Gender Minority Young Adult Mental Health: Anti-Transgender Prejudice, Mediators, and Implications in the COVID-19 Era

by

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Abstract

Binary and nonbinary transgender young adults exist in a state of marginalization in American society. Both interpersonal and institutional forms of prejudice, discrimination, and oppression against trans individuals have created a myriad of mental and physical health disparities in this population. Yet, limited research has examined the mechanisms of risk for transgender young adults. Moreover, the impacts of the COVID-19 pandemic may exacerbate risk for marginalized groups. Using a minority stress framework and online cross-sectional survey design ($N = 239$), the current study examines gender dysphoria, emotion dysregulation, and relational authenticity as mediators of the relationship between transgender distal stress and negative mental health outcomes (i.e., psychological distress, alcohol use, and e-cigarette use) during the early stages of the novel coronavirus pandemic (late May to early July 2020). Additional data examined stressors relating to the novel coronavirus pandemic. Findings suggest gender dysphoria and emotion dysregulation mediate the distal stress-psychological distress pathway. An indirect effect of relational authenticity on alcohol use and gender dysphoria on e-cigarette use was also observed. Results are contextualized within the COVID-19 pandemic and critical implications are drawn for researchers, policymakers, and practitioners.

Gender Minority Young Adult Mental Health: Anti-Transgender Prejudice, Mediators,

and Implications in the COVID-19 Era

Transgender folks, both binary and nonbinary, exist as a marginalized group in the United States. This status is reflective of cisnormative values (i.e., the belief that biological sex and gender identity must always be aligned) in America, which are themselves derived from white settler-colonial belief systems (Dozono, 2017; Morgensen, 2012; Stryker & Currah, 2014; see Appendix for a brief discussion on this topic). Trans people experience disproportionately negative life outcomes compared to their cisgender counterparts due to long-enshrined structural and institutionalized forms of oppression in the U.S. (Carpenter et al., 2020; James et al., 2016). These disparities extend to negative mental health outcomes, with a national survey finding that 40% of transgender individuals report experiencing significant psychological distress, 40% report experiencing a suicide attempt in their lifetime, and 7% report experiencing a suicide attempt in the past year (James et al., 2016). This population also has higher reported anxiety (Bouman et al., 2017), substance use disorders (Keuroghlian et al., 2015), and electronic cigarette usage (Buchting et al., 2017). With at least one million people identifying as trans in the United States (Flores et al., 2016; Stroumsa, 2014), research on the mental health of this population is imperative, yet the underlying mechanisms facilitating these vulnerabilities are far from understood.

Younger members of the transgender community have been identified as a particularly at-risk subgroup for negative mental health outcomes (Newcomb et al., 2020). Conducting research about young adult experiences is particularly important considering that the years from age 18-29 capture, for many, their earliest and most significant experiences with the so-called "real world" (e.g., independent living, higher education, and career development). This becomes

especially important when one considers the barriers, prejudice, and discrimination trans people may face in these spaces. These challenges may disrupt many milestone experiences that set the foundation for further personal and professional development, highlighting the significance of understanding their experiences of stigmatization and mental health during these critical years.

Despite some increases in visibility in recent years, transgender folks continue to experience considerable levels of discrimination across a variety of social situations and environments (James et al., 2016), including in healthcare settings (Grant et al., 2010), on university campuses (Flint et al., 2019; Seelman, 2016), and in the workplace (Davidson, 2016; Martinez et al., 2017). Such discriminatory experiences encompass institutions and policies that create barriers for trans folks as well as interpersonal manifestations of transgender social stigma, including exclusion, harassment, and violence (James et al., 2016). Transgender people, especially trans people of color, are especially vulnerable to hate-based violence, including homicide (Waters et al., 2018). Psychological scientists have defined these external experiences of anti-transgender social stigma as "distal stressors" (Testa et al., 2015). These findings underscore the necessity of examining anti-transgender distal stressors and how they affect transgender individuals, establishing an imperative for the scientific community to better understand how these social phenomena impact gender diverse populations. Given the current pandemic disproportionately impacts the physical and mental health of marginalized groups, including transgender individuals (Herman & O'Neill, 2020; Salerno et al., 2020a; Wang et al., 2020), expanding our understanding in this area gains a new heightened urgency.

Theoretical Frameworks for Understanding Trans Minority Stress

Psychological research on minority stress theory holds that experiences of discrimination create unique stressors for stigmatized identity groups (Meyer, 2003). This theory of minority

stress indicates that the social status of holding a stigmatized identity leads to experiences of discrimination which contribute to disparate psychopathology. While originally designed for lesbian, gay, and bisexual (LGB) individuals, studies have since found support for this model's application to the transgender community (Brennan et al., 2017; Timmins et al., 2017). Indeed, transphobic discrimination has been associated with negative health outcomes for trans folks (Brennan et al., 2017; Chodzen et al., 2019; Lombardi, 2009; Tabaac et al., 2018). Minority stress theory, therefore, provides a solid theoretical framework through which to view the challenges facing transgender individuals in contemporary American society.

Hatzenbuehler's (2009) psychological mediation framework expands upon Meyer's (2003) work on minority stigma-stress by suggesting discriminatory events incite changes in underlying psychological processes to thereby create disparate mental health outcomes in sexual minority populations. Where minority stress theory suggests stigmatized social status leads to discriminatory events which, in turn, lead to psychopathology, the psychological mediation framework acknowledges the role of other emotional and cognitive processes that may facilitate the relationship between discrimination and psychopathology. Researchers have applied this model to examine other marginalized groups (e.g., women, racial minorities; Le et al., 2020), yet few have explored the framework's applications to gender minority populations (Lloyd et al., 2019; Scandurra et al., 2018), leaving a notable gap in our understanding of the most relevant psychological processes for transgender mental health disparities.

To further expand on past work and explore the specific characteristics of transgender social stigma, researchers have also proposed the gender minority stress and resilience (GMSR) model (Hendricks & Testa, 2012; Testa et al., 2015), acknowledging the distinct experiences that create both points of challenge and points of strength within the transgender community. Under

this model, trans folks experience both distal and proximal stressors to explain disparate health outcomes. Research that disentangles the unique influences of both distal and proximal stressors on transgender people's mental health would provide a deeper understanding of psychosocial variables unique to this population. For example, GMSR research has linked transgender-specific distal stressors (i.e., transphobic discrimination) to depressive symptoms and suicidal ideation (Brennan et al., 2017; Testa et al., 2017). Studies have identified other constructs, such as psychological inflexibility (Lloyd et al., 2019) and internalized transphobia (Scandurra et al., 2018), as potential mediators (i.e., proximal factors) of the relationship between distal stress and negative outcomes. However, further research is necessary to investigate how, for trans individuals, that distal stress may affect proximal stressors (i.e., gender dysphoria, relational authenticity, and emotion dysregulation, within the present study) which may then manifest in psychological distress.

