherd, 2010). While cisgender sexual minority and gender minority individuals are commonly grouped together in empirical study, assuming homogeneous experiences across psychosocial outcomes, emerging research has evidenced that these subgroups experience unique patterns of risk and protective factors in relation to suicidal thoughts and behaviors (Horwitz et al., 2020). Thus, extant research that explores risk and resilience factors for SI among LGBTQ+ people often lacks the nuance and specificity needed to identify unique mechanisms that may confer risk for, or protect against, suicide in TNB individuals specifically.

Further, most existing research examining TNB peoples' experience with suicidality uses a risk-based, deficit-focused approach. For instance, past work has highlighted higher rates of external (distal) minority stressors such as violence, victimization, and discrimination among TNB people compared to cisgender people, and demonstrates how these stressors are associated with the presence and exacerbation of SI and suicide attempts (Flores et al., 2021; Fuller & Riggs, 2018; Goldblum et al., 2012). Internal (proximal) minority stressors, including internalized transphobia and negative expectations of others, have also been linked to elevated SI among TNB adults, which predict suicidal behavior in this population (Scandurra et al., 2020; Staples et al., 2018).

While these stressors have been implicated as risk factors for poor psychosocial well-being in gender minority people, gender minority resilience factors (e.g., identity pride, community connectedness) are understudied, particularly in relation to mental health concerns such as suicidality. Identity pride reflects positive views of one's gender identity, such as feeling special or unique, and comfort in sharing one's identity with others; community connectedness reflects interactions with and affiliation towards others who share one's gender identity (Testa et al., 2015). These constructs have been hypothesized to serve as buffers against the deleterious impacts of gender minority stressors among TNB people (Testa et al.). Work by Chang and colleagues (2021) indicates that identity pride may be an important facet of sexual and gender minority psychological well-being among LGBT people, as increased identity pride is associated with lower rates of depressive symptoms and may be an important mechanism linking discrimination and reduced social support to mental health outcomes. As deepening our understanding of suicide protective factors is paramount in informing intervention, there is a need for work aimed at increas-

ing our understanding of resilience as it applies to TNB people who may be at high risk of suicidal thoughts or behaviors.

In addition to the limitations associated with deficit-based approaches, prior research has been dominated by studies using cross-sectional data to understand TNB suicide risk, despite the promising nature of intensive longitudinal methods such as ecological momentary assessment (EMA; Gee et al., 2020) to elucidate within-person patterns of risk as they change over time. For example, studies of historical (lifetime) minority stressors among TNB people provide limited data to understand whether these experiences precede, co-occur, or follow experiences of SI, even though identifying prospective predictors of SI is critical to modeling and predicting high-risk transition periods that require intervention. To our knowledge, no research to date has examined how momentary changes in gender minority resilience factors may predict changes in outcomes like suicidal thoughts and behaviors among TNB people. Further, multi-level analysis of potential correlates of SI allows researchers to determine the extent to which these experiences fluctuate over time (within-person change), relative to their tendency towards stability over time for a particular individual, in which case they may be more indicative of a factor that varies primarily across individuals (between-person differences).

The Present Investigation

Prior research has established the importance of investigations targeting TNB-specific risk and resilience factors as they relate to mental health outcomes. Yet, most prior research is limited to cross-sectional, between-person examinations of risk factors, resulting in a relative paucity of work examining gender minority resilience factors as potential mechanisms protective against SI. The present investigation examines (a) the extent to which gender minority resilience factors, such as identity pride and community connectedness, vary over time among TNB people, and (b) how within-person and between-person indicators of gender minority resilience predict daily SI during a 3-week EMA protocol. Specifically, we tested the following aims:

Aim 1: Characterize Fluctuations in Gender Minority Resilience

First, we considered the extent to which repeated measures of gender minority resilience factors (identity pride, community connectedness) measured daily over 3

weeks would vary at within-person and between-person levels. Using intraclass correlation coefficients (ICC), we calculated the proportion of variability in these daily resilience factors attributable to within-person, versus between-person, differences. We predicted that there would be greater between-person variance in gender minority resilience, relative to within-person gender minority resilience variability (Hypothesis 1).

