College Adjustment Among Transgender and Gender Nonconforming Students

by

Rebecca Witt Meacham

BA Youth Services, WV Wesleyan College, 1987

MA, Clinical Psychology, Marshall University, 2002

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This dissertation was presented

by

Rebecca Witt Meacham

It was defended on

February 27, 2020

and approved by

Heather Bachman, Ph.D., Psychology in Education

Dr. Sophia Choukas-Bradley, Ph.D., Psychology

Linda DeAngelo, Ph.D., Administrative and Policy Studies

Roger Klein, Ph.D., Psychology in Education

Thesis Advisor/Dissertation Director: Brian M. Galla, Ph.D., Psychology in Education

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Not all students make a successful transition to college, putting their degree completion at risk. The gender minority stress model (Testa et al., 2015) posits that gender minority students may especially struggle with the transition to college due to unique stressors, such as greater violence and lower perceptions of safety. This study utilized seven semesters of data (Fall 2015-Fall 2018) from the National College Health Assessment-IIc (NCHA-IIc; N=241,171) to examine the relationship between gender and college adjustment (operationalized as emotional distress). Mediation analysis explored if this relationship was influenced by the experiences of stressors. A moderation model investigated the relationship between campus residency, emotional distress, and stressors. Lastly, trends for emotional distress and stressors were examined for stability across semesters. Results indicated transgender and gender nonconforming (TGNC) students experience higher levels of emotional distress and stressors than their cisgender peers. Furthermore, although living on campus provided a greater feeling of safety for all, TGNC students and cisgender women who lived on campus reported higher levels of emotional distress. TGNC students reported high, yet stable levels of emotional distress and stressors across semesters. A sensitivity analysis examined the relationship between gender, emotional distress, and stressors by parceling TGNC students by congruence between sex assigned at birth and current gender identity. This study contributes to the field of college adjustment by addressing disparities of gender minorities and by examining distinctions between TGNC students who experience congruence and those who are not. Included are theoretical implications and recommendations for future research.

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Preface

My doctoral education has spanned more than a decade. It has been quite the journey. I would like to express my deepest gratitude and appreciation to my advisor, **Dr. Brian Galla**, who took on the unenviable task of teaching an old dog new tricks! I have a work that I'm proud of because of your advice and guidance. You also taught me how to use modern technology to my advantage and how to structure an argument. Because of you, I think and write more clearly. Because of your help, I am now Dr. Meacham!

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1.0 Introduction

College students are stressed. A recent national survey of 19,664 college students revealed that more than 66% report experiencing overwhelming anxiety and more than 46% felt so depressed it was difficult for them to function (American College Health Association, 2019). A closer look reveals that transgender and gender nonconforming (TGNC) students are struggling even more. Messman and Leslie (2019) found that, compared to female students, TGNC students were more likely to suffer from anxiety (82.6% vs 70.2% of the population, respectively) and depression (3.4% vs. 2.8%, respectively). Life transitions, like moving from high school to college, often require adaptation and change that can be stressful (Arnett, 2000). Adjusting to college life includes academic demands (e.g., heavier reading loads and more complex assignments), personal and emotional demands such as separating from parents and friends, and social demands, like forming new relationships and learning to live in a dormitory. Students who successfully navigate these challenges are more likely to earn better grades, graduate from college, and be poised to obtain jobs that pay well and provide benefits (Mayhew et al., 2016; Pascarella & Terenzini, 2005).

Successful adjustment to college may be more difficult for historically underrepresented groups (Smedley et al., 1993), including racial minorities, (Arbona et al., 2018; Huynh & Fuligni, 2012; Johnson et al., 2014; Wei et al., , 2011), who have often been the focus of much college adjustment research. This current study, however, examines TGNC student adjustment, a topic that has been less explored and is less well understood. Transgender and gender nonconforming(TGNC) students report disproportionately experiencing stressors such as violence (Martin-Storey et al., 2018) and harassment (Dugan et al., 2012; Griner et al., 2017; Pryor, 2015), which may manifest in a lower perception of safety (Messman & Leslie, 2019) and lower levels

of psychological well-being (Effrig et al., 2011) compared to some of their cisgender peers. Minority stress models (Meyer, 2003; Smedley et al., 1993; Testa et al, 2015) provide a general framework for understanding how stress undermines well-being in certain underrepresented populations. Unique stressors that these groups experience, such as increased rates of discrimination, add to typically experienced stress and produce less favorable outcomes (e.g., higher prevalence of mental disorders, Meyer, 2003).

1.1 Purpose of the Study

This study seeks to understand disparities in college adjustment between TGNC and cisgender students. Utilizing data from a large national survey of over 290,000 undergraduate college students spanning four academic years (seven consecutive semesters), I will explore (1) TGNC vs. cisgender students on college adjustment; (2) mechanisms of violence and safety that might explain disparities in adjustment; (3) moderators of adjustment, specifically whether living on campus protects or hinders personal-emotional adjustment, and (4) secular trends in transgender college adjustment. This study also offers an unprecedented look at TGNC students and their adjustment to college. Although a handful of inquiries have examined differences between TGNC and cisgender college students, very few have utilized a large national dataset with multiple cohort comparisons, and none have made these comparisons within a gender minority stress framework. Additionally, no study, to my knowledge, has used college residency status as an adjustment variable when comparing TGNC and cisgender students.

In the literature review that follows, I will first define the term “TGNC,” and then broadly define college adjustment, describe its importance, and offer a brief history. Next, I will discuss

how the minority stress model offers an explanation for why TGNC personal-emotional adjustment to college differs from that of cisgender students. Finally, I will describe my research questions, the dataset used to answer those questions (from the American College Health Association's National College Health Assessment [ACHA-NCHA-IIc]), and my analytical approach.

2.0 Review of the Literature

2.1 "TGNC" Defined

TGNC (transgender and gender nonconforming) is a relatively new term referring to people whose sex assigned at birth differs from their current expression of gender (American Psychological Association, 2020, p. 139). Considering that definitions of "transgender" and "gender non-conforming" in research literature vary, it is important to clarify how I will refer to the participants in my study. To adequately define TGNC, differentiating between "sex" and "gender" is necessary, as these terms have often been used interchangeably. According to Dotto (2019), *sex* refers to the genetic and biological differences between males and females, often specified according to the genitalia that one is born with. *Gender*, on the other hand, refers to the social norms and expectations that are associated with a specific sex; for example, equating women with a caregiving role. *Gender status* is how someone experiences being a man or a woman, according to the cultural norms of their society; a person's gender status may or may not align with their sex assigned at birth (Dotto, 2019). Gender status may also be experienced as occurring somewhere between that of a man or a woman, or even outside these binary designations, ("agender" or "non-binary;" Gender Spectrum, 2019). Originally, the term "transgender," using the prefix "trans," meaning "across from," implied someone moving from one sex to another (as may happen with surgery and/or hormone treatment, Boskey, 2018). The counterpart term, "cisgender," using the prefix "cis," meaning "on this side of," (Merriam-Webster, n.d.) describes someone whose sex assigned at birth is identical to their current experience and expression of gender status.

There is not an agreed upon gold standard definition for the term “transgender,” making it difficult to compare studies within this population. The literature on TGNC college adjustment is likewise hampered by the rich array of terms and definitions that are used to indicate gender. Many researchers have used the broad term “transgender” for people who experience gender in a non-typical way, as this term is both encompassing and parsimonious (see Dugan et al., 2012; Goldberg et al., 2018; Meerwijk & Sevelius, 2017; Pryor, 2015; Seelman, 2014 and 2016; Seelman et al., 2017). Other terms, such as “non-binary” (Martin-Storey et al., 2018) and “gender-variant” (BrckaLorenz et al., 2017) have been less commonly used in the body of literature on college adjustment. Someone who refers to themselves as “non-binary” is usually indicating that they do not experience their gender as either a man or a woman, but it is not clear if they feel that their gender falls somewhere between or somewhere outside of these polarities (National Center for Transgender Equality, 2018). Therefore, depending on how you define the terms, “non-binary” and “transgender” could either be used interchangeably, or they could indicate two different experiences. Similarly, “gender non-conforming” and “gender variant” are both terms that indicate someone who does not experience gender in a traditionally masculine or feminine way (PFLAG, 2019), and might also suggest that someone is transgender. Currently, the American Psychological Association recommends use of “TGNC” as it is “a generally agreed-upon umbrella term” (American Psychological Association, 2020, p. 139).

As sex and gender have been used interchangeably in the past, some research on college adjustment has confounded these concepts, most frequently by failing to differentiate LGB (lesbian, bisexual and gay) students from T (transgender) students; that is, failing to differentiate between sexual orientation and gender status (e.g. Mustanski et al., 2016; Riley et al., 2016; Schmidt et al., 2011). Sexual orientation commonly refers to whom someone is sexually or

romantically attracted (American Psychological Association, 2008). Although distinctions between the two constructs are becoming more common, the body of research with TGNC college students is nowhere near as prolific as the research being done with LGB students.

Following best practices (Broussard et al., 2017; Fraser, 2018; Tate et al., 2013), in this study, individuals will be designated as TGNC if the following criteria are met: (1) they identify with a gender that is not congruent with sex assigned at birth, and/or (2) they explicitly indicate that they are "transgender." Cases that violate these principles will be hand-coded (see Methods and Appendix D for more information).

2.2 College Adjustment Defined

College adjustment is a multidimensional construct that reflects the complex challenges faced by incoming first year students attempting to acclimatize themselves to both the academic and social domains of college life. Conceptualizations of adjustment may vary, but they often include three related, but distinct dimensions: personal-emotional adjustment, social adjustment, and academic adjustment. Personal-emotional adjustment is defined as a sense of both psychological and physical well-being and can include affective states such as anxiety and depression (Bowman et al., 2019). Social adjustment is defined as a student's involvement in campus activities as well as feelings of belonging and of being a good fit with the institution (Baker & Siryk, 1984; Dugan et al., 2012; Nicolazzo et al., 2017; Vaccaro & Newman, 2016). Academic adjustment is defined as the adequacy and effectiveness of a student's academic effort, and includes such things as assignment completion, frequency of class attendance (Baker & Siryk, 1984), and grade point average (Brcka-Lorenz et al., 2017; Woodford et al., 2017).

Although college adjustment is multidimensional, in this study I focus on personal-emotional adjustment for the following reasons:

a. Personal-emotional adjustment is a critical area of disparity between TGNC and cisgender college students in past research (Borgogna et al., 2019; Stolzenberg & Hughes, 2017).
b. Personal-emotional adjustment largely influences other types of adjustment, such as academic and social. For example, students who are less distressed emotionally, may be more able to focus on attending class, completing homework, making friends, and joining clubs (Credé & Niehorster, 2012, p. 157).
c. Experiencing poor personal-emotional adjustment, for any student, has been shown to be negatively correlated with retention and graduation (Credé & Niehorster, 2012), making this a crucial area of exploration for those who are interested in promoting success in college students.

Because of the critical importance of personal-emotional adjustment to student competence in all dimensions of college life, this study will specifically look at how TGNC students adjust to college on the personal-emotional dimension, compared with their cisgender peers, and explore other related variables and trends influencing this type of adjustment.

The most common way to assess personal-emotional adjustment is through subjective self-report scales, including the Student Adaptation to College Questionnaire (Baker & Siryk, 1984) and the College Adjustment Questionnaire (O'Donnell, et. al., 2018). Other, more general self-report assessments of mental health have been used (Bowman et al., 2019) and ask students to rate themselves on items such as, "Lately, I have been feeling blue and moody a lot" (Baker & Siryk,

1984). Objective measures, such as frequency of using psychological services provided on campus, can also be used to assess personal-emotional adjustment (Beyers & Goossens, 2002).

College adjustment is vital for the success of both students and institutions. It influences retention (Credé & Niehorster, 2012) and is therefore able to predict which students may have the persistence necessary to reach graduation. Students who are well adjusted are more likely to finish school relative to peers who are less well adjusted. For example, a longitudinal study of over 1,000 high school students in Quebec found those who reported higher levels of emotional and social adjustment were more likely to complete their college education (LaRose et al., 2018). Institutions are also stakeholders in college adjustment, as they compete for a shrinking population of emerging adults to recruit and enroll (Horn, 2018). Students who drop out no longer pay tuition, and this results in reduced income to their former institution. The sooner colleges can identify undergraduates who are not adjusting well, the more likely they can offer timely intervention opportunities aimed at retaining them as students.

2.3 Historic Approaches to College Adjustment

For more than 100 years, institutions of higher learning have sought to understand factors related to students leaving before attaining a degree (i.e., attrition) and how to best keep them enrolled (i.e., persistence, Bean, 1980; National Survey of Student Engagement, 2018). Early theorists of attrition, including Astin (1975) and Tinto (1975), found that if new college students involved themselves with their current environment (e. g., joined a club), their likelihood of graduation increased. Astin's theory of involvement focused on measuring a student's *behavior*, conceptualizing involvement as the energy a student invests in any activity (e.g., going to class,

joining a club), whereas Tinto's theory of integration emphasized a student's *perception* of the extent to which they had adapted to the culture of the campus environment (e.g., sharing the attitudes and values of peers and professors). Tinto's theory was groundbreaking as it examined institutional characteristics (e.g., student access to professors) and student perceptions, rather than student traits (e.g., lack of ability), that could promote or discourage college adjustment (Melguizo, 2011). Most research in the field of college student adjustment primarily relies on Tinto's model of integration (Melguizo, 2011), despite the fact that the preferred model of student persistence incorporates both student behavior *and* perception (Milem & Berger, 1997).

2.4 Modern Approaches to College Adjustment

Although the shared constructs of involvement and integration offer insight into understanding college adjustment, these theories may not necessarily be representative to all students. For example, in his criticism of Tinto's (1975) theory of integration, Tierney (1999) argued that Tinto's assertion that assimilation into the dominant culture of a college campus is necessary for racial minority student success, "legitimizes one culture over another" (Melguizo, 2011, p. 401). Additionally, many studies of college student retention show patterns of higher attrition for racial minority college students (e.g., Arbona et al., 2018), especially when they were attending predominantly White universities (e.g., Johnson et al., 2014; Wei et al., 2011). Although attempts to understand college adjustment disparity began with a focus on racial minorities (Huynh & Fuligni, 2012), it expanded to other minority distinctions, such as physical disabilities (Vaccaro et al., 2015), first generation college students (Jean, 2010), community college students (Tovar, 2013) and students with autism (Trevisan & Birmingham, 2016).

One model of college adjustment that has come into prominence to explain why some students have a more difficult time than others making the transition to college, is the *minority stress model* (Smedley et al., 1993). The minority stress model was developed based on a study of 161 ethnic minority first year students at a predominantly White university. At the end of their first year, students in this study rated their experiences in three separate areas: stressful life events; stress related to the role of college student; and stress related to minority status. Minority status stressors included experiences of racism and discrimination, interracial stressors, social environment factors (e.g., negative treatment by faculty, having few professors or classmates of the same race), and stressors related to academic achievement. Adjustment outcome variables were ratings of general well-being, ratings of psychological distress, and end-of-first-year GPA. The authors found that minority-specific stressors added a unique and significant contribution to poor college adjustment, above and beyond that of stressful life events and the common stress of being a college student. When combined with other stressors, minority-specific stressors significantly accounted for both lower GPA (9% of the increased variance) and higher reported ratings of psychological distress (12% of the increased variance) in the first-year students surveyed. Although many students experience stress in the transition to college, experiencing racism and discrimination may create an additional psychological burden on underrepresented students' coping skills (Smedley et al., 1993), therefore increasing the prospect of depression or attrition (Arbona et al., 2018; Bennett & Okinaka,1990).

The minority stress model was later extended to explain the increased rate of mental health disorders reported by the lesbian, gay and bisexual population (Meyer, 2003). The author's explanation for this disparity is that there are stressors uniquely related to sexual minority status that add an additional burden to the general stress already experienced by all people. These unique

sexual minority stressors include self-hatred (internalized homophobia) and feeling the need to conceal one's sexual orientation. The resulting social stigma and prejudice associated with being a sexual minority could then activate concerns about one's sexual orientation, and lead to mental health problems, such as depression and substance abuse (Meyer, 2003).

2.5 Gender Minority Stress and Resilience Model

A further evolution of the minority stress model is the *gender minority stress and resilience model* (GMSR, Testa, et al., 2015). In the GMSR, as in Meyer's model (2003), there are unique stressors associated with minority status, only here they are based on gender status (referred to as gender-minority stressors). For example, being a gender minority often brings difficulties in changing legal documents (e.g. birth certificate, driver's license, name used for college registration) from ones that correspond to sex assigned at birth to ones that reflect someone's current gender status. Additional stressors faced by TGNC people include experiencing hostility and violence when accessing public restrooms (see Herman, 2013; Weinhardt et al., 2017) and not having a preferred name or gender acknowledged (Testa, et al., 2017). The original GMSR model describes the stressors experienced by TGNC people as either proximal (occurring internally, as in experiencing internalized transphobia) or distal (occurring outside of the self, e.g., gender-related victimization); this study is most concerned with distal stressors.

The GMSR model (Testa et al., 2015) was developed using an anonymous, online survey of 844 individuals who were 18 or older and whose current gender status did not match their sex assigned at birth. Participants were asked to complete self-report scales measuring perceived *gender-minority* stress, which included questions about discrimination, rejection, victimization,

and nonaffirmation due to gender. For example, endorsing the statement, "I have to repeatedly explain my gender identity to people or correct the pronouns people use" would indicate the gender minority stress of nonaffirmation. Participants also completed scales measuring perceived *general* stress, which ask about unpredictable or overwhelming events, e.g., "In the last month, how often have you dealt successfully with irritating life hassles." The obtained stress scores were then correlated with psychosocial outcomes (e.g., depressive symptoms and social anxiety) to determine if *gender-minority* stressors were responsible for poor outcomes above and beyond *general* stressors. Perceived social support and feelings of belonging were proposed as resiliency factors that moderate the stressor-outcome relationship. Findings indicated that the participants who reported experiencing greater gender-minority stress also reported poorer outcomes; conversely, those who perceived higher levels of social support and feelings of belongingness reported fewer symptoms of depression and social anxiety (Testa et al., 2015).

Although not developed explicitly to explain college student adjustment, the GMSR is particularly relevant during the college years (see Figure 1). In this depiction, the GMSR makes a series of predictions to explain why some TGNC students may report worse outcomes than cisgender students. Primarily, TGNC students are differentially exposed to unique gender-minority stressors (greater experiences of violence and feeling less safe) that cisgender students are not, and as a consequence, this additional stress burden creates poorer outcomes (college adjustment). These outcomes may depend on contextual factors that buffer the effects of stress (e.g., living on or off campus). Critically, the argument is *not* that cisgender students will never be victims of violence, or that violence is only a gender minority stressor, but that TGNC students may disproportionately shoulder the burden of certain kinds of stressors (James et al., 2016). Thus, this model offers a framework to help explain the underlying reason that TGNC college students may

report increased rates of poor mental health outcomes (Martin-Storey et al., 2018; Seelman, 2016; Seelman et al., 2017). In the sections that follow, I will describe each of the key steps in the gender minority stress and resilience model and the empirical evidence to date showing that TGNC students report experiencing unique stressors that affect their adjustment to college in ways that are different from some cisgender students, and how resiliency may not always provide a buffer from this stress.

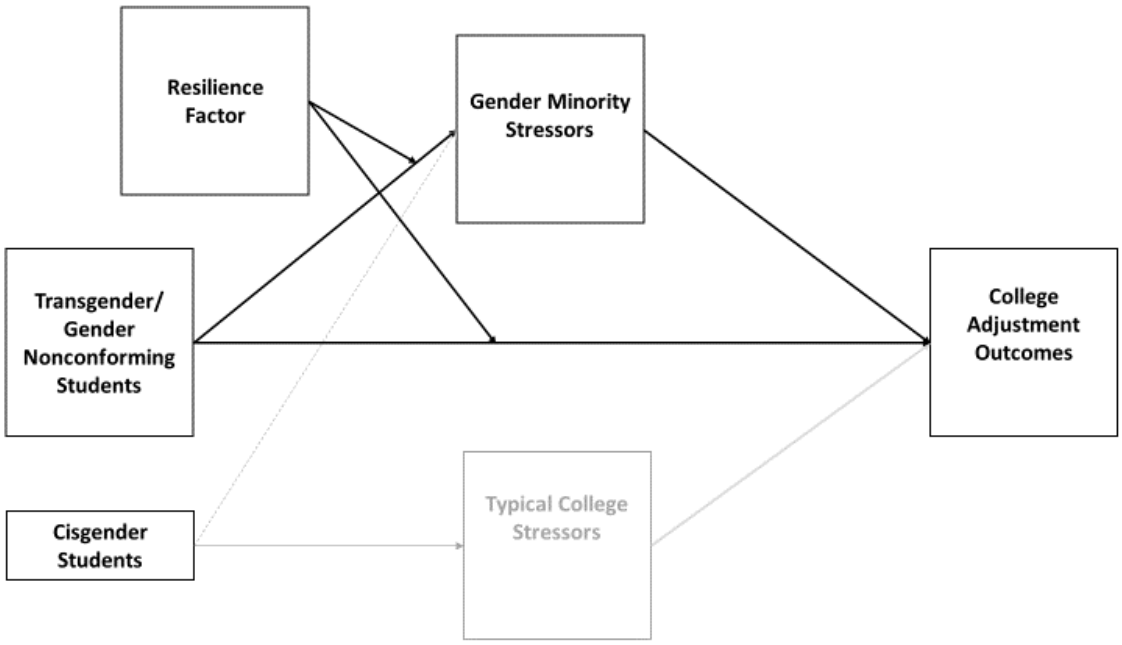

Figure 1. Gender Minority Stress and Resilience Model Adapted for College Students

Note. This model is an adaptation of the Gender Minority Stress and Resilience Model (Testa et al., 2015). It emphasizes the effect of gender minority stressors on college adjustment.