Relevant Constructs for Trans Mental Health

Gender dysphoria is defined as emotional distress due to discrepancies between assigned sex and gender identity (Schneider et al., 2016). Gender dysphoria has been identified as a notable stressor for transgender folks (Galupo et al., 2019; Zucker, 2019), with links to suicidality, non-suicidal self-injury, and body dissatisfaction (Peterson et al., 2017). This experience is unique to trans people, as few other identity groups must reconstruct their sense of self and, over time, internally manage misalignment between their assigned and true identities. Despite this relevance, limited work has been done to investigate gender dysphoria and its relationship with external stigma-related stressors. Therefore, the current study seeks to investigate how anti-transgender distal stress impacts symptoms of gender dysphoria. As an internal psychological process unique to the transgender community, gender dysphoria is best

conceptualized in the GMSR model as a proximal stressor: should experiences of discrimination make more salient the discrepancies between one's sex assigned at birth and gender identity, the resulting cognitive stress one experiences attempting to reconcile this dissonance logically could lead to mental health detriments. In this way, discriminatory experiences would heighten gender dysphoria which, in turn, would increase symptoms of psychological distress.

Relational authenticity, being the extent to which one feels that their identity is perceived by others in a genuine and authentic way (Kernis, 2003), has also been investigated as a significant variable in the day-to-day experience of transgender folks, particularly in the workplace (Martinez et al., 2017). Higher relational authenticity enhances mental health by allowing trans individuals to navigate social contexts as their true and genuine selves. Discriminatory experiences may disrupt this by sending a message to a transgender person that their identity is not understood nor viewed as valid by those around them, prompting distress. Hence, examining relational authenticity in the context of discriminatory experiences is important for understanding the full impact of distal stress on trans mental health.

In addition to psychosocial states, it is important to consider risk-factors at the trait level. Emotion dysregulation, or deficiencies in emotional awareness and the ability to modulate them (Powers et al., 2015), has been identified as a potent trait-based risk factor for a variety of mental health outcomes (Wolff et al., 2019). One study found that LGBTQ+ discrimination was positively associated with emotion dysregulation (Keating & Muller, 2020). Distal stress may, therefore, impair emotional regulatory processes in transgender individuals and these changes may place the individual at greater risk of psychopathology.

Impacts of the Novel Coronavirus Pandemic

The challenges facing the transgender community have been exacerbated further by the novel coronavirus pandemic. Health disparities in preexisting conditions (e.g., diabetes, heart disease, asthma, HIV) may increase the likelihood for trans individuals to experience more severe complications from the virus. Trans folks experience discrimination within and often altogether lack access to healthcare services, and the strain on the medical system may create additional barriers to essential gender-affirming medical therapies, all of which may place the transgender community at particular risk during the current crisis (Herman & O'Neill, 2020; Wang et al., 2020). Systems of economic oppression and high rates of poverty and homelessness among transgender folks add an additional layer of risk for this population (Herman & O'Neill, 2020). Transgender young adults may also be at particular risk given their unique social and fiscal vulnerabilities (e.g., financial dependency, non-affirming family members, challenges accessing support systems virtually; Fish et al., 2020; Salerno et al., 2020a). Emerging data support these hypotheses, finding high levels of increased LGBTQ+ minority stressors and higher levels of psychological distress associated with the pandemic in a college student sample (Gonzales et al., 2020; Salerno et al., 2020b). Thus, to examine transgender mental health in this moment creates not only a unique view of trans mental health broadly, but also begins to elucidate the state of mental health for marginalized folks during the pandemic.

Current Study

The current study integrates theoretical foundations in gender and minority stress to investigate variables relating to negative mental health disparities in transgender young adults. As these experiences are a manifestation of systematic social stigma and, in itself, represents a major stressor for trans folks, it is hypothesized that transphobic distal stress (i.e., external experiences of identity-based social stigma) will predict negative mental health outcomes (i.e., a

main effect of distal stress on negative mental health). While a variety of health outcomes are relevant to the transgender population, the current study elects to focus on three particularly salient disparities that have emerged in the literature: psychological distress (Bouman et al., 2017; James et al., 2016), alcohol use (Keuroghlian et al., 2015), and e-cigarette use (Buchting et al., 2017). This existing research highlights their public health importance and makes these outcomes prime candidates for investigation under a minority stress framework. It is further hypothesized that the previously introduced proximal stressors—dysphoria symptoms, relational authenticity, and emotion dysregulation—will mediate the relationship between discrimination and negative mental health. The full proposed model is illustrated in Figure 1. In testing these hypotheses, the current study seeks to provide a more nuanced understanding of the underlying mechanisms of transgender mental health disparities relevant both to future researchers and current practitioners serving the trans community, advancing the literature on this critical population. Parallel to these goals, the current study further seeks to provide an emerging image of the state of transgender mental health in the context of the novel coronavirus pandemic.

Method

Procedure

Data collection and recruitment were conducted via a cross-sectional online survey. Recruitment links were distributed to university LGBTQ+ student centers across the United States in addition to being posted to listservs, online community boards, and social media platforms relevant to the trans community. Advertising materials specified that "anyone ages 18-29 who identifies with a gender identity different from their sex assigned at birth is eligible to participate." Participants who accessed the survey completed a brief screener to ensure eligibility before being presented with a virtual informed consent detailing the study procedures. The

survey took approximately 40 minutes to complete. Remuneration was provided in the form of a raffle entry into a $50 gift card raffle. All study procedures were approved by the institutional review board of the author's university.

Participants

A total of 375 people accessed the online survey. Of them, 292 people met the eligibility criteria, provided informed consent, and began the survey. However, 44 completed fewer than 75% of survey items. Nine others did not complete all items of the distal stress measure. The binary scaling of the GMSR measure, as described below, is incompatible with mean imputation and, thus, these participants were also excluded from analyses. No participants failed either of the two attention check items. After data cleaning, a final sample of 239 transgender young adults was confirmed.

These participants all identified with a gender identity other than their sex assigned at birth and were between the ages of 18 and 29 (M_{age} = 21.77 ± 3.00). The sample was majority white (182 participants or 73.4% of the sample), followed by biracial/multiracial (26 participants or 10.5%), Asian (22 participants or 8.9%), Latinx/Hispanic (9 or 3.6%), Black (6 participants or 2.4%), another racial/ethnic identity (2 participants or .8%), and Middle Eastern/North African (1 participant or .4%). The most common sexual orientation listed was queer (114 participants or 46.0% of the sample), followed by bisexual (85 participants or 34.3%), gay (34 participants or 13.7%), asexual (42 participants or 16.9%), another sexual orientation (e.g., pansexual, aromantic, demisexual; 39 participants or 15.7%), lesbian (32 participants or 12.9%), uncertain or questioning (25 participants or 10.1%), heterosexual (10 participants or 4%). Note that these do not sum to 100% as individuals may identify with multiple sexual orientations.

The sample was mostly assigned female at birth (194 participants or 78.2%). Participant gender was split between binary (111 participants or 44.8%) and nonbinary (137 or 55.2%) identities. Specifically, 36 participants (14.5%) were women, 75 (30.2%) were men, 109 (44%) were nonbinary (i.e., explicitly identified as "nonbinary"), and 28 (11.3%) were a gender separate from these three, but also outside the gender binary (e.g., transmasculine, genderqueer, agender). In terms of personal pronouns, 68 participants' (27.4%) use she/her, 120 (48.4%) use he/him, 146 (58.9%) use they/them, 8 (3.2%) use ze/zir, 21 (8.5%) use no pronouns, and 5 (2%) use another pronoun(s). Note that these numbers do not sum to 100% as people may have multiple pronouns (e.g., he/they, they/ze, she/he/they). Participants reported being at different stages of transitioning at the time of responding to the survey, with 29 (11.8%) having not begun transitioning, 33 (13.4%) actively considering transitioning, 34 (13.8%) preparing to transition, 121 (49.2%) in the process of transitioning, and 29 (11.8%) fully transitioned.

