CONTEXTUAL SUPPORT, RESILIENCE, ALLOSTATIC LOAD, AND MENTAL HEALTH IN TRANSGENDER AND GENDER DIVERSE INDIVIDUALS

By

Devon Mary Kimball

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Psychology – Master of Arts

2022

ABSTRACT

CONTEXTUAL SUPPORT, RESILIENCE, ALLOSTATIC LOAD, AND MENTAL HEALTH
IN TRANSGENDER AND GENDER DIVERSE INDIVIDUALS

By

Devon Mary Kimball

Research suggests that the support TGD individuals experience in the places they live can influence their wellbeing. Other research about physical health has found exposure to stressors has physiological effects, which can be measured through allostatic load (multiple physiological indicators that reflects "wear and tear" on the body; AL). Research has also indicated that TGD individuals are at higher risk of depression and anxiety. TGD populations also have unique resilience factors, such as pride and community connectedness, which may influence health. This study used latent class analysis to examine how individuals clustered based on current and past contextual support, and then examined the relationship between these classes and AL, depression, and anxiety, including whether pride and community connectedness moderated these relationships. Contextual support across the lifetime was also examined as a continuous variable. Participants either had lived consistently in contexts with high levels of support (High Support class), had moved from contexts with low levels of support to high levels of support (Low to High Support class), or had consistently lived in contexts with low levels of support (Low Support class). Individuals in the Low Support class had lower levels of AL compared to those in the High Support class. There were no associations between class and depression and anxiety, and there were no moderating effects of community connectedness or pride. This study suggests that contextual support may not influence depression and anxiety among TGD people, but that lower levels of support may actually correlate with decreased AL.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Introduction

Transgender and gender diverse (TGD) people are individuals who identify with a gender other than the one traditionally associated with their sex assigned at birth; this category includes trans men and trans women, as well as individuals with nonbinary and genderqueer identities, and those who do not identify with any gender. Although TGD populations are often grouped with people who identify as lesbian, gay, bisexual, and queer in terms of their sexual orientations, gender is distinct from sexual orientation, and TGD individuals can have any sexual orientation. TGD individuals' experiences are in contrast to those who are cisgender, meaning that they identify with the gender typically associated with their sex assigned at birth.

TGD people experience a range of stressors and their mental health is influenced by contextual factors, including sources of support and marginalization. To add to this growing body of research, this study examined patterns in the types of supportive and discriminatory resources in the physical places that people live in or are from (current context and context of origin, respectively), and how these may vary over the course of their lifetime. This study also examined how patterns of contextual support related to mental health (depression and anxiety) and physical health (allostatic load; AL) outcomes, and the potential moderating effects of pride and community connectedness.

Sociopolitical Context and Minority Stress

In the US, TGD individuals face unique stressors compared with their cisgender peers, especially as anti-trans laws and policies have been put forward at both the national and state level (Burgess et al., 2018; Human Rights Campaign, 2018; Moreau, 2021; Price et al., 2020; Simmons-Duffin, 2020). This was particularly the case during the Trump administration, which made active efforts to place individuals with clear bias against TGD individuals into influential

governmental positions and stall progress toward legal protections of TGD individuals (Burgess et al., 2018). The structural stigma that TGD individuals in the US face has not been limited to the Trump administration; laws that marginalize TGD people were present before this administration and still persist, particularly at the state level (Moreau, 2021). In fact, structural stigma at the state level has been a persistent problem. For instance, between 2013 and 2016, 24 states considered legislation that would force TGD individuals to use bathrooms based on their sex assigned at birth rather than their gender identity (Flaskerud & Lesser, 2018).

The sociopolitical context also includes exposure to stressful narratives about the lives of TGD people, as the broader climate shapes the narratives about TGD people. In this regard, exposure to media reporting on violence against TGD people can result in vicarious stress, in which TGD individuals experience stress and fear in response to violence against other TGD people or rhetoric about TGD people's lives (Puckett et al., 2021; Westbrook, 2021). Likewise, in the wake of the Pulse Orlando shooting, lesbian, gay, bisexual, transgender, and queer (LGBTQ) individuals outside the US reported shock and stress in response to this event (Pickles, 2021). These experiences of stress and discrimination, even if not direct, can be impactful to TGD individuals, and it is important to consider how they can impact both the mental and physical health of TGD individuals.

Minority stress theory (Brooks, 1981; Meyer, 2003) provides a framework to explain how the sociopolitical context influences mental health. Minority stress theory posits that the stress marginalized individuals experience due to discrimination and prejudice detrimentally affects their mental and physical health. These broader structural issues influence exposure to distal stressors, such as overt acts of violence, discrimination, and harassment. The social context

and distal stressors may also affect health outcomes through proximal stressors of internalized stigma, expectations of rejection, and identity concealment.

It is also essential to acknowledge that the impacts of systematic oppression are leveraged against other marginalized groups, including sexual minorities, racial and ethnic minority individuals, people with disabilities, and many others. Crenshaw's (1989) intersectionality theory outlined how individuals who hold two or more marginalized identities experience marginalization unique to their combination of identities. Intersectionality theory further highlights that this marginalization is inherently embedded within systems of power and privilege. The experiences of TGD individuals are shaped not solely by their gender identities but all other identities they hold. Research on TGD individuals has demonstrated that TGD individuals with disabilities report higher rates of mental illness and suicide than their able bodied TGD peers (James et al., 2016). In addition, TGD people of color are more likely to attempt suicide than their white TGD peers (James et al., 2016). Findings such as these highlight that the systems of oppression centered in understandings of intersectionality theory have serious effects on the wellbeing of TGD individuals.

Minority Stress and Health

Mental Health

As a product of minority stress, notable mental health disparities impact TGD communities. Research suggests TGD individuals report high rates of mental health concerns, particularly in terms of anxiety (Bockting et al., 2013; Borgogna et al., 2019; Budge et al., 2013; Miller et al., 2016; Puckett et al., 2019) and depression (Bockting et al., 2013; Borgogna et al., 2019; Budge et al., 2013; Puckett et al., 2019; Rotondi et al., 2011; Su et al., 2016). Comparative

studies have found that TGD individuals report depression and anxiety at higher rates than cisgender people (Bockting et al., 2013; Borgogna et al., 2019; Su et al., 2016).

Research has linked experiences of stress and discrimination to depression and anxiety among TGD populations. Studies have linked experiences of discrimination to increased depression (Jefferson et al., 2013; Nemoto et al., 2011; Puckett et al., 2020) and anxiety (Puckett et al., 2020; Weinhardt et al., 2017; Yang et al., 2016). Furthermore, Hughto and colleagues' (2015) review found that anti-trans discrimination excludes TGD people from many essential life domains and opportunities (including healthcare, employment, public spaces, and resources), which is associated with poorer mental and physical health outcomes. Clearly, the oppression of TGD individuals affects their mental health and has a cascade of effects on access to resources and basic needs that may also influence health outcomes.

Physical Health

The physiological effects of minority stress on TGD people have received less attention. Researchers have suggested that the discrimination TGD individuals face throughout their lifetime may be associated with increased inflammation, putting them at higher risk for adverse health outcomes (Diamond et al., 2021). Recent research has assessed the physiological effects of minority stress via multiple indicators, including AL, which measures the "wear and tear" of stress on the body. AL involves multiple physiological metrics and can predict stress-related disease (Juster et al., 2019). More specifically, AL incorporates several biomarkers that measure whether different physiological systems within the body are dysregulated (Juster et al., 2009). Some biomarkers included in assessments of AL (e.g., cortisol) contribute to primary effects of stress. The combination of physiological stress responses hampers the body's ability to regulate back to homeostasis. If this persists, this can lead to secondary effects as systems begin to

dysregulate to compensate for the primary effects of stress. Over time, this process can have enough of a negative effect on the body to result in disorders, significantly impacting the body's function.

The biomarkers included in AL measure dysregulation in systems related to primary and secondary effects and can therefore help predict whether an individual is at risk for stress-related disease (Juster et al., 2009). By measuring several physiological systems, AL allows researchers to understand the risks and results of systemic dysregulation, rather than dysregulation of a single system, providing a more detailed assessment of the impact of stress (Juster et al., 2016b). The measures used to calculate AL can also be collected through minimally invasive procedures, allowing researchers to measure the physiological impact of stress on TGD individuals without subjecting them to clinical interactions, which may cause discomfort and distress (DuBois et al., 2021). By examining AL, rather than individual biomarkers, researchers can evaluate how stress affects individuals pervasively.

In our study, we calculated AL via cortisol, C-reactive protein (CRP), glycosylated hemoglobin (HbA1C), heart rate, blood pressure, and anthropometric measures, which were height and weight to calculate body mass index (BMI) and waist and hip ratio. Cortisol is a stress hormone in the hypothalamic-pituitary-adrenal (HPA) axis, and the patterns of its release can be used to measure dysregulation (Staufenbiel et al., 2013). Salivary cortisol levels follow a diurnal pattern, with levels increasing in the early morning and peaking within 25 to 40 minutes after waking (Chida & Steptoe, 2009). General stress is associated with higher levels of cortisol, but clinically low cortisol levels (or hypocortisolism) have been observed in individuals with stress-related diseases (Juster, 2019). In addition, cortisol has been linked to depression, although the direction of the association can vary; higher levels of cortisol have been shown to correlate with

increased risk for typical depression (Staufenbiel et al., 2013), while atypical depression has been associated with lower levels of cortisol (Juster, 2019). The anthropometric measures are used to calculate BMI to assess for obesity, which correlates with numerous physical and mental health conditions, such as type-two diabetes, hypertension, cardiovascular problems, depression, and anxiety (Dixon, 2010).

CRP is a protein released by the body in response to injury and pathology, and elevations in CRP are associated with inflammation and tissue damage (Pepys & Hirschfield, 2003). Research has also shown an association between CRP and depression (with a positive correlation in cisgender men and a negative correlation in cisgender women; Dressler et al., 2006) and increased stress (McDade et al, 2006). HbA1C levels indicate how well the body processes glucose (with lower levels indicating better processing), thereby serving as a predictor of diabetes, and has been positively correlated with stress (McCurley et al., 2015). Hip-waist ratio and body density are significant predictors of cardiovascular disease (Huxley et al., 2010) and inflammation (Panagiotakos et al., 2005). Finally, blood pressure has been linked to experienced stress, and those stress-related changes in blood pressure are a risk factor for hypertension (Matthews et al., 2004).

A growing body of research has linked AL and its component elements to stress among TGD populations. Among transgender men, one study (DuBois et al., 2017) found that higher gender-specific stress was associated with increased waking cortisol, although levels recovered by the end of the day; this pattern could indicate a stronger overall stress response among the study participants. DuBois (2012) also found that transgender men who reported gender-specific stressors had higher levels of CRP (a marker of inflammation) than those who did not. Another study (Morgan et al., 2019) found that nearly half their sample of transgender women and

cisgender men who were attracted to men had significantly elevated levels of CRP and pro-inflammatory cytokines. These studies show that exposure to stressors has physiological effects on TGD individuals experiencing systemic discrimination.