Aim 2: Explore the Daily Within-Person Relationships Between Gender Minority Resilience and Suicidal Ideation

Second, we examined the associations between daily reports of gender minority resilience and aggregated daily reports of SI using dynamic structural equation modeling. Specifically, we examined how changes in resilience predicted changes in SI across days, controlling for between-person differences in overall SI and overall gender minority resilience. We predicted that within-person increases in resilience would predict within-person decreases in SI across days (Hypothesis 2).

Methods

Participants

Participants ($N = 49$) consisted of transgender and nonbinary (TNB) adults enrolled in a larger study focused on gender minority stress, resilience, and suicide risk. TNB participants were recruited online based on reported SI or suicidal behavior in the past month to take part in a virtual study involving interviews, questionnaires, and a 3-week EMA protocol. Participants self-identified as transgender or gender diverse (e.g., nonbinary, gender-fluid, genderqueer), were age 18 or older, and lived in the United States. Participants were recruited via social media advertisements (i.e., Twitter, Facebook). Participants included in the present sample completed a baseline interview using web-based videoconferencing, baseline self-report questionnaires using an online data collection tool (Qualtrics), and began an EMA protocol scheduled over 3 weeks using their personal smartphone. All participants had a history of lifetime SI and 32 (65.3%) participants had at least one lifetime suicide attempt.

Procedure

Participants were recruited via online advertisements on Twitter, Facebook, or Reddit. Interested individuals who clicked on study advertisements were directed to a

prescreening survey to determine eligibility for the study. This web link described study procedures in more detail and assessed inclusion criteria (below); if determined to be eligible, contact information was solicited and sent directly to the research team for scheduling purposes. Inclusion criteria were as follows: currently residing in the United States; currently owns a phone with internet access and the ability to receive text messages; ability to speak, read, and understand English; ability to access a webcam (for verification of identity at the start of the baseline session); reported SI or suicidal behavior within the past month; and age 18 years or older.

If initially eligible, interested participants were scheduled for an interview with the research team via Zoom. During the virtual assessment, the research team obtained consent from participants, completed a semistructured interview to assess lifetime and recent history of suicidal thoughts and behaviors, and guided participants through a battery of self-report questionnaires. Research staff then trained participants on completing the EMA assessments using detailed instructions and a practice set of EMA items. EMA surveys were scheduled for distribution to participants six times per day for 21 days, between participants' self-reported wake and bedtimes, with the ability to "black out" specific windows of time each day during which participants were unavailable to complete surveys. Survey notifications were scheduled by binning participants' available times each day into six windows, with one survey sent during each window. Survey notifications were sent using SMS text messages, and each survey link remained available for 30 minutes following the notification. If the participant did not click on the survey link within 10 minutes, a reminder text message was sent. Survey notifications were scheduled using proprietary software developed by the lead investigator's lab, which interfaces with Amazon Web Services to send SMS notifications containing a link to a survey on Qualtrics.

Participant safety was of paramount concern throughout the study. Graduate research assistants were trained in suicide risk assessment and safety planning procedures, which have been utilized successfully for similar studies. For the EMA portion of the study, participants were repeatedly informed both during the baseline session and at every EMA survey that responses were not monitored in real-time and were directed to contact crisis hotlines

and other resources if they needed urgent support or intervention. Links to crisis hotlines, including Trans Lifeline, were provided on every page of the EMA survey. Reports of suicidal behavior generated "flags" that were sent to the research team for follow-up and safety monitoring. Details of the safety monitoring and risk management protocols are available on the Open Science Framework page for the larger study (<https://osf.io/8vynm>).

Participants were paid \$50 via an Amazon gift card for participation in the baseline session of the study, and an additional \$50 gift card for the 3-week EMA portion of the study. Participants who completed at least 80% of the distributed surveys (100 or more of 126 possible) received an additional "bonus" \$25 Amazon gift card. A letter of determination was obtained which facilitated payments while ensuring participant anonymity. All study procedures were approved by the Texas Tech University Institutional Review Board (IRB#2020-686).