Most participants were born in the United States (220 or 88.7%) and, as a rudimentary indicator of civic engagement, were registered to vote (210 or 85%). Regarding relationship status, most participants reported being single (146 participants or 58.9%), while 89 (35.9%) reported being in a committed relationship, 11 (4.4%) reported being married, and 2 (.8%) reported being divorced. In terms of socioeconomic status, 75 participants (31.3%) reported annual household incomes below $25,000, 57 participants (23.7%) reported incomes between $25,000 and $50,000, 45 (18.8%) reported between $50,000 and 100,000, and 63 (26.2% reported greater than $100,000. In terms of educational attainment, 15 (6%) had earned graduate or professional degrees, 84 (33.9%) had earned a college degree, 111 (44.8%) had completed some college, 36 (14.5%) had earned a high school diploma, and 2 (.8%) had not earned a high school diploma. The sample was mostly comprised of students (135 participants or 54.5%),

while 48 (19.4%) report being employed full-time, 71 (28.6%) employed part-time, 10 (4.0%) self-employed, 64 (25.8%) unemployed), 6 (2.4%) specified disability as part of their employment status, and 8 (3.2%) reported another status (e.g., internship, multiple jobs, volunteer). These do not sum to 100% as individuals may have multiple employment statuses (e.g., a student who also works part-time).

Measures

Demographics

In addition to traditional demographic items capturing pronouns, age, race/ethnicity, work status, etc., transgender-specific demographics (e.g., "At about what age did you begin to feel that your gender was "different" from your assigned birth sex?) were adapted from the 2015 U.S. Transgender Survey (James et al., 2016). Additionally, one item capturing transition status ("Which of the following best describes how you would characterize your status?" on a five-point scale from "not begun transitioning" to "fully transitioned") was adapted from another study of transgender individuals in the workplace (Martinez et al., 2017).

For correlations, birth sex was coded 1 = female, 2 = male, gender identity is scored 1 = binary, 2 = nonbinary, race, as in past research (e.g., Lloyd et al., 2019) was coded 0 = monoracial white, 1 = any other response, education was coded by highest attainment where 0 = less than high school, 1 = high school diploma, 2 = some college, 3 = college degree, 4 = professional or graduate degree, and transition status is coded 1 = not begun transitioning; 2 = considering transitioning; 3 = preparing to transition; 4 = in the process of transitioning; 5 = fully transitioned.

Distal Stress

Transgender-specific distal stressors were collected using the Gender Minority Stress and Resilience Measure (Testa et al., 2015). To reduce participant fatigue, only subscales specified as distal stress in the measure development study were included (i.e., gender-related discrimination, rejection, victimization, and non-affirmation of gender identity, a total of 23 items).

The first three subscales, gender-related discrimination, rejection, and victimization, include statements such as: "I have been rejected by or made to feel unwelcome in my ethnic/racial community because of my gender identity or expression" with options of "Never; Yes, before age 18; Yes, after age 18; Yes, in the past year." These 17 items are scored 0 for "Never" and 1 for any other response. The non-affirmation subscale is scored on a Likert scale from 0 (strongly disagree) to 4 (strongly agree). The non-affirmation of gender identity subscale includes statements such as: "I have difficulty being perceived as my gender" scored from 0 (strongly disagree) to 4 (strongly agree).

The measure has established criterion validity, convergent validity, and discriminant validity (Testa et al., 2015). Cronbach's alpha for these subscales has ranged from .61 (gender-related discrimination) and .93 (non-affirmation of gender identity). The present study found similar reliability rates, with Cronbach's alpha ranging from .65 (discrimination) to .87 (non-affirmation). To more accurately capture the various dimensions of distal transgender stressors and in following past research (Brennan et al., 2017), these four subscales were summed to create an overall distal stress score, with higher scores indicating greater experiences of gender-related distal stress. Brennan et al. (2017) observed a Cronbach's alpha of .83 for this composite measure where the current study found a reliability of .80.

Gender Dysphoria

Gender dysphoria was measured with the Utrecht Gender Dysphoria Scale-Gender

Spectrum (McGuire et al., 2020). The UGDS-GS is an adapted version of the Utrecht Gender

Dysphoria Scale (Cohen-Kettenis & van Goozen, 1997; Schneider et al., 2016). In the original

measures, there are two different 12-item scales: one administered to female-to-male and the

other to male-to-female transgender people. The original measure is, therefore, not inclusive of

nonbinary-identifying transgender individuals, preventing researchers to accurately capture the

full diversity of experiences of the gender diverse community.

As such, the current study utilized an adapted 18-item version of the scale designed by

McGuire and colleagues (2020) to encompass all gender identities, referring instead to "assigned

sex" and "affirmed gender" to allow the use of only one scale for all participants, ensuring

greater consistency and validity between participants with different identities. This scale has two

subscales: gender dysphoria (14 items) and gender affirmation (4 items), with the former

subscale being used for analyses in the current study. Items include: "I wish I was born as my

affirmed gender" and "I hate my birth assigned sex" rated on a 5-point Likert scale from

"disagree completely" to "agree completely." Recent research has established construct validity

for transgender, nonbinary, and cisgender LGB individuals, indicating its validity for measuring

gender dysphoria in a variety of populations (McGuire et al., 2020). The current study observed a

Cronbach's alpha of .87 for the dysphoria subscale.

Relational Authenticity

Relational authenticity was measured by adapting the Martinez et al. (2017) workplace-

specific measure of relational authenticity to one more generally applicable (e.g., replace "people

at work" with "people"). Scored on a seven-point Likert scale from strongly disagree to strongly

agree, this four-question measures includes items such as "People perceive my gender identity in

the same way that I do." Cronbach's alpha in Martinez et al. (2017) was .92 and in the current

study was .89.

Emotion Dysregulation

Emotion dysregulation was measured with Emotion Dysregulation Scale-short version

(EDS-Short, Powers et al., 2015). It includes 12 items scored on a seven-point ("not true" to

"very true" scale) such as "Emotions overwhelm me." Construct validity for the shortened

measure was found in comparisons to a more established measure of emotion dysregulation (i.e.,

Difficulties in Emotion Regulation Scale) and in criterion validity analyses with a variety of

mental health outcomes, such as depression, posttraumatic stress symptoms, and problematic

substance use. Internal consistency for the measure was also high, with a Cronbach's alpha of .93

during measure development (Powers et al., 2015) and .93 in the current study.