Contexts, Support, and Resilience

In addition, a growing body of literature indicates that how much support sexual (lesbian, gay, bisexual, and queer) minority and TGD people experience in the place they live (their context) can influence their wellbeing. Research has shown that having legal protections was associated with lower rates of suicidality in sexual minority youth (Hatzenbuehler, 2011). In addition, Day and colleagues (2019) found that LGBTQ youth who attended high schools with gay-straight alliances and LGBTQ focused policies were less likely to report bullying based on their gender identity than their peers whose schools lacked these resources. This finding suggests that having supportive resources within a community may be associated with a reduced likelihood of stressors. In addition, Puckett and colleagues (2016) found that sexual minority women who moved from low to high support contexts reported less internalized homophobia and greater social support than participants who remained in low support contexts, again suggesting that supportive resources within community may be correlated with social support. Inversely, discrimination within one's context may negatively affect a TGD individual's health. Duncan and Hatzenbuehler (2014) found that higher incidence of anti-LGBTQ hate crimes was associated higher rates of suicidal ideation and suicide attempts in sexual minority youth. These studies collectively demonstrate that exposure to minority stressors and social support may vary according to the broader context in which LGBT people live.

Although research has also demonstrated that context can contribute to mental health among TGD populations, there has been much less research for this population than there has

been among cisgender people. The research that has been done does seem to suggest that aspects of a context such as its perceived safety (Gower et al., 2018) and legislation against gender-based discrimination (Blosnich et al., 2016; McDowell et al., 2020) were associated with improved mental health outcomes. On the other hand, the absence of resources seems to be associated with worsened mental health among TGD individuals. One study found that legislation protecting TGD populations moderated the relationship between discrimination and suicide attempts among TGD population, such that there was a positive association between discrimination and suicide attempts for participants in states with few legal protections, but there was no relationship for those who lived in states with moderate or high levels of protection (Rabasco & Andover, 2020). On the other hand, another study found that TGD individuals living in rural areas, which traditionally are less accepting of TGD identities, were more likely to report social anxiety than their peers in urban and suburban environments (Kaplan et al., 2019). Based on these findings, it is plausible that the presence and absence of contextual factors can influence stress, and thereby not only mental health, but the primary and secondary physiological effects observed through AL.

TGD populations also have unique resilience factors that are important to consider. In their model of minority stress in TGD populations, Testa and colleagues (2015) identified pride and community connectedness as resilience factors that might buffer against the effects of both proximal and distal stressors on health. These resilience factors are also commonly reported by TGD people to bolster their resilience. For example, in their study of how TGD individuals defined resilience, Singh and colleagues (2011) found that TGD people described resilience as creating their own sense of self, cultivating self-worth, being conscious of the oppression of TGD people, having community connections, and finding hope in the future. Although there are

many ways resilience manifests beyond pride and community connectedness, these have been central in theoretical advancements in TGD health research. Relatedly, Matsuno and Israel (2018) developed the Transgender Resilience Intervention Model (TRIM), which proposes intervening on the individual, group, and community level to foster both individual and group resilience and reduce the impact of stressors on mental health. The TRIM model identified several community factors, including belonging, support, and activism, as sources of resilience that could improve mental health outcomes (Matsuno & Israel, 2018).

Of relevance to this study, whether TGD people take pride in their identity could buffer the effects of stress, consistent with research focusing on other marginalized populations. For example, Latina and Black women who reported pride in their racial or ethnic identity had higher levels of dehydroepiandrosterone (DHEA), a hormone that can buffer against disease (Ratner et al., 2013). Additionally, even for those in low resource areas, there may be a strong sense of community with TGD peers, whether in their local community or online. As such, regardless of the level of affirming contextual resources, it is possible that feeling connected to one's community could buffer the effects of a low resource area. For instance, sexual minority individuals who cope via seeking social support report lower stress compared to those who cope using avoidance strategies (who also have higher AL; Juster et al., 2016a). In addition, TGD youth have lower levels of inflammation when experiencing less gender-related stressors and more social support (McQuillan et al., 2020). This evidence suggests that pride in one's identity and community connectedness could buffer against negative physiological health outcomes associated with living in a more stressful and less supportive context.

In addition, there is evidence to suggest these factors may buffer TGD individuals against negative mental health outcomes, like depression and anxiety. Bockting et al. (2013) found that

pride in one's own TGD identity and connections with other TGD individuals buffered against the adverse effects of stigma on mental health. Another study found that TGD individuals who knew other TGD people before identifying as trans reported feeling less fearful when they began to identify as TGD and were also less likely to report feeling suicidal when they first began to identify as TGD (Testa et al., 2014). Barr et al. (2016) found that a feeling of belonging to the TGD community mediated the positive association between a strong sense of identifying as a TGD and mental health. Understanding how resilience may impact biopsychosocial outcomes could provide insight into creating supportive systems and preventative measures for TGD individuals experiencing stress.

Current Study

In the current study, I explored contextual supports for TGD people, how these relate to AL, anxiety, and depression, and the moderating effects of pride and community connectedness. First, I used latent class analysis to create classes of participants based on the levels of support experienced in their current context and their context of origin. These analyses were meant to determine if there were significant differences between participants based on contextual support. I then examined the relationship between the identified classes and AL, anxiety, and depression to see what effect contextual support had on these three outcomes. I also examined whether pride and community connectedness moderated the relationship between classes and the outcomes to see if these resiliency factors had buffering effects on the associations between context and AL, anxiety, and depression. Finally, I examined the relationship between contextual support (as a continuous variable) and AL, anxiety, and depression.

Hypotheses

First, in reference to the latent class analyses, I hypothesized that we would find a similar structure to the structure identified in Puckett et al. (2017), which identified three classes: individuals who came from and stayed in high support contexts, those who came from low support contexts and moved to high support contexts, and those who came from and stayed in low support contexts. Although this was my hypothesis, I also specified that the final model would be chosen based on the number of classes that had the best model fit statistics, regardless of whether it reflected our hypothesized model or not. Regarding the relationship between context and the outcomes, I hypothesized that individuals currently in lower support contexts would show higher AL, higher depression scores, and higher anxiety scores. Concerning resilience, I hypothesized that community connectedness and pride would moderate the

relationship between context and AL, depression, and anxiety individually such that higher

community connectedness and pride would buffer against the negative effects of low support

contexts on all three outcomes. Finally, I hypothesized that pride and community connectedness

would predict AL, depression, and anxiety over and above the influence of context when

measured as a continuous variable.

Methods

My research used data drawn from a longitudinal study of the effects of sociopolitical contexts on resilience and wellbeing in TGD individuals (PIs: Puckett and DuBois). Baseline assessment included semi-structured interviews, the collection of biomarker measures, and surveys (data collected from November 2019-March 2020). This was followed by monthly surveys administered online for a year (April 2020 – March 2021) and then follow-up interviews (April 2021-June 2021) and the second collection of biomarkers (July 2021-November 2021). Almost all data for this analysis were drawn from the baseline timepoint. The exception to this is the information on support in the participants' contexts of origin, which was added to the final monthly survey because this information was not part of the original data collection plan. I used baseline data and not longitudinal data in order to keep the data consistent to a single timeframe, as many of the measures used are sensitive to change over time; the exception to this is the information on context of origin, which is stable across time.

Participants were recruited through outreach to community organizations via email, social media (including Twitter and Facebook), in-person events, and snowball sampling. Interested individuals completed an online screener and then were invited to participate if they met inclusion criteria (identifying as TGD, being 19 years of age or older, and living in Oregon, Tennessee, Michigan, or Nebraska). In terms of compensation, participants were eligible to receive $60 for completing the baseline assessment, $10 per monthly survey (with two $10 bonus payments for completing the first six and last six surveys), $20 for completing the remote twelve-month assessment, and $30 for completing the second biomarker. All compensation was provided in the form of electronic gift cards.

Participants

   The sample consisted of participants between the ages of 19 and 70 ($M = 33.06$; $SD =$ 12.88). Regarding gender, 27.2% of the sample identified as trans men or men, 26% identified as trans women or women, and the remaining participants identified with a diverse array of gender identities, with more details on response options available in Table 1. Write-in responses for gender included 2 spirit, freespirit, non-binary transmasculine, and others. In terms of race and ethnicity, 69% of participants identified as white, and 30.4% of participants identified as people of color (see Table 1 for more details). Most participants identified with a sexual minority identity, with queer being the most common sexual identity ($n = 83$; 52.5%). In terms of participant distribution across states, 28.5% lived in Oregon ($n = 45$), 24.7% lived in Tennessee ($n = 39$), 24.7% lived in Michigan ($n = 39$), and 22.2% lived in Nebraska ($n = 35$). Participants were asked whether they shared finances with anyone and were then asked for household income. Among participants who did not share finances, the median income was in the range of $10,000-19,999. There were 39.9% ($n = 63$) of participants who shared income with another person, and among those individuals, the median household income was in the $50,000-59,999 range. In terms of education, 56.3% ($n = 89$) had completed at least an Associate degree or post-secondary certificate program.

Table 1
Sample Demographics

Characteristic	Full Sample *N* (%)	Analysis Subsample *n* (%)
Gender Identity		
Transman/Trans man	37 (23.4%)	32 (25.8%)
Transwoman/Trans woman	32 (20.3%)	23 (18.5%)
Genderqueer	16 (10.1%)	10 (8.1%)
Non-binary	40 (25.3%)	33 (26.6%)
Agender	3 (1.9%)	3 (2.4%)
Androgyne	1 (0.6%)	1 (0.8%)

Table 1 (cont'd)

Genderfluid	2 (1.3%)	0 (0.0%)
Woman	9 (5.7%)	8 (6.5%)
Man	6 (3.8%)	4 (3.2%)
Bigender	2 (1.3%)	1 (0.8%)
Not listed	9 (5.7%)	8 (6.5%)
Missing	1 (0.6%)	1 (0.8%)

Sex Assigned at Birth

Female	105 (66.5%)	82 (66.1%)
Male	52 (32.9%)	41 (33.1%)
Missing	1 (0.6%)	1 (0.8%)

Difference of Sex Development

No	130 (82.3%)	105 (84.7%)
Yes	5 (3.2%)	4 (3.2%)
Unsure	23 (14.6%)	15 (12.1%)

Race or Ethnicity

Black or African American	8 (5.1%)	6 (4.8%)
American Indian or Alaskan Native	2 (1.3%)	2 (1.6%)
Asian	6 (3.8%)	5 (4.0%)
Latinx	6 (3.8%)	4 (3.2%)
White	109 (69%)	87 (70.2%)
Not listed	1 (0.6%)	0 (0.0%)
Multiracial/Multiethnic	26 (16.5%)	20 (16.1%)

Sexual Orientation (check all that apply)

Bisexual	44 (27.8%)	31 (25.0%)
Gay	23 (14.6%)	17 (13.7%)
Lesbian	20 (12.7%)	15 (12.1%)
Queer	83 (52.5%)	65 (52.4%)
Asexual	16 (10.1%)	15 (12.1%)
Pansexual	60 (38%)	47 (37.9%)
Heterosexual/Straight	8 (5.1%)	5 (4.0%)
Not Listed	8 (5.1%)	5 (4.0%)

Employment (check all that apply)

Employed Full-time	69 (43.7%)	54 (43.5%)
Employed Part-time	48 (30.4%)	37 (29.8%)
Full-time Student	38 (24.1%)	33 (26.6%)
Part-time Student	6 (3.8%)	5 (4.0%)

Table 1 (cont'd)

Unable to work for health reasons	16 (10.1%)	12 (9.7%)
Unemployed	11 (7%)	8 (6.5%)
Other	13 (8.2%)	12 (9.7%)

Education Level

High school graduate – high school diploma or equivalent (i.e. GED)	14 (8.9%)	11 (8.9%)
Some college credit, but less than 1 year	8 (5.1%)	2 (1.6%)
Technical or vocational school degree	5 (3.2%)	2 (1.6%)
One or more years of college, no degree	42 (26.6%)	35 (28.2%)
Associate's degree	18 (11.4%)	13 (10.5%)
Bachelor's degree	52 (32.9%)	43 (34.7%)
Master's degree	16 (10.1%)	16 (12.9%)
Doctorate or professional degree (e.g., PhD, MD, JD, DDS)	2 (1.3%)	1 (0.8%)
Graduate of a Certificate Program	1 (0.6%)	1 (0.8%)

Income

Less than $10,000 to $19,999	81 (51.3%)	64 (51.6%)
20,000 – 39,999	28 (17.7%)	19 (15.4%)
40,000 – 59,999	25 (15.9%)	21 (17.0%)
60,000 - 79,999	12 (8.3%)	11 (8.8%)
80,000 - 99,999	4 (2.5%)	2 (1.6%)
More than $100,000	6 (3.8%)	6 (4.8%)
Missing	1 (0.6%)	1 (0.8%)

Measures

All measures are provided in the Appendix.