2.5.1 Being a TGNC vs. Cisgender Individual Transitioning to College

One way that the college experience may differ for TGNC and cisgender students can be illustrated by the traditional experience of moving into a communal residence when starting

college. Although the typical scenario for a cisgender first-year student would likely involve being assigned a residence and roommate based on their sex assigned at birth, a TGNC student might be required to provide additional evidence of their claimed gender and be required to "come out" to officials to request the housing assignment in which they would feel most comfortable. This is not a theoretical concern, but represents actual experiences, as addressed in multiple qualitative interviews with TGNC students (e.g., Chang & Leets, Jr., 2018; Goodrich, 2012; Krum et al., 2013; Nicolazzo, 2017). For example, some TGNC students recall an invasive screening process required to apply for gender appropriate housing during which they were forced to discuss personal issues with college administrators (Nicolazzo, 2017, pp. 194-196; Nicolazzo & Marine, 2015). Inability to obtain documentation of a gender change, such as a corrected birth certificate or driver's license, may also decrease the likelihood of qualifying for gender appropriate housing (Goldberg et al., 2018; Krum et al, 2013; Maurer & Prunty, 2018, p. 156). Failure at any step in the process could result in a TGNC student being assigned university housing and a roommate incompatible with their experienced gender status, which might also produce the additional stress of concealing their gender assigned at birth in order to "pass" (i.e., appearing to others as the gender the TGNC person identifies with). Preventing themselves from being "outed" (i.e., having their sex assigned at birth exposed) could demand continual effort from those TGNC students without the option to choose their own living arrangements. This could likely be *in addition* to the stress of being unable to affect name or gender changes in university records and not being referred to as their preferred name or pronouns. The chronic stress related to their gender minority status could result in higher levels of depression and anxiety for TGNC students and in turn, make focusing on academic work more difficult. In some cases, this scenario has led to TGNC students dropping out of college (Nicolazzo, 2017).

2.5.2 Gender Minority Stressors

2.5.2.1 Hostility and Violence.

TGNC students report experiencing levels of prejudice, hostility and discrimination beyond those reported by cisgender students. Dugan et al. (2012) found that TGNC college students reported more frequent encounters with harassment and discrimination than their cisgender peers. Suggesting a source of this trans harassment and discrimination, both Broussard and Warner (2018) and Yost and Gilmore (2011) interviewed cisgender college students who expressed hostility and distaste towards TGNC people. For example, one student, a straight, cisgender man stated, "[t]ransgendered people are mentally ill, and should be in no social environments. I am seriously offended and fearful of their presence in any capacity" (Yost & Gilmore, 2011, p. 1340).

Although hostility can be psychologically damaging, TGNC students are also more likely to report experiencing physical violence. Using survey data collected from the ACHA from the fall semesters of 2011, 2012, and 2013, Griner et al. (2017) found that TGNC college students reported virtually every type of abuse surveyed (i.e. emotional, physical and sexual) at significantly higher rates than that of cisgender college students. Similar results were found with Canadian TGNC undergraduates who reported higher rates of sexual violence on campus than cisgender students, including cisgender students who were also LGB (Martin-Storey, et al., 2018). Large surveys (N = 12,749) have shown that students who were "out" (i.e., openly TGNC) in college were more likely to report experiencing sexual, verbal, or physical abuse, often precipitating dropping out (James et al., 2016). Furthermore, many of the TGNC college students who reported suffering from physical and sexual assault also report that they have attempted to end their lives (Grant, et al., 2011).

Not only do TGNC students report experiencing more hostility and violence compared to cisgender students, they also seem to suffer disproportionately from those experiences. A study examining the relationship between victimization and self-esteem in LGBTQ college students (N = 497) found that victimization (e.g., threats and insults) decreased self-esteem more in TGNC students than for cisgender students. The authors noted that these results suggest that gender status was the deciding factor on how self-esteem is affected by victimization (Seelman et al., 2017).

2.5.2.2 Perceptions of Safety

Harassment is associated with TGNC college students who doubt their safety and well-being on campus (Hafford-Letchfield et al., 2017). For example, survey data from 143 TGNC students compared with 91 matched pairs of cisgender LGB and straight students, found that TGNC students reported lower levels of feeling valued and accepted as members of the campus community in response to experiencing discrimination and perceiving their campus atmosphere as being prejudicial against them (Dugan et al., 2012). It seems logical that if a TGNC student experiences violence and discrimination at a higher rate than their cisgender peers, then they might also perceive their campus as less safe.

2.5.3 Gender Minority Outcome: Personal-emotional Adjustment

The GMSR, adapted for college students (see Figure 1), suggests that TGNC students will experience poorer personal-emotional adjustment because they experience more stress (Testa et al., 2015). This gender-minority stress is indicated in the experience of greater violence and feeling unsafe. Multiple studies of the emotional health of TGNC college students produce remarkably similar results: in whatever ways cisgender college students are suffering, TGNC students are

suffering more. One example of this disparity was revealed by the Higher Education Research Institute's (HERI) annually administered CIRP Freshman Survey of nearly 142,000 first-year college students. When TGNC students were compared with cisgender students, more than half of the TGNC students reported their emotional health as being below average. Additionally, TGNC students had a five-fold rate of depression—47.2 % of TGNC students reported being depressed vs. 9.5% of cisgender students (Stolzenberg & Hughes, 2017). Similarly, data from the 2016-2017 Healthy Minds survey (N = 53,760), which examines mental health service utilization in college students, revealed that TGNC students reported significantly higher levels of anxiety and depression, when compared to cisgender students (Borgogna et al., 2019). Similar results are consistent across a wide variety of studies (Effrig, et al., 2011; Oswalt and Lederer, 2017).

2.5.4 Gender Minority Resilience Factor: Residency Status

Drawing on the minority stress model (Meyer, 2003) and research on TGNC identity development (Testa et al., 2014), the GMSR proposes that connecting with a community who shares and takes pride in your mutual gender status provides a buffer against stress (i.e., resiliency). Specifically, these connections provide social support that counters the poor mental health outcomes generally associated with gender minorities when they are victims of hostility and violence. In research with TGNC college students, community connectedness (i.e., having a close and supportive peer group), has been used to measure resilience, with results indicating a greater connectedness providing more favorable outcomes, (e.g., college retention, Nicolazzo, 2016; Nicolazzo et al., 2017).

Traditionally, for cisgender students, living on campus has been associated with higher levels of engagement and social adjustment, possibly through a student's physical presence on

campus (Gerdes & Mallinckrodt, 1994; Ingram, 2012; Kuh et al., 2006; Means and Pyne, 2017). Living on campus facilitates participation in activities and social interaction and may provide a sense of community through a relationship with a roommate and others living in the same dormitory. Preliminary findings from a multi-institution survey of more than 241,000 first-year students indicated that those who resided on campus were more likely to report high-quality interactions with other students and attend more campus events than students who lived off campus (Gonyea et al., 2015). However, this relationship between living on campus and good college adjustment may not be universally true, especially if students perceive their campus climate as hostile (Tovar, 2013). Nicolazzo's (2017) qualitative study revealed that of nine TGNC students interviewed, eight left campus housing and four withdrew from school after reporting experiences of ridicule and rejection from dorm mates. If TGNC students experience their campus as hostile, they may not receive the same benefits, such as resiliency and belonging, that cisgender students do from living on campus.

These mixed findings make it difficult to predict if living on campus is beneficial to TGNC students. Does the increased opportunity to form relationships and become engaged in activities promote adjustment, or does the stress of gendered spaces, where safety and belonging are questionable, inhibit adjustment?

2.6 Current Limitations in the Literature

This study, to the best of my knowledge, is the first attempt to use the framework of the GMSR (Testa et al., 2014) to explain college adjustment outcomes in TGNC students. Although

it appears that college adjustment has been previously studied in TGNC students, there are limitations to the work that has been done, as I will explain below.

2.6.1 College Adjustment of TGNC Students

Although previous studies have used an ACHA survey to examine outcomes of TGNC students, the data used is from an earlier version that used a more general measure of gender status (Griner et al., 2017; Messman & Leslie, 2019; Oswalt & Lederer, 2017). This earlier version required students to make a forced choice between cisgender and transgender as their gender status ("What is your gender?" with answer choices "female," "male," or "transgender), despite the possibility that one could identify as not cisgender *but also* not transgender[1]. The implication of this limitation is that some gender non-conforming students may not have been included in the analysis of the data from ACHA surveys given prior to Fall, 2015. My study addresses this limitation by utilizing the most recent survey data (Fall 2015-Fall 2018) allowing for a broader identification of TGNC students, as students can choose from a variety of responses for gender, including a write-in option for specification.

Another limitation of previous studies is that few have used experiences of violence and perceptions of safety to examine TGNC college outcomes, so it remains unknown if these gender minority stressors are pathways linking TGNC status to college adjustment. Additionally, some studies have focused their work differently by using only formally diagnosed psychological disorders as a measure of emotional health (see Oswalt & Lederer, 2017). Examining subjective

[1] See previous section, "*TGNC" defined*, for a more detailed explanation.

reports of mental well-being, as in my study, captures more common, day-to-day experiences of students, including those who have never sought treatment. It is likely these students outnumber those with a formal diagnosis, painting a broader picture of a dimension of suffering that may not reach clinical levels.

2.6.2 Residential Status as a Resiliency Factor for TGNC Students

The recent literature on college adjustment and student housing is unclear as to how much benefit living on campus provides any college student. In the first of three major works synthesizing research on higher education, Pascarella and Terenzini (1991) asserted that living on campus "was the single most consistent within-college determinant of the impact of college" (p. 611), associated with an increased ability to relate to others, a higher self-concept, and a greater likelihood to graduate. However, by the release of the third volume of research in 2016 (Mayhew et al.), living on campus was associated with declines in psychological well-being and emotional health for first-year students, in general (p. 214). This lack of clarity, combined with the additional concerns that TGNC students have when living on campus (e.g., gendered dorm assignments), make it difficult to determine if campus residency can provide a sense of resilience for this, or any population. To date, no study has examined the effects of living on or off campus on the college adjustment of TGNC students, relative to cisgender students. Lipson et al., (2014) did investigate correlations between campus residency and mental health treatment utilization, but residency type was assigned to institutions, not students. My study classifies individual students by housing status, an important distinction that may help determine what type of residential setting could increase the likelihood of personal-emotional adjustment for TGNC students.

2.6.3 Cohort Factors of College Adjustment for TGNC Students

Despite well-documented incidents of harassment and discrimination against TGNC students, there is some evidence that attitudes could be changing, with greater visibility of transgender people in the media (Friedman, 2019; Rothman, 2019) and more news coverage concerning their treatment (Ali, 2019; Bracho-Sanchez, 2019; Christensen, 2019; Dvorak, 2019; Goodnough et al., 2019). It remains to be seen, however, if this will result in decreased levels of prejudice and hostility. Therefore, it is not apparent if the levels of TGNC college adjustment are stable, improving, or worsening. A broad review of the extant literature on TGNC college students has not addressed this issue, although Garvey et al., (2017) asked 3,121 LGBTQ students, graduating between 1944 – 2013 to retrospectively rate their campus climate in terms of acceptance and safety. The study found a strong trend, beginning in 1998 and continuing throughout the study, of improving perceptions of campus climate, with each subsequent graduating class. However, this study did not separate the responses of TGNC graduates, from those who were LGB, so it is not known if this trend for sexual minority populations would be similar to those of students who are a gender minority. Due to the lack of research specifically focused on gender minorities, it is not clear if TGNC personal-emotional adjustment should be improving, worsening, or remaining stable.

2.7 Current Study

The aim of the current study is to examine how personal-emotional adjustment for TGNC students differs from that of cisgender students, according to the GMSR model. Because TGNC

students differentially report experiencing stressors, like violence and low safety perception, compared to some of their cisgender peers, it seems likely that these experiences would produce different outcomes. To examine this question in depth, I will analyze national data gathered from college students from Fall 2015 inclusive of Fall 2018. The American College Health Association (ACHA) publishes a twice-yearly survey of undergraduate and graduate college students from colleges and universities in the United States, the National College Health Assessment (ACHA-NCHA). Surveys administered prior to Fall, 2015 required students to make a forced choice between cisgender and transgender as their gender status, resulting in speculation that data from the larger population of gender nonconforming students participating were not captured (Rahn et al., 2016). This was corrected in the Fall 2015 survey, and subsequent surveys since, by allowing students to choose from a variety of responses for gender, including transwoman, transman, genderqueer, and an option to write in their preferred response.

Although there is an emerging body of literature comparing TGNC students' mental health outcomes and campus perceptions to those of cisgender students, this particular data set, utilizing data from Fall 2015 through Fall 2018, has not been explored to determine if personal-emotional adjustment for TGNC students is mediated through experiences of violence and safety perceptions and moderated by residential status.

2.7.1 Research Questions and Hypotheses

Here are four overarching questions that remain unanswered regarding gender and college adjustment.

1. Do TGNC college students experience lower personal-emotional adjustment and more stressors than their cisgender peers? My hypothesis, based on the GMSR, is that TGNC

students will report lower levels of personal-emotional adjustment and higher levels of stress compared to their cisgender peers.

2. Is the relationship between TGNC status and personal-emotional adjustment mediated through the experience of violence or physical safety? My hypothesis, based on the GMSR, is that both experiences of violence and perceptions of safety will mediate the relationship between TGNC status and personal-emotional adjustment; specifically, as reported experiences of violence increase and feelings of safety decrease, adjustment decreases.
3. Do living arrangements protect TGNC students from stressors and/or moderate the relationship between stressors and personal-emotional adjustment outcomes? This hypothesis could be argued either way and in either direction. It is unclear, based on the current literature on TGNC college adjustment, if living on campus provides a source of community and support (a protective factor) or hostility and discrimination (a risk factor).
4. These first three research questions describe how I will analyze key features of the gender minority stress model (GMSR) and how its framework offers an explanation for the disparate outcomes between TGNC and cisgender college students. But, because this rich data set spans seven semesters, I have an unprecedented opportunity to extend the descriptive nature of the GMSR. To this end, I will investigate the stability and changing secular trends of college adjustment and stressors that occur, contrasting the results by gender. My hypothesis is that college adjustment for TGNC students will remain at stable, low levels, because research has not shown a decrease in hostility or violence towards transgender people.

5. Finally, in an effort to generate future hypotheses, I will explore demographic features and differential patterns of enrollment among and within TGNC student participants and the implications these contextual matters might have within the framework of the GMSR.

3.0 Method

3.1 Participants

Participants in this study are undergraduate college students who completed the ACHA's National College Health Assessment, version IIc survey (ACHA-NCHA-IIc), between Fall 2015 and Fall 2018. The current study thus spans data collected across a total of seven semesters. The ACHA has conducted this survey since 2000, but only the latest iteration of the survey (v. IIc) includes questions that allow for identification of students whose gender self-perception is non-binary or not consistent with their sex assigned at birth. Participating colleges varied each semester, and students were only able to access the survey once each semester but could possibly complete the survey multiple times during their college tenure.

The ACHA provided me with a subset of their total data set, collected from 427,463 students throughout Fall 2015 to Fall 2018, known as the Reference Group. The Reference Group includes 358,453 students, or nearly 84% of the total data set, and is composed only of respondents from United States colleges that either surveyed all students or surveyed a random sampling of students (ACHA, 2018). The analytic sample used in this dissertation includes 241,171 undergraduates, drawn from the Reference Group. However, my study limited analysis to full-time undergraduate students, between the ages of 18 and 24, enrolled in four-year college programs. As such, I removed 117,282 (32.7%) students because they are either enrolled at two-year institutions; are over the age of 24; are enrolled less than full-time; and/or are not undergraduates.

Within the analytic sample (and aggregated across all seven semesters of cohorts), 6,191 (2.6%) students identify as TGNC, 70,611 (29.3%) identify as cisgender men, and 164,669

(68.3%) identify as cisgender women. The racial composition of the sample includes 151,580 (62.9%) White students; 10,717 (4.4%) Black students; 23,263 (9.7%) Latinx students; 25,889 (10.7%) Asian/Pacific Islander students; 25,767 (10.7%) Multiracial/Biracial students; 3,747 (1.6%) Other Race (Including American Indian and Alaskan Native); and 508 (0.2%) students with racial data missing. Sample characteristics, split by cohort, can be found in Table 2.

3.2 Procedure

3.2.1 ACHA Study

Beginning in 2000, the ACHA has conducted surveys of undergraduate and graduate students twice a year, once each fall and spring semester, online or on paper, that take an average of 30 minutes to complete (ACHA, n.d.). Students are asked questions concerning their physical health, emotional health, habits (e.g., seatbelt use, contraceptive use), perceptions of safety, barriers to academic achievement (e.g., roommate difficulties, homesickness), and involvement in college activities. Institutions that belong to the ACHA pay $0.43 per student to administer the survey online and $1.25 to administer a paper version. Non-members pay $0.86 per student to administer the survey online and $2.25 per student for the paper version (ACHA, n.d.). The survey is confidential, but not anonymous, meaning that a student's email is only retained until they have completed the survey; their completed surveys are never associated with their email. Students cannot be compelled to take the survey; the ACHA will not administer a survey that is mandatory (ACHA, 2016). Although the schools participating in the survey are self-selecting, limiting

generalizability, the ACHA-NCHA survey items have been shown to be reliable and valid in previous studies (ACHA, 2013).

3.2.2 Current Study

For this study, I analyzed a subset of data from the ACHA-NCHA-IIc to examine my research questions. To obtain the data, I joined the ACHA, as members have full access to survey data. The process for requesting data consisted of completing an application in which I described my research questions, specified which data sets and question sets that I wanted to access, and attached a copy of my IRB exemption. I submitted my request on February 15, 2019 and received the data set April 26, 2019. This study was determined to be exempt by the University of Pittsburgh's IRB because it is not human subjects research. The approval letter from the IRB can be found in Appendix A.

3.3 Measures

My study used survey data related to demographic information, personal-emotional adjustment, and violence and safety stressors to determine the relationship between these factors, gender status, and residence type. See Appendix B for a copy of the ACHA-NCHA-IIc survey questions, and Appendix C for specific items used to create the composite scores for the data analysis.

3.3.1 Demographic Characteristics

3.3.1.1 Gender Status.

The ACHA determines gender by asking three questions. Participants first responded to the question “What sex were you assigned at birth, such as on an original birth certificate?” using *female* or *male* as response options. Second, they answered *yes* or *no* to the question “Do you identify as transgender?” Third, participants answered the question “Which term do you use to describe your gender identity?” using a variety of response options (*woman*, *man*, *trans woman*, *trans man*, *genderqueer*, *another identity [please specify]*). Participants who responded “another identity (please specify)” were given the opportunity to write in a response that clarifies their gender.

Using the responses from these three questions, the ACHA categorizes students as either male, female, or transgender. The ACHA classifies “males” as those participants who responded to the questions “What sex were you assigned at birth?” and “Which term do you use to describe your gender identity?” with *male*, and who also indicate that they are not transgender. The ACHA classifies “females” as those participants who responded to the questions “What sex were you assigned at birth?” and “Which term do you use to describe your gender identity?” with *female*, and who also indicate that they are not transgender. The ACHA classifies “transgender” as those participants who indicate that they are transgender. Students are also classified as transgender if their responses are inconsistent when asked about their sex assigned at birth and their current gender status. For example, if someone responded to “What sex were you assigned at birth?” with *female*, and “Which term do you use to describe your gender identity?” with *genderqueer*, they would be classified as transgender, regardless of their response to the question “Do you identify

as transgender?"[2]. The ACHA classifies participants with missing data for any of the three questions as *missing.* These students were removed from the data set and their responses were not analyzed since it was impossible to confirm their gender status with certainty.