Study procedures, aims, measures, and recruitment strategies were designed with the input and consultation of an advisory board comprised of adult TNB volunteers. TNB adults were recruited to join the advisory board through social media advertisements and did not need to report a history of suicidal thoughts or behaviors to participate. The advisory board met virtually to discuss the overall aims of the study and to solicit feedback regarding study goals and hypotheses. Advisory board members were also sent study measures via email and solicited for feedback regarding the specific methods of assessment used as a part of the study.

Study procedures, aims, and hypotheses were preregistered on the Open Science Framework (<https://osf.io/bvz65/>). Aim 1 described in this paper was not preregistered and should thus be treated as exploratory. Aim 2 was preregistered as Hypothesis 4; the remaining hypotheses involve examination of minority stressors and are thus beyond the scope of this paper. Data analyses reflect the preregistered methods with one minor exception. Specifically, the preregistration notes that EMA items (binary and Likert-type) will be treated as categorical. However, because resilience was assessed using three items (see below), creation of a composite indicator of resilience required averaging the Likert-type scores across items for each day. These mean values cannot appropriately be modeled as categorical, and

resilience was thus modeled as an interval variable.

Measures

Demographic Characteristics

At the baseline session, participants self-reported their age, gender identity, race, ethnicity, and sexual orientation. To report gender identity, participants were given the option to identify as transgender man (36.7%), transgender woman (4.1%), nonbinary/gender nonconforming/gender-fluid/genderqueer (55.1%), or other (2%). Participants ranged in age from 18 to 56 ($M = 28.1$; $SD = 7.60$) and were primarily non-Hispanic/Latinx White (67.3%). See Table 1 for descriptive characteristics of the sample.

Diagnostic Interviews

Lifetime, past year, and past month suicidal thoughts and behaviors were assessed using an adapted version of the Columbia-Suicide Severity Rating Scale (C-SSRS; Posner et al., 2011), which was administered by trained graduate students. These data were used in the present study to determine eligibility for the EMA protocol (e.g., past month SI or suicide attempt at the time of the baseline assessment).

EMA Assessments

At the first survey opened each day, participants were asked three items from the Gender Minority Stress and Resilience (GMSR; Testa et al., 2015) measure to assess gender minority resilience at the daily level. Participants rated the following items on a scale from 1 (*not at all*) to 5 (*very much*): “My gender identity or expression makes me feel special and unique” (identity pride), “I felt connected to other people who share my gender identity” (community connectedness), and “When interacting with members of the community that share my gender identity, I feel like I belong” (community connectedness). These three items were averaged to create an indicator of daily gender minority resilience.

At each survey (up to six times per day), participants were asked to rate two items with respect to how they felt “at this moment” on a scale from 1 (*not at all*) to 5 (*very much*) as indicators of SI: “I feel that life is not worth living” and “I want to die.” Ratings for these two items were averaged across responses per day to create an aggregate daily SI indicator. Although use of a small number of items to assess a construct as complex as SI can pose psychometric concerns, research suggests that single item EMA measures can have predictive utility,

and the added benefit of additional items is modest at best (Song et al., 2022).

Potential Covariates

Age, race/ethnicity, and symptoms of borderline personality disorder were considered as potential covariates for grand-mean-centered resilience and SI at the between-person level. Race/ethnicity was operationalized as non-Hispanic/Latinx White (0) or another racial/ethnic identity (1) given small cell sizes for other racial/ethnic groups. Symptoms of borderline personality disorder were computed as the sum of items marked “yes” from the McLean Screening Inventory for Borderline Personality Disorder (Zanarini et al., 2003).