Demographics

Demographic information was gathered at the time of the baseline assessment. Demographic questions included items on gender identity, sex assigned at birth, differences of sex development, age, race, sexual identity, income, education, and the state in which participants lived. Response options are available in Table 1.

Trans-Affirming Resources Checklist

Participants were asked about the presence or absence of specific supports and resources for TGD individuals as well as individuals or organizations that discriminated against TGD individuals (Puckett et al., 2017) in their current location and the location in which they grew up. These resources included: LGBT bars or nightclubs; pride celebrations; trans-inclusive places of worship; anti-discrimination laws that protect trans people; trans support groups; trans community leaders; trans-affirming mental health care; trans peers; anti-trans organizations; known instances of anti-trans discrimination; resources for trans people; and individuals and organizations that would negatively impact trans individuals. Each of these was coded as "0" indicating its absence or a "1" indicating its presence. Items assessing the presence of detrimental individuals, organizations, and experiences (anti-trans discrimination, anti-trans organizations, etc.) were reverse coded. Responses from these individual items were used in the latent class analyses (LCA) to create categories of participants. In addition, a summed scale score was calculated to represent the overall supportiveness of the contexts an individual had experienced.

Gender Minority Stress and Resilience Scale

Pride and community connectedness (Testa et al., 2015) were measured via two subscales of the Gender Minority Stress and Resilience Scale. The Pride subscale contains eight items and measures respondents' sense of pride in their own gender identity (e.g., "My gender identity or expression makes me feel special and unique"). The Community Connectedness subscale contains five items and measures how close individuals feel to a TGD community (e.g., "I feel part of a community of people who share my gender identity"). For both the pride and community connectedness subscales, individuals were asked to provide an answer on a five-

point scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree)*; two items on the community connectedness scale required reverse coding. Each scale was scored using the scale mean. In terms of internal consistency, both the pride subscale (Cronbach's α = .90) and the community connectedness subscale (Cronbach's α = .88) have been shown to have good internal consistency in previous literature (Testa et al., 2015). In this sample, the reliability of the pride subscale was .83 and the reliability of the community connectedness scale was .86.

AL

Biomarker measures (cortisol, CRP, HbA1C, anthropometrics, blood pressure, and heart rate) were obtained at baseline. Participants collected three salivary samples from which to measure cortisol levels (one at waking, one 30 minutes after waking, and one at bedtime) the day after their baseline assessments and subsequently returned them to the research team. CRP was assayed from dried blood spot samples taken at the interview. HbA1C was measured via blood using a point of care device at the interview. Anthropometrics included measurements of height, weight, and waist-hip ratios, and were measured using a portable anthropometer, a portable scale, and a flexible tape measure respectively. Blood pressure and heart rate were assessed three times throughout the baseline interview, all while participants were seated: once after consent, a second time after the semi-structured interview, and finally at the end of the interview. Biomarker samples (saliva for measuring cortisol; dried blood spots for measuring CRP) were shipped to Dr. DuBois at the University of Oregon, where they were assayed.

AL values were calculated in several steps based on previous literature (Juster et al., 2010). The first step was to establish normative values to compare individuals' biomarkers against; given that no normative sample of these biomarkers exists in a TGD population, the normative value was based on the overall sample. Based on these norms, for each biomarker,

individuals in the 75th or 25th percentile were identified as dysregulated in individual biomarker measures; whether the 75th or 25th percentile was used was based on whether high or low values are markers of poor health and disease risk. Participants were assigned a "1" for each score in the dysregulated range and "0" for each score in the normative range. These scores were totaled so that higher scores reflected more dysregulated systems.

Depression

At baseline, participants completed the short-form PROMIS Depression scale (Cella et al., 2010). Participants were asked to respond on a five-point Likert scale, ranging from 1 (*never*) to 5 (*always*), how frequently the statements applied to them over the past seven days (e.g., "I felt worthless"). Scores were determined by calculating raw scores based on the sum of participants' responses and then converting this score to a T-score (HealthMeasures, 2019a). Previous research has demonstrated that the items used in the short-form depression scale have a correlation of .96 with the full 28-item scale, and the reliability of the distribution was generally above .92 (Cella et al., 2010). In our sample, the reliability was .91.

Anxiety

Participants also completed the short-form PROMIS Anxiety scale at baseline (Cella et al., 2010). As with the depression items, participants were asked to respond on a five-point Likert scale, ranging from 1 (*never*) to 5 (*always*), how frequently the statements below fit their experience over the past seven days (e.g., "I feel fearful"). Scores were determined by calculating raw scores based on the sum of participants' responses and then converting this score to a T-score (HealthMeasures, 2019b). Previous research has shown that the items used in the short-form anxiety scale demonstrate a correlation of .96 with the full 29-item scale and the

reliability of the distribution was generally above .89 (Cella et al., 2010). In our sample, the reliability was .92.

Analysis Plan

First, due to the smaller than anticipated sample size, I needed to reduce the number of items included in the LCA. To determine which items to remove, I computed Cronbach's alpha for the Trans-Affirming Resources Checklist using SPSS to see which items may not be a good fit for the overall measure; I also examined the frequency of endorsement of items on this measure to remove items that were endorsed infrequently. I then conducted a LCA to characterize the supports available to participants, both in terms of their current and past contexts. LCA allows researchers to examine data, determine if responses are grouped, and if so, discern what data are clustered together (Masyn, 2013). LCA enables researchers to organize data into subgroups based on shared response patterns to variables (The Methodology Center, 2020). This analysis technique identifies groups of participants based on the probability that they indicated similar levels of support on the context items. This methodology was used to better understand how outcomes may vary based on past and present aspects of contextual support. This method also relies on patterns observed in the data to identify how the sample should be parsed rather than arbitrarily choosing to organize participants based on past or current context alone or averaging across the two variables. Previous work suggests that sexual minority women may cluster into distinct classes based on the support they experienced in past and present contexts (Puckett et al., 2017). This analysis was a novel attempt to discern if this extends to TGD populations. Although the hypothesized classes were based on the findings of Puckett et al. (2017), the final structure was chosen based on model fit statistics.

Potential models were generated starting with a single grouping, after which the number of classes was increased in each subsequent model until the greatest number of feasible models was generated. In order to select which number of classes was most appropriate, I planned to evaluate absolute model fit using a likelihood ratio (LR), specifically the chi-square goodness-of-fit test. Classes were also evaluated for model fit based on Akaike information criterion (AIC), Bayesian information criteria (BIC), adjusted BIC, entropy values, and log likelihood. Lower AIC, BIC, and adjusted BIC indicate that the model is a better fit to the data, whereas higher entropy values indicate better model fit (Masyn, 2013). Once classes were determined, I then examined whether gender identity, gender category [whether participants identified as trans masculine, nonbinary/genderqueer, or trans feminine], sex assigned at birth, difference of sex development, age, and race were correlated with class membership. Because of the small number of participants per cell, another race variable was created to compare Black, Indigenous, and people of color (BIPOC) participants to white participants in these analyses.

The second set of analyses used a series of regression analyses to examine the relationship between the classes and AL, depression, and anxiety. I also examined whether resilience factors (pride and community connectedness subscales) moderated the relationship between these classes and AL, depression, and anxiety, such that even when in low resource areas, individuals with greater pride or community connectedness would experience lower AL and psychological distress. Separate regressions were conducted for the relationship between the classes and each outcome (AL, depression, and anxiety). In each regression, I entered the independent variable of latent class membership, one of the resilience factors (community connectedness and pride), and the interaction term between latent class membership and each of the resilience factors. I ran separate analyses for each of the resilience factors. Finally, I

conducted a multiple regression analysis to assess if findings would vary if context was measured as a continuous variable and repeated the above analyses with context, pride, and community connectedness predicting AL, depression, and anxiety. MPlus was used for the LCA and all other analyses were conducted in SPSS.

Results

Model Selection

I began by calculating Cronbach's alpha for the Trans-Affirming Resource Checklists. For the current context scale, Cronbach's α = .65; for the past context scale, Cronbach's α = .76. To improve Cronbach's alpha, the item assessing for "known cases of discrimination based on gender identity and/or gender expression" (both current and past) was removed, changing Cronbach's alpha to α = .73 and α = .80 for current and past contexts respectively. Regarding the frequency of item endorsement, the items assessing for "other resources for the trans community" were removed from both the current and past context scales because of low endorsement (12.0% in current context and 13.3% in past context). Finally, the item assessing for "other organizations or individuals that might negatively impact the trans community" was removed from both scales in order to make a more parsimonious model given that other items likely reflected the presence of organizations. Of the original sample of $N = 158$ participants, 2 participants were removed from the original sample due to missing data on both current and past context resources, and 32 participants were removed for missing data on past context resources, leaving a sample of $n = 124$.

Using this modified list of variables, latent class models were generated and evaluated in MPlus (Version 8.6; Muthén & Muthén, 2018), with the number of latent classes in the model ranging between one and six. The five and six class models encountered an error that indicated that a model could not be specified, and the number of parameters in the six class model exceeded the sample size; as such, these models were considered invalid and no further models were generated. Additionally, in our original analysis plan, we intended to include the chi square test as an indication of model fit; however, there were too many indicators in the model to be

able to compute the chi-square test. In order to evaluate model fit, we primarily considered BIC

as a primary indicator of model fit (Nylund-Gibson & Choi, 2018), as well as entropy and the

general principle of parsimony. Model fit statistics are available in Table 2 for models ranging

between one and four classes.

Table 2
Indicators of Model Fit

| Classes in Model	Number of Free Parameters	Loglikelihood (H0)	Loglikelihood (Correction Factor)*	AIC	BIC	Sample Size Adjusted BIC	Entropy
1	20	-1334.96	1.00	2709.93	2766.33	2703.09	-
2	41	-1168.05	1.03	2418.11	2533.74	2404.09	.97
3	62	-1029.43	1.02	2182.86	2357.72	2161.67	.97
4	83	-998.82	1.01	2163.64	2397.72	2135.27	.97

Note. AIC = Akaike Information Criteria, BIC = Bayesian Information Criteria. *Full title: Loglikelihood (H0 Correction Factor of MLR)

Based on the fit indices, the three-class model was selected as the most appropriate model

to use. The three-class model demonstrated the lowest BIC, as well as a high entropy. Although

the four-class model demonstrated better AIC and sample-size adjusted BIC, differences between

the classes in this model were less meaningful, and some of the classes were particularly small (n

$= 15$), making interpretation challenging. In addition, the individual classes in the three-class

model were more clearly interpretable and exhibited less overlap than the classes in the four-

class model. As such, the three-class model was selected as it represented the most parsimonious

and meaningful model. Probabilities for item endorsement for each of the three classes are

available in Figure 1. Participants were assigned to the class they were most likely to belong to

based on the posterior probabilities supplied by MPlus.