The ACHA-NCHA-IIc survey follows guidelines recommended by Meerwijk & Sevelius (2107): labeling people who currently identify as a gender other than the one assigned to them at birth as "transgender," even if they do not self-identify in that way. Despite this practice in their *survey*, ACHA *publications* refer to this population as "gender non-binary" (American College Health Association, 2018). However, considering the National Center for Transgender Equality's (2018) caution that "most transgender people are *not* non-binary," and the APA's current recommendation (American Psychological Association, 2020, p. 139), I use the terms "TGNC" to refer to transgender and gender nonconforming people, in this study. Despite the ACHA's coding method, it was necessary to recode the gender classification of some participants. Nonsensical responses, referred to as "mischievous responses" are often used as a write-in gender response, by survey participants, to communicate discomfort with or disapproval of TGNC status (Fraser, 2018). For example, a common mischievous response, *Apache Attack Helicopter,* is frequently used to express non-support for the TGNC community (Jaroszewski, et al., 2018). Appendix D gives examples of how this re-coding took place. Within the analytic sample, 579 (40.5%) of the 1,678 write-in responses were recoded: 480 (28.6%) as "uncodeable," 66 (3.9%) as "male," and 33 (2%) as "female."[3] The remaining 1099, (59.5%) write-in responses were coded as "TGNC."

[2] Technically, the ACHA uses the term *non-binary* to refer to these students, but I use the well-accepted umbrella-term "*TGNC"* (American Psychological Association, 2020, p. 139).

[3] Participants with write-in response indicating (1) they were female or male, (2) they were born female or male, and (3) they were not transgender were re-coded as female or male, respectively.

3.3.1.2 Residency Status.

Students are asked to indicate where they live by choosing one of the following options: *Campus residence hall*; *Fraternity or sorority house*; *Other college/university housing*; *Parent/guardian's home*; *Other off-campus housing*; or *Other*. Students who endorse *Campus residence hall*, *Fraternity or sorority house*, and *Other college/university housing* were classified as "living on campus." Students who endorse *Parent/guardian's home, Other off-campus housing*, or *Other* were classified as "living off campus."

3.3.1.3 Personal-Emotional Adjustment.

Personal-emotional adjustment was assessed with 8 items that capture psychological well-being (e.g., "Have you ever felt overwhelming anxiety?"). Given the slightly ambiguous response set, I recoded students' responses to these items using the following rubric: Responses of either (1) *Yes in the last 2 weeks*, (2) *Yes in the last 30 days*, or (3) *Yes in the last 12 months*, were given a score of 1; responses of either (1) *No, never*, or (2) *No, not in the last 12 months*, were given a score of 0. Scores for each of the eight items were summed, with a range of 0 (no endorsements) to 8 (every item endorsed), where high scores indicated more psychological distress (i.e., *lower* personal-emotional adjustment). Because high scores indicate psychological distress, I will operationalize personal-emotional adjustment as emotional distress and I will refer to this outcome as "Emotional Distress" throughout the data analysis plan, results, and discussion of my research questions.

3.3.1.4 Gender Minority Stressors: Violence.

Exposure to violence in the past 12 months is assessed through seven items (e.g., "Were you verbally threatened?"). Students answer each question with either *no* or *yes* (coded 0 and 1,

respectively). A sum score was created for each student to get a total number of violence episodes from 0 to 7. A high score indicates more exposure to violence.

3.3.1.5 Gender Minority Stressors: Safety Perception.

Perceptions of physical safety were assessed through four items. Students provide perceptions of safety for both the campus and the community, and for both daytime and nighttime (i.e., “How safe do you feel in the [campus/community] surrounding this school [daytime/nighttime]?”). Student respond to each question using a scale from 1 = *not at all safe* to 4 = *very safe*. Responses for all four conditions were averaged to create a composite score, with a higher score indicating a greater perception of safety.

4.0 Data Analysis

All analyses were conducted using SPSS v24 (IBM Corp, 2016). Because the data were collected across 7 cohorts, spanning Fall 2015 to Fall 2018, I combined the separate cohorts into a single dataset. Using the combined dataset, I then examined means, standard deviations, and ranges for each variable using descriptive statistics. I also examined bivariate correlations for each variable.

4.1 Main Analysis

In this section I reiterate the four overarching questions, but each is broken down into individual research questions. For two of the three research questions, I compared Emotional Distress for each gender status group (cisgender women, cisgender men, TGNC). These analyses tested my core theoretical concerns that (1) TGNC students have greater emotional distress and experience more stressors compared to cisgender students (Research Questions 1a and 1b) and (2) living arrangements can moderate the effect of TGNC status on emotional distress and stressors (Research Questions 2a and 2b). Due to the large sample size (total N = 241,171), and to guard against Type I error, I adjusted the significance level in comparisons between TGNC and cisgender students to $p < .01$. Missing variables created listwise deletions ranging from 236,795 to 241,254 participants across all calculations.

In addition to using inferential statistics, I also examined effect size estimates using partial eta squared (η_p^2) for omnibus tests and the correlation coefficient (r) for pairwise comparisons,

where r = .1 is considered a small effect, r = .3 a medium effect and r = .5 a large effect (Watson, 2019). Effect size for pairwise comparisons was calculated by taking the mean difference from the pairwise comparisons and dividing it by the standard error of the mean difference to find the *t* score (Lane, n.d.). Degrees of freedom (*df*) were calculated by summing the *N* of both groups used in the comparison and subtracting 1 *df* for each covariate and subtracting an additional *df* (Field, 2018, p. 438). The equation $\sqrt{t^2/(t^2+df)}$ was used to calculate *r* (Zaiontz, 2019).

4.2 Research Question 1a

Do TGNC college students experience greater emotional distress and more stressors than their cisgender peers?

4.2.1 Hypothesis 1a

Based on the GMSR, I predict that TGNC students will experience greater emotional distress and higher levels of stress compared to their cisgender peers.

To investigate Research Question 1a, I conducted a one-way Analysis of Covariance (ANCOVA) to compare the effect of gender status on both emotional distress and stress exposure. The between-subjects independent variable, gender status, has three levels (cisgender women, cisgender men, TGNC). In total, 3 models were conducted, one for each outcome (emotional distress, violence, and safety).

I included three covariates that have previously been shown to correlate with both gender and stress and adjustment: year in school (with first-year undergraduate indicated by "1", second-

year undergraduate by "2", and so forth, ending with "5" indicating 5th year or more undergraduate); ACHA cohort (treated as a series of six dummy codes with Fall 2015 cohort serving as the reference category); and race (treated as a series of 5 dummy codes, with White serving as the reference category). Including these variables as controls, I minimized the possibility that they might confound the association between gender and my outcomes of interest (Bennett & Okinaka, 1990; Chapman & Pascarella, 1983; Fischer, 2007; Garvey et al., 2017).

4.3 Research Question 1b

Is the relationship between TGNC status and emotional distress mediated through the experience of violence or physical safety (stressors)?

4.3.1 Hypothesis 1b

Based on the GMSR, I predict that stressors will mediate the relationship between TGNC status and emotional distress; specifically, as experiences of violence increase and as feelings of safety decrease, emotional distress increases.

To examine Research Question 1b, I conducted an indirect effect analysis using 5,000 bootstrapped samples with the PROCESS v3.4 macro for SPSS (Hayes, 2019). In this model (see Figure 2), gender status served as the independent variable (coded as two dummy variables, with TGNC status serving as the reference group), both experiences of violence and perceptions of physical safety served as the mediators, and emotional distress served as the dependent variable.

Mediation is inferred when the 99% Confidence Interval for the indirect effect does not include zero (Hayes, 2009).

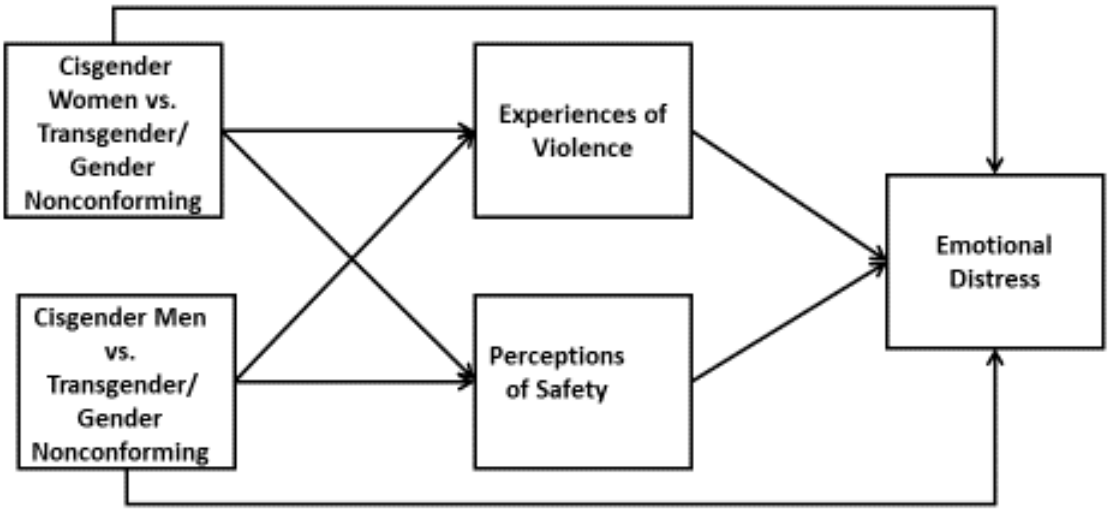

Figure 2. Gender Status and Emotional Distress Mediated by Stressors

Note. This figure illustrates the relationship between gender and emotional distress through the experiences of stressors.

4.4 Research Question 2a

To what extent does residency moderate the relationship between gender status and emotional distress?

4.4.1 Hypothesis 2a

Due to the conflicting results of prior work on whether living on campus is beneficial to TGNC students, I am exploring possible hypotheses.

To examine Research Question 2a, I conducted a 3 x 2 Factorial Analysis of Covariance (ANCOVA) (see Figure 3). This analysis has two between-subjects factors, (1) gender status (cisgender women, cisgender men, TGNC), and (2) residency status (on vs. off campus). I tested main and interactive effects of gender and residency status on the dependent variable, emotional distress. The key parameter of interest is the gender status-by-residency status interaction, which indicates whether the relationship between gender status and emotional distress varies systematically as a function of living on vs. off campus. When a significant interaction was revealed ($p < .01$), post hoc analyses were conducted consisting of a series of independent *t*-tests to determine in which group (cisgender women, cisgender men, TGNC) the differences exist. Pairwise comparisons of the emotional distress levels were examined for each group (cisgender women, cisgender men, TGNC) between living on and off campus. Again, I included the covariates: year in school, ACHA cohort/semester, and race.

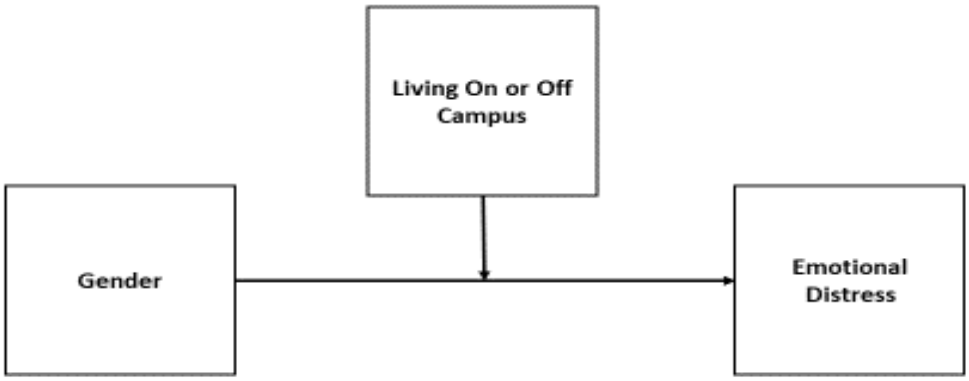

Figure 3. Gender Status and Emotional Distress Moderated by Residency

4.5 Research Question 2b

To what extent does residency moderate the relationship between gender status and stressors (experiences of violence and perceptions of safety)?

4.5.1 Hypothesis 2b

Due to the conflicting results of prior work on whether living on campus is beneficial to TGNC students, I am exploring possible hypotheses.

To examine Research Question 2b, I conducted a 3 x 2 Factorial Analysis of Covariance (ANCOVA; see Figure 4). This analysis has two between-subjects factors, (1) gender status (cisgender women, cisgender men, TGNC), and (2) residency status (on vs. off campus). Across two separate models, I tested main and interactive effects of gender and residency status on the dependent variables, experiences of violence and perceptions of safety. The key parameter of

interest is the gender status-by-residency status interaction, which indicates whether the relationship between gender status and stress exposure varies systematically as a function of living on vs. off campus. When a significant interaction was revealed ($p < .01$), post hoc analyses was conducted consisting of a series of independent *t*-tests to determine in which group (cisgender women, cisgender men, TGNC) the differences exist. Pairwise comparisons of gender stressor levels were examined for each group (cisgender women, cisgender men, TGNC) between living on and off campus. In each model, I included the covariates: year in school, ACHA cohort/semester, and race.

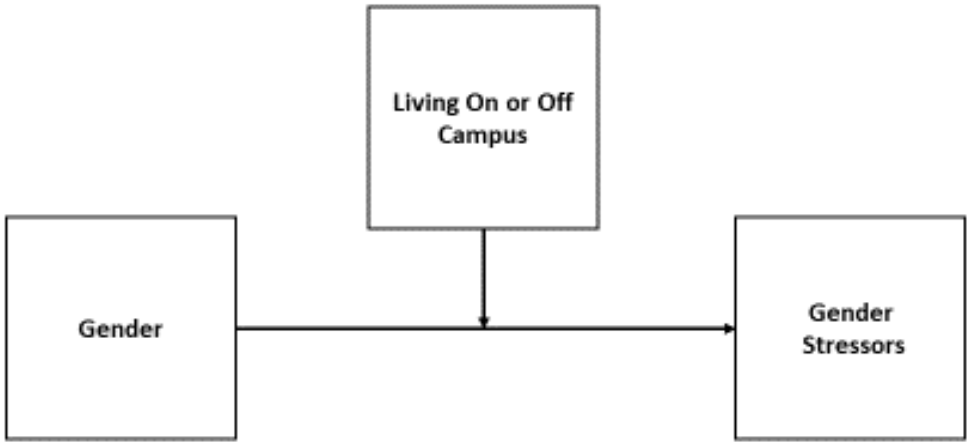

Figure 4. Gender Status and Stressors Moderated by Residency

4.6 Research Question 3a

Over time, how stable is the emotional distress of TGNC students?

4.6.1 Hypothesis 3a

Although TGNC issues are getting more exposure, research has not shown a decrease in hostility or violence towards TGNC people. Therefore, I predict that emotional distress of TGNC students will remain relatively stable across the seven semesters of student survey data compared to cisgender students.

To examine Research Questions 3a, I conducted a 3 x 7 Factorial Analysis of Covariance (ANCOVA) to compare the effects of gender status and cohort on emotional distress. As before, gender status served as a between-subjects factor (cisgender women, cisgender men, TGNC) predicting emotional distress. The second between-subjects factor, ACHA cohort, has seven levels, representing each semester between Fall 2015 through Fall 2018. My main interest is in the gender status-by-cohort interaction effect. This interaction indicates if the strength of the relationship between gender status and outcomes varies as a function of time (i.e., cohort). When a significant interaction was revealed ($p < .01$), post hoc analyses was conducted consisting of a series of independent *t*-tests to determine in which group (cisgender women, cisgender men, and TGNC) the cohort differences exist. Pairwise comparisons of emotional distress levels were examined for each group (cisgender women, cisgender men, TGNC) between the first cohort (Fall 2015) and the final cohort (Fall 2018) of the data. In each model, I included two covariates: year in school and race, to minimize confounding the association between cohort and my outcomes of interest.

4.7 Research Question 3b

Over time, are the rates of violence and perceptions of safety for TGNC students changing?

4.7.1 Hypothesis 3b

Although TGNC issues are getting more exposure, research has not shown a decrease in hostility or violence towards TGNC people. Therefore, I predict that TGNC students' experiences of violence and perceptions of safety will remain relatively stable across the seven semesters of student survey data.

To examine Research Question 3b, I conducted a 3 x 7 Factorial Analysis of Covariance (ANCOVA) to compare the effects of gender and cohort on experiences of violence and perceptions of safety. As before, gender status served as a between-subjects factor (cisgender women, cisgender men, TGNC) predicting stress exposure. The second between-subjects factor, ACHA cohort, has seven levels, representing each semester between Fall 2015 through Fall 2018. In total, 2 models were conducted, one for each stressor outcome (experiences of violence and perceptions of safety). My main interest is in the gender status-by-cohort interaction effect. This interaction indicates if the strength of the relationship between gender status and outcomes varies as a function of time (i.e., cohort). When a significant interaction was revealed ($p < .01$), post hoc analyses was conducted consisting of a series of independent *t*-tests to determine in which group (cisgender women, cisgender men, TGNC) the cohort differences exist. Pairwise comparisons of levels of stressors were examined for each group (cisgender women, cisgender men, TGNC) between the first cohort (Fall 2015) and the final cohort (Fall 2018) of the data. In each model, I included the covariates of year in school and race.

5.0 Results

5.1 Descriptive Statistics

In this section I describe basic descriptive statistics for my key variables as they apply to all participants, including means, standard deviations and correlations (see Table 3).

5.1.1 Emotional Distress

Participants reported high rates of distressing emotions (e.g., hopelessness, overwhelming anxiety, depression) within the past year (M = 5.05, SD = 2.587), with most students (24.2%) endorsing all 8 possible emotions [in the past 12 months] and very few endorsing none (7.4%; see Figure 5).

5.1.2 Violence

Participants reported few incidents of experiencing violence (e.g., being in a physical fight, being verbally threatened) within the past year (M = .49, SD = .974), with most students (71.6%) endorsing no violent incidents and very few endorsing all seven possible events (0.1%; see Figure 6).

5.1.3 Safety

Participants (N = 237,303) reported feeling quite safe on both their campus and the surrounding community during the day as well as at night (M = 3.26, SD = .547), with most students (65.6%) reporting that they felt "somewhat safe" (a score of 3) to "very safe" (a score of 4) and very few reporting that, on average, they did not feel "safe at all" (0.3%, see Figure 7).

5.2 Research Question 1a

5.2.1 Emotional Distress and Stressors of TGNC vs Cisgender Students

Consistent with hypothesis 1a, ANCOVA revealed a significant effect of gender status on emotional distress (F(2, 236,978) = 4,788.84, p < .001, η_p^2 = .039), violence (F(2, 237,637) = 315.36, p < .001, η_p^2 = .003), and safety (F(2, 240,735) = 6,903.26, p < .001, η_p^2 = .054). Controlling for covariates, TGNC students reported more emotional distress compared to both cisgender women (*M Diff* = 0.89, 99% CI [0.79, 0.99], p < .001, r = .065) and cisgender men (*M Diff* = 1.94, 99% CI [1.84, 2.04], p < .001, r = .204). They also reported more violence and lower levels of safety perception relative to both cisgender women (*M Diff* = 0.26, 99% CI [0.22, 0.30], p < .001, r = .049; *M Diff* = -0.45, 99% CI [-0.07, -0.03], p < .001, r = .016; respectively) and cisgender men (*M Diff* = .314, 99% CI [0.28, 0.35], p < .001, r = .087; *M Diff* = -0.32, 99% CI [-0.34, -0.30], p < .001, r = .164; respectively). Cisgender women also reported significantly more emotional distress than men (*M Diff* = 1.045, 99% CI [1.01, 1.08], p < .001, r = .186), as well as more violence and lower levels of safety perception (*M Diff* = 0.05, 99% CI [0.04, 0.07], p < .001,

r = .028; *M Diff* = -0.28, 99% CI [-0.28, -0.27], *p* < .00, *r* = .274; respectively). See Figures 8, 9, and 10 for graphical depictions and Tables 4, 5 and 6 for descriptive statistics, split by gender, for emotional distress, violence, and safety perception, respectively.

5.3 Research Question 1b

5.3.1 Stressors Mediate Emotional Distress for TGNC vs Cisgender Students

Hypothesis 1b was upheld, as both violence (indirect effect = 0.52, 99% CI [0.51,0.54]) and safety (indirect effect = -0.54, 99% CI [-0.56, -0.51]) predicted emotional distress, thus mediating the association between gender status and emotional distress. See Figure 11 for a graphical representation of these results.