Psychological Distress

Psychological distress, indicating negative mental health symptomatology, was measured

with the 6-item Kessler Psychological Distress Scale (K6, Kessler et al., 2002). This measure

includes items asking about distress over the last 30 days (e.g., "During the last 30 days, about

how often did you feel depressed?"). Each item was scored on a scale from "None of the time"

(0) to "All of the time" (4), with higher scores indicating greater distress. For clinical usage, past

research has identified a K6 score $\geq$ 5 to be indicative of moderate mental distress and a score $\geq$

13 to be indicative of severe mental illness (Prochaska et al., 2012). For analyses, K6 scores were

treated as continuous variables. Large-scale studies have found evidence of the instrument's

construct validity (e.g., correlations to clinical ratings of mental illness) and internal reliability.

Subsequently, this measure has been widely used in epidemiological research and clinical

settings (Kessler et al., 2010; Prochaska et al., 2012). Cronbach's alpha was .89 during measure

development and .84 in the current study.

Alcohol Use

Alcohol use was operationalized using the Alcohol Use Disorders Identification Test

(AUDIT, Babor et al., 2001). Developed by the World Health Organization for screening

potential alcohol use disorders, this measure asks 10 frequency items scaled from 0 ("Never") to

4 ("Daily or almost daily") on items such as "How often during the last year have you failed to

do what was normally expected of you because of drinking." Scores above 8 suggest mild

advice/education on hazardous drinking may be appropriate, 16-19 indicate potential need for

counseling and monitoring, and 20+ warrant further diagnostic evaluation for disordered alcohol

use. For analyses, AUDIT scores were treated as continuous variables. The AUDIT has since

become widely used and a review of the literature found strong evidence of validity and

reliability, with Cronbach's alpha ranging from .75-.94 in different populations (Allen et al.,

1997). Cronbach's alpha in the current study fell within this range at .87.

E-Cigarette Use

E-Cigarette nicotine dependence was measured with the Patient-Reported Outcomes

Measurement Information System (PROMIS-E, Morean et al., 2018). Scored from "Never" (0)

to "Almost always" (4), this measure asks four items relating to e-cigarette use and cravings

(e.g., "I find myself reaching for my e-cigarette without thinking about it"). Responses were

summed to create a composite score where higher scored indicated greater e-cigarette

dependence. This recent, initial study of 520 high school students who vape found support for

the measure's validity, with the measure being correlated with vaping frequency among other

use-related variables. Its internal validity was also strong, with a Cronbach's alpha of .91 during

measure development and .94 in the current study.

Pandemic Stressors

Stressors relating to the coronavirus pandemic were measured using the Pandemic Stress

Index (Harkness et al., 2020). This measure examines behavioral changes and stressors

associated with COVID-19 (e.g., "Have you lost work due to COVID-19;" "How much is/did

COVID-19 impact your day to day life;" "Which of the following are you experiencing or did

you experience during COVID-19"). As recommended by Harkness and colleagues (2020),

additional items relating to the experience of transgender individuals were also added (e.g.,

"Have you had problems being able to access gender-affirming health care due to COVID-19").

Each item was scored separately, mainly on a binary yes or no (i.e., whether the participant

experienced the stressor). As such, in the current study, only prevalence of stressors are reported.

Data Analysis Approach

The analytic plan was specified prior to data collection. All analyses were conducted

using SPSS (v26) with a significance threshold of $p < .05$. The data were first evaluated with

missing values analyses and skewness and kurtosis checks. Mediation hypotheses were tested

with linear regression using Hayes' (2013) approach and PROCESS extension, which is an add-

on tool for SPSS that generates regression analyses for moderation and mediation hypotheses

with options for bootstrapping. A separate multiple mediation model was run for each of the

three outcome variables of interest: psychological distress, alcohol use, and e-cigarette use.

Data Screening and Preparation

Missing data ranged .4% (1 participant; various items) to 2% (5 participants; GMSR items 1, 2, and 5). These data, as tested by Little's missing completely at random analysis, returned an insignificant chi-squared statistic ($\chi 2(730) = 687.08$, p = .87). Mean imputation (Parent, 2013) was thus used to account for missing items, aside from demographic items and subscales of the GMSR for which doing so would have produced nonmeaningful or inaccurate values. In terms of univariate normality, the AUDIT (Skewness = 4.85, Kurtosis = 24.68) and PROMIS-E (Skewness = 2.42, Kurtosis = 7.76) were the only measures outside the acceptable range for skewness and kurtosis. These measures were, therefore, log-transformed per the approach suggested by Tabachnick and Fidell (2007) to reduce the lack of normality in the distribution.

Results

Descriptive Results

Clinical Variables

Psychological distress was, by far, the most prevalent outcome in the sample. On the K6, 96% of the sample reported moderate to severe psychological distress (i.e., only 4% of the sample scored below 5). Specifically, 42.4% scored between 5 and 12 (inclusive; the range for moderate psychological distress) and 53.6% scored 13 or above (the range for severe psychological distress). Furthermore, the sample exhibited an average psychological distress score of 12.85 out of 24 (*SD* = 4.90), an average alcohol use score of 4.12 out of 40 (*SD* = 5.13), and an average e-cigarette use score of .53 out of 16 (*SD* = 2.15).

COVID-19 Variables

The current sample experienced a variety of challenges relating to the COVID-19 pandemic. A small proportion of participants failed to complete certain Pandemic Stress Index items and so these results are based on subsamples of minimum $n = 245$ to the full sample of $N = 248$. In terms of the pandemic's impact, 156 (63.4%) reported that it had "Very much" or "Extremely" impacted their day-to-day life while only 38 (15.4%) reported "A little" impact or no impact at all. Additionally, 198 participants (79.8%) reported experiencing loneliness during the pandemic. Living arrangements in some way changed for 107 participants (43.7%). Of these 107, 81 (75.7%) reported living with parents during COVID-19. Those who moved back with parents were, on average, younger than the rest of the sample ($t(243) = -6.21, p < .001$). A total of 85 participants (34.6%) reported having problems accessing gender-affirming care due to COVID-19. In terms of the professional impacts of the coronavirus, 166 participants (66.9%) reported attending school from home due to the pandemic, 129 (52%) reported experiencing some sort of financial loss (e.g., job loss, investment loss, travel-related cancellation loss), 48 (19.4%) reported losing their primary source of income, 61 (24.7%) reported losing a work opportunity that was not their primary source of financial support (e.g., unpaid internship, they were already dependent on someone else's income, etc.), 111 (44.9%) reported working from home, and 54 (21.9%) reported returning to work in a physical environment with exposure to other people. Most of the sample (201 participants or 81%) reported following media coverage related to COVID-19 with an average reported daily consumption of 1.84 hours ($SD = 1.74$).

Correlational Analyses

A correlation matrix with all non-coronavirus study variables is provided in Table 1. Any significant correlates with the three outcome variables were identified and included as covariates

in subsequent mediation analyses. For psychological distress, these covariates were transition status (r = -.16, p = .01), and income (r = -.22, p < .01). For alcohol use, these covariates were age (r = .345, p < .001), sex assigned at birth (female = 1, male = 2; r = -.144, p = .024), and educational attainment (r = .283, p < .001). For e-cigarette use, there was only one covariate, income (r = -.14, p = .03). Notably, five participants failed to report annual household income while two failed to report transition status, resulting in their exclusion from analyses which used those demographics as covariates. This reduced the sample size for the psychological distress model (n = 232) and e-cigarette model (n = 234), but not the alcohol use model (N = 239).