Class 1 ($n = 24$, 19.4%) reflected individuals who had grown up in places with high

levels of contextual support (e.g., had access to TGD affirming resources and people) and

continued to live in high support contexts at the time of baseline and was labeled High Support.

Class 2 ($n = 75$, 60.5%) encapsulated individuals who grew up in places with low levels of contextual support but were living in places with high levels of contextual support at the time of baseline; this class was labeled Low to High Support. Class 3 ($n = 25$, 20.2%) was comprised of individuals who had grown up in places with low levels of contextual support and continued to live in low support contexts at the time of baseline and was therefore labeled Low Support.

Figure 1
Three Class Model
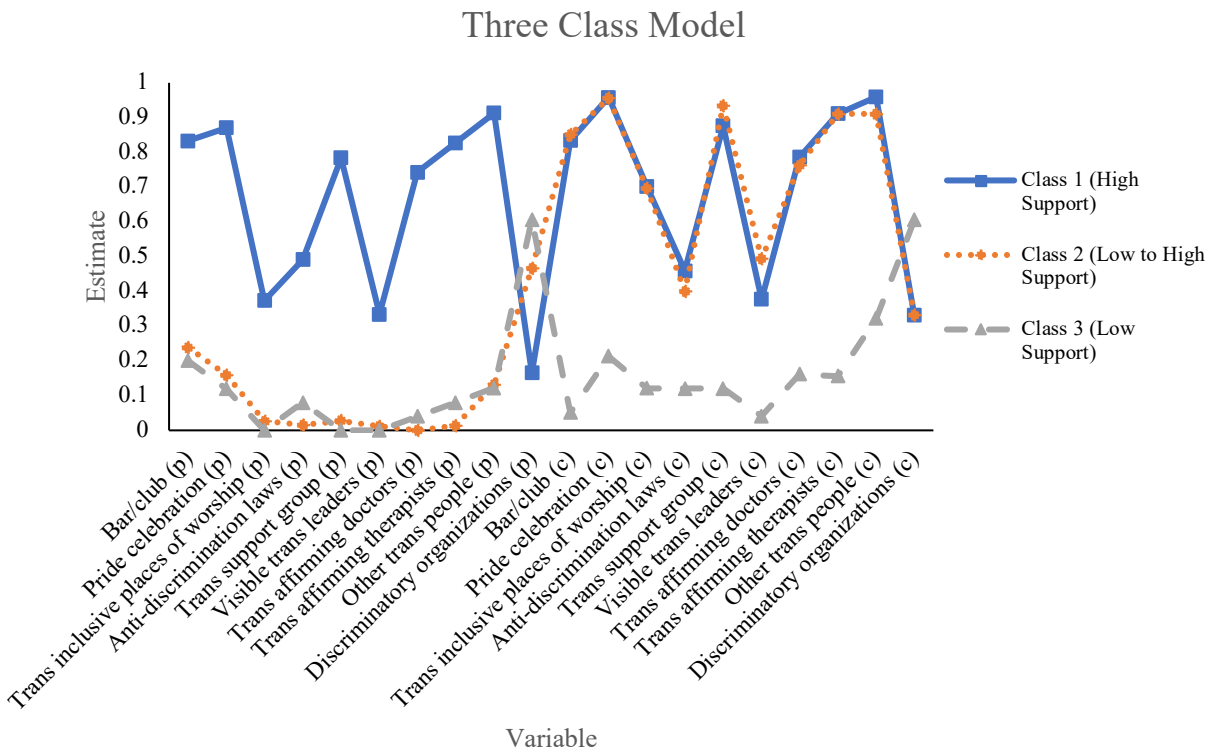
Note. (p) indicates past context, and (c) indicates current context

In addition, I examined whether demographic variables (gender identity, gender category, sex assigned at birth, difference of sex development, and race -- dichotomized as BIPOC or white) were associated with class membership. None of the following demographics had a significant relationship to class membership: race, $X^2(2, 124) = 1.46$, $p = .48$; gender identity, $X^2(18, 123) = 25.37$, $p = .12$; gender category, $X^2(4, 124) = 2.28$, $p = .68$; sex assigned at birth, $X^2(2, 123) = 0.68$, $p = .71$; difference of sex development, $X^2(4, 124) = 3.46$, $p = .49$. The

ANOVA examining the relationship between age and class membership was not significant ($p =$ .09).

Regressions

Dummy-coded variables were created to indicate membership in the Low to High Support class (Class 2) and the Low Support class (Class 3), with the High Support class (Class 1) as the 0-0 condition. The Lilliefors corrected Kolmogorov-Smirnov test revealed non-normality of the distribution of AL [$D(124) = .16, p < .001$], but not for the depression [$D(124) = .07, p = .20$] or anxiety distributions [$D(124) = .08, p = .09$]. However, research has suggested that in larger samples (> 40 individuals), regression is robust against violations of the normality assumption (Lumley et al., 2002; Ghasemi & Zahediasl, 2012). In addition, the skewness and kurtosis for the distributions of AL [skew = .35 (SE = .22); kurtosis = -.86 (SE = .43)], anxiety [skew = -.48 (SE = .22); kurtosis =-.21 (SE = .43)], and depression [skew = -.45 (SE = .22); kurtosis = .59 (SE = .43)] were all acceptable. For means, standard deviations, and correlations between classes and outcomes, see Table 3.

Table 3
Correlation between Class Membership, Depression, Anxiety, and AL

Variable	M (SD)	1	2	3	4	5	6
1. Class 1	-	-					
2. Class 2	-	-	-				
3. Class 3	-	-	-	-			
4. AL	2.00 (1.52)	.07	.12	-.21*	-		
5. Depression	58.23 (6.80)	.04	.13	-.20*	-.10	-	
6. Anxiety	61.47 (7.46)	.06	.11	-.20*	-.04	.71**	-

Note. AL = Allostatic Load. * $p < .05$, ** $p < .01$

For the initial analyses, three multiple regressions were run, with class membership predicting AL, depression, and anxiety in their own respective regressions, controlling for the effects of age. In terms of the multiple linear regression with class membership predicting AL, the overall regression was significant [adjusted $R^2 = .14$, $F(3, 120) = 7.60$, $MSE = 2.00$, $p <$

.001]. Compared to individuals in the High Support class, individuals in the Low Support class had lower AL (B = -1.17, p < .05). See Table 4 for coefficients for all variables.

Table 4
Coefficients for Models Predicting AL

Predictors	*B*	*SE B*	*β*
Linear Regression with Classes			
Age+	0.04**	0.01	.35
Class (Ref = High Support Class)			
Low to High Support+	-0.18	0.33	-.06
Low Support Class+	-1.17*	0.41	-.31
Moderation Analyses: Pride			
Pride	0.02	0.04	-
Pride x Low to High Support	-0.02	0.05	-
Pride x Low Support	-0.03	0.05	-
Moderation Analyses: Community Connectedness			
Community Connectedness	-0.02	0.23	-
Community Connectedness x Low to High Support	0.00	0.25	-
Community Connectedness x Low Support	0.08	0.27	-
Linear Regression with Contextual Sum Score: Pride			
Contextual Support+	0.09*	0.03	.23
Pride	0.01	0.10	.04
Contextual Support x Pride	0.01	0.01	0.1
Linear Regression with Contextual Sum Score: Community Connectedness			
Community Connectedness	0.02	0.07	.02
Contextual Support x Community Connectedness	-0.02	0.02	-.10

Note. AL = Allostatic Load. Variables marked with + had consistent coefficients across models and are only reported once for parsimony. * p < .01 ** p <.001

In terms of the multiple linear regression with class membership predicting depression, the overall regression was significant [adjusted R^2 = .12, $F(3, 120)$ = 6.50, *MSE* = 40.80, p < .001], although age was the only significant predictor of depression. See Table 5 for coefficients for all variables. The multiple linear regression with class membership predicting anxiety was significant [adjusted R^2 = .06, $F(3, 120)$ = 3.73, *MSE* = 52.24, p < .05]. Compared to participants

in the High Support class, there were no significant differences in anxiety for participants in the

Low to High Support class or Low Support class. See Table 6 for coefficients for all variables.

Table 5
Coefficients for Models Predicting Depression

Predictors	B	SE B	β
Linear Regression with Classes			
Age+	-0.17*	0.05	-.32
Class (Ref = High Support Class)			
Low to High Support+	0.64	1.5	.05
Low Support Class+	-2.01	1.86	-.12
Moderation Analyses: Pride			
Pride	0.01	0.18	-
Pride x Low to High Support	-0.17	0.21	-
Pride x Low Support	0.03	0.24	-
Moderation Analyses: Community Connectedness			
Community Connectedness	0.13	1.04	-
Community Connectedness x Low to High Support	-0.36	1.10	-
Community Connectedness x Low Support	-1.28	1.22	-
Linear Regression with Contextual Sum Score: Pride			
Contextual Support+	-0.07	0.15	-.04
Pride	-0.04	0.09	-.04
Contextual Support x Pride	0.01	0.02	.02
Linear Regression with Contextual Sum Score: Community Connectedness			
Community Connectedness	-0.12	0.3	-.04
Contextual Support x Community Connectedness	0.02	0.09	.02

Note. Variables marked with + had consistent coefficients across models and are only reported once for parsimony.
* $p < .001$

In addition, I examined whether resilience factors (pride and community connectedness

subscales) moderated the relationship between these classes and AL, anxiety, and depression.

Three moderated regressions were conducted, controlling for age, with class membership as the

predictor variable, pride as the moderating variable, and AL, depression, and anxiety as

outcomes, respectively. The model assessing the relationship between class and AL as moderated

by pride was significant [$R^2 = .16$, $F(6, 117) = 3.77$, $MSE = 2.05$, $p < .01$], see Table 4 for all

coefficients. The model assessing the relationship between class membership and depression as moderated by pride was significant [R^2 = .15, $F(6, 117)$ = 2.55, MSE = 41.14, $p < .01$], see Table 5 for all coefficients. The model assessing the relationship between class membership and anxiety as moderated by pride was significant [R^2 = .10, $F(6, 117)$ = 2.16, MSE = 52.74, p = .05], see Table 6 for all coefficients. Although the overall models were significant, pride was not a significant predictor of any of the outcomes and there were no significant interactions in any of the models.

Table 6
Coefficients for Models Predicting Anxiety

Predictors	B	SE B	β
Linear Regression with Classes			
Age+	-0.13*	0.05	-.22
Class (Ref = High Support Class)			
Low to High Support+	0.17	1.70	.01
Low Support Class+	-2.77	2.10	-.15
Moderation Analyses: Pride			
Pride	0.26	0.20	-
Pride x Low to High Support	-0.32	0.24	-
Pride x Low Support	-0.27	0.27	-
Moderation Analyses: Community Connectedness			
Community Connectedness	-0.82	1.17	-
Community Connectedness x Low to High Support	0.65	1.23	-
Community Connectedness x Low Support	-0.82	1.37	-
Linear Regression with Contextual Sum Score: Pride			
Contextual Support+	-0.03	0.17	-.01
Pride	0.07	0.10	.06
Contextual Support x Pride	0.03	0.03	.10
Linear Regression with Contextual Sum Score: Community Connectedness			
Community Connectedness	-0.22	0.33	-.06
Contextual Support x Community Connectedness	0.06	0.10	.06

Note. Variables marked with + had consistent coefficients across models and are only reported once for parsimony.
* $p < .05$

In addition, three moderated regressions were conducted with class membership as the predictor variable, community connectedness as the moderating variable, and AL, depression,

and anxiety as outcomes. The model assessing the relationship between class membership and AL as moderated by community connectedness was significant [$R^2 = .16$, $F(6, 117) = 3.75$, $MSE = 2.05$, $p < .01$], see Table 4 for all coefficients. The model assessing the relationship between class membership and depression as moderated by community connectedness was significant [$R^2 = .17$, $F(6, 117) = .3.87$, $MSE = 40.58$, $p < .01$], see Table 5 for all the coefficients. The model assessing the relationship between class membership and anxiety as moderated by community connectedness was significant [$R^2 = .13$, $F(6, 117) = 2.87$, $MSE = 51.05$, $p < .05$], see Table 6 for all coefficients. Although these overall models were significant, community connectedness was not a significant predictor of any of the outcomes and there were no significant interactions in any of the models.