5.4 Research Question 2a

5.4.1 Residency Moderates the Relationship between Gender Status and Emotional Distress

ANCOVA revealed a significant gender status-by-residency status interaction on reported emotional distress, ($F(2, 236{,}777) = 11.82$, $p < .001$, $\eta_p^2 = .000$). TGNC students living on campus reported more emotional distress than those living off campus (*M Diff* = .30, 99% CI [0.13, 0.47], *p* < .001, *r* = .057) as did cisgender women (*M Diff* = 0.09, 99% CI [0.05, 0.12], *p* < .001, *r* = .015). However, residency status was insignificant for men (*M Diff* = 0.01, 99% CI [-0.04, 0.06],

p =.656). See Figure 12 for graphical depictions and Table 7 for descriptive statistics, split by residency, for emotional distress.

5.5 Research Question 2b

5.5.1 Residency Moderates the Relationship between Gender Status and Gender Stress

Contrary to predictions, ANCOVA did not reveal a significant gender status-by-residency status interaction on reported experiences of violence, (F(2, 237,428) = 2.313, p = .099). However, ANCOVA *did* reveal a significant gender status-by-residency status interaction on reported perceptions of safety, (F(2, 240,518) =46.73, p < .001, η_p^2 = .000). Controlling for covariates, all students who lived on campus experienced higher perceptions of safety than those who lived off campus. Cisgender women experienced the largest difference (*M diff* = 0.107, 99% CI [0.114, 0.100], p < .001, r = .088), followed by cisgender men (*M diff* = 0.063, 99% CI [0.052, 0.073], p < .001, r = .059), and then TGNC students (*M diff* = 0.057, 99% CI [0.021, 0.092], p < .001, r = .052). See Figure 13 for graphical depictions of safety perception and Table 8 for descriptive statistics, split by residency, for safety perception.

5.6 Research Question 3a

5.6.1 Stability of Emotional Distress Over Time by Gender Status

ANCOVA revealed a significant interaction between gender status and cohort on emotional distress, (F(12, 236,966) = 5.803, $p < .001$, $\eta_p^2 = .000$), with all students reporting more emotional distress with time. Both cisgender women (*M Diff* = 0.42, 99% CI [0.29, 0.55], $p < .001$, $r = .082$) and cisgender men (*M Diff* = 0.28, 99% CI [0.01, 0.05], $p < .001$, $r = .126$) reported a statistically significant increase in emotional distress between Fall 2015 and Fall 2018 cohorts. However, for TGNC students, this increase was not statistically significant (*M Diff* = 0.64, 99% CI [-0.03, 1.31], $p = .018$). Although all students showed a general trend of more emotional distress with time, the differences were not always statistically significant when comparing consecutive cohorts. See Figure 14 for graphical depiction of these results.

5.7 Research Question 3b

5.7.1 Stability of Stressors Over Time by Gender Status

ANCOVA revealed a significant interaction between gender status and cohort on both experiences of violence, (F(12, 237,625) = 4.903, $p < .001$, $\eta_p^2 = .000$), and perceptions of safety, (F(12, 240,723) = 4.730, $p < .001$, $\eta_p^2 = .000$). Although cisgender women (*M Diff* = 0.11, 99% CI [0.06, 0.16], $p < .001$, $r = .055$) reported a statistically significant increase in experiences of violence between Fall 2015 and Fall 2018 cohorts, cisgender men (*M Diff* = 0.06, 99% CI [-0.02,

0.13], p = .143) and TGNC students (*M Diff* = -0.17, 99% CI [-0.27, 0.24], p = 1) did not. Although there was no statistically significant difference for cisgender women (*M Diff* = -0.01, 99% CI [-0.04, 0.02], p = 1) or TGNC students (*M Diff* = -0.01, 99% CI [-0.15, 0.13], p = 1), cisgender men reported significant *higher* levels of safety perception (*M Diff* = 0.05, 99% CI [0.01, 0.09], p < .001, r = .057) between the Fall 2015 and Fall 2018 cohorts. Comparing consecutive cohorts, no clear trend for stressors emerged, as students did not report any consistent or statistically significant pattern of increased or decreased violence or safety perceptions. See Figures 15 and 16 for graphical depictions of these results.

5.8 Hypothesis Generation Using Transgender Demographic Characteristics

As previously discussed, few research studies have closely examined gender minority college students, and in many of those studies, gender minorities were confounded with sexual minorities (see Mustanski et al., 2016; Riley et al., 2016; Schmidt et al., 2011). This data set offered a unique opportunity to explore the responses from a large population of TGNC college students; these findings might be useful for generating hypotheses for future research. Table 9 provides a detailed listing of the demographic characteristics of the TGNC participants in this study.

Racially, TGNC students, like the total population of survey participants, are predominately White (all students: 62.8%; TGNC students: 62.3%). However, TGNC students are overrepresented in the Biracial/Multiracial category (all students: 10.7%; TGNC students: 14.1%). TGNC respondents' class standings are equitably distributed from first through the fourth year of college, and more TGNC students live *on* campus than *off* campus, with some cohorts peaking at over 68% in campus housing. Very few TGNC students report attending institutions

that are religiously affiliated, usually preferring public to private colleges and universities for most cohorts. Although TGNC students are geographically widespread, most attend universities that are in small cities (population 50,000-249,999) with a total enrollment of more than 20,000 students.

Within each cohort, over three-fourths of the TGNC students surveyed (78.5%) were assigned female at birth. Surprisingly, many of these students classified themselves as transgender or gender non-conforming, but also self-identified with their sex assigned at birth. This congruence between sex assigned at birth and current gender identification was unanticipated for those students who indicated that they are transgender; the literal definition of ("transgender" implies a crossing over from one gender to another (Boskey, 2018). As an example, of those TGNC students surveyed in Fall 2015 who were assigned female at birth, 47.3% identified their current gender as "women;" of those TGNC students surveyed in Spring 2017 who were assigned male at birth, 33.3% identified their current gender as "men." This trend shifted towards less congruence between sex assigned at birth and current gender identification for more recent cohorts, with more TGNC students selecting either "genderqueer," or "another," for their gender identity. Few (below 14% for all cohorts) TGNC students endorsed "transwoman" or "transman" as their current gender.

This particular finding stands out: of the students who consider themselves to be TGNC, many reported that their sex assigned at birth and their gender identity are congruent (e.g., they were born male and identify as a man). This is contrary to a traditional definition of transgender: incongruence between sex assigned at birth and current gender identity. Exploring whether these different populations (congruent vs. incongruent) also differ in their experiences of emotional distress and stressors could offer additional insight into the relationship between gender and college adjustment.

5.9 Sensitivity Analysis

As earlier stated, the students designated as TGNC in this study represented a heterogenous population and understanding the differences within this group might help parse the association between gender, emotional distress, and the experience of stressors. With this in mind, I conducted a sensitivity analysis by rerunning the models used to test Research Question 1a, after separating TGNC students by sex assigned at birth and current gender identity. This division created 3 distinct groups: Group 1 were those who endorsed being transgender, but also reported congruence between their sex assigned at birth and current gender identity (e.g., transgender, assigned female at birth, and currently identify as a woman; n = 1,938; 31.3% of all TGNC students); Group 2 were those who did NOT endorse being transgender, but reported incongruence between their sex assigned at birth and current gender identity (e.g., not transgender, assigned female at birth, and identify as genderqueer; n = 2,304 ; 37.2% of all TGNC students); and Group 3 were those who endorsed being transgender and reported incongruence between their sex assigned at birth and their current gender identity (e.g., transgender, assigned female at birth, and identify as male; n = 1,949; 31.5% of all TGNC students). Group 3 represents those students who seem to meet all the current criteria for classification as "TGNC". See Table 1 for clarification.

Table 1. Sensitivity Analysis Groupings

Group	*n*	Transgender	Congruence
Cis Women	164,669	No	Yes
Cis Men	70,611	No	Yes
TGNC 1	1,938	Yes	Yes
TGNC 2	2,304	No	No
TGNC 3	1,949	Yes	No
Total	241,171		

Note. The column "Transgender" indicates TGNC student response to the question "Do you identify as transgender?" The column "Congruence" indicates TGNC student response to the questions "What sex were you assigned at birth, such as on an original birth certificate?" and "Which term do you use to describe your gender identity?" If students indicated that their sex assigned at birth aligned with their current gender identity, they were classified "yes" for congruence. Any other response combination was classified as "no" for congruence.

I conducted the sensitivity analysis with a 5-group, one-way Analysis of Covariance (ANCOVA) comparing the between-subjects independent gender variable (cisgender women, cisgender men, and 3 groups of TGNC students). Cisgender women and cisgender men, by the definition of "cisgender," were classified as having congruence between sex assigned at birth and current gender identity. In total, 3 models were conducted, one for each outcome (emotional distress, experiences of violence, and perceptions of safety). I included the three covariates from the original models: year in school, ACHA cohort, and race.

Consistent with the original hypothesis for Research Question 1a, ANCOVA revealed a significant effect of gender status on emotional distress ($F(4, 236{,}976) = 2{,}510.04$, $p < .001$, $\eta_p^2 = .041$), violence ($F(4, 237{,}635) = 186.86$, $p < .001$. $\eta_p^2 = .003$), and safety ($F(4, 240{,}733) = 3{,}495.37$, $p < .001$, $\eta_p^2 = .055$).

There were significant differences among the transgender groups revealed by ANCOVA. Controlling for covariates, Group 3 TGNC students reported more emotional distress compared to both Group 1 TGNC students (*M Diff* = 1.70, 99% CI [1.43, 1.97], $p < .001$); Group 2 TGNC students (*M Diff* = 0.59, 99% CI [0.33, 0.85], $p < .001$); cisgender women (*M Diff* = 1.64, 99% CI [1.45, 1.83], $p < .001$); and cisgender men (*M Diff* = 2.69, 99% CI [2.49, 2.88], $p < .001$). Group 1 TGNC students did not differ from cisgender women on reports of emotional distress. See Figure 17 for graphical depiction and Table 10 for descriptive statistics, split by extended gender groupings, for emotional distress.

Similar to the findings for emotional distress, Group 3 TGNC students reported more violence relative to Group 1 TGNC students (*M Diff* = 0.33, 99% CI [0.23, 0.43], $p < .001$); Group 2 TGNC students (*M Diff* = 0.23, 99% CI [0.13, 0.33], $p < .001$); cisgender women (*M Diff* = 0.40, 99% CI [0.32, 0.47], $p < .001$); and cisgender men (*M Diff* = 0.45, 99% CI [0.38, 0.53], $p < .001$). Group 1 TGNC students did not differ from cisgender women on reports of experiences of violence. See Figure 18 for graphical depiction and Table 11 for descriptive statistics, split by extended gender groupings, for experiences of violence.

Continuing this pattern, Group 3 TGNC students also reported lower levels of safety perception relative to Group 1 TGNC students (*M Diff* = -0.21, 99% CI [-0.27, -0.16], $p < .001$); Group 2 TGNC students (*M Diff* = -0.14, 99% CI [-0.20, -0.90], $p < .001$); cisgender women (*M Diff* =- 0.17, 99% CI [-0.21, -0.13], $p < .001$); and cisgender men (*M Diff* =- 0.44, 99% CI [-0.48, -0.40], $p < .001$). Group 2 TGNC students did not differ from cisgender women on perceptions of safety. See Figure 19 for graphical depiction and Table12 for descriptive statistics, split by extended gender groupings, for safety perception.

6.0 Discussion

This study examined college adjustment among transgender and gender nonconforming (TGNC) students in a large, national sample of US college students. Using the gender minority stress and resilience model (GMSR) as a guiding framework, I tested and found that TGNC students experienced lower personal adjustment (operationalized as higher emotional distress) and more gender stress (operationalized as greater experiences of violence and lower perceptions of safety) compared to both cisgender women and cisgender men. Greater stress burdens partially explained why TGNC students experienced more emotional distress. I also tested the hypothesis that campus residency buffers emotional distress and the presence of stressors. Somewhat paradoxically, living on campus was associated with greater perceptions of safety, but higher levels of emotional distress for TGNC students and cisgender women. Finally, I examined trends of emotional distress and stressors over seven cohorts to see if these variables remained stable over time. Though all students showed an increase in emotional distress between the first cohort (Fall 2015) and the last (Fall 2018), only cisgender women experienced an increase in experiences of violence and only cisgender men reported higher levels of safety perception. Transgender and gender nonconforming students reported stable, high levels of emotional stress and stressors across cohorts.

Consistent with findings from other work (Auerbach et al., 2018; Lipson et al., 2019), all students in this sample (cisgender women, cisgender men, and TGNC) reported high levels of emotional distress. Specifically, most students reported that they felt overwhelmed (88.3%) and exhausted (84.4%); nearly two-thirds reported feeling lonely (64.9%) and anxious (62.1%). However, our data showed that some students report greater stress burdens than others. As

predicted by the GMSR, cisgender men reported lowest levels of emotional distress, followed by cisgender women, and then TGNC students. Similar results were found in previous studies, where TGNC students experienced more emotional distress than cisgender men and cisgender women (Borgogna et al., 2019; Stolzenberg & Hughes, 2017).

These data provide a possible explanation for why TGNC students are more emotionally distressed. Relative to their cisgender peers, TGNC students experience greater violence, especially verbal threats and being sexually touched without giving consent. Similarly, TGNC students also reported feeling less safe than other students, most notably at night and in the community surrounding the campus. Those students who experienced more violence and those who perceived their environment as less safe reported higher levels of emotional distress. Further, the data show that an increased exposure to stressors partially mediated the relationship between gender status and emotional distress. These are both predictions of the GMSR model (Testa, et al., 2015). Similar results from Effrig et al. (2011) Pryor (2015), and a host of others (see Griner et al., 2017; Martin-Storey, et al., 2018, Seelman et al., 2017) emphasize the disparity between cisgender and TGNC college students in terms of emotional distress and stressors.

Somewhat contrary to GMSR predictions, campus residency status did not buffer emotional distress and experiences of violence. According to one line of thinking, living on campus might provide a sense of community and belonging that would be conducive to emotional health (Gerdes & Mallinckrodt, 1994; Ingram, 2012; Kuh et al., 2006; Means and Pyne, 2017). However, cisgender women and TGNC students who lived on campus were *more* emotionally distressed than cisgender women and TGNC students living off campus. Yet, for cisgender men, emotional distress did not differ among those living on versus off campus.

In contrast to the findings for emotional distress and experiences of violence, living on campus seemed to provide some sense of security for students; all groups reported significantly greater perceptions of safety if they lived in campus housing, regardless of gender. These results seem puzzling, as greater emotional distress was generally associated with lower perceptions of safety. Possibly, the reports of greater perception of safety, for those who are living on campus, is associated with a "bubble effect": perceiving campus as safer than the "outside world" (Williams et al., 2016) or due to campus safety features such as better lighting at night (Maier & DePrince, 2019) or safety notifications (Garland et al., 2016; Hayes et al., 2018) of sexual offenders.

This study also revealed secular trends of emotional distress. We might expect that, given the increased awareness of transgender issues and the popularity of transgender celebrities such as Jazz Jennings (Diaz, 2020) and Laverne Cox (Rothman & Gjorgievska, 2014), society would be more accepting of TGNC people over time. If increased awareness did lead to more social acceptance of TGNC people, we might also expect a corresponding decrease in emotional distress for this population. The data from this study do not suggest that this is the case. Although there was no significant increase in emotional distress or the experience of stressors over time, TGNC students reported the highest levels of emotional distress across all cohorts compared to cisgender students. Likewise, TGNC students also reported higher than average levels of violence and lower perceptions of safety, compared to cisgender students. Granted, it is not only TGNC students who are not improving; cisgender women reported *increasing* levels of emotional distress and experiences of violence over the same time frame. However, these increasing levels are still lower than the levels of emotional distress and the number of violent experiences that TGNC students reported in every cohort.

The sensitivity analysis revealed significant differences in TGNC student emotional distress, experiences of violence, and safety perceptions. Overall, those students who *did not* report congruence between their sex assigned at birth and their current gender identity fared worse than those TGNC students who reported congruence. The students who represented a more traditional definition of transgender (TGNC Group 3—answering yes to transgender and giving incongruent answers to questions about sex at birth and current gender identity) reported the lowest emotional distress, the most violent experiences, and the lowest safety perception relative to all the other group of students.

Despite identifying as transgender, those students who reported congruence between sex assigned at birth and current gender identity (TGNC Group 1) appeared to experience the lowest emotional distress and stressors, at levels indistinguishable from those of cisgender women. Perhaps this congruence between sex assigned at birth and gender identity allows them to remain undetected as transgender (i.e., "pass") and therefore not subjected to the microaggressions and discrimination generally associated with TGNC students. Previous research found similarly beneficial outcomes for transgender congruence, with associations between transgender congruence and higher ratings of self-esteem (van den Brink et al., 2019).

6.1 Implications for Theory

What are the implications of this study for theory? There are several. First, this study both affirms and challenges several aspects of the GMSR. It affirms prior work (Borgogna et al., 2019; Stolzenberg & Hughes, 2017) by showing that TGNC students disproportionately experience higher levels of emotional distress, and it advances researching showing that this distress is

predicted by stressors. However, it challenges the theory because it suggests that campus residency status may not be beneficial, as has been suggested by prior research (see Gonyea et al., 2015; Means and Pyne, 2017; and Nicolazzo, 2016). In fact, cisgender women and TGNC students who lived on campus had greater emotional distress. Why would living on campus be associated with greater emotional distress, especially if these students are simultaneously experiencing higher perceptions of safety? While it is possible that TGNC students might be physically safe from harm, they still may feel excluded in spaces like dorms or when using restrooms, where they might encounter subtle instances of discrimination or hostility (see Krum, et al., 2013; Nicolazzo, 2017; & Seelman, 2014, 2016). Likewise, the greater emotional distress of cisgender women may simply reflect the higher likelihood of women to experience, express, and seek treatment for mental health disorders (American Psychological Association, 2017).

Second, transgender and gender nonconforming students are still struggling. This is somewhat surprising, given the increased social awareness of transgender challenges. A recent poll (Jones et al., 2019) revealed that over 60% of Americans say their support for transgender rights has increased over the past five years. The theoretical framework of the GMSR would predict that increased support for transgender rights would be a resiliency factor, resulting in decreasing levels of emotional distress. However, this study showed no improvement in emotional distress for TGNC students over seven cohorts. One possible explanation is that the effect of increased resilience might be negated by stressors, which are also increasing. But this study revealed *stable* levels of violent experiences and safety perceptions. Perhaps violence and safety, the stressors examined in this study, are not the only things that concern TGNC students. Recall the GMSR proposes two types of stressors, distal (environmental, such as violence), which were included in this study, and proximal (internal, such as internalized transphobia), which were not

measured. It could be that these so-called proximal stressors, which were unexamined, are responsible for the secular trends of high, stable levels of emotional distress (see Seelman, 2016).

As expected, given the large sample size, I found many statistically significant results; yet the effect sizes were small, ranging in size from .00 to .27. Though the effect sizes were conventionally small, this does not mean that these findings are practically unimportant (see Abelson, 1985). On the contrary, small differences can be quite meaningful in such a large population as was used in this study (i.e., nearly one-quarter of a million participants). For example, Rosnow and Rosenthal (1989, p. 1279) illustrate this paradox citing research on the use of aspirin to prevent heart attacks. Although the reported effect size of the aspirin findings was small, the results were by no means trivial. With this in mind, the results of this study on TGNC college adjustment could have noteworthy implications because the small effect sizes do not necessarily diminish the importance of the findings. In other words, it may mean, that at a national level, even a small elevation of emotional distress for TGNC students, relative to cisgender students, suggests a large number of people who are affected.

A final implication is that although TGNC students have often been viewed as a homogenous group (e.g., Broussard & Warner, 2018; Messman & Leslie, 2019; Oswalt & Lederer, 2017), there is, in fact, quite a lot of heterogeneity within this population, which makes creating clear and meaningful gender categories challenging. Although the ACHA took great strides to improve the identification of TGNC students in their updated Survey, ACHA-NCHA-IIc (ACHA, 2018, p.2), the way they designated TGNC status did not discriminate transgender students who indicated congruence between their sex assigned at birth and their current gender identity from those students who indicated *incongruence* between their sex assigned at birth and their current gender identity (regardless of their endorsement of being transgender). Methodologically, it is

important to make these distinctions within the transgender population (i.e., considering congruence between sex assigned at birth and current gender identity) as the experiences of each group may be quite different. Failing to do so may mask the ability of "gender", as a variable, to make meaningful distinctions among the TGNC population. For example, given how my sensitivity analysis found similarities between the experiences of cisgender women and congruent TGNC students, it is possible that NOT making these distinctions could occlude the extent of distress occurring in TGNC students who are not congruent in their current gender identity and sex assigned at birth. The sensitivity analysis thus complemented the main analyses by examining finer distinctions within the overall TGNC group.