Mediation Analyses

Mediation hypotheses were tested in SPSS using PROCESS v3.5 (model 4) with 10,000 bootstrap samples for bias correction and to establish 95% confidence intervals (Hayes, 2013). Standardized coefficients are reported in the following sections and figures.

Psychological Distress

First considering the direct effects of the model variables, distal stress (β = .14, SE = .05, t = 2.07, p = .04), gender dysphoria (β = .14, SE = .03, t = 2.15, p = .03), and emotion dysregulation (β = .41, SE = .02, t = 6.5, p < .001) were all significantly associated with psychological distress, while relational authenticity, income, and transition status were not (R^2 = .38). The full results from this analysis are presented in Table 2.

In mediation analyses, the total effect (both the direct pathway and through the mediator variables) of gender-related distal stressors on psychological distress was significant (β = .37, SE = .04, t = 6.08, p < .001). The direct effect of gender-related distal stressors after controlling for the mediation was also significant (β = .09, SE = .04, t = 2.07, p = .04). The indirect effect of

gender-related distal stressors on psychological distress through gender dysphoria ($\beta = .05$,

[.004, .11]) and emotion dysregulation ($\beta = .16$, [.09, .23]) were both significant and positive,

whereas the indirect effect of gender-related distal stressors on psychological distress through

relational authenticity was not ($\beta = .02$, [-.03, .08]). The overall model is illustrated in Figure 2

and accounted for 20.6% of the variance in psychological distress ($F(6,225) = 23.11$, $p < .001$).

Alcohol Use

Considering the direct effects of the model variables, only relational authenticity ($\beta = .21$,

$SE = .01$, $t = 3.06$, $p < .01$) and the covariates, assigned sex ($\beta = -.14$, $SE = .06$, $t = -2.31$, $p = .02$)

and age ($\beta = .34$, $SE = .01$, $t = 5.72$, $p < .001$), were significantly associated with alcohol use,

while distal stress, gender dysphoria, and emotion dysregulation were not ($R^2 = .19$). The full

results from this analysis are presented in Table 3.

The total effect of gender-related distal stressors on alcohol use was not significant ($\beta =$

.08, $SE = .003$, $t = 1.30$, $p = .19$). However, there was a significant indirect effect of gender-

related distal stress on alcohol use through relational authenticity ($\beta = -.09$, CI [-.16, -.03]), but

not gender dysphoria ($\beta = .01$, CI [-.04, .06]) or emotion dysregulation ($\beta = .02$, CI [-.03, .09]).

Thus, greater distal stress was associated with decreased relational authenticity while relational

authenticity, in turn, was associated with increased alcohol use. The overall model is illustrated

in Figure 3 and accounted for 14.8% of the variance in alcohol use ($F(7,231) = 7.92$, $p < .001$).

E-Cigarette Use

Considering the direct effects of the model variables, only gender dysphoria ($\beta = .16$, SE

$= .002$, $t = 2.05$, $p = .04$) was significantly associated with e-cigarette use, while distal stress,

emotion dysregulation, relational authenticity, and income were not ($R^2 = .06$). The full results from this analysis are presented in Table 4.

The total effect of gender-related distal stressors on e-cigarette use was not significant ($\beta = .11$, $SE = .002$, $t = 1.68$, $p = .09$). However, there was a significant indirect effect of gender-related distal stress on e-cigarette use through gender dysphoria ($\beta = .05$, CI [.004, .11]), but not relational authenticity ($\beta = -.03$, CI [-.11, .04]) or emotion dysregulation ($\beta = -.04$, CI [-.11, .02]). The overall model is illustrated in Figure 4 and accounted for 3.1% of the variance in e-cigarette use ($F(5,228) = 3.03$, $p = .01$).

Discussion

The current study found exceptionally high rates of psychological distress, with over half the sample experiencing symptoms indicative of severe psychological distress and less than five percent scoring under the threshold for moderate psychological distress defined by Prochaska and colleagues (2012). Mediation analyses further revealed complex relationships between the variables of interest. Distal stress was only directly associated with psychological distress and not alcohol use or e-cigarette use. As hypothesized, distal stress was positively associated with gender dysphoria and emotion dysregulation and negatively associated with relational authenticity. There was mixed support for the mediation hypotheses. Gender dysphoria and emotion dysregulation, as expected, but not relational authenticity, mediated the relationship between distal stress and psychological distress; distal stress was positively associated with gender dysphoria and emotion dysregulation which, in turn, were both positively associated with psychological distress. There was a significant indirect of distal stress on alcohol use only through relational authenticity, but such that higher levels of relational authenticity were associated with greater alcohol use, opposite the hypothesized direction. Lastly, there was a

significant indirect effect of distal stress on e-cigarette use only through gender dysphoria in the

hypothesized direction (i.e., greater gender dysphoria was associated with greater e-cigarette

use).

Discussion of Mediation Findings

Gender dysphoria has been linked in the past to negative mental health outcomes

(Peterson et al., 2017), but not to discrimination/distal stress. Thus, the current study is the first,

to the author's knowledge, to examine the link between discrimination and gender dysphoria and

its mediating effect on psychological distress and e-cigarette use. Although these two findings

were as predicted, it is curious how gender dysphoria was associated with e-cigarette use but not

alcohol use, given they both are forms of substance use. Perhaps e-cigarette use is more discrete

and has fewer visible indicators (i.e., stereotypical intoxication behaviors) than alcohol use,

making it an easier-to-access coping mechanism for people surrounded by family or otherwise

unable to access alcohol. Additionally, until the end of 2019, people between the ages of 18 and

20 were legally able to access e-cigarettes, but not alcohol, in the U.S. (U.S. Food and Drug

Administration, 2020). This could contribute to the differences in usage among young adults in

this sample by allowing them to access nicotine at an earlier age than they could alcohol. In any

case, further research on the factors contributing to different behavioral outcomes is warranted.

Gender dysphoria, in addition to its definition as distress associated with assigned

sex/gender identity incongruence, has also existed as a diagnosis in various editions of the

Diagnostic and Statistical Manual (Beek et al., 2016). While current findings reflect how

symptoms of gender dysphoria can create clinically significant levels of psychological distress,

treating gender dysphoria as a mental illness itself may pathologize transgender identity more

broadly, failing to consider that the source of distress and discomfort may not be the internal

misalignment between birth sex and identity, but rather the external rejection and alienation trans folks experience from deviating from the norm. This may be a logical extension also of gender role conflict theory (O'Neil, 1981; Wester et al., 2010): for cisgender men who experience distress relating to strict gendered expectations, we do not view the dissonance between society's expectations and their own sense of self and diagnose them with "masculine dysphoria," rather we view the distress as symptomatic of social norms and expectations. Similarly, we might view the transgender individual experiencing gender dysphoria as experiencing conflict between society's cisnormative expectations and their own sense of self. As Beek and colleagues (2016) observed, the concept of gender dysphoria has been consistently evolving over the years and over different iterations of the DSM as our knowledge on this population expands and the sociopolitical climate gradually becomes more accepting of transgender folks. Building on emerging conceptualizations of gender dysphoria as a proximal stressor (Lindley & Galupo, 2020), the current study provides support, based on quantitative evidence, for a theoretical shift in our understanding of gender dysphoria as being etiologically linked to systems of oppression and as a mediator of the relationship between anti-trans distal stress and negative health outcomes. Additional research with larger sample sizes and diverse age groups is necessary to explore this oppression hypothesis of gender dysphoria.