Finally, I created a sum variable of contextual support available to participants in their current and past context. After mean-centering the contextual support variable, I conducted regressions with the total contextual support as the independent variable. First, I conducted the regressions examining the effects of total contextual support, pride, and their interaction on the three outcomes, while controlling for age. The regression examining AL was significant [Adjusted $R^2 = .12$, $F(4, 199) = 5.18$, $MSE = 2.05$, $p < .001$]. There was also a significant effect of total contextual support, such that increased contextual support throughout the lifetime was associated with increased AL ($B = .09$, $p < .01$). See Table 4 for all coefficients. The regression examining depression was significant [Adjusted $R^2 = .09$, $F(4, 119) = 4.09$, $MSE = 42.04$, $p < .01$]; however, the effects of contextual support throughout the lifetime, pride, and their interaction were not significant. See Table 5 for all coefficients. The overall regression examining the effects of contextual support, pride, and their interaction on anxiety, while controlling for age, approached significance [Adjusted $R^2 = .04$, $F(4, 119) = 2.36$, $MSE = 53.36$,

$p = .06$]; however, the effects of contextual support, pride, and their interaction were not significant. See Table 6 for all coefficients.

I then conducted regressions, controlling for age, examining the effect of total contextual support, community connectedness, and their interaction on each of the three outcomes. The model examining AL was significant [Adjusted $R^2 = .12$, $F(4, 119) = 5.17$, $MSE = 2.05$, $p < .001$]. The effect of age ($p < .001$) and contextual support ($p < .05$) were again significant such that increased levels of each were associated with increased AL. See Table 4 for all coefficients. The model examining depression was significant [Adjusted $R^2 = .09$, $F(4, 119) = 4.10$, $MSE = 42.03$, $p < .01$]. The effect of age ($p < .001$) was again significant such that older age was associated with decreased depression scores. See Table 5 for all coefficients. The model examining the effect of total contextual support, community connectedness, and their interaction on anxiety, while controlling for age, approached significance [Adjusted $R^2 = .04$, $F(4, 119) = 2.22$, $MSE = 53.58$, $p = .07$]. Again, the effects of community connectedness and the interaction between contextual support and community connectedness were not significant. See Table 6 for all coefficients.

Discussion

This study built off Puckett and colleagues' (2017) examination of patterns of contextual support as reported by sexual minority women by examining whether the latent class structure of contextual support was consistent or different for TGD individuals. The overall class structure found in this study replicated the composition of classes found in Puckett et al. (2017); participants were grouped into classes that reflected having consistently lived in locations with high amounts of support (High Support), having moved from locations with lower levels of support to those with higher support (Low to High Support), and having always lived in locations with low levels of support (Low Support).

There were some important differences across these studies to note. First, the studies relied on different statistical analyses. Puckett et al. (2017) compared means on other study variables (e.g., internalized stigma) across all classes whereas the current study relied on regression analyses. The current study also examined the relationship between class membership and AL, depression, and anxiety, whereas Puckett et al. (2017) examined differences across classes in internalized heterosexism, interpersonal relationships, and outness. As a result, while these studies examine similar class structures among two different populations, the implications of those class structures cannot be directly compared.

The prevalence of the classes is also worth examining. The Low to High Support class was the most prevalent, with 60.5% of the sample assigned to this class. This class was somewhat more common than in Puckett et al. (2017), which had 44.55% of their sample in this class. The High Support and Low Support classes were relatively equal in prevalence, encompassing 19.4% and 20.2% of the sample, respectively. These classes were somewhat less common than the findings in Puckett et al. (2017), which reported 27.77% of their sample in the

High Support class and 27.68% of their sample in the Low Support class. This data suggests that overall, while the majority of TGD individuals grew up in locations with low levels of contextual support for their TGD identities, the majority of people from such contexts will shift to be in contexts with more resources over time. This may reflect that TGD people choose to move to locations with more support and resources as adults. This shift may also reflect changes over time in locations as those areas with few resources may have become more supportive and resource-rich over time. These findings also suggest that few TGD participants grew up in resource-rich and supportive contexts. This, of course, can have implications for access to social support or the means through which to affirm one's gender identity, with subsequent effects on mental health and wellbeing (Blosnich et al., 2016; Day et al., 2019; Gower et al., 2018; Hughto et al., 2015; Kaplan et al., 2019; McDowell et al., 2020; Rabasco & Andover, 2020).

In terms of the outcomes themselves, it is helpful to consider the mean values of the outcomes examined in this paper. In terms of AL, the average AL score was 2.00, out of a maximum of 6.00. AL was calculated based on the sample norms, such that a 1.00 on one of the six individual metrics represented that an individual was among the 25% of the sample whose biomarker measure was considered dysregulated compared to their peers. This finding suggests that the average TGD individual in this study was experiencing physiological dysregulation in two of their major biological systems, putting them at risk for stress-related disease in their lifetime (Dixon, 2010; Huxley et al., 2010; Juster et al, 2009; Pepys & Hirschfield, 2003). These elevated AL levels may be a direct result of the stress experienced due to discrimination related to their TGD identity (Diamond et al., 2021; DuBois, 2012; DuBois et al., 2017; McCurley et al., 2015; Juster et al., 2009; Juster, 2019; Juster et al., 2019).

In terms of depression, the mean score was 58.23, which is in the "Mild Depression" range (American Psychiatric Association, n.d.a). The mean score of Anxiety was 61.47, which is in the "Moderate Anxiety" range (American Psychiatric Association, n,d.b). These two findings reflect that, on average, participants were experiencing clinically elevated levels of anxiety and depression at the time of baseline. This result is consistent with findings that TGD individuals often report elevated levels of anxiety and depression (Bockting et al., 2013; Borgogna et al., 2019; Budge et al., 2013; Miller et al., 2016; Puckett et al., 2019; Rotondi det al., 2011; Su et al., 2016), including in comparison to cisgender samples (Bockting et al., 2013; Borgogna et al., 2019; Su et al., 2016). Previous work has linked discrimination in TGD populations to depression (Jefferson et al., 2013; Nemoto et al., 2011; Puckett et al., 2020) and anxiety (Puckett et al., 2020; Weinhard et al., 2017; Yang et al., 2016), suggesting that discrimination may put TGD individuals at risk of worse mental health outcomes.

Class membership was not significantly associated with anxiety or depression. Both of these findings run counter to my hypotheses that anxiety and depression scores would be inversely related to current contextual support. There was, however, a significant relationship between class membership and AL, such that participants in the Low Support class had significantly lower AL than participants in the High Support class. This finding was also counter to my hypothesis that AL would be inversely related to current contextual support. When contextual support was examined as a continuous variable rather than by class membership, similar findings emerged, wherein there was no significant relationship between overall contextual support and either depression or anxiety, but there was a positive relationship between contextual support and AL scores.

The findings that AL showed only a significant association with Low Support class membership such that individuals in this class had lower AL than individuals in the High Support class marks a divergence from what would be expected based on previous findings in the literature. Previous research has suggested that elements of AL, specifically waking cortisol (DuBois et al., 2017) and CRP (DuBois, 2012), tend to show dysregulation in TGD individuals experiencing stressors. Based on research suggesting that the level of support available can impact the psychological strain experienced by LGBTQ individuals (Hatzenbuehler, 2011; Duncan & Hatzenbuehler, 2014), as well as TGD individuals specifically (Kaplan et al., 2019), our hypothesis was that individuals in the Low Support class would have higher AL than those in the High Support class; instead, the data suggested the inverse. This finding would suggest that the relationship between AL and contextual support may be more complicated than initially posited in my hypotheses, or that there may be other factors involved that were not accounted for in my hypotheses.

There are several factors that could potentially contribute to the findings of this study. First, some of the questions (e.g., "An LGBT bar or nightclub," "A pride celebration") could pertain to a wider LGBTQ community rather than a TGD community specifically. Even though a local LGBTQ community can be a source of valuable support, exclusion can also occur within the LGBTQ community. For instance, a study of BIPOC sexual minority people found that participants reported both support and exclusion from the broader LGBTQ community, which tended to be predominantly white (Parmenter et al., 2021). Although this study examined racial identity, similar tensions exist within the broad community between TGD individuals and cisgender-identified individuals (Galupo et al., 2014).

The sociopolitical time in which these data were collected could also have influenced the findings. The data used to calculate AL were collected in late 2019 and early 2020. While this was prior to the start of quarantine precautions in the United States, the data was collected during the Trump presidency and the lead-up to the 2020 presidential elections. This sociopolitical climate could potentially contribute to the findings in this study. Individuals in the Low Support class may have habituated over time to living in non-supportive contexts, and as such, the Trump administration represented less of a change for them. On the other hand, individuals in the Low to High Support and High Support classes may be less habituated to living in less-supportive contexts and therefore experienced greater stress adjusting to living under the Trump administration. This would potentially fit with some of the findings of Drabble and colleagues (2018), who found that sexual minority individuals in traditionally supportive locations expressed greater levels of concern about their broader safety after the 2016 election than those in less supportive locations. Based on these findings, it may be worth exploring whether TGD individuals with fewer affirming resources have developed an ability to deal with significant stressors that allows them to better weather further stress compared to individuals with more affirming resources who have not had to develop similar levels of crisis competency.

In terms of the role of pride and community connectedness, I hypothesized that community connectedness and pride would modify the relationships between the classes and outcomes, such that they would buffer against the negative effects of low support contexts on these outcomes. However, there was no relationship between community connectedness and pride and any of the three outcomes, and the moderation analyses were not significant. Finally, the regressions examining lifetime contextual support as a continuous variable did not find a

significant main effect of pride or community connectedness, nor were there significant interactions between either of these variables and contextual support.

The existing literature examining community connectedness has yielded mixed findings. Some literature has found that community connectedness has beneficial effects on mental and physical health (Barr et al., 2016; Inderbinen et al., 2021; Jäggi et al., 2018; Juster et al., 2016a; McQuillan et al., 2020; Testa et al., 2014), while other research has found no effect of community connectedness on health outcomes (Scandurra et al., 2020). Bockting and colleagues (2013) found that connection with TGD peers moderated the relationship between stigma and psychological distress such that, at low and medium levels of support, stigma was correlated positively with distress, but at high levels of support, there was no significant relationship. However, it is essential to note that much of the research regarding health in TGD populations has focused on a deficit model, and as such, there is relatively little research examining the effects of resiliency on their health. For instance, Sherman and colleagues (2020) conducted a systematic review of community connection in TGD populations and only identified three quantitative studies and three mixed-method studies of community connection. As such, it would likely be helpful to further examine the effect of community connectedness on mental health in TGD populations to reach a clearer consensus.