Analysis of TGNC students is further complicated by how little we know about why a student may or may not identify as transgender or endorse congruence between sex assigned at birth and current gender identity. A variety of possible factors could influence this decision. For example, theories abound to explain how gender identity development for transgender individuals, may differ from those of cisgender individuals (Bilodeau & Renn, 2005). Where someone might fall on this pathway, indicated by events such as revealing their transgender status to others (i.e., outness) socially transitioning (e.g., dressing like the experienced gender, or changing one's name or pronouns) and the pursual of hormonal or surgical treatments, may influence whether or not they would refer to themselves as "transgender" (see Diamond et al., 2011; and Garrison, 2018 for more information). The possibility also remains, despite my efforts to remove those cases, that mischievous answering might lead some students to falsely indicate incongruence between sex assigned at birth and current gender identity or to falsely indicate transgender status (see Fraser, 2018; Jaroszewski, et al., 2018).

6.2 Implications for Practice

What are the implications of this research for practice? Specific policy recommendations and prescriptive solutions are beyond the scope of this paper. It does seem clear, however, that there is a need for further investigation to better understand the heterogeneities of the TGNC population and how these differences might influence outcomes such as the ones presented in this study.

6.3 Future Directions

Research with TGNC students is a fairly new endeavor with many areas still in need of investigation. Recall that college adjustment is a multifaceted construct, often including not only personal-emotional adjustment (operationalized here as emotional distress) but also academic adjustment (e.g. attendance, classroom engagement, assignment completion) and social adjustment (e.g., involvement with social activities and academic clubs). Though the focus of this study was on personal-emotional adjustment, future research could explore a richer sense of college adjustment by using a more diverse range of variables (e.g. interpersonal relationships, participation in extra-curricular activities) to represent and measure how TGNC students are faring at college.

Likewise, the ACHA data used in this study contained measures of stressors which, according to the GMSR model, would be categorized as distal. Students were asked about violence (e.g., being in a physical fight) and safety perceptions (e.g. feeling safe on campus or in the surrounding community) to determine their experience of stressors. However, these stressors were

not specific to TGNC students, as all students can experience violence and feel unsafe. Altering how these questions are phrased might help clarify whether student responses are linked to gender identity (e.g., "Have you been physically assaulted because you are transgender or gender nonconforming?") and provide a better measure of gender-specific stressors. Furthermore, future research could also include proximal stressors (e.g., poor self-image, self-hatred), as past research has linked these with experiences of discrimination and aggression (see Seelman, 2016). Differentiating between distal and proximal stressors and investigating unique gender-specific experiences may help to identify a more descriptive pathway between gender and emotional distress for TGNC students.

Due to the unexplained finding that campus housing is associated with higher perceptions of safety, but more emotional distress, future research is needed to unpack this paradoxical outcome. One possible path is to differentiate which aspects of college housing might be particularly stressful for TGNC students. This could include further exploration into what living on campus might mean for students. For example, exploring the relationship between alcohol consumption and residence (i.e., do students in college housing consuming more alcohol than students who live off campus?). Living on campus might also represent freedom from parental control or, especially in the case of TGNC students, disapproval.

Future research could evaluate the options that many institutions have used to provide appropriate campus housing for TGNC students (e.g., creating LGBTQ living communities or designating housing as gender-neutral), as research on the success of these attempts has either not been done or is still in the early stages (see Garvey et al., 2018). Future research might utilize a qualitative approach designed to uncover nuances of TGNC student responses to these housing options that quantitative research might miss; longitudinal research might better capture the

efficacy of these approaches. Both types of investigation might provide information that could lead to improved college adjustment.

Recall also that I examined demographic characteristics of TGNC students as a means of generating hypotheses for future research. I included this enhancement because I am acutely aware that examining TGNC adjustment and stressors as main effects provides a limited scope for understanding the multifaceted experiences of this population. The research questions investigated in this study make the assumption that all TGNC students are similar, i.e., they share common experiences which produce analogous outcomes. Though on some level this is true (see Dugan et al., 2012, pp 729-730), and my research has illuminated general trends, other characteristics (e.g., race) may also influence outcomes for TGNC students. Based on the principles of intersectionality[4], the ability to richly describe this population and explore how the many facets of their identity interact to create unique experiences, might provide some insight into creating a more welcoming college environment for TGNC students. Furthermore, the wide variety of terms that the TGNC students in this study used to self-identify seems to indicate that we may not fully understand how this population experiences gender. As suggested by my sensitivity analysis, dividing TGNC students by congruence may be a fruitful endeavor. It may also be that, as emerging adults, TGNC students are still striving to find a term that fully captures their thoughts and feelings about their identity; further research may provide enlightenment on this issue

[4] The combination of two or more characteristics generally associated with underrepresented groups, (see Shields, 2008 for a detailed treatment of this subject).

6.4 Limitations

This study has several advantages: a large, national sample, sequential cohorts, and broad topical coverage. Having a survey with well over 6,000 TGNC students, across all cohorts, is an opportunity to look at a wide variety of data from a segment of society that has, until quite recently, been largely unrecognized by the public. Similar surveys have drawn from a smaller ratio of TGNC students relative to cisgender students. For example, the 2016-2017 Healthy Minds Survey (Eisenberg, et al., n.d., p. 12; N=53,760) had 1,074 (2%) participants who identified as some gender other than man or woman. The 2016 National Survey of Student Engagement (NSSE) had 292,031 respondents, of whom 584 (0.2%) identified as some gender other than man or woman (BrckaLorenz & Clark, 2017; National Survey of Student Engagement, 2017). In comparison, the ACHA data used in this study, for that particular time period (2016-2017, N=64,800) included 1,448 (2.3%) students who identified as transgender.

Another strength of this study is using data from an ACHA survey that increased the ways that TGNC students can self-identify, including the option to write-in a preferred gender identity. Not only does this capture a wider segment of the gender nonconforming population, including those who might not identify as "transgender", but also not identify as women or men, but it also provides insight into the relationship between TGNC students' assigned sex at birth and their current experience of gender.

Related, my study added to the body of transgender studies by my clarification of TGNC identity. Although the ACHA categorized any student who wrote in a preferred gender identity, many of these responses were mischievous in nature (Fraser, 2018; Jaroszewski, et al., 2018). I hand-coded each participant who used this write-in option, potentially creating a more accurate TGNC population for analysis. Furthermore, my sensitivity analysis explored an expanded

distinction in gender categories by separating TGNC students who experienced congruence in their sex assigned at birth and current gender identity from those who did not (see Table 1). To my knowledge, this distinction has not been used in previous studies analyzing TGNC data.

Despite its strengths, this study is not without its limitations. Primarily, the nature of survey data tempers the conclusions that can be made from it. The data is cross-sectional, which means that no causal relationships can be drawn from the results. For example, even though TGNC students and cisgender women report more emotional distress if they live on campus, this does not imply that living on campus *causes* emotional distress for these populations. It could simply be that students who are experiencing lower levels of emotion well-being choose to live in campus housing. In addition, even though several consecutive cohorts were explored, no longitudinal analysis is possible with these data. In addition, this time frame (seven semesters) may be too short to pick up on secular trends (which, if considered over several generations, might show improvement), but it can suggest, that at least short term, students are not improving.

Yet another limitation for this study was using a secondary data source, preventing the assessment of a wide variety of variables representing personal adjustment and stressors. Recall, for example, that analysis was limited to distal stressors (violence and safety). Likewise, personal-emotional adjustment was limited to self-reports of emotional distress. It should be noted that almost half of the questions (3 out of 7) used to calculate experiences of violence relate to sexual assault; it is possible that this may have influenced the increased experiences of violence endorsed by cisgender women.

This study is not nationally representative, but it is national, so the results can be generalized to other schools and students that share the characteristics of those surveyed. It cannot, however, be generalized across *all* colleges or students. As an example, the ACHA administers

this particular survey in both fall and spring semesters. The fall cohorts are noticeably smaller than the spring cohorts, in this data set, and often different geographical regions are more heavily represented. This may imply that particular regions of the country, or types of universities are the focus of the ACHA during different cohorts, possibly limiting external validity of the data. Furthermore, it is unknown how the findings from other cohorts and other nations may differ from the ones of used in this study, (e.g., those that might have more or less bias against TGNC students).

Finally, the results of my study are based entirely on self-report questionnaires, which have known limitations (e.g., reference bias, desirability bias, see Krosnick, 1999). Future researchers should consider incorporating objective measures of variables, such as emotional distress and experiences of violence, from registrar and campus health records or even police reports, to minimize the subjective perceptions of survey responses.

6.5 Conclusion

College students are stressed, but some students experience greater stress burdens than others. Examining disparities in college adjustment revealed, that although *all* college students report high rates of emotional distress, TGNC students are suffering more. This suffering may make successful adjustment difficult, because college adjustment is closely associated with student retention. Although this study explored systematic differences in stressors and emotional distress for TGNC and cisgender students, future research can help clarify which stressors are most detrimental and which resiliency factors are most protective for college adjustment. Truly

understanding how to better support TGNC students could help create a welcoming and supportive college environment where all students can succeed.

Table 2. Demographic Characteristics for Analytic Sample

Variables	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018	Total
Sample Size	13,181 (5.5)	63,134 (26.2)	23,045 (9.6)	41,755 (17.3)	21,626 (9.0)	61,723 (25.6)	17,007 (7.1)	241,171
Gender Identity								
Female	8,801 (66.8)	42,813 (67.8)	15,940 (69.2)	28,587 (68.5)	14,100 (65.2)	43,143 (69.6)	11,285 (66.4)	164,669 (68.3)
Male	4,051 (30.7)	18,620 (29.5)	6,578 (28.5)	12,247 (29.3)	7,031 (32.5)	16,749 (27.1)	5,335 (31.4)	70,611 (29.3)
Transgender/Gender Nonconforming	329 (2.5)	1,701 (2.7)	527 (2.3)	921 (2.2)	495 (2.3)	1,831 (3)	387 (2.3)	6,191 (2.6)
Missing	0.0%	0.0%	0.0%	0	0.0%	0.0%	0.0%	0
Year in School								
First Year	4,068 (30.9)	17,504 (27.7)	6,929 (30.1)	12,916 (30.9)	6,366 (29.4)	16,827 (27.3)	5,439 (32.0)	70,049 (29)
Second Year	3,083 (23.4)	14,691 (23.3)	5,199 (22.6)	10,228 (24.5)	5,173 (23.9)	13,947 (22.6)	4,038 (23.7)	56,359 (23.3)
Third Year	2,959 (22.4)	15,370 (24.3)	5,152 (22.4)	9,836 (23.6)	4,878 (22.6)	15,507 (25.1)	3,756 (22.1)	57,458 (23.8)
Fourth Year	2,407 (18.3)	12,227 (19.4)	4,710 (20.4)	7,835 (18.8)	4,424 (20.5)	12,209 (19.8)	3,245 (19.1)	47,057 (19.5)
Fifth Year or Higher	664 (5.0)	3,342 (5.3)	1,055 (4.6)	940 (2.3)	785 (3.6)	3,233 (5.2)	529 (3.1)	10,548 (4.4)
Missing	0	0	0	0	0	0	0	0
Race/Ethnicity								
White	9,120 (69.2)	36,827 (58.3)	15,594 (67.7)	28,282 (67.7)	15,180 (70.2)	36,614 (59.3)	9.963 (58.6)	151,580 (62.8)
Black	849 (6.4)	2,257 (3.6)	1,274 (5.5)	1,857 (4.4)	1,019 (4.7)	2,154 (3.5)	1,307 (7.7)	10,717 (4.4)
Latinx	697 (5.3)	6,997 (11.1)	1,691 (7.3)	2,753 (6.6)	1,302 (6.0)	8,361 (13.5)	1,462 (8.6)	23,263 (9.7)
Asian/Pacific Islander	846 (6.4)	8,157 (12.9)	1,939 (8.4)	4,325 (10.4)	1,770 (8.2)	6,741 (10.9)	2,111 (12.4)	25,889 (10.7)
Biracial/Multiracial	1446 (11.0)	7,670 (12.1)	2,112 (9.2)	3,958 (9.5)	2,061 (9.5)	6,667 (10.8)	1,853 (10.9)	25,767 (10.7)
Other[a]	192 (1.5)	1,052 (1.7)	395 (1.7)	497 (1.2)	261 (1.2)	1,078 (1.7)	272 (1.6)	3,747 (1.6)
Missing	31 (0.2)	174 (0.3)	40 (0.2)	83 (0.2)	33 (0.2)	108 (0.2)	39 (0.2)	508 (0.2)
Residency Status								
Campus Housing	7099 (53.9)	33,121 (52.5)	13,168 (57.1)	25,186 (60.3)	13,914 (64.3)	30,178 (48.9)	10,716 (63)	133,382 (55.2)
Non-Campus Housing	6,058 (46.0)	29,903 (47.4)	9,874 (42.8)	16,536 (39.6)	7,692 (35.6)	31,500 (51)	6,272 (36.9)	107,835 (44.7)
Missing	24 (0.2)	110 (0.2)	3 (0.0)	33 (0.1)	20 (0.1)	44 (0.1)	19 (0.1)	254 (0.1)

Note. Percentages are given within parentheses.

[a] This category includes American Indians and Alaskan Natives

Table 3. Descriptive Statistics and Correlations for Analytical Sample (N= 241,171)

Variables	*n*	*M*	*SD*	Min	Max	1	2	3
1. Emotional Distress	237,469	5.05	2.59	0.00	8.00	—		
2. Experiences of Violence	238,146	0.49	0.97	0.00	7.00	.22*	—	
3. Perceptions of Safety	241,254	3.26	0.55	1.00	4.00	-.17*	-.11*	—

*p<.001

Table 4. Emotional Distress

	Cisgender Women			Cisgender Men			TGNC		
Cohort	***n***	***M***	***SD***	***n***	***M***	***SD***	***n***	***M***	***SD***
Fall 2015	8,624	5.08	2.49	3,950	4.03	2.76	322	5.80	2.50
Spring 2016	41,994	5.18	2.46	18,198	4.18	2.75	1,657	5.94	2.43
Fall 2016	15,695	5.31	2.44	6,455	4.30	2.74	518	6.36	2.23
Spring 2017	28,183	5.34	2.42	11,998	4.39	2.73	909	6.45	2.15
Fall 2017	13,884	5.43	2.41	6,903	4.20	2.78	483	6.42	2.19
Spring 2018	42,436	5.46	2.42	16,426	4.40	2.76	1,799	6.35	2.25
Fall 2018	11,028	5.49	2.46	5,207	4.30	2.83	374	6.44	2.26
Total	161,794	5.33	2.44	69,137	4.28	2.76	6,062	6.24	2.30

Note. This table lists the average number of distressing emotions (e.g., anxiety, loneliness, depression) by gender status and cohort that students have experienced in the last 12 months. There were 8 different types of distressing emotions to choose from, with a higher number indicating a higher level of emotional distress.

Table 5. Experiences of Violence

	Cisgender Women			Cisgender Men			Transgender		
Cohort	***n***	***M***	***SD***	***n***	***M***	***SD***	***n***	***M***	***SD***
Fall 2015	8,721	0.45	0.96	4,008	0.43	0.83	326	0.73	1.27
Spring 2016	42,355	0.45	0.96	18,447	0.42	0.83	1,684	0.68	1.15
Fall 2016	15,658	0.51	1.00	6,480	0.47	0.86	516	0.88	1.32
Spring 2017	28,053	0.49	1.00	12,045	0.44	0.87	898	0.82	1.33
Fall 2017	13,840	0.55	1.07	6,480	0.48	0.88	493	0.91	1.32
Spring 2018	42,183	0.53	1.04	16,456	0.44	0.85	1,800	0.77	1.24
Fall 2018	11,125	0.55	1.04	5,259	0.47	0.91	379	0.71	1.14
Total	161,935	0.50	1.01	69,621	0.44	0.86	6,096	0.77	1.24

Note. This table lists the average number of violent experiences (e.g., physical fight, verbally threatened) by gender status and cohort that students have had in the last 12 months. There were seven different types of violent experiences to choose from, with a higher number indicating a greater number of violent experiences.

Table 6. Perceptions of Safety

	Cisgender Women			Men			TGNC		
Cohort	***n***	***M***	***SD***	***n***	***M***	***SD***	***n***	***M***	***SD***
Fall 2015	8,778	3.17	0.51	4,028	3.41	0.52	328	3.10	0.56
Spring 2016	42,669	3.18	0.54	18,546	3.45	0.52	1,694	3.13	0.59
Fall 2016	15,910	3.21	0.52	6,561	3.46	0.53	526	3.16	0.57
Spring 2017	28,525	3.23	0.52	12,207	3.51	0.50	918	3.21	0.56
Fall 2017	14,068	3.21	0.50	7,014	3.49	0.50	495	3.15	0.59
Spring 2018	43,034	3.14	0.55	16,698	3.44	0.53	1,821	3.11	0.59
Fall 2018	11,235	3.15	0.53	5,310	3.45	0.53	385	3.08	0.57
Total	164,219	3.18	0.53	70,364	3.46	0.52	6,167	3.13	0.58

Note. This table lists the average perception of safety (both on and off campus, during the day and night), by gender status and cohort over the last 12 months. There were 4 levels of safety to choose from (e.g. “Not safe at all”, “Very safe”) with a higher number indicating a greater perception of safety.

Table 7. Emotional Distress

	Residence								
	On Campus			Off Campus			Total		
Gender	***n***	***M***	***SD***	***n***	***M***	***SD***	***n***	***M***	***SD***
Cis women	88,379	5.37*	2.42	73,292	5.3*	2.47	161,671	5.33*	2.44
Cis men	38,900	4.29	2.76	30,163	4.28	2.76	69,063	4.29	2.76
TGNC [a]	3,690	6.34*	2.21	2,371	6.04*	2.44	6,061	6.19*	2.30
Total	130,969	5.06	2.58	105,826	5.03	2.60	236,795	5.05	2.59

Note. This table gives the average rating for emotional distress by gender and residency. The possible range of response was 1-8, with a higher number indicating a higher level of emotional distress.

[a] Transgender and gender nonconforming.

*p<.001.

Table 8. Perceptions of Safety

	Residence								
	On Campus			Off Campus			Total		
Gender	***n***	***M***	***SD***	***n***	***M***	***SD***	***n***	***M***	***SD***
Cis women	89,673	3.23	0.51	74,412	3.12	0.55	164,085	3.18	0.54
Cis men	39,564	3.49	0.86	30,721	3.42	0.85	70,285	3.46	0.52
TGNC [a]	3,755	3.16	0.57	2,411	3.10	0.60	6,166	3.13	0.58
Total	132,992	3.31	0.52	107,544	3.20	0.96	240,536	3.27	0.55

Note. This table gives the average perception of safety by gender and residency. The possible range of response was 1-4, with a higher number indicating a higher perception of safety.

[a] Transgender and gender nonconforming.