Relational authenticity was only indirectly associated with alcohol use, and in a direction opposite hypothesized findings. Relational authenticity is an understudied construct and may be theoretically similar to more general social support from close relationships (i.e., generally supportive relationships for trans folks are also relationships that validate their gender identity and make them feel perceived in accordance with their true self). Therefore, its positive association to alcohol use in the current study may instead be reflective of socially motivated

drinking (i.e., drinking openly with acquaintances) instead of problematic usage, especially

considering that social support is considered a buffer against negative mental health for

transgender folks (Trujillo et al., 2017). Being generally perceived in accordance with one's

gender identity may also allow one to feel safer drinking in public settings without fearing being

"outed." Still, the positive association of distal stress to reduced relational authenticity is itself

interesting and may speak to how experiences of discrimination shape how one feels their

identity is understood by others, even as the indirect effect to psychological distress does not

hold.

The emotion dysregulation findings are partially aligned with past research on LGB

individuals that found a mediating effect of emotion dysregulation and related constructs on the

relationship between discrimination and negative mental health outcomes (Hatzenbuehler et al.,

2009; Reitzel et al., 2017). The present study thereby expands this finding specifically to the

experiences of gender minority individuals. However, the lack of indirect effects for substance

use outcomes is inconsistent with other sexual minority research that did find such an effect

among sexual minority women (Fitzpatrick et al., 2020). This raises the question as to whether

this inconsistency stems from the aforementioned issues of substance access, due to differences

between sexual and gender minority experiences, or due to some other factor. Future research

into what leads to different morbidities in transgender populations is warranted.

Discussion of Binary/Nonbinary Within-Group Differences

It is also worth discussing how most of the sample for the current study identified as a

nonbinary gender identity, in contrast to James and colleagues' (2016) estimate that one-third of

the transgender population in the US fell outside of binary gender categories (i.e., woman or

man). While this may either a sampling bias limitation, it could also be reflective of a larger

cultural shift towards nonbinary (as opposed to binary) conceptualizations of gender among trans young adults. Within-group differences are also hinted at by Variable 2 in Table 1 (gender identity: binary = 1; nonbinary = 2), where nonbinary identity was negatively associated with status of transition, gender dysphoria, and relational authenticity and positively associated with distal stress. These findings suggest that, since such explicit rejections of the gender binary carry with them added stigmatization and ignorance from the general population (Matsuno & Budge, 2017), nonbinary people experience more discrimination (e.g., misgendering with singular they/them pronouns or non-gendered neo-pronouns) and do not feel like others, who operate with a binary conceptualization of gender, view their nonbinary identity accurately (i.e., lack of relational authenticity). Unfortunately, the regression analyses of the current study do not examine the differences in experiences between binary and nonbinary transgender individuals, presenting a limitation. However, these correlations provide directions and implications for future researchers interested in nonbinary gender identity, suggesting that observed health disparities for nonbinary versus binary transgender individuals (Burgwal et al., 2019) may be related to differential distal stress experiences.

Discussion of the Novel Coronavirus Pandemic

The prevalence of severe psychological distress observed here is higher than in past samples of transgender individuals (Turban et al., 2019) and higher than COVID-19-era samples of LGBTQ+ young adults on the Kessler 10 scale (Salerno et al., 2020b), indicating disparities attributable both to pandemic-related vulnerabilities and to unique experiences of gender minority (versus sexual minority) young adults. However, similar disparities were not found for alcohol use and e-cigarette use. Given the large proportion of college-aged students who had moved home with parents during COVID-19 in the sample, it is possible that the skew in the

substance use measures is due to lack of access to these substances that would otherwise be readily-available in a university setting. For older participants and those who did not move home during the pandemic, the financial impacts of public health shutdown measures may have similarly reduced access to certain substances. In either case, access issues may explain the unexpectedly low levels of substance use despite high levels of psychological distress.

It is further evident that both binary and nonbinary transgender young adults are experiencing high rates of a variety of stressors relating to COVID-19. Future researchers then may seek to understand how these stressors continue to impact the transgender community, especially as the prolonged impacts of the pandemic begin to emerge (e.g., economic depression, evictions, lack of welfare programs, overwhelmed social support services). Additionally, given the surprisingly low rate of substance use observed in the current sample, investigators may seek to also document what other coping mechanisms, both helpful and maladaptive, that trans young adults have utilized during the pandemic. It may also be valuable to explore additional potential mediators to better understand the mechanisms of gender minority mental health disparities. Social support-related constructs may be of particular interest given the mixed relational authenticity findings.

Implications for Practitioners

The present study identified gender dysphoria and emotion dysregulation as mediators for the relationship between transgender distal stress and psychological distress, providing two constructs for practitioners to focus on when working with transgender clients. In the case of gender dysphoria, it is important not only to work on addressing feelings of dissonance between assigned sex and gender identity, but also explore the influence of cisnormative systems and discrimination in the manifestation of dysphoric symptomatology. Additionally, given the

exceptionally high observed rates of psychological distress, practitioners working to mitigate the mental health impacts of COVID-19 and/or support the transgender community should consider these findings when providing services and developing culturally cognizant interventions. Considering binary, cisnormative systems of gender to be the root of anti-transgender prejudice (i.e., distal stress) and, in line with the current findings, trans mental health disparities, these findings further support calls for practitioners to recognize the ethical obligation to critically examine and fight pre-conceived ideas of gender and sex (Markman, 2011).

Implications for Public Policy

In the middle of the coronavirus pandemic, the United States Department of Health and Human Services (2020) attempted to remove healthcare discrimination protections for LGBTQ folks, providing a prime example of the continued use of policy measures to reify transgender oppression. Similarly, Perez-Brumer and Silva-Santisteban (2020) document an example from Peru on how binary gendered policies during times of crisis can heighten violence against transgender folks. Within the context of the current study, it can be inferred that such policy-based contributors to transgender distal stress are linked to mental health disparities. It follows, then, that legislators and mental health advocates should advance policy agendas that seek to address these disparities and their roots in systems of oppression, remediating past harms while taking proactive measures to erase future disparities.

Limitations

There are several limitations the current study worth consideration. First, these data are cross-sectional and, as such, any implication of causality is solely grounded in theoretical frameworks. To the author's knowledge, the only study that has thus far addressed this limitation

with longitudinal methodology was unable to replicate past GMSR indirect effect findings,

though these null findings may have been limited by an interval between data collection waves

of only one year (Lloyd et al., 2016). Past research also suggests that trans youth and young

adults often do not disclose their identity to health professionals, potentially attenuated by factors

such as parental support (Sequeira et al., 2019). It is reasonable, then, to expect a sampling bias

in both cross-sectional and longitudinal studies interested in transgender youth and young adults,

whose ability to access trans spaces, openly disclose identity, or otherwise participate in long-

term trans-relevant research could be limited by familial influences or concerns about

discrimination from medical or academic establishments. In these cases, only those trans youth

with the support structures and resources to allow long-term participation in a research study can

participate. So saying, in line with recent calls from organizations like the Society of Adolescent

Health and Medicine (2020), research on trans populations will only improve if transgender

competency in health and research professions as well as broader social conditions also improve.