Data Analytic Procedures

All analyses were conducted using Mplus statistical software, version 8.6 (Muthén & Muthén, 2017) using Bayesian multilevel timeseries (dynamic) structural equation modeling (DSEM), which has several advantages for analysis of EMA data (Hamaker et al., 2018). In these models, results at the within-person level are centered for each individual such that parameter estimates reflect daily deviations from a person’s own mean. For prospective analyses at the within-person level, variables were lagged across days, and autore-

Table 1. Demographic Characteristics Across Study Participants ($N = 49$)

Sample Characteristics	N	%
Gender		
Transgender man	18	36.7%
Transgender woman	2	4.1%
Non-Binary, GNC/GF/GQ	27	55.1%
Other	1	2%
Race/Ethnicity		
Non-Hispanic white	33	67.3%
Hispanic/Latinx white	6	12.2%
Black/African American	3	6.1%
Asian/Asian-American	1	2%
Biracial/multiracial/other	5	10.2%
Sexual orientation		
Asexual	3	6.1%
Bisexual	18	32.7%
Gay/ Lesbian	6	12.2%
Heterosexual	3	6.1%
Pansexual	5	10.2%
Queer	12	24.5%
Questioning	1	2.0%
Other	2	4.1%

Note. GNC = Gender nonconfirming; GF = Gender-fluid; GQ = Genderqueer.

gressive effects were included to account for within-person stability over time. Thus, results reflect the extent to which within-person change in one construct (resilience) predicts within-person change in another construct (SI) from one day to the next. Results at the between-person level are centered on the group (sample) mean, such that parameter estimates reflect the extent to which an individual participant's scores deviate from the overall sample average. Results are presented using standardized coefficients followed by 95% credibility intervals, which are used to evaluate statistical significance for Bayesian models.

In the tested model, the ICC of gender resilience was calculated by dividing its between-person variance by the sum of its within- and between-person variance estimates (Aim 1). At the within-person level, resilience measured at day *d* was regressed on resilience at day *d*-1 (prior day), and SI measured at day *d* was regressed on SI at day *d*-1 (prior day). Day *d* SI was then regressed on day *d* resilience (Aim 2). At the between-person level, overall resilience was allowed to covary with overall SI.

Age, race/ethnicity, and symptoms of borderline personality disorder were tested as between-person covariates of resilience and SI in separate models. Age and symptoms of borderline personality disorder showed no significant relationships with resilience or SI and thus are not considered further in this paper. There was, however, a significant association between race/ethnicity and constructs of interest, such that non-Hispanic/Latinx White participants reported higher resilience, and lower SI, than participants from minoritized racial/ethnic groups. Thus, results are presented for the model which included race/ethnicity as a covariate.

Results

Aim 1: Characterize Fluctuations of Gender Minority Resilience

The ICC for the EMA resilience indicator was 0.75 (95% CI [0.67, 0.82]). These results indicated that approximately 75% of the variance in gender minority resilience was accounted for by between-person differences, with only 25% of the variability in gender minority resilience attributable to within-person fluctuations over time.

Aim 2: Explore the Daily Within-Person Relationships Between Gender Minority Resilience and Suicidal Ideation

Both resilience and SI showed significant auto-regressive effects over time. There was also a significant association between day *d* resilience and day *d* SI, controlling for these auto-regressive effects, such that within-person change in resilience from day *d*-1 to day *d* predicted within-person change in SI from day *d*-1 to day *d* ($B = -0.07$, 95% CI [-0.14, -0.01]). Specifically, higher reported resilience (relative to an individual's own mean) at the first survey of the day predicted lower average SI ratings (relative to an individual's own mean) across all surveys later that same day.

At the between-person level, we found that overall EMA-reported resilience was significantly associated with overall SI ($B = -0.44$, 95% CI [-0.65, -0.17]), meaning that individuals who, on average, reported higher resilience during EMA also, on average, reported lower SI. Race/ethnicity was also significantly associated with both aggregate resilience and aggregate SI, such that non-Hispanic/Latinx white individuals reported higher resilience, and lower SI, than members of minoritized racial/ethnic groups. Results for this model are displayed in Figure 1.