All findings were significant at p = .001

Table 9. Demographic Features of Transgender and Gender Nonconforming Students

Variables	**TOTAL**	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018
Gender Identity								
Assigned male at birth	1,332 (21.5)	73 (22.2)	322 (18.9)	112 (21.3)	210 (22.8)	108 (21.8)	417 (22.8)	90 (23.3)
Assigned female at birth	4,859 (78.5)	256 (77.8)	1,379 (81.1)	415 (78.7)	711 (77.2)	387 (78.2)	1,414 (77.2)	297 (76.7)
Self-identification								
Woman	1,819 (29.4)	137 (41.6)	650 (38.2)	161 (30.6)	241 (26.2)	126 (25.5)	416 (22.7)	88 (22.7)
Man	632 (10.2)	33 (10.0)	165 (9.7)	52 (9.9)	111 (12.1)	51 (10.3)	173 (9.4)	47 (12.1)
Trans woman	124 (2.0)	10 (3.0)	35 (2.1)	7 (1.3)	14 (1.5)	11 (2.2)	32 (1.7)	15 (3.9)
Trans man	408 (6.6)	16 (4.9)	69 (4.1)	38 (7.2)	56 (6.1)	56 (11.3)	134 (7.3)	39 (10.1)
Genderqueer	1,573 (25.4)	63 (19.1)	397 (23.3)	131 (24.9)	253 (27.5)	127 (25.7)	501 (27.4)	101 (26.1)
Another[a]	1,635 (26.4)	70 (21.3)	385 (22.6)	138 (26.2)	246 (26.7)	124 (25.1)	575 (31.4)	97 (25.1)
Race								
White	3,860 (62.3)	234 (71.1)	979 (57.6)	364 (69.1)	593 (64.4)	353 (71.3)	1,095 (59.8)	242 (62.5)
Black	248 (4.0)	19 (5.8)	56 (3.3)	23 (4.4)	37 (4.0)	26 (5.3)	69 (3.8)	18 (4.7)
Latinx	504 (8.1)	12 (3.6)	171 (10.1)	27 (5.1)	57 (6.2)	33 (6.7)	173 (9.4)	31 (8.0)
Asian/Pacific Islander	561 (9.1)	17 (5.2)	194 (11.4)	31 (5.9)	98 (10.6)	29 (5.9)	155 (8.5)	37 (9.6)
Biracial/Multiracial	872 (14.1)	41 (12.5)	267 (15.7)	69 (13.1)	119 (12.9)	49 (9.9)	275 (15.0)	52 (13.4)
Other[b]	125 (2.0)	6 (1.8)	29 (1.7)	12 (2.3)	14 (1.5)	5 (1.0)	54 (2.9)	5 (1.3)
Missing	21 (0.3)	0	5 (0.3)	1 (0.2)	3 (0.3)	0 (0.0)	10 (0.5)	2 (0.5)
Residency Status								
On Campus	3,768 (60.9)	199 (60.5)	942 (55.4)	347 (65.8)	612 (66.4)	338 (68.3)	1,066 (58.2)	264 (68.2)
Off Campus	2,422 (39.1)	129 (39.2)	759 (44.6)	180 (34.2)	309 (33.6)	157 (31.7)	765 (41.8)	123 (31.88)
Missing	1 (0.0)	1 (.3)	0	0	0	0	0	0
Type of College								
Public	3,491 (56.4)	222 (67.5)	1,093 (64.3)	263 (49.9)	382 (41.5)	195 (39.4)	1,159 (63.3)	177 (45.7)
Private	2,700 (43.6)	107 (32.5)	608 (35.7)	264 (50.1)	539 (58.5)	300 (60.6)	672 (36.7)	210 (54.3)
Religious	809 (13.1)	33 (10.0)	232 (13.6)	73 (13.9)	127 (13.8)	116 (23.4)	156 (8.5)	72 (18.6)
Campus Setting								
Very Large City	1,366 (22.1)	25 (7.6)	430 (25.3)	82 (15.6)	332 (36.0)	32 (6.5)	378 (20.6)	87 (22.5)
Large City	531 (8.6)	29 (8.8)	1,391 (8.2)	78 (14.8)	59 (6.4)	11 (2.2)	161 (8.8)	54 (14.0)
Small City	2,093 (33.8)	138 (41.9)	536 (31.5)	137 (26.0)	319 (34.6)	273 (55.2)	562 (30.7)	128 (33.1)
Variables	**TOTAL**	Fall 2015	Spring 2016	Fall 2016	Spring 2017	Fall 2017	Spring 2018	Fall 2018

Large Town	1,688 (27.3)	130 (39.5)	482 (28.3)	173 (32.8)	167 (18.1)	128 (25.9)	529 (28.9)	79 (20.4)
Small Town	452 (7.3)	7 (2.1)	93 (5.5)	41 (7.8)	36 (3.9)	51 (10.3)	190 (10.4)	34 (8.8)
Rural Community	61 (1.0)	0	21 (1.2)	16 (3.0)	8 (0.9)	0	11 (0.6)	5 (1.3)
US Geographical Area								
Northeast	1,564 (25.3)	92 (28.0)	374 (22.0)	138 (26.2)	274 (29.8)	178 (36.0)	367 (20.0)	141 (36.4)
Midwest	1,295 (20.9)	37 (11.2)	270 (15.9)	184 (34.9)	206 (22.4)	121 (24.4)	430 (23.5)	47 (12.1)
South	1,219 (19.7)	121 (36.8)	221 (13.0)	157 (29.8)	194 (21.1)	129 (26.1)	227 (12.4)	170 (43.9)
West	2,113 (34.1)	79 (24.0)	836 (49.1)	48 (9.1)	247 (26.8)	67 (13.5)	807 (44.1)	29 (7.5)
Total Enrollment								
20,000 +	1,988 (32.1)	131 (39.8)	638 (37.5)	157 (29.8)	311 (33.8)	92 (18.6)	605 (33.0)	54 (14.0)
10,000-19,999	1,169 (18.9)	45 (13.7)	337 (19.8)	59 (11.2)	186 (20.2)	148 (29.9)	300 (16.4)	94 (24.3)
5,000-9,999	1,085 (17.5)	38 (11.6)	261 (15.3)	134 (25.4)	164 (17.8)	66 (13.3)	280 (15.3)	142 (36.7)
2,500-4,999	723 (11.7)	70 (21.3)	136 (8.0)	104 (19.7)	81 (8.8)	104 (21.0)	203 (11.1)	25 (6.5)
<2,500	1,226 (19.8)	45 (13.7)	329 (19.3)	73 (13.9)	179 (19.4)	85 (17.2)	443 (24.2)	72 (18.6)
Year in School								
First	1,793 (29.0)	102 (31.0)	464 (27.3)	154 (29.2)	304 (33.0)	147 (29.7)	493 (26.9)	129 (33.3)
Second	1,486 (24.0)	98 (29.8)	396 (23.3)	135 (25.6)	222 (24.1)	113 (22.8)	424 (23.2)	98 (25.3)
Third	1,462 (23.6)	64 (19.5)	403 (23.7)	131 (24.9)	213 (23.1)	102 (20.6)	472 (25.8)	77 (19.9)
Fourth	1,150 (18.6)	49 (14.9)	328 (19.3)	85 (16.1)	161 (17.5)	110 (22.2)	348 (19.0)	69 (17.8)
Fifth or Higher	300 (4.8)	16 (4.9)	110 (6.5)	22 (4.2)	21 (2.3)	23 (4.6)	94 (5.1)	14 (3.6)

Note. Percentages appear in parentheses.

[a] Participants choosing this option specified their preferred term

[b] Includes American Indian, Alaskan Native, Native Hawaiian and Other

Table 10. Emotional Distress by Extended Gender Groupings

	n	***M***	***SD***
Cisgender Women	161,794	5.33	2.44
Cisgender Men	69,137	4.28	2.76
TGNC Group 1	1,883	5.27	2.55
TGNC Group 2	2,264	6.38	2.23
TGNC Group 3	1,915	6.97	1.71
Total	236,993		

Note. This table lists the average number of distressing emotions (e.g., anxiety, loneliness, depression) that students have experienced in the last 12 months, with extended gender groupings. There were 8 different types of distressing emotions to choose from, with a higher number indicating a higher level of emotional distress. TGNC Group 1 are those students who endorsed being transgender but also endorsed congruence between sex assigned at birth and current gender identity. TGNC Group 2 students did NOT endorse being transgender but endorsed incongruence between sex assigned at birth and current gender identity. TGNC Group 3 students endorsed being transgender and endorsed incongruence between sex assigned at birth and current gender identity; therefore, representing those students who seem to meet all the current criteria for classification as "TGNC". See Table 1 for clarification of gender groupings.

Table 11. Experiences of Violence by Extended Gender Groupings

	n	***M***	***SD***
Cisgender Women	161,935	0.50	1.01
Cisgender Men	69,621	0.45	0.86
TGNC Group 1	1,905	0.57	1.06
TGNC Group 2	2,262	0.80	1.28
TGNC Group 3	1,929	0.90	1.34
Total	237,652		

Note. This table lists the average number of violent experiences (e.g., physical fight, verbally threatened) that students have had in the last 12 months, with extended gender groupings. There were seven different types of violent experiences to choose from, with a higher number indicating a greater number of violent experiences. TGNC Group 1 are those students who endorsed being transgender but also endorsed congruence between sex assigned at birth and current gender identity. TGNC Group 2 students did NOT endorse being transgender but endorsed incongruence between sex assigned at birth and current gender identity. TGNC Group 3 students endorsed being transgender and endorsed incongruence between sex assigned at birth and current gender identity; therefore, representing those students who seem to meet all the current criteria for classification as "TGNC". See Table 1 for clarification of gender groupings.

Table 12. Perceptions of Safety by Extended Gender Groupings

	n	***M***	***SD***
Cisgender Women	164,219	3.18	0.53
Cisgender Men	70,364	3.46	0.52
TGNC Group 1	1,930	3.23	0.55
TGNC Group 2	2,292	3.16	0.58
TGNC Group 3	1,945	3.02	0.60
Total	240,750		

Note. This table lists the average perception of safety (both on and off campus, during the day and night) over the last 12 months, with extended gender groupings. There were 4 levels of safety to choose from (e.g. "Not safe at all", "Very safe") with a higher number indicating a greater perception of safety. TGNC Group 1 are those students who endorsed being transgender but also endorsed congruence between sex assigned at birth and current gender identity. TGNC Group 2 students did NOT endorse being transgender but endorsed incongruence between sex assigned at birth and current gender identity. TGNC Group 3 students endorsed being transgender and endorsed incongruence between sex assigned at birth and current gender identity; therefore, representing those students who seem to meet all the current criteria for classification as "TGNC". See Table 1 for clarification of gender groupings.

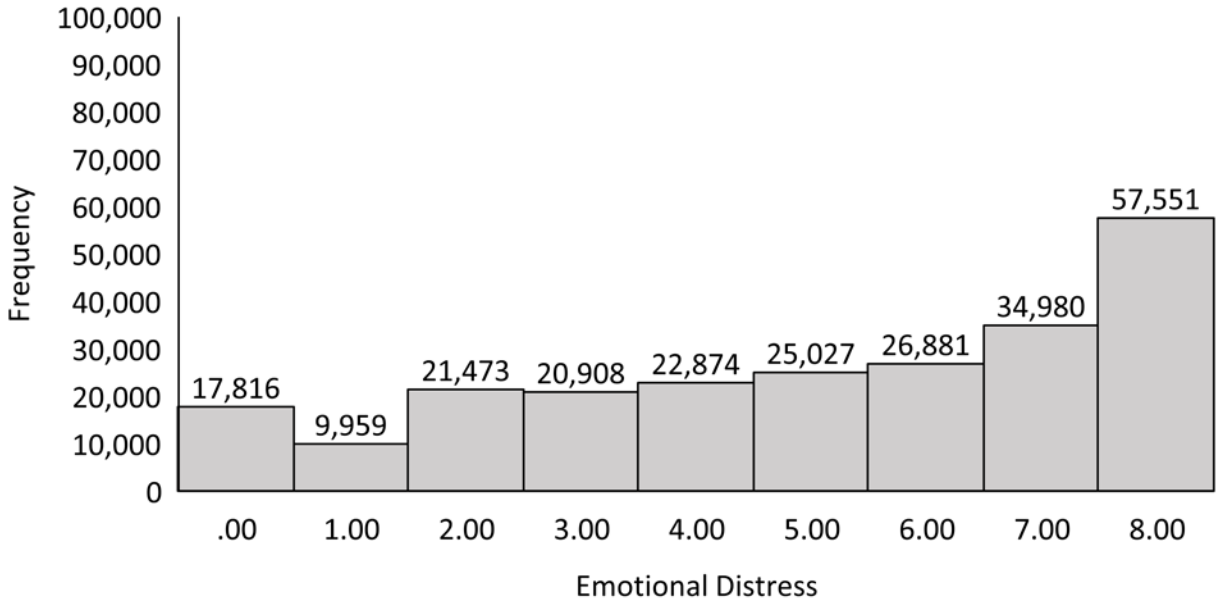

Figure 5. Number of Students Endorsing Distressing Emotions

Note. This figure indicates how many distressing emotions (e.g., anxiety, loneliness, depression) that students have experienced in the last 12 months. There were 8 different types of distressing emotions to choose from, with a range of responses from 0-8. Higher numbers indicate a greater level of emotional distress.

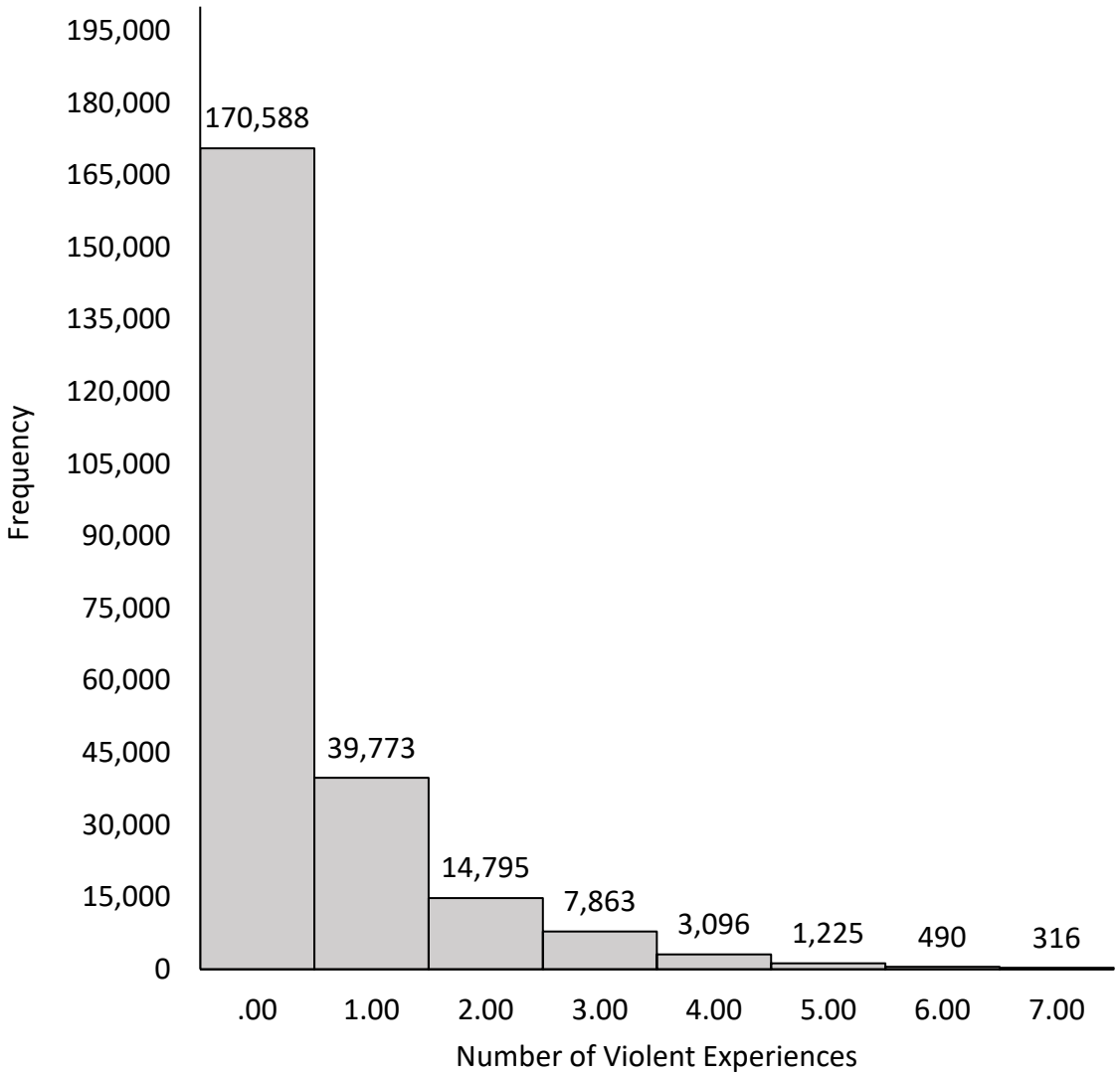

Figure 6. Number of Students Endorsing Violent Experiences

Note. This figure indicates how many types of violent experiences (e.g., physical fight, verbally threatened) that students have had within the last 12 months. There were 7 different types of violent experiences to choose from, with a range of possible responses from 0-7. Higher numbers indicate a greater number of violent experiences

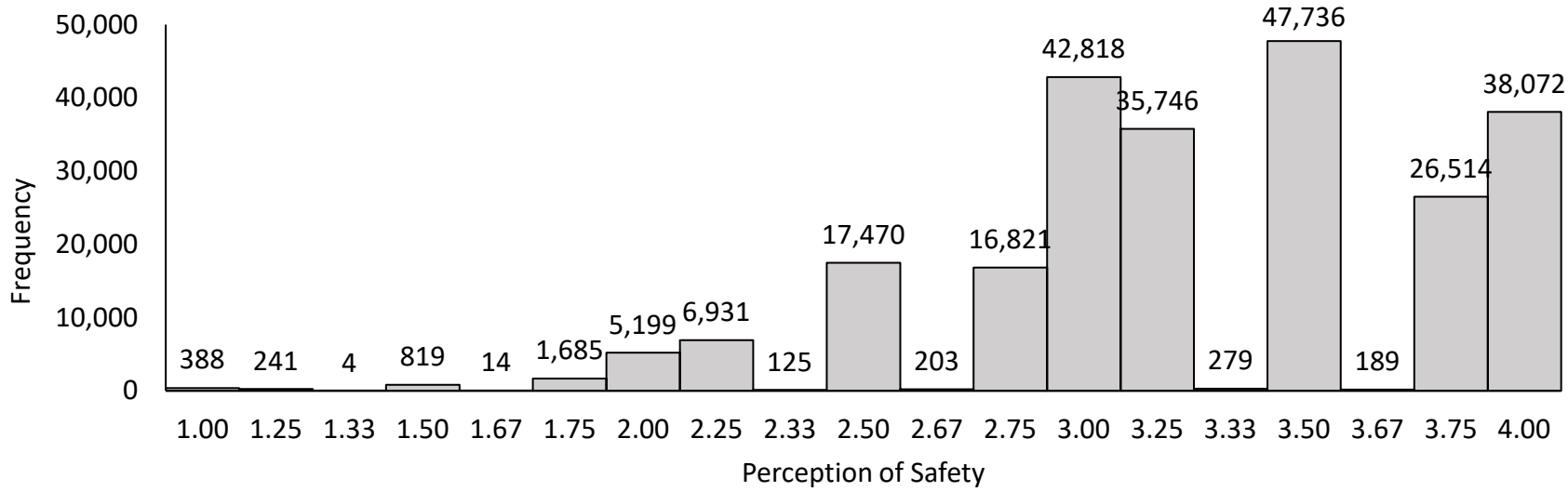

Figure 7. Level of Safety Perceptions Endorsed by Students

Note. This figure represents the average perception of safety indicated by students both on and off campus during the day and night. There were 4 levels of safety to choose from (e.g. "Not safe at all", "Very safe") with a higher number indicating a greater perception of safety. The possible range of responses was from 1-4.

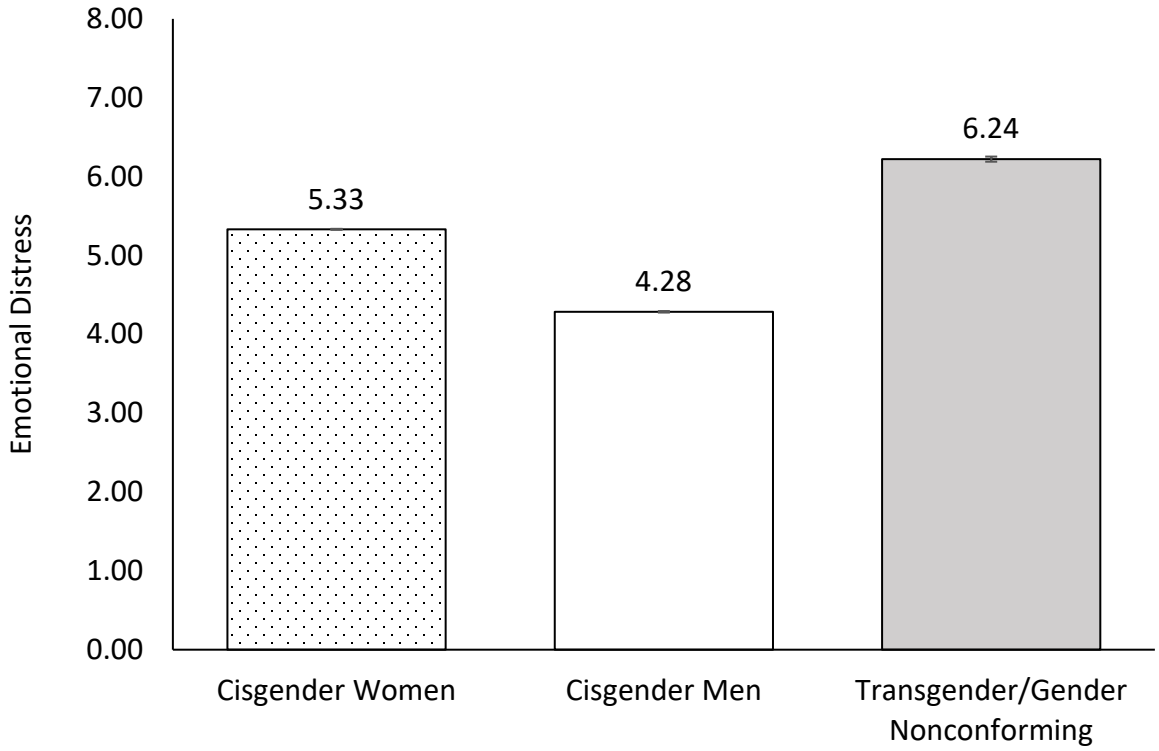

Figure 8. Average Level of Emotional Distress by Gender

Note. This figure represents the number of distressing emotions (e.g., anxiety, loneliness, depression) that students have experienced in the last 12 months by gender status and averaged over seven cohorts (Fall 2015-Fall 2018). Error bars are +/-1 SE. There were 8 types of distressing emotions to endorse, with a range of possible responses from 0-8. Higher numbers indicate a greater level of emotional distress.