In addition, it is crucial to keep in mind that communities are not monoliths. While there can be significant health benefits to being involved in the community, there can also be stress within a community, which may influence health and health behaviors. Recent work by Pachankis and colleagues (2020) has highlighted the concept of intra-minority stress. This study particularly highlighted conflict within the community of gay and bisexual men regarding disagreement with perceived community norms and exclusion of diversity. Furthermore, Burton

and colleagues (2020) found that sexual minority men who reported experiencing intra-minority stress were more likely to engage in HIV risk behaviors, suggesting that this stress can affect health and wellbeing. Research has also shown that intra-minority stress can impact the wellbeing of BIPOC sexual minority men, whether within their racial and ethnic community (MacCarthy et al., 2021) or the sexual minority community (Pachankis et al., 2020). It may be that a wider community, and therefore more contextual support, is associated with both increased stress and increased support, making the relationship between contextual support and stress multifaceted. In addition, there is some evidence to suggest that sexual minority community involvement is not purely protective in regards to health outcomes (Convertino et al., 2021; Soulliard et al., 2022), which may in part be attributable to intra-minority stress.

In terms of pride, the findings of this study suggested no effect of pride on AL, depression, or anxiety. While some previous research has found that pride in a marginalized identity can be associated with improved physical (Ratner et al., 2013) and mental health (Bockting et al., 2013; Scandurra et al., 2017; Testa et al., 2015) outcomes, other research has found that the effects of identity pride on outcomes in TGD populations is limited (Puckett et al., 2019; Scandurra et al., 2020) or absent (Jäggi et al., 2018). The findings in this study further contribute to the ambiguity in the literature as to whether and in what contexts pride can affect a TGD individual's health. However, as with community context, the effects of pride on health outcomes among TGD individuals has largely been examined from a deficit model, and as such the influence of resilience factors, like pride, have received little attention. As such, further research is needed to draw a more definite conclusion as to if and when pride can buffer against adverse health outcomes.

Limitations

      This research had several limitations. First, I was unable to assess for effects of individual racial identities due to small cell sizes. Second, participants reported on contextual support in the location they are from retrospectively, which may have led to inaccuracies. In addition, it would have been beneficial to gather information on all places in which individuals have lived, as opposed to just their current location and their hometown. Many individuals grow up in multiple locations or spend significant periods of time in other areas (such as college or previous jobs). The support experienced in these contexts may significantly impact their health and well-being. Finally, the relatively small sample size may have interfered with my ability to detect significant effects of community connectedness and pride in moderation analyses.

Directions for Future Research

      This study does pose several directions for future research. It is important to replicate this study in a sample that is both larger and more diverse in racial and ethnic makeup. The current analyses grouped participants into the categories of white and BIPOC only. This categorization is an oversimplification of the experiences of marginalized racial and ethnic groups in the United States. An in-depth exploration of these effects within individual racial and ethnic groups would be critically important to understanding the experiences of BIPOC TGD individuals. In addition, although the intra-minority stress model may provide an explanation for some of the findings of this paper, it has yet to be explored within TGD community. As researchers, it is essential that we be careful not to assume that frameworks designed for cisgender individuals automatically apply to TGD populations. The intra-minority stress theory was developed particularly in regards to sexual minority men (Pachankis et al., 2020). While there is overlap between the sexual minority and TGD communities, and there are individuals who identify as both TGD and sexual

minority men, it is essential to critically examine if this framework fits with the experiences of

TGD individuals. Future research examining support and stress within both the broader LGBTQ

community and TGD community would be necessary for assessing whether this theory is helpful

in understanding the experiences of TGD individuals.

Conclusion

This study found that individuals in the Low Support class exhibited lower AL than their peers in the High Support class and found no differences in anxiety or depression by class, nor any moderation effects for pride and community connectedness. Further research is required to understand whether the findings concerning AL reflect the resilience of individuals who continue to live in low support contexts or if intra-minority stress and community discord in higher support contexts may account for increased AL. It is important to examine why the data in this study did not reflect an effect of either community connectedness and pride on health to better conceptualize the influence of these factors on mental and physical health in TGD populations. Research in the areas of community connectedness and pride are particularly mixed and more work is needed in this area to understand more about these factors and their protective qualities.

APPENDIX

Measures and Questionnaires

Demographics

1. Which of the following best describes your gender? Because this survey is only for transgender people, we do not have options for cisgender people below.

a. Transman/Trans man
b. Transwoman/Trans woman
c. Genderqueer
d. Non-binary
e. Agender
f. Androgyne
g. Genderfluid
h. Woman
i. Man
j. Bigender
k. Not listed – please specify: [text box response]

2. What sex were you assigned at birth, on your original birth certificate?

a. Female
b. Male
3. Do you have a difference of sex development (DSD or intersex)?
a. No
b. Yes
c. Unsure

4. Age [text response box]

5. Birth Month [text response box]

6. Birth Day: [text response box]

7. What race do you identify with? Select all that apply.
a. Black or African American
b. American Indian or Alaska Native
c. Native Hawaiian or Other Pacific Islander
d. Asian
e. Latino/a/x
f. White

g. Not listed – please specify [text box]

8. Which of these commonly used sexual orientation categories best captures your identity? Check all that apply

a. Bisexual

b. Gay

c. Lesbian

d. Queer

e. Asexual

f. Pansexual

g. Heterosexual/straight

h. Not listed – please specify [text box response]

11. What best describes your employment/student status? [check all that apply]

a. Employed full-time

b. Employed part-time

c. A full-time student

d. A part-time student

e. Unable to work for health reasons

f. Unemployed

g. Other [text box]

12. Please tell us your current occupation: [text response]

13. Which of the following best describes your living situation?

a. Living alone in an apartment, dorm, or house

b. Living with parents or family

c. Living with a roommate(s) in an apartment, dorm, or house

d. Living with a romantic or sexual partner

e. Group home or residential treatment facility

f. No permanent home address (homeless, squatting, etc.)

14. What is the highest degree or level of school you have completed? If you are currently enrolled, please mark the previous grade of highest degree received.

a. None

b. Primary, Elementary and/or junior high

c. Some high school

d. High school graduate – high school diploma or equivalent (i.e. GED)

e. Some college credit, but less than 1 year

f. Technical or vocational school degree

g. One or more years of college, no degree

h. Associate's degree
i. Bachelor's degree
j. Master's degree
k. Doctorate or professional degree (e.g., PhD, MD, JD, DDS)
l. Graduate of a Certificate Program

15. Please estimate your total personal income (gross income before taxes)

a. Less than $10,000
b. 10,000 – 19,999
c. 20,000 – 29,999
d. 30,000 – 39,999
e. 40,000 – 49,999
f. 50,000 – 59,999
g. 60,000 – 69,000
h. 70,000 – 79,000
i. 80,000 – 89,000
j. 90,000 – 99,000
k. More than $100,000

16. Do you share finances with another person (e.g., spouse or partner)?

a. Yes
b. No

17. [if 16 yes] Please estimate your total shared income (gross income before taxes)

a. Less than $10,000
b. 10,000 – 19,999
c. 20,000 – 29,999
d. 30,000 – 39,999
e. 40,000 – 49,999
f. 50,000 – 59,999
g. 60,000 – 69,000
h. 70,000 – 79,000
i. 80,000 – 89,000
j. 90,000 – 99,000
k. More than $100,000

25. What state do you live in? [text box]

Context Information

The town/city I currently live in has: (check all that apply)
- An LGBT bar or nightclub
- A pride celebration
- Trans inclusive places of worship

- Laws to protect against discrimination based on gender identity and/or gender expression

- A trans support group
- Visible trans leaders in the community
- Doctors that serve trans people effectively

- Therapists/mental health professionals that serve trans people effectively

- Other trans people that I might connect with/socialize with

- Organizations that are openly discriminatory or publicly negative about trans people

- Known cases of discrimination based on gender identity and/or gender expression

- Other resources for the trans community

- Other organizations or individuals that might negatively impact the trans community

The town/city I grew up in had: (check all that apply)
- An LGBT bar or nightclub
- A pride celebration
- Trans inclusive places of worship

- Laws to protect against discrimination based on gender identity and/or gender expression

- A trans support group
- Visible trans leaders in the community
- Doctors that serve trans people effectively

- Therapists/mental health professionals that serve trans people effectively

- Other trans people that I might connect with/socialize with

- Organizations that are openly discriminatory or publicly negative about trans people

- Known cases of discrimination based on gender identity and/or gender expression

- Other resources for the trans community

- Other organizations or individuals that might negatively impact the trans community

Source: Investigator created based on Puckett, Horne, Herbitter, Maroney, & Levitt (2017)

Gender Minority Stress and Resilience Scale

Pride Subscale

1. My gender identity or expression makes me feel special and unique.

2. It is okay for me to have people know that my gender identity is different from my sex assig

3. I have no problem talking about my gender identity and gender history to almost anyone.

4. It is a gift that my gender identity is different from my sex assigned at birth.

5. I am like other people but I am also special because my gender identity is different from my at birth.

6. I am proud to be a person whose gender identity is different from my sex assigned at birth.

7. I am comfortable revealing to others that my gender identity is different from my sex assign

8. I'd rather have people know everything and accept me with my gender identity and gender h

Community Connectedness Subscale

15. I feel part of a community of people who share my gender identity.

16. I feel connected to other people who share my gender identity.

17. When interacting with members of the community that shares my gender identity, I feel like I belong.

18. I'm not like other people who share my gender identity. (R)

19. I feel isolated and separate from other people who share my gender identity. (R)

Source: Gender Minority Stress & Resilience Scale (Testa, Habarth, Peta, Balsam, & Bockting, 2015)

PROMIS Depression Scale

Instructions: Please respond to each item by choosing one answer per question. In the past 7 days…

1. I felt worthless
2. I felt helpless
3. I felt depressed
4. I felt hopeless
5. I felt like a failure
6. I felt unhappy
7. I felt that I had nothing to look forward to
8. I felt that nothing could cheer me up

Source: PROMIS Item Bank v1.0 – Emotional Distress – Depression–Short Form 8a; Cella et al., 2011

PROMIS Anxiety Scale

Instructions: Please respond to each item by choosing one answer per question. In the past 7 days…

1. I felt fearful
2. I found it hard to focus on anything other than my anxiety
3. My worries overwhelmed me
4. I felt uneasy
5. I felt nervous
6. I felt like I needed help for my anxiety
7. I felt anxious
8. I felt tense

Source: PROMIS Item Bank v1.0 – Emotional Distress – Anxiety – Short Form 8a; Cella et al., 2011

REFERENCES

REFERENCES

American Psychiatric Association (n.d.b.). *LEVEL 2—Anxiety—Adult (PROMIS Emotional Distress—Anxiety—Short Form)*. https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/APA_DSM5_Level-2-Anxiety-Adult.pdf

American Psychiatric Association (n.d.a). *LEVEL 2—Depression—Adult (PROMIS Emotional Distress—Depression—Short Form)*. https://www.psychiatry.org/File%20Library/Psychiatrists/Practice/DSM/APA_DSM5_Level-2-Depression-Adult.pdf

Barr, S. M., Budge, S. L., & Adelson, J. L. (2016). Transgender community belongingness as a mediator between strength of transgender identity and well-being. *Journal of Counseling Psychology*, *63*(1), 87-97. https://doi.org/10.1037/cou0000127

Blosnich, J. R., Marsiglio, M. C., Gao, S., Gordon, A. J., Shipherd, J. C., Kauth, M., Brown, G. R., & Fine, M. J. (2016). Mental health of transgender veterans in US states with and without discrimination and hate crime legal protection. *American Journal of Public Health*, *106*(3), 534-540. https://doi.org/10.2105/AJPH.2015.302981

Bockting, W. O., Miner, M. H., Swinburne Romine, R. E., Hamilton, A., & Coleman, E. (2013). Stigma, mental health, and resilience in an online sample of the US transgender population. *American Journal of Public Health*, *103*(5), 943-951. https://doi.org/10.2105/AJPH.2013.301241

Burton, C. L., Clark, K. A., & Pachankis, J. E. (2020). Risk from within: Intraminority gay community stress and sexual risk-taking among sexual minority men. *Annals of Behavioral Medicine*, *54*(9), 703-712. https://doi.org/10.1093/abm/kaaa014

Brooks, V. R. (1981). *Minority stress and lesbian women*. Free Press.