Discussion

Previous research has demonstrated that TNB individuals are at elevated risk of suicidal thoughts and behaviors (Herman et al., 2019). Given the unique experiences of TNB people, preventing suicide in this population requires an understanding of both specific risk and protective factors related to gender minority identities, particularly using longitudinal or prospective methodologies (dickey & Budge, 2020; Vigny-Pau et al., 2021). This is the first study to attempt to model momentary change in gender minority resilience as it relates to SI in a naturalistic context. The present findings offer some preliminary insights that may be valuable in informing our understanding of gender minority resilience and how changes in resilience may protect against SI. First, our findings indicate that gender minority resilience is best conceptualized as a relatively stable factor that varies more between people than within a person over time, at least when assessed over a 3-week interval. However, despite the relative stability of resilience in this study, we still found that, controlling for between-person differences, within-person changes in resilience from a person's own mean (typical) level were predictive of changes in endorsement of SI from one day to the next. Thus, understanding both individual differences and within-person changes in gender minority

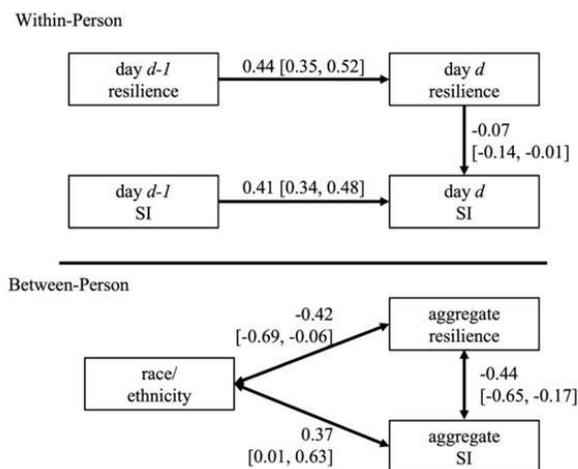


Figure 1. Visual depiction of results

Note. Results reflect standardized parameter estimates, followed by their 95% credibility interval in brackets. Credibility intervals that do not contain zero reflect statistically significant results. Single headed arrows reflect regression paths; double headed arrows reflect covariances. SI = suicidal ideation, race/ethnicity was coded such that 0 = non-Hispanic/Latinx white and 1 = members of minoritized racial/ethnic groups.

resilience factors may be critical to identify opportunities for prevention efforts aimed at reducing SI, consistent with prior cross-sectional research implicating gender minority resilience factors as protective against SI in TNB people (Rabasco & Andover, 2021).

When considering covariates, we found that neither age nor symptoms of borderline personality disorder were associated with between-persons differences in resilience or SI. This is somewhat notable given prior research showing that older age is positively associated with resilience (Breslow et al., 2015; Puckett et al., 2019) and negatively associated with SI (Yockey et al., 2020), whereas borderline personality disorder symptoms have been negatively associated with resilience (Jia et al., 2022) and strongly positively associated with SI (Paris, 2002). However, these constructs did differ across racial/ethnic groups, with non-Hispanic/Latinx White individuals reporting greater resilience and lower SI, on average, than participants from minoritized racial/ethnic backgrounds. This expands upon prior conflicting and limited literature on the relationship between race/ethnicity and SI (Wolford-Clevenger et al., 2018) and resilience (Puckett et al.) among transgender adults. Prior work has pointed to the importance of environmental stressors, such as the effects of racial discrimination, as risk factors for poor mental health and SI among people of color (Madubata et al., 2022; Polanco-Roman et al., 2021); these sociocultural factors are also likely to contribute to worse mental health outcomes among transgender people of color (Atteberry-Ash et al., 2021). TNB people from minoritized racial/ethnic backgrounds may experience marginalization both from communities of color and from the broader LGBT community (Balsam et al., 2011), which would impact reported resilience given the role of community connectedness in the conceptualization of resilience utilized here.

Implications

These findings point to several potential clinical implications. First, there is a clear need to focus on interventions designed to improve minority-specific protective and resilience factors for suicide risk in TNB people (Matsuno & Israel, 2018). When addressing suicidal thoughts and behaviors in a clinical setting, treatment providers may find it valuable to focus on promoting pride in transgender and nonbinary identities, in addition to encouraging strong community bonds. These considerations