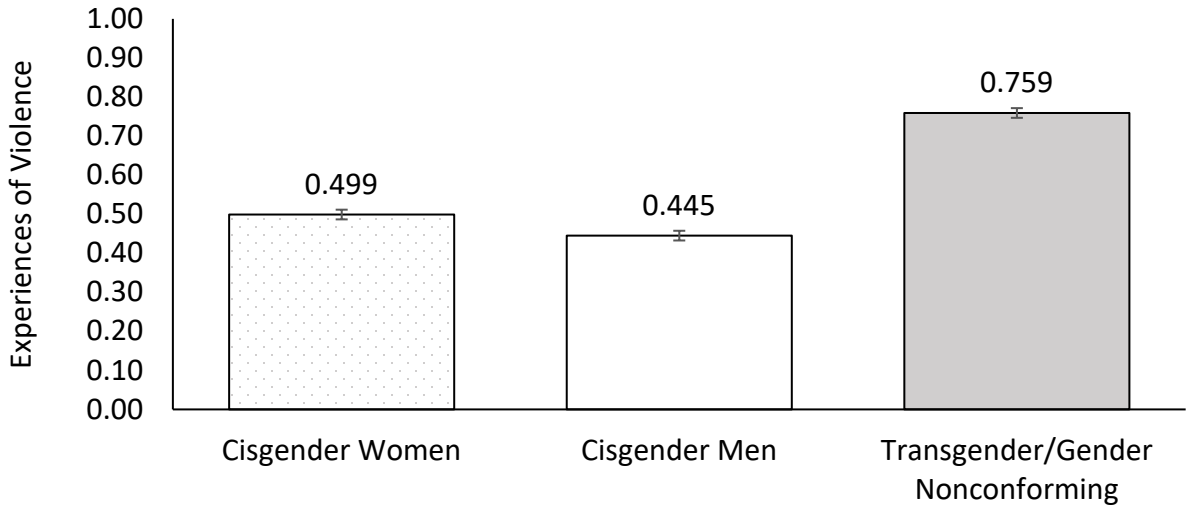

Figure 9. Average Number of Violent Experiences by Gender

Note. This figure represents the number of violent experiences (e.g., physical fight, verbally threatened) that students have experienced in the last 12 months by gender status and averaged over seven cohorts (Fall 2015-Fall 2018). Error bars are +/-1 SE. There were 7 types of violent experiences to endorse, with a range of possible responses from 0-7. Higher numbers indicate a greater number of violent experiences.

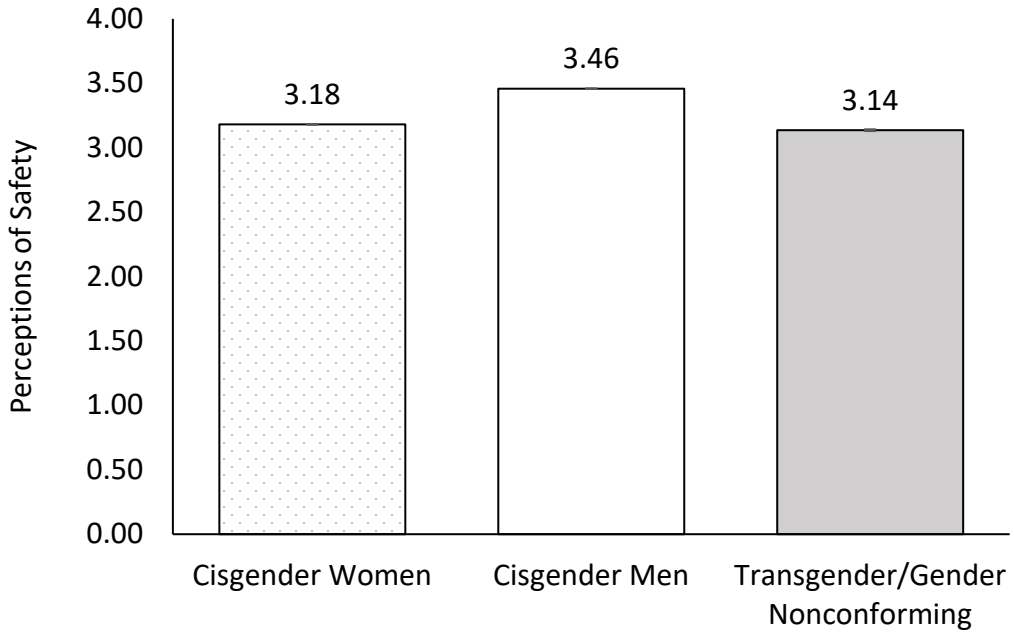

Figure 10. Average Perception of Safety by Gender

Note. This figure represents the average perception of safety (both on and off campus, during the day and night), by gender status for the last 12 months, averaged over seven cohorts (Fall 2015-Fall 2018). Error bars are +/-1 SE. The possible range of responses fell between 1 and 4, with higher numbers indicating higher perceptions of safety.

Figure 11. Pathway Values for Direct and Indirect Effects of Gender on Emotional Distress

Note. This figure represents the values of the unstandardized regression coefficients between gender and emotional stress, both directly and indirectly and mediated through the stressors of experiences of violence and perceptions of safety. The two gender variable pathways are comparing cisgender women with TGNC students and cisgender men with TGNC students. Covariates controlled for are race, year in school, and cohort. All modeled paths are statistically significant at $p<.001$.

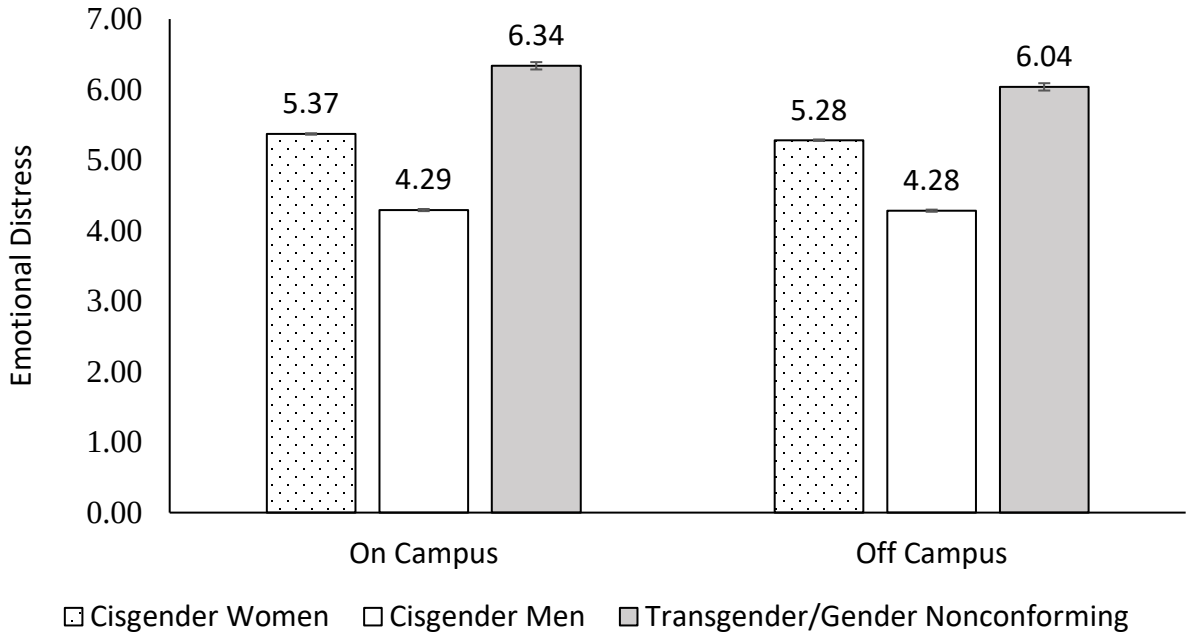

Figure 12. Average Level of Emotional Distress by Gender and Residency

Note. This figure represents the average value of emotional distress by gender status and residency over the last 12 months, averaged over seven cohorts (Fall 2015-Fall 2018). Error bars are +/-1 SE. There were 8 types of distressing emotions to endorse, with a range of possible responses from 0-8. Higher numbers indicate higher levels of emotional distress.

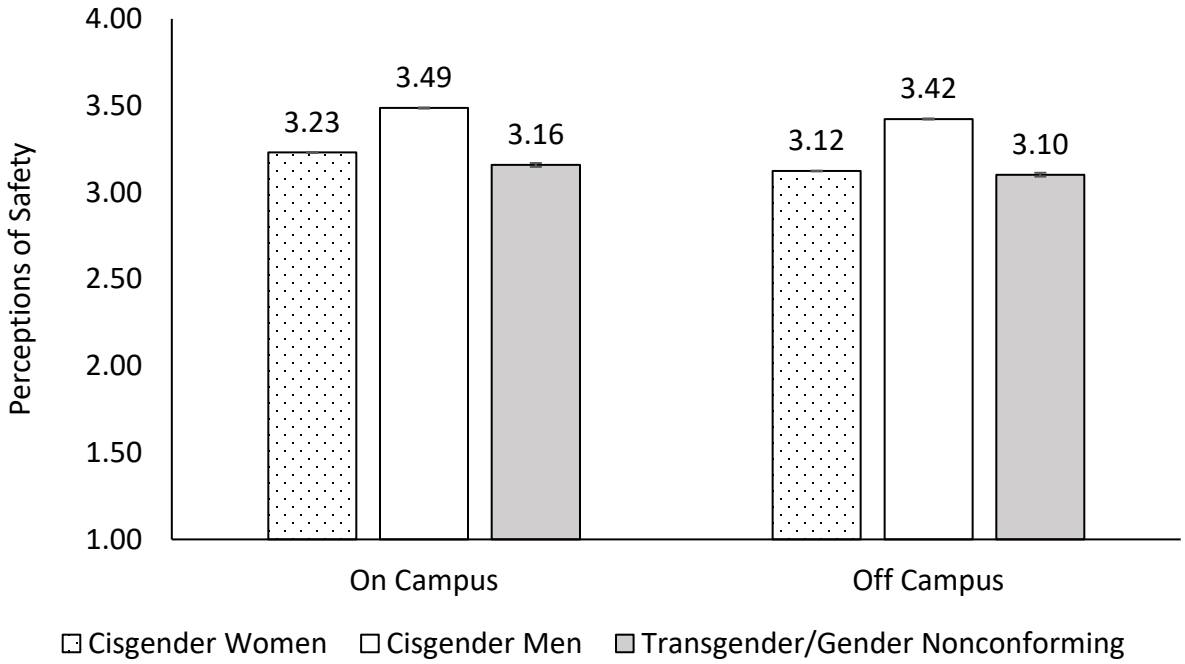

Figure 13. Average Level of Safety Perceptions by Gender and Residency

Note. This figure represents the average level of safety perceptions by gender status and residency over the last 12 months, averaged over seven cohorts (Fall 2015-Fall 2018). Error bars are +/-1 SE. The range of possible responses for this item fell between 1 and 4, with higher numbers indicating higher perceptions of safety.

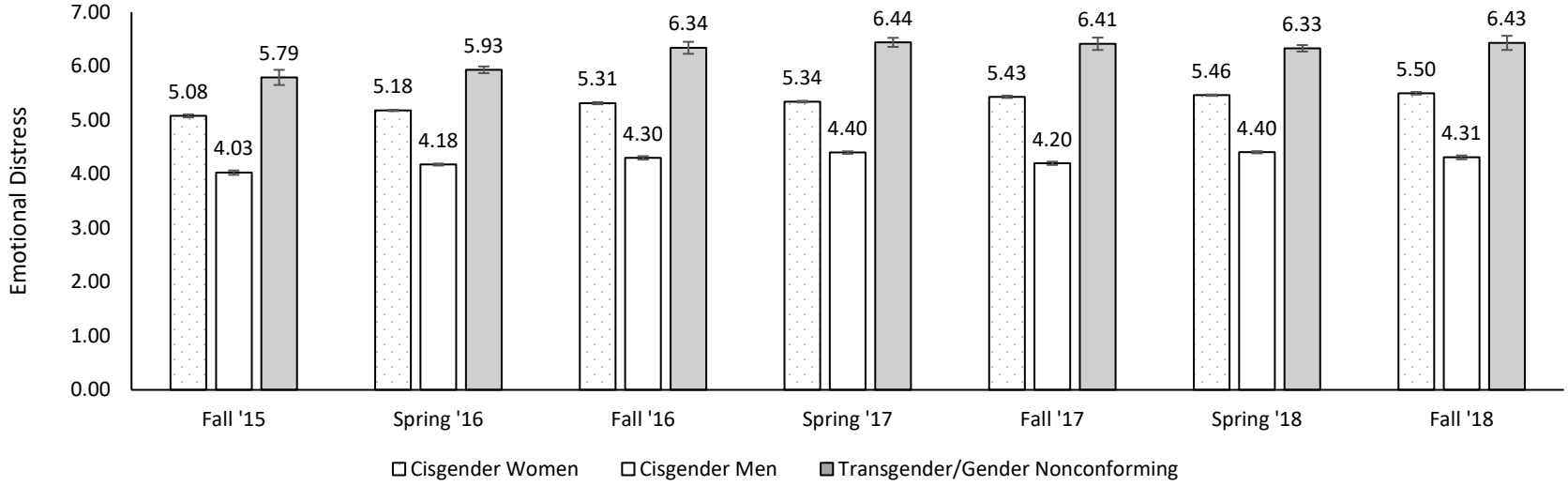

Figure 14. Average Level of Emotional Distress of Students by Gender and Cohort

Note. This figure represents the average value of emotional distress by gender status and cohort over the last 12 months. Error bars are +/-1 SE. There were 8 types of distressing emotions to endorse, with a range of possible responses from 0-8, with higher numbers indicating higher levels of emotional distress.

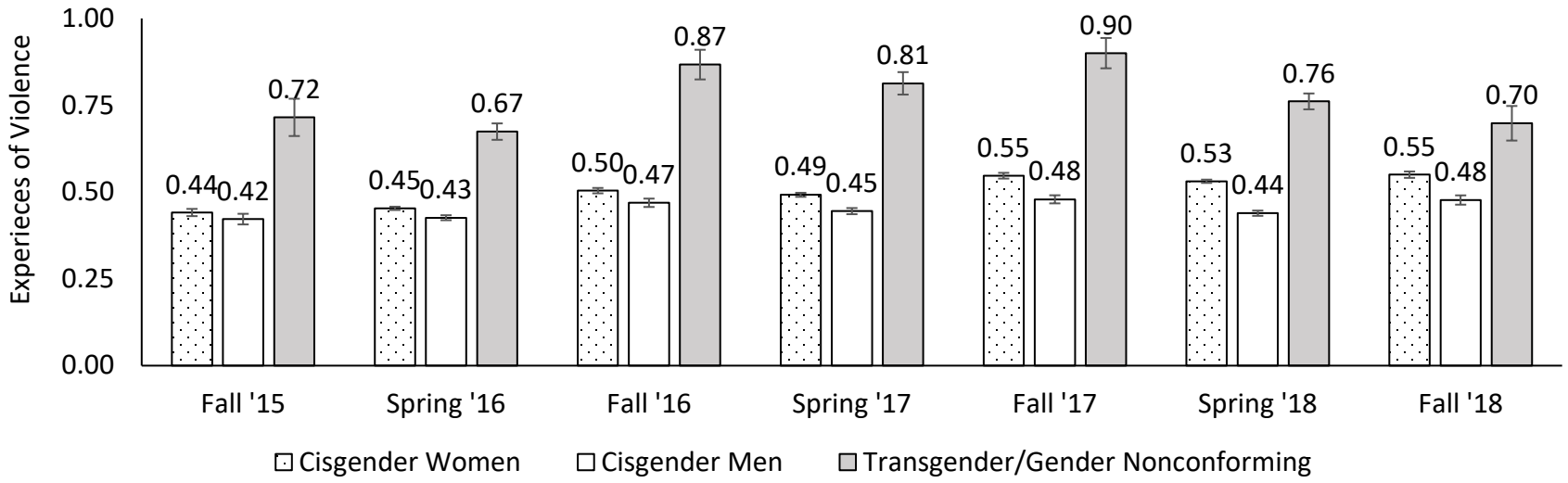

Figure 15. Average Experiences of Violence for Students by Gender and Cohort

Note. This figure represents the average number of violent experiences by gender status and cohort over the last 12 months. Error bars are +/-1 SE. There were 7 types of violent experiences to endorse, with a range of possible responses from 0-7. Higher numbers indicate a greater number of violent experiences.

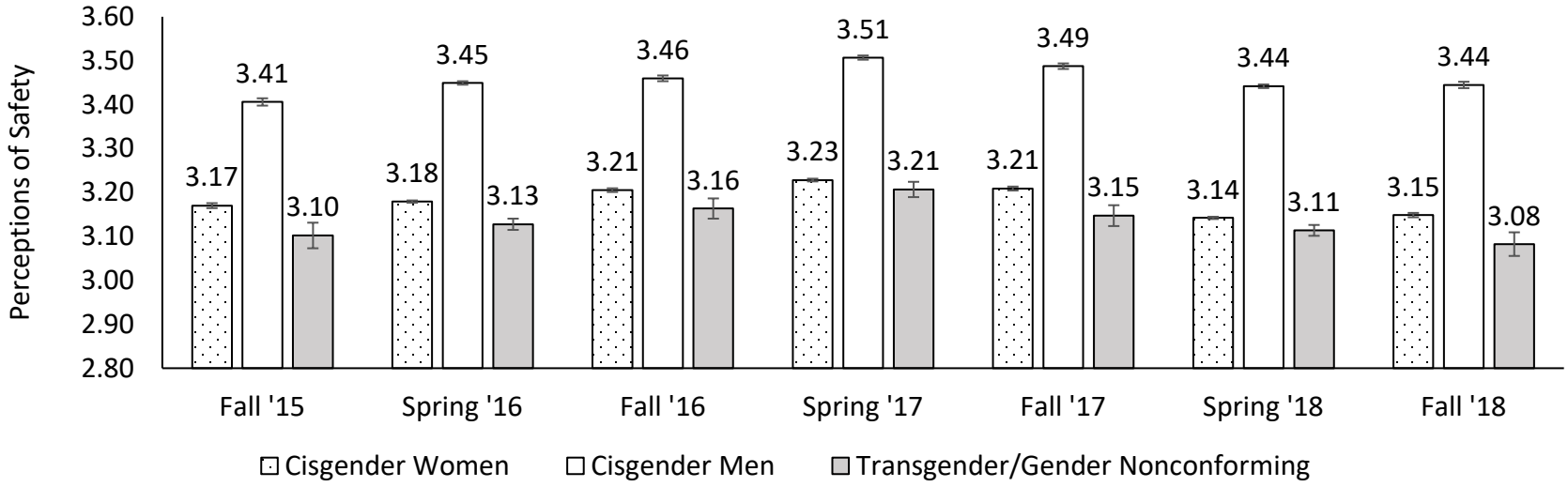

Figure 16. Average Level of Safety Perceptions for Students by Gender and Cohort

Note. This figure represents the average level of safety perceptions by gender status and cohort over the last 12 months. Error bars are +/-1 SE. There was a possible response range from 1-4, with higher numbers indicating higher perceptions of safety.