The proportion of white-identifying participants in this study is higher than the general

US population, which may be attributable to sampling biases commonly observed in internet-

based surveys (Dillman et al., 2014) and/or the usage of university-based recruitment methods to

obtain large portions of the study. This may limit the generalizability of the present findings to

transgender people of color. Intersectionality theory (Crenshaw, 1991), which posits that

overlapping systems of oppression may interact and compound in unique ways, may suggest that

transgender people of color, due to the interaction between transphobic and racist systems of

oppression, may create unique vulnerabilities that neither white transgender people nor cisgender

people of color face on their own (Lefevor et al., 2019). Perhaps transgender people of color

more strongly experience the mediation pathways proposed by this study or experience different

mechanisms entirely. Either way, incorporating an intersectional approach explicitly into future studies of transgender experiences is imperative to properly understand the nuances of various systems of oppression and provide competent service to all members of the transgender community.

Conclusion

The current study examined mechanisms of minority stress-related risk in a moderately large sample of transgender young adults amid a unique global crisis. As scientists and practitioners seek to serve gender minority populations, especially within the context of the coronavirus pandemic, understanding these mechanisms will be critical to begin to mitigate the damage done by long-enshrined oppressive social practices. The data support an overarching need to critically rethink binary/cisnormative conceptualizations of gender to mitigate the observed mechanisms of risk and achieve a more equitable society.

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Appendix

Binary gender, being a dichotomous system of male versus female rooted in "biological sex," is not a sociocultural inevitability—there are many cultures across history and across time (including, for example, Indigenous communities in the United States) that do not hold these assumptions (Dozono, 2017). Rather, the assumptions of binary gender have become deeply ingrained in contemporary American society due to the imposition of white settler-colonial belief systems (Morgensen, 2012; Stryker & Currah, 2014). Transgender individuals, or people whose gender does not align with their sex assigned at birth (James et al., 2016), by their existence subvert these systems. Antithetical to the binary, current paradigms examine gender identity as a spectrum where trans people may not only identify as a man or woman but also exist as a nonbinary identity (e.g., two-spirit, nonbinary, genderqueer, agender; Matsuno & Budge, 2017).

Despite this, most previous research has focused only on binary transgender identities (Matsuno & Budge, 2017; Moradi et al., 2016). The disparity may perhaps be attributed to how researchers and members of the public often erroneously understand trans identity as moving strictly within a gender binary (i.e., man to woman/MTF or woman to man/FTM; Darwin, 2020). While there exist further complexities as to the relationship between nonbinary people and the use of the word "transgender" to label their identities (Darwin, 2020), the fact remains that over one-third of transgender individuals (and perhaps an even greater proportion based on the results of the current study) identify outside the gender binary (James et al., 2016) and that nonbinary trans folks may experience health disparities similar or worse than those of binary trans folks (Brugwal et al., 2019). As such, contemporary scholars have begun to recognize the antiquity and limitations of binary approaches to understanding gender identity and note how the inclusion of both binary and nonbinary identities in the research of gender diverse populations is essential,

especially with regard to mental health research (Matsuno & Budge, 2017). Acknowledging

these complexities, the current research defines "transgender" broadly and seeks to contextualize