should be incorporated when developing novel TNB-affirming therapies and provide further support for existing TNB-affirming therapies (e.g., Austin & Craig, 2019; Austin et al., 2018) designed for people struggling with suicidal thoughts or behaviors. There may also be benefits to encouraging TNB clients to monitor their perceptions of these resilience factors on a daily level, as this can inform their understanding of how changes in resilience may relate to their experience of SI. While the current findings help improve our understanding of TNB individuals' experiences with suicidal thoughts, further research and prevention efforts must also consider the intersectional marginalization of TNB members of minoritized racial/ethnic groups, especially considering the distinct risk and resilience factors that may be relevant for these people (Kattari et al., 2017; Singh & McKleroy, 2011; Stone et al., 2020). Results may also inform policy decisions as they relate to legal protections for programs fostering TNB community connectedness and identity pride. For example, prior research indicates that nondiscrimination laws are associated with decreased TNB community stigma (Gleason et al., 2016), which suggests these laws may have downstream effects on individual indicators of gender minority resilience and, subsequently, risk for SI. To that end, future research and interventions should focus on targeting systematic and structural solutions for suicide among TNB people in order to avoid the common, but problematic, tendency of suicide prevention efforts to put the onus for change on individual members of marginalized groups, such as TNB people.

Strengths and Limitations

Interpretation of the present investigation should consider a few limitations. First, although consistent with other EMA studies, the generalizability of our findings may be limited due to the size of our current sample ($N = 49$). Thus, the potential for Type I error may be inflated; however, we argue that the potential clinical importance of these findings justifies their consideration. Further, the small sample size limited our ability to detect the potential moderating effects of race/ethnicity, socioeconomic status, and sexual orientation on the within-person association between resilience and SI, the strength of which may differ across subgroups within the TNB population. Extension of our findings in larger samples with diverse representation across racial/ethnic identities will

be critical given evidence of associations between race/ethnicity and our constructs of interest, as well as prior literature showing conflicting results regarding differences in reported SI across TNB communities of color (Wolford-Clevenger et al., 2018). Second, the present study was limited to a sample of TNB people with a recent history of suicidal thoughts or behaviors, and results may not generalize to TNB people who are not regularly experiencing SI and may not translate to the ability to predict new or first onset of SI among previously nonsuicidal people. Future research should examine whether there are differences in gender minority-specific resilience between TNB people that do and do not experience SI to add to our understanding of the construct of gender minority resilience; for example, it is possible that within-person variability of resilience may be higher (or lower) for TNB people who are not experiencing acute suicidality. Third, we are unable to directly establish a causal relationship between resilience and SI; it is possible that, on the daily level, elevated SI leads to decreased perceptions of gender minority resilience, rather than vice versa. However, the fact that resilience was measured at the first survey per day, while SI was measured throughout the day, suggests that our indicators of resilience temporally precede most reports of SI being aggregated, lending credence to the possibility of a causal effect.

Finally, as with any empirical study, the characteristics of our sample should be considered with respect to generalizing results to diverse TNB populations. The present sample was primarily nonbinary (55.1%); therefore, our current findings might center the experiences of nonbinary people more specifically than individuals who identify as transgender men or women. Future research is needed to determine whether there might be heterogeneity of SI and resilience even within the TNB umbrella, especially in light of previous findings that highlight differences in the experiences of binary and nonbinary TNB people (Reisner & Hughto, 2019). Further, recruitment using online modalities, and EMA data collection requiring ownership of a personal smartphone, likely skewed our sample towards a younger, more technologically savvy population of higher socioeconomic status, with implications for understanding resilience among the broader community of TNB adults.

Despite these limitations, the present study has several strengths. First, TNB-specific and validated measures were used to

assess gender minority resilience during EMA. Second, we used naturalistic and longitudinal methods, allowing for the assessment of changes in SI related to resilience over time and at both between- and within-person levels. Third, by recruiting a sample of TNB adults with recent suicidal thoughts, the study provides valuable data on a clinically high-risk group. Fourth, collaboration with an advisory board of TNB adults during the formative stages of the larger research study likely improved the clinical and community relevance of these findings and the appropriateness of study methods and procedures for ethical engagement with members of a historically marginalized group. Finally, to our knowledge, this is the first EMA study of suicidal thoughts in TNB people to assess resilience factors, rather than focusing solely on a risk-based approach. These findings highlight the potentially beneficial effects of developing clinical and policy efforts to foster identity pride and community connectedness among TNB people as strategies to improve suicide prevention in this high-risk population.

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The authors have no conflicts of interest to declare.

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