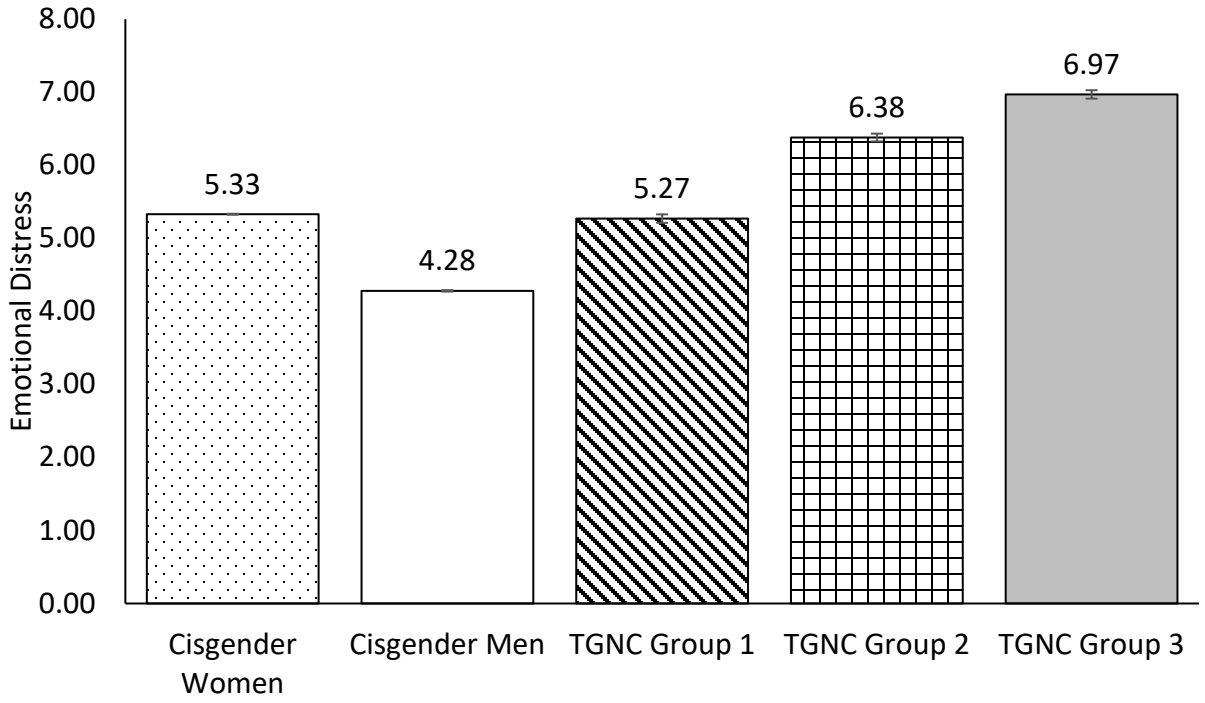

Figure 17. Average Level of Emotional Distress by Extended Gender Categories

Note. This figure represents the number of distressing emotions (e.g., anxiety, loneliness, depression) that students have experienced in the last 12 months averaged over seven cohorts (Fall 2015-Fall 2018) by extended gender groupings. Error bars are +/-1 SE. There were 8 types of distressing emotions to endorse, with a range of possible responses from 0-8. Higher numbers indicate a greater level of emotional distress. TGNC Group 1 are those students who endorsed being transgender but also endorsed congruence between sex assigned at birth and current gender identity. TGNC Group 2 students did NOT endorse being transgender but endorsed incongruence between sex assigned at birth and current gender identity. TGNC Group 3 students endorsed being transgender and endorsed incongruence between sex assigned at birth and current gender identity; this group would represent the students who meet the current criteria for classification as "TGNC". See Table 1 for clarification of gender groupings.

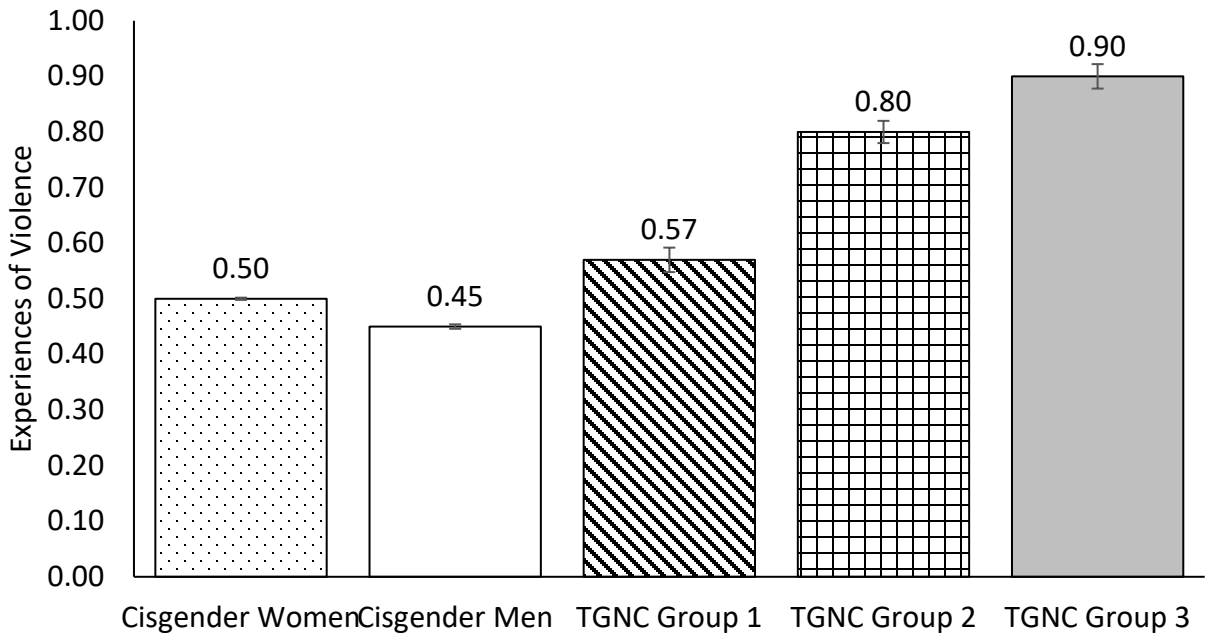

Figure 18. Average Level of Violence Experiences by Extended Gender Categories

Note. This figure represents the number of violent experiences (e.g., physical fight, verbally threatened) that students have experienced in the last 12 months averaged over seven cohorts (Fall 2015-Fall 2018) by extended gender groupings. Error bars are +/-1 SE. There were 7 types of violent experiences to endorse, with a range of possible responses from 0-7. Higher numbers indicate a greater number of violent experiences. TGNC Group 1 are those students who endorsed being transgender but also endorsed congruence between sex assigned at birth and current gender identity. TGNC Group 2 students did NOT endorse being transgender but endorsed incongruence between sex assigned at birth and current gender identity. TGNC Group 3 students endorsed being transgender and endorsed incongruence between sex assigned at birth and current gender identity; this group would represent the students who meet the current criteria for classification as "TGNC". See Table 1 for clarification of gender groupings.

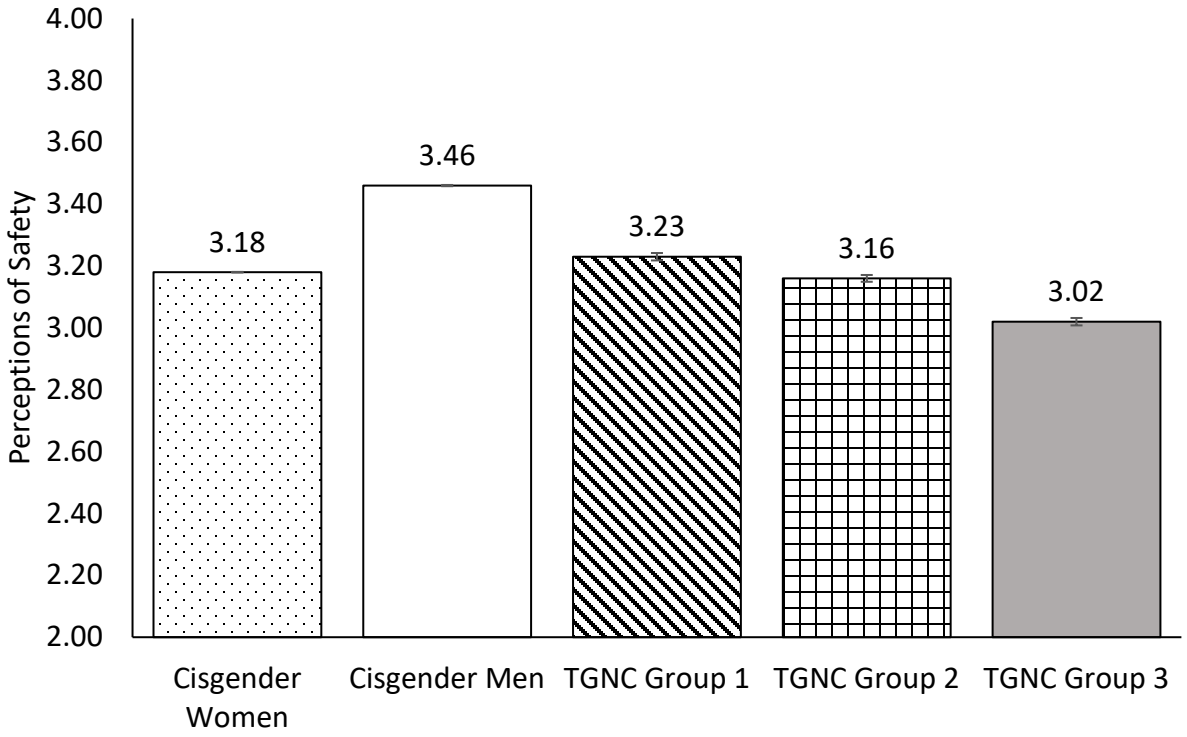

Figure 19. Average Level of Safety Perception by Extended Gender Categories

Note. This figure represents the average perception of safety (both on and off campus, during the day and night) for the last 12 months, averaged over seven cohorts (Fall 2015-Fall 2018) by extended gender groupings. Error bars are +/-1 SE. The possible range of responses fell between 1 and 4, with higher numbers indicating higher perceptions of safety. TGNC Group 1 are those students who endorsed being transgender but also endorsed congruence between sex assigned at birth and current gender identity. TGNC Group 2 students did NOT endorse being transgender but endorsed incongruence between sex assigned at birth and current gender identity. TGNC Group 3 students endorsed being transgender and endorsed incongruence between sex assigned at birth and current gender identity; this group would represent the students who meet the current criteria for classification as "TGNC". See Table 1 for clarification of gender groupings.

Appendix A IRB Exemption Letter

University of Pittsburgh
Institutional Review Board

Human Research Protection Office
3500 Fifth Avenue, Suite 106
Pittsburgh, PA 15213
Tel (412) 383-1480
www.hrpo@pitt.edu

NOT HUMAN RESEARCH

IRB:	STUDY19010039
PI:	Rebecca Meacham
Title:	How do transgender undergraduate students compare with undergraduate cisgender students in differing aspects of college adjustment?
Funding:	None
Date:	February 15, 2019
IRB Coordinator:	Dana DiVirgilio

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval are not required.

This determination applies only to the activities described in the IRB submission and does not apply should any changes be made. If changes are being considered and there are questions about whether IRB review is needed, please submit a study modification to the IRB for a determination. You can create a modification by clicking **Create Modification / CR** within the study.

Appendix B Questions Used from the ACHA-NCHA-IIc Survey

The following questions are the ones that I used for this study. They are all from the most recent version of the ACHA-NCHA-IIc Survey.

Table B 1. Questions that will be used from the ACHA-NCHAA-IIc Survey

Variable	Survey Variable	Exact Wording of Item	Response Options
Stressor: Violence Physical Fight	**NQ5A**	Within the last 12 months: (Please mark the appropriate column for each row) (A) Were you in a physical fight?	(1) No; (2) Yes
Stressor: Violence Physically Assaulted	**NQ5B**	Within the last 12 months: (Please mark the appropriate column for each row) (B) Were you physically assaulted (do not include sexual assault)?	(1) No; (2) Yes
Stressor: Violence Verbally Threatened	**NQ5C**	Within the last 12 months: (Please mark the appropriate column for each row) (C) Were you verbally threatened?	(1) No; (2) Yes
Stressor: Violence Sexually Touched	**NQ5D**	Within the last 12 months: (Please mark the appropriate column for each row) (D) Were you sexually touched without your consent?	(1) No; (2) Yes
Stressor: Violence Sexual Penetration Attempted	**NQ5E**	Within the last 12 months: (Please mark the appropriate column for each row) (E) Was sexual penetration attempted (vaginal, anal, oral) without your consent?	(1) No; (2) Yes
Stressor: Violence Sexual Penetration	**NQ5F**	Within the last 12 months: (Please mark the appropriate column for each row) (F) Were you sexually penetrated (vaginal, anal, oral) without your consent?	(1) No; (2) Yes
Stressor: Violence Stalking	**NQ5G**	Within the last 12 months: (Please mark the appropriate column for each row (G) Were	(1) No; (2) Yes

Variable	Survey Variable	Exact Wording of Item	Response Options
		you a victim of stalking (e.g. waiting for you outside your classroom, residence, or office; repeated emails/phone calls)?	
Stressor: Safety Campus Day	**NQ7A**	How safe do you feel: (Please mark the appropriate column for each row) (A) On this campus (daytime)	(1) Not safe at all; (2) Somewhat unsafe; (3) Somewhat safe; (4) Very safe
Stressor: Safety Campus Night	**NQ7B**	How safe do you feel: (Please mark the appropriate column for each row) (B) On this campus (nighttime)	(1) Not safe at all; (2) Somewhat unsafe; (3) Somewhat safe; (4) Very safe
Stressor: Safety Community Day	**NQ7C**	How safe do you feel: (Please mark the appropriate column for each row (C) In the community surrounding this school (daytime)	(1) Not safe at all; (2) Somewhat unsafe; (3) Somewhat safe; (4) Very safe
Stressor: Safety Community Night	**NQ7D**	How safe do you feel: (Please mark the appropriate column for each row) (D) In the community surrounding this school (nighttime)	(1) Not safe at all; (2) Somewhat unsafe; (3) Somewhat safe; (4) Very safe
Emotional Distress: Hopeless	**NQ30A**	Have you ever: (Please mark the appropriate column for each row) (A) Felt things were hopeless	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months
Emotional Distress: Coping	**NQ30B**	Have you ever: (Please mark the appropriate column for each row) (B) Felt overwhelmed by all you had to do	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months
Emotional Distress: Tired	**NQ30C**	Have you ever: (Please mark the appropriate column for each row) (C) Felt exhausted (not from physical activity)	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months

Variable	Survey Variable	Exact Wording of Item	Response Options
Emotional Distress: Lonely	**NQ30D**	Have you ever: (Please mark the appropriate column for each row) (D) Felt very lonely	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months
Emotional Distress: Sad	**NQ30E**	Have you ever: (Please mark the appropriate column for each row) (E) Felt very sad	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months
Emotional Distress: Depression	**NQ30F**	Have you ever: (Please mark the appropriate column for each row) (F) Felt so depressed that it was difficult to function	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months
Emotional Distress: Anxiety	**NQ30G**	Have you ever: (Please mark the appropriate column for each row) (G) Felt overwhelming anxiety	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months
Emotional Distress: Anger	**NQ30H**	Have you ever: (Please mark the appropriate column for each row) (H) Felt overwhelming anger	(1) No, never; (2) No, not in the last 12 months; (3) Yes, in the last 2 weeks; (4) Yes, in the last 30 days; (5) Yes, in the last 12 months
Age	**NQ 46**	How old are you?	Write in age in years
Gender SAB	**RNQ47A**	What sex were you assigned at birth, such as on an original birth certificate?	(1) Female; (2) Male
Transgender ID	**RNQ47B**	Do you identify as transgender?	(1) No; (2) Yes
Gender	**RNQ47C**	Which term do you use to describe your gender identity?	(1) Woman; (2) Man; (3) Transwoman; (4) Trans man; (5) Genderqueer; (6)

Variable	Survey Variable	Exact Wording of Item	Response Options
			Another identity (please specify)
Demographics: Year in School	**NQ51**	What is your year in school?	(1) 1st year undergraduate; (2) 2nd year undergraduate; (3) 3rd year undergraduate; (4) 4th year undergraduate; (5) 5th year or more undergraduate; (6) Graduate or professional; (7) Not seeking a degree; (8) Other
Demographic: Enrollment Status	**NQ52**	What is your enrollment status?	(1) Full-time; (2) Part-time; (3) Other
Demographic: Race	**NQ54**	How do you usually describe yourself? (Mark all that apply)	(A) White; (B) Black; (C) Hispanic or Latino/a; (D) Asian or Pacific Islander; (E) American Indian, Alaskan Native, or Native Hawaiian; (F) Biracial or Multiracial; (G) Other
Resilience Factor: Living on or off campus	**NQ58**	Where do you currently live?	(1) Campus residence hall; (2) Fraternity or sorority house; (3) Other college/university housing; (4) Parent/guardian's home; (5) Other off-campus housing; (6) Other

Appendix C Composite Scores

This section details how I created scores for experiencing violence, perceptions of safety, and emotional distress.

Appendix C.1 Violence.

Students indicated “yes” or “no” for each of the following items from Question 5 of the ACHA-NCHA-IIc. An indication of “yes” was assigned a score of “1”; an indication of “no” was assigned a score of “0”. A sum score was then created for each student to get a total number of violence episodes from 0 to 7. A high score indicated more exposure to violence.

(A) Were you in a physical fight?

(B) Were you physically assaulted (do not include sexual assault)?

(C) Were you verbally threatened?

(D) Were you sexually touched without your consent?

(E) Was sexual penetration attempted (vaginal, anal, oral) without your consent?

(F) Were you sexually penetrated (vaginal, anal, oral) without your consent?

(G) Were you a victim of stalking (e.g., waiting for you outside your classroom, residence, or office; repeated emails/phone calls)?

Appendix C.2 Safety

Students indicated 1 (Not safe at all), 2 (Somewhat unsafe), 3 (Somewhat safe), or 4 (Very safe) for the following items from Question 7 of the ACHA-NCHA-IIc. Responses were averaged to create a composite score, with a higher score indicating a greater perception of safety.

(A) On this campus (daytime)?

(B) On this campus (nighttime)?

(C) In the community surrounding this school (daytime)?

(D) In the community surrounding this school (nighttime)?

Appendix C.3 Emotional Distress

On the original survey, students indicated 1 (No, never), 2 (No, not in the last 12 months), 3 (Yes, in the last 2 weeks), 4 (Yes, in the last 30 days), or 5 (Yes, in the last 12 months) for the following items from Question 30 of the ACHA-NCHA-IIc. For the purposes of this study, original student responses of 1 or 2, both indicating no experience of distress over the past year, were re-assigned a score of 0. The remaining responses (3, 4, and 5), were re-assigned a score of 1, indicating that the emotion *had* been experienced by the student over the past year. Scores for each of the eight items were then summed, with a range of 0 (no endorsements) to 8 (every item endorsed), where high scores indicated more emotional distress.

"Have you ever:"

(A) Felt things were hopeless

(B) Felt overwhelmed by all you had to do

(C) Felt exhausted (not from physical activity)

(D) Felt very lonely

(E) Felt very sad

(F) Felt so depressed that it was difficult to function

(G) Felt overwhelming anxiety

(H) Felt overwhelming anger

Appendix D Examples of Recoded Gender Responses

The table below lists examples of individual responses to Question NC47CO, which allowed respondents to write in an answer that best described their experience of gender. Several cases with write-in responses were originally coded as "Non-binary" by the ACHA will be recoded. Of the 1678 recoded cases, 1099 were recoded as "Transgender"; 480 as "Uncodeable", 66 as "Cisgender men" and 33 as "Cisgender women." Participants with write-in responses indicating (1) they were female or male, (2) they were born female or male and (3) they were not transgender will be re-coded as cisgender women or cisgender men, respectively. This change in the raw data will result in the loss of 579 individuals previously coded as "non-binary", however this revision will represent a more accurate depiction of the participants' gender identity.

Table D 1. Examples of Recoded Gender Responses for Question NQ47CO

Coded at Transgender	Uncodeable	Coded as Male	Coded as Female
Agender	*Animals* (llama, unicorn, dinosaur)	Boy	Cis Woman
Androgynous	*Celebrity* (Batman, Beyoncé)	Bro	Female
Demi	*Ideological response* ("Gender is a social construct")	Dude	Girl
Don't know		Gentleman	Womyn
Gender expansive	*Inanimate object* (couch potato, jar of pickles)	"Male" not man	
Genderfluid		Manly Man	
Gender neutral	*Non-sensical response* ("Apache Attack Helicopter"; "Just don't call me late for dinner")	Young Man	
Gender non-conforming			
Gender queer			
Non-binary			
Non-conforming			
Pangender			
Postgender			
Trans			
Two-Spirit			

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