Budge, S. L., Domínguez Jr, S., & Goldberg, A. E. (2020). Minority stress in nonbinary students in higher education: The role of campus climate and belongingness. *Psychology of Sexual Orientation and Gender Diversity*, *7*(2), 222-228. http://dx.doi.org/10.1037/sgd0000360

Budge, S. L., Adelson, J. L., & Howard, K. A. (2013). Anxiety and depression in transgender individuals: The roles of transition status, loss, social support, and coping. *Journal of Consulting and Clinical Psychology*, *81*(3), 545-557. https://doi.org/10.1037/a0031774

Burgess, S. R., & Brettschneider, M. (2018). Staying tuned: LGBTQIA politics in the Trump era. *Politics & Gender*, *14*(4), 553-560. https://doi.org/doi:10.1017/S1743923X18000764

Cella, D., Riley, W., Stone, A., Rothrock, N., Reeve, B., Yount, S., Amtmann., D., Bode, R., Buysse., D., Choi, S., Cook, K., DeVellis, R., DeWalt, D., Fries, J. F., Gershon, R., Hahn, E. A., Lai, J. S., Pilkonis, P., Revicki, D., Rose, M., Weinfurt, K., Hays, R., & PROMIS

Cooperative Group. (2010). The Patient-Reported Outcomes Measurement Information System (PROMIS) developed and tested its first wave of adult self-reported health outcome item banks: 2005–2008. *Journal of Clinical Epidemiology*, *63*(11), 1179-1194. https://doi.org/10.1016/j.jclinepi.2010.04.011

Chida, Y., & Steptoe, A. (2009). Cortisol awakening response and psychosocial factors: A systematic review and meta-analysis. *Biological Psychology*, *80*(3), 265-278. https://doi.org/10.1016/j.biopsycho.2008.10.004

Convertino, A. D., Brady, J. P., Albright, C. A., Gonzales IV, M., & Blashill, A. J. (2021). The role of sexual minority stress and community involvement on disordered eating, dysmorphic concerns and appearance-and performance-enhancing drug misuse. *Body Image*, *36*(1), 53-63. https://doi.org/10.1016/j.bodyim.2020.10.006

Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A black feminist critique of antidiscrimination doctrine, feminist theory and antiracist politics. *University of Chicago Legal Forum, 140*(1), 139-167. https://doi.org/10.4324/9780429500480-5

Day, J. K., Fish, J. N., Grossman, A. H., & Russell, S. T. (2020). Gay-straight alliances, inclusive policy, and school climate: LGBTQ youths' experiences of social support and bullying. *Journal of research on adolescence*, *30*(S2), 418-430. https://doi.org/10.1111/jora.12487

Diamond, L. M., Dehlin, A. J., & Alley, J. (2021). Systemic inflammation as a driver of health disparities among sexually-diverse and gender-diverse individuals. *Psychoneuroendocrinology*, *129*(1), 1-18. https://doi.org/10.1016/j.psyneuen.2021.105215

Drabble, L. A., Veldhuis, C. B., Wootton, A., Riggle, E. D., & Hughes, T. L. (2019). Mapping the landscape of support and safety among sexual minority women and gender non-conforming individuals: Perceptions after the 2016 US presidential election. *Sexuality Research and Social Policy*, *16*(4), 488-500. https://doi.org/10.1007/s13178-018-0349-6

Dressler, W. W., Balieiro, M. C., Ribeiro, R. P., & Dos-Santos, J. E. (2006). Depressive symptoms and C-reactive protein in a Brazilian urban community. *Brazilian Journal of Medical and Biological Research*, *39*(8), 1013-1019. https://doi.org/10.1590/S0100-879X2006000800003

DuBois, L. Z. (2012). Associations between transition-specific stress experience, nocturnal decline in ambulatory blood pressure, and C-reactive protein levels among transgender men. *American Journal of Human Biology*, *24*(1), 52-61. https://doi.org/10.1002/ajhb.22203

DuBois, L. Z., Gibb, J. K., Juster, R. P., & Powers, S. I. (2021). Biocultural approaches to transgender and gender diverse experience and health: Integrating biomarkers and advancing gender/sex research. *American Journal of Human Biology*, *33*(1), 1-19. https://doi.org/10.1002/ajhb.23555

DuBois, L. Z., Powers, S., Everett, B. G., & Juster, R. P. (2017). Stigma and diurnal cortisol among transitioning transgender men. *Psychoneuroendocrinology*, *82*(1), 59-66. http://dx.doi.org/10.1016/j.psyneuen.2017.05.008

Duncan, D. T., & Hatzenbuehler, M. L. (2014). Lesbian, gay, bisexual, and transgender hate crimes and suicidality among a population-based sample of sexual-minority adolescents in Boston. *American Journal of Public Health*, *104*(2), 272-278. https://doi.org/10.2105/AJPH.2013.301424

Flaskerud, J. H., & Lesser, J. (2018). The current socio-political climate and psychological distress among transgender people. *Issues in Mental Health Nursing*, *39*(1), 93-96. https://doi-org.proxy1.cl.msu.edu/10.1080/01612840.2017.1368751

Galupo, M. P., Henise, S. B., & Davis, K. S. (2014). Transgender microaggressions in the context of friendship: Patterns of experience across friends' sexual orientation and gender identity. *Psychology of Sexual Orientation and Gender Diversity*, *1*(4), 461-470. http://dx.doi.org/10.1037/sgd0000075

Grant, R. W., McCloskey, J., Hatfield, M., Uratsu, C., Ralston, J. D., Bayliss, E., & Kennedy, C. J. (2020). Use of latent class analysis and k-means clustering to identify complex patient profiles. *JAMA Network Open*, *3*(12), 1-13. https://doi.org/10.1001/jamanetworkopen.2020.29068

Gower, A. L., Rider, G. N., Brown, C., McMorris, B. J., Coleman, E., Taliaferro, L. A., & Eisenberg, M. E. (2018). Supporting transgender and gender diverse youth: Protection against emotional distress and substance use. *American Journal of Preventive Medicine*, *55*(6), 787-794. https://doi.org/10.1016/j.amepre.2018.06.030

Hatzenbuehler, M. L. (2011). The social environment and suicide attempts in lesbian, gay, and bisexual youth. *Pediatrics*, *127*(5), 896-903. https://doi.org/10.1542/peds.2010-3020

HealthMeasures. (2019b, March 1). *Anxiety: A brief guide to the PROMIS[©] Anxiety Instrument.* https://www.healthmeasures.net/images/PROMIS/manuals/PROMIS_Anxiety_Scoring_Manual.pdf

HealthMeasures. (2019a, February 28). *Depression: A brief guide to the PROMIS© Depression Instrument.* https://www.healthmeasures.net/images/PROMIS/manuals/PROMIS_Anxiety_Scoring_Manual.pdf

Hughto, J. M. W., Reisner, S. L., & Pachankis, J. E. (2015). Transgender stigma and health: A critical review of stigma determinants, mechanisms, and interventions. *Social Science & Medicine*, *147*(1), 222-231. https://doi.org/10.1016/j.socscimed.2015.11.010

Human Rights Campaign. (2018) *Dismantling a Culture of Violence: Understanding Anti-Transgender Violence and Ending the Crisis*. Human Rights Campaign. https://assets2.hrc.org/files/assets/resources/2018AntiTransViolenceReportSHORTENED.pdf

Huxley, R., Mendis, S., Zheleznyakov, E., Reddy, S., & Chan, J. (2010). Body mass index, waist circumference and waist: hip ratio as predictors of cardiovascular risk—a review of the literature. *European Journal of Clinical Nutrition*, *64*(1), 16-22. https://doi.org/10.1038/ejcn.2009.68

Inderbinen, M., Schaefer, K., Schneeberger, A., Gaab, J., & Nuñez, D. G. (2021). Relationship of internalized transnegativity and protective factors with depression, anxiety, non-suicidal self-injury and suicidal tendency in trans populations: a systematic review. *Frontiers in Psychiatry*, *12*(1), 1-13. https://doi.org/10.3389/fpsyt.2021.636513

Jäggi, T., Jellestad, L., Corbisiero, S., Schaefer, D. J., Jenewein, J., Schneeberger, A., Kuhn, A., & Garcia Nuñez, D. (2018). Gender minority stress and depressive symptoms in transitioned Swiss transpersons. *BioMed Research International*, *2018*(1), 1-10. https://doi.org/10.1155/2018/8639263

James, S., Herman, J., Rankin, S., Keisling, M., Mottet, L., & Anafi, M. A. (2016). The report of the 2015 US transgender survey. *National Center for Transgender Equality*. https://www.transequality.org/sites/default/files/docs/USTS-Full-Report-FINAL.PDF

Jefferson, K., Neilands, T. B., & Sevelius, J. (2013). Transgender women of color: discrimination and depression symptoms. *Ethnicity and Inequalities in Health and Social Care*, *6*(4), 121-136. https://doi.org/10.1108/EIHSC-08-2013-0013

Juster, R. P. (2019). Sex× gender and sexual orientation in relation to stress hormones and allostatic load. *Gender and the Genome*, *3*(1), 1-17. https://doi.org/10.1177/2470289719862555

Juster, R. P., de Torre, M. B., Kerr, P., Kheloui, S., Rossi, M., & Bourdon, O. (2019). Sex differences and gender diversity in stress responses and allostatic load among workers and LGBT people. *Current Psychiatry Reports*, *21*(11), 1-11. https://doi.org/10.1007/s11920-019-1104-2

Juster, R. P., McEwen, B. S., & Lupien, S. J. (2010). Allostatic load biomarkers of chronic stress and impact on health and cognition. *Neuroscience & Biobehavioral Reviews*, *35*(1), 2-16. https://doi.org/10.1016/j.neubiorev.2009.10.002

Juster, R. P., Ouellet, É., Lefebvre-Louis, J. P., Sindi, S., Johnson, P. J., Smith, N. G., & Lupien, S. J. (2016a). Retrospective coping strategies during sexual identity formation and current biopsychosocial stress. *Anxiety, Stress, & Coping*, *29*(2), 119-138. https://doi.org/10.1080/10615806.2015.1004324

Juster, R. P., Russell, J. J., Almeida, D., & Picard, M. (2016b). Allostatic load and comorbidities: A mitochondrial, epigenetic, and evolutionary perspective. *Development and Psychopathology*, *28*(4.1), 1117-1146. https://doi.orgo/10./1017/S0954579416000730

Kaplan, S. C., Butler, R. M., Devlin, E. A., Testa, R. J., Horenstein, A., Swee, M. B., & Heimberg, R. G. (2019). Rural living environment predicts social anxiety in transgender

and gender nonconforming individuals across Canada and the United States. *Journal of Anxiety Disorders*, *66*(1), 1-7. https://doi.org/10.1016/j.janxdis.2019.102116

MacCarthy, S., Bogart, L. M., Galvan, F. H., & Pantalone, D. W. (2021). Inter-group and intraminority-group discrimination experiences and the coping responses of Latino sexual minority men living with HIV. *Annals of LGBTQ Public and Population Health*, *2*(1), 1-21. https:// http://dx.doi.org/10.1891/LGBTQ-2020-0028

McDowell, A., Raifman, J., Progovac, A. M., & Rose, S. (2020). Association of nondiscrimination policies with mental health among gender minority individuals. *JAMA Psychiatry*, *77*(9), 952-958. https://doi.org/10.1001/jamapsychiatry.2020.0770

Masyn, K. E. (2013). Latent Class Analysis and Finite Mixture Modeling, In T. D. Little (Ed.), *The Oxford handbook of quantitative methods* (551-511). Oxford University Press.

Matsuno, E., & Israel, T. (2018). Psychological interventions promoting resilience among transgender individuals: Transgender resilience intervention model (TRIM). *The Counseling Psychologist*, *46*(5), 632-655. https://doi.org/10.1177/0011000018787261

Matthews, K. A., Katholi, C. R., McCreath, H., Whooley, M. A., Williams, D. R., Zhu, S., & Markovitz, J. H. (2004). Blood pressure reactivity to psychological stress predicts hypertension in the CARDIA study. *Circulation*, *110*(1), 74-78. https://doi.org/10.1161/01.CIR.0000133415.37578.E4

McCurley, J. L., Mills, P. J., Roesch, S. C., Carnethon, M., Giacinto, R. E., Isasi, C. R., Tenh, Y., Sortes-Alvarez, D., Llabre, M. M., Penedo, F. J., Schneiderman, N., & Gallo, L. C. (2015). Chronic stress, inflammation, and glucose regulation in US Hispanics from the HCHS/SOL sociocultural ancillary study. *Psychophysiology*, *52*(8), 1071-1079. https://doi.org/10.1111/psyp.12430

McDade, T. W., Hawkley, L. C., & Cacioppo, J. T. (2006). Psychosocial and behavioral predictors of inflammation in middle-aged and older adults: the Chicago health, aging, and social relations study. *Psychosomatic Medicine*, *68*(3), 376-381.

McQuillan, M. T., Kuhns, L. M., Miller, A. A., McDade, T., & Garofalo, R. (2020). Gender minority stress, support, and inflammation in transgender and gender-nonconforming youth. *Transgender Health*, *6*(2), 91-100. http://doi.org/10.1089/trgh.2020.0019

Millet, N., Longworth, J., & Arcelus, J. (2017). Prevalence of anxiety symptoms and disorders in the transgender population: A systematic review of the literature. *International Journal of Transgenderism*, *18*(1), 27-38. http://dx.doi.org/10.1080/15532739.2016.1258353

Moreau, J. (2021, January 26). *Advocates brace for anti-LGBTQ backlash at state level after Biden victory*. NBC News. https://www.nbcnews.com/feature/nbc-out/advocates-brace-anti-lgbtq-backlash-state-level-after-biden-victory-n1255606

Morgan, E., Taylor, H. E., Ryan, D. T., D'Aquila, R., & Mustanski, B. (2019). Systemic inflammation is elevated among both HIV-uninfected and-infected young men who have sex with men. *AIDS*, *33*(4), 757-759. https://doi.org/10.1097/QAD.0000000000002093

Meyer, I. H. (2003). Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence. *Psychological Bulletin*, *129*(5), 674-697. https://doi.org/10.1037/0033-2909.129.5.674

The Methodology Center (2020, May 11). *LCA Applied Example*. The Methodology Center at Pennsylvania State University, College of Health and Human Development. https://www.methodology.psu.edu/ra/lca/example/.

Nemoto, T., Bödeker, B., & Iwamoto, M. (2011). Social support, exposure to violence and transphobia, and correlates of depression among male-to-female transgender women with a history of sex work. *American Journal of Public Health*, *101*(10), 1980-1988. https://doi.org/10.2105/ AJPH.2010.197285

Pachankis, J. E., Clark, K. A., Burton, C. L., Hughto, J. M. W., Bränström, R., & Keene, D. E. (2020). Sex, status, competition, and exclusion: Intraminority stress from within the gay community and gay and bisexual men's mental health. *Journal of Personality and Social Psychology*, *119*(3), 713-741. http://dx.doi.org/10.1037/pspp0000282

Panagiotakos, D. B., Pitsavos, C., Yannakoulia, M., Chrysohoou, C., & Stefanadis, C. (2005). The implication of obesity and central fat on markers of chronic inflammation: The ATTICA study. *Atherosclerosis*, *183*(2), 308-315. https://doi.org/10.1016/j.atherosclerosis.2005.03.010

Parmenter, J. G., Galliher, R. V., Wong, E., & Perez, D. (2021). An intersectional approach to understanding LGBTQ+ people of color's access to LGBTQ+ community resilience. *Journal of Counseling Psychology, 68*(6), 629-641. https://doi.org/10.1037/cou0000578

Pepys, M. B., & Hirschfield, G. M. (2003). C-reactive protein: a critical update. *The Journal of Clinical Investigation*, *111*(12), 1805-1812. https://doi.org/10.1172/JCI18921

Pickles, J. (2021). Sociality of hate: The transmission of victimization of LGBT+ people through social media. *International Review of Victimology*, *27*(3), 311-327. https://doi.org/10.1177/0269758020971060

Price, S. F., Puckett, J., & Mocarski, R. (2020). The impact of the 2016 US presidential elections on transgender and gender diverse people. *Sexuality Research and Social Policy*, *18*(1), 1094–1103 https://doi.org/10.1007/s13178-020-00513-2

Puckett, J. A., Aboussouan, A. B., Ralston, A. L., Mustanski, B., & Newcomb, M. E. (2021). Systems of cissexism and the daily production of stress for transgender and gender diverse people. *International Journal of Transgender Health*, Advanced online publication. https://doi.org/10.1080/26895269.2021.1937437

Puckett, J. A., Horne, S. G., Herbitter, C., Maroney, M. R., & Levitt, H. M. (2017). Differences across contexts: Minority stress and interpersonal relationships for lesbian, gay, and bisexual women. *Psychology of Women Quarterly*, *41*(1), 8-19. https://doi.org/10.1177/0361684316655964

Puckett, J. A., Maroney, M. R., Wadsworth, L. P., Mustanski, B., & Newcomb, M. E. (2020). Coping with discrimination: The insidious effects of gender minority stigma on depression and anxiety in transgender individuals. *Journal of Clinical Psychology*, *76*(1), 176-194. https://doi.org/10.1002/jclp.22865

Puckett, J. A., Matsuno, E., Dyar, C., Mustanski, B., & Newcomb, M. E. (2019). Mental health and resilience in transgender individuals: What type of support makes a difference?. *Journal of Family Psychology*, *33*(8), 954–964. https://doi.org/10.1037/fam0000561

Rabasco, A., & Andover, M. (2020). The Influence of State Policies on the Relationship Between Minority Stressors and Suicide Attempts Among Transgender and Gender-Diverse Adults. *LGBT health*, *7*(8), 457-460. https://doi.org/10.1089/lgbt.2020.0114

Rapkin, B. D., & Luke, D. A. (1993). Cluster analysis in community research: Epistemology and practice. *American Journal of Community Psychology*, *21*(2), 247-277. https://doi.org/10.1007/BF00941623

Ratner, K. G., Halim, M. L., & Amodio, D. M. (2013). Perceived stigmatization, ingroup pride, and immune and endocrine activity: Evidence from a community sample of Black and Latina women. *Social Psychological and Personality Science*, *4*(1), 82-91. https://doi.org/10.1177/1948550612443715

Rotondi, N. K., Bauer, G. R., Travers, R., Travers, A., Scanlon, K., & Kaay, M. (2011). Depression in male-to-female transgender Ontarians: results from the Trans PULSE Project. *Canadian Journal of Community Mental Health*, *30*(2), 113-133. https://doi.org/10.7202/1017478

Scandurra, C., Amodeo, A. L., Valerio, P., Bochicchio, V., & Frost, D. M. (2017). Minority stress, resilience, and mental health: A study of Italian transgender people. *Journal of Social Issues*, *73*(3), 563-585. https://doi.org/10.1111/josi.12232

Scandurra, C., Bochicchio, V., Dolce, P., Caravà, C., Vitelli, R., Testa, R. J., & Balsam, K. F. (2020). The Italian validation of the gender minority stress and resilience measure. *Psychology of Sexual Orientation and Gender Diversity*, *7*(2), 208-221. http://dx.doi.org/10.1037/sgd0000366

Sherman, A. D., Clark, K. D., Robinson, K., Noorani, T., & Poteat, T. (2020). Trans* community connection, health, and wellbeing: a systematic review. *LGBT health*, *7*(1), 1-14. https://dx.doi.org/10.1089/lgbt.2019.0014

Simmons-Duffin, S. (2020, June 12). *Transgender Health Protections Reversed by Trump Administration*. NPR. https://www.npr.org/sections/health-

shots/2020/06/12/868073068/transgender-health-protections-reversed-by-trump-administration

Singh, A. A., Hays, D. G., & Watson, L. S. (2011). Strength in the face of adversity: Resilience strategies of transgender individuals. *Journal of Counseling & Development*, *89*(1), 20-27. https://doi.org/10.1002/j.1556-6678.2011.tb00057.x

Soulliard, Z. A., Layland, E. K., Smith, J. C., Kipke, M. D., & Bray, B. C. (2022). Body image concerns, correlates, and community connection among Black and Latinx sexual minority cisgender men and transgender/gender nonconforming young adults. *LGBT health*, *9*(2), 1-9. https://doi.org/10.1089/lgbt.2021.0237

Staufenbiel, S. M., Penninx, B. W., Spijker, A. T., Elzinga, B. M., & van Rossum, E. F. (2013). Hair cortisol, stress exposure, and mental health in humans: a systematic review. *Psychoneuroendocrinology*, *38*(8), 1220-1235. https://doi.org/10.1016/j.psyneuen.2012.11.015

Su, D., Irwin, J. A., Fisher, C., Ramos, A., Kelley, M., Mendoza, D. A. R., & Coleman, J. D. (2016). Mental health disparities within the LGBT population: A comparison between transgender and nontransgender individuals. *Transgender Health*, *1*(1), 12-20. https://doi.org/10.1089/trgh.2015.0001

Testa, R. J., Jimenez, C. L., & Rankin, S. (2014). Risk and resilience during transgender identity development: The effects of awareness and engagement with other transgender people on affect. *Journal of Gay & Lesbian Mental Health*, *18*(1), 31-46. https://doi.org/10.1080/19359705.2013.805177

Testa, R. J., Habarth, J., Peta, J., Balsam, K., & Bockting, W. (2015). Development of the Gender Minority Stress and Resilience measure. *Psychology of Sexual Orientation and Gender Diversity*, *2*(1), 65-77. https://doi.org/10.1037/sgd0000081

Weinhardt, L. S., Stevens, P., Xie, H., Wesp, L. M., John, S. A., Apchemengich, I., Kioko, D., Shavez-Korell, S., Cochran, K.M., Watjen, J.M., & Lambrou, N. H. (2017). Transgender and gender nonconforming youths' public facilities use and psychological well-being: a mixed-method study. *Transgender Health*, *2*(1), 140-150. https://doi.org/10.1089/trgh.2017.0020

Westbrook, L. (2021). *Unlivable Lives: Violence and Identity in Transgender Activism*. University of California Press.

Yang, X., Wang, L., Gu, Y., Song, W., Hao, C., Zhou, J., Zhang, Q., & Zhao, Q. (2016). A cross-sectional study of associations between casual partner, friend discrimination, social support and anxiety symptoms among Chinese transgender women. *Journal of Affective Disorders*, *203*(1), 22-29. https://doi.org/10.1016/j.jad.2016.05.051