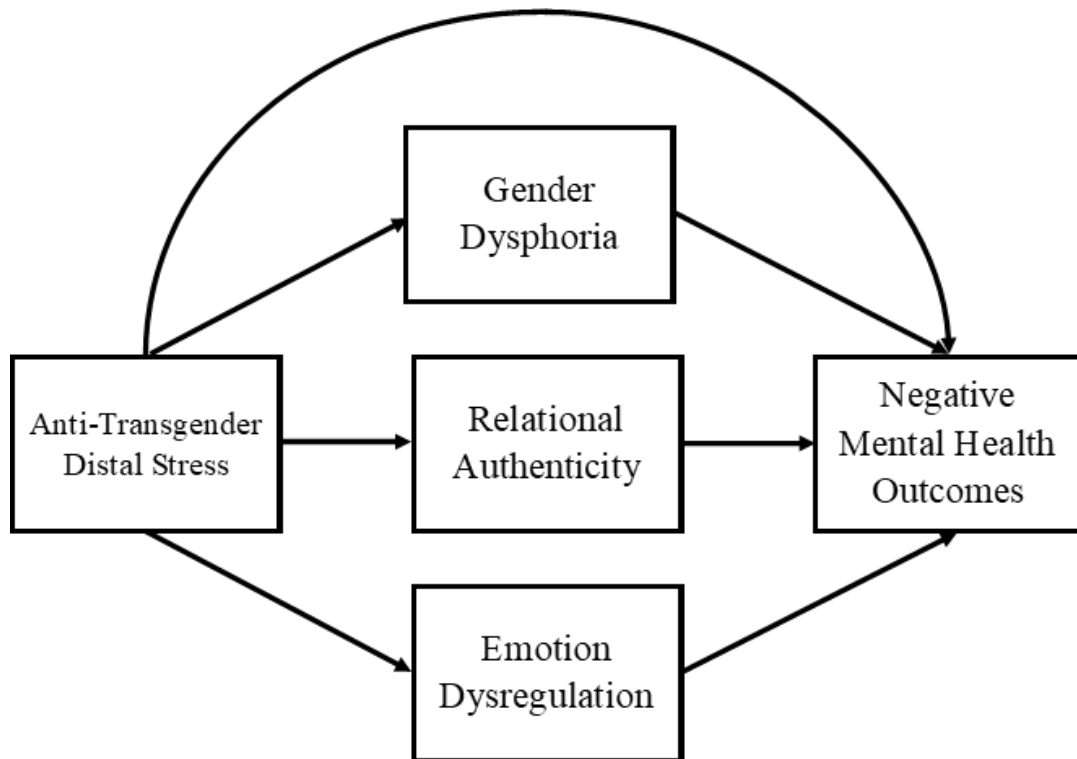findings with a critical lens toward cisnormative systems of gender.
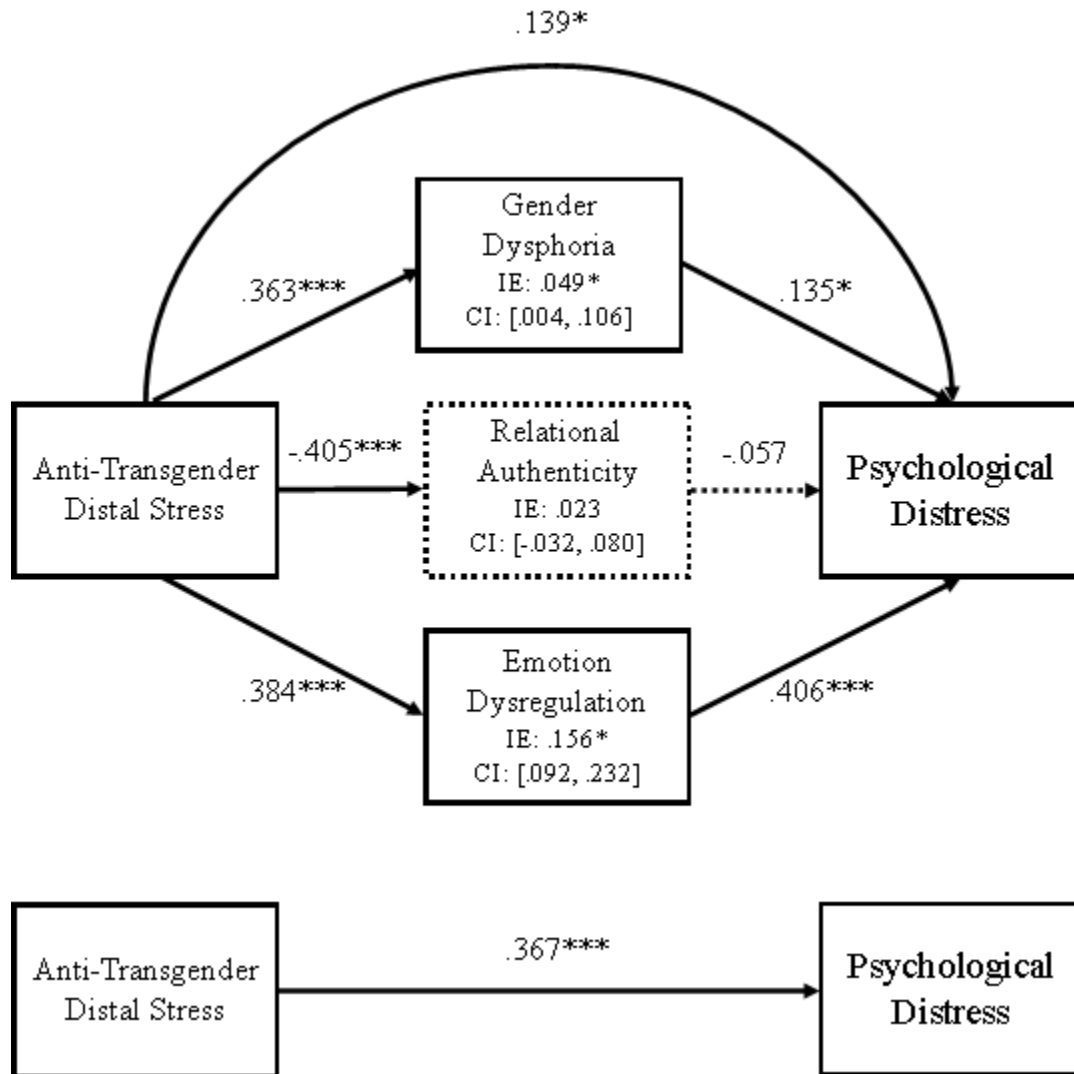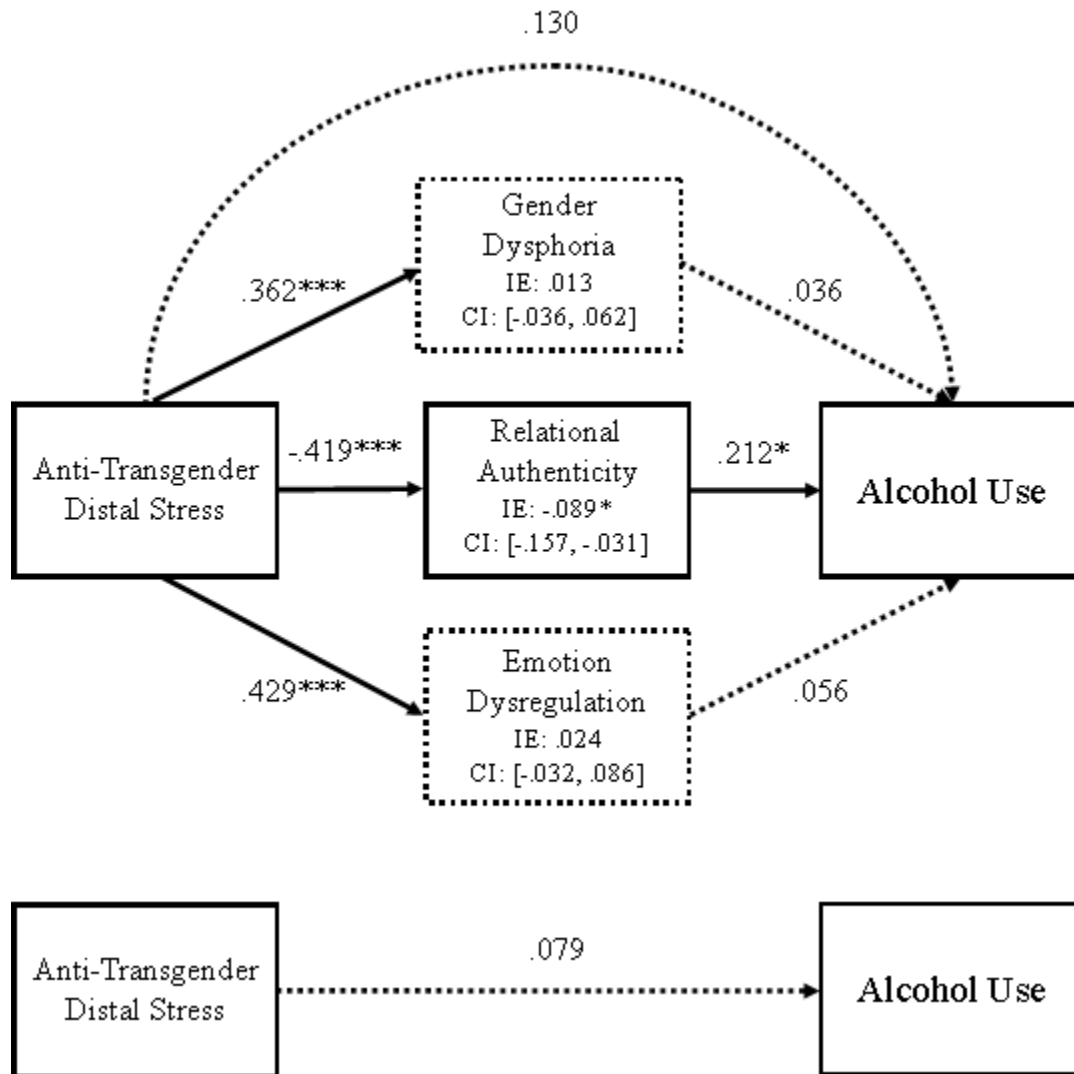
Figure 1

Overall Mediation Model

Figure 2

Mediation Analysis Results: Psychological Distress

Note. IE = Indirect Effect; CI = 95% Confidence Intervals; Dotted lines indicate non-significant pathways; dotted boxes indicate non-significant indirect effects; *p* < .05, **p* < .01, ***p* < .001

Figure 3

Mediation Analysis Results: Alcohol Use

Note. IE = Indirect Effect; CI = 95% Confidence Intervals; Dotted lines indicate non-significant

pathways; dotted boxes indicate non-significant indirect effects; *p < .05, **p < .01, ***p < .001

Figure 4

Mediation Analysis Results: E-Cigarette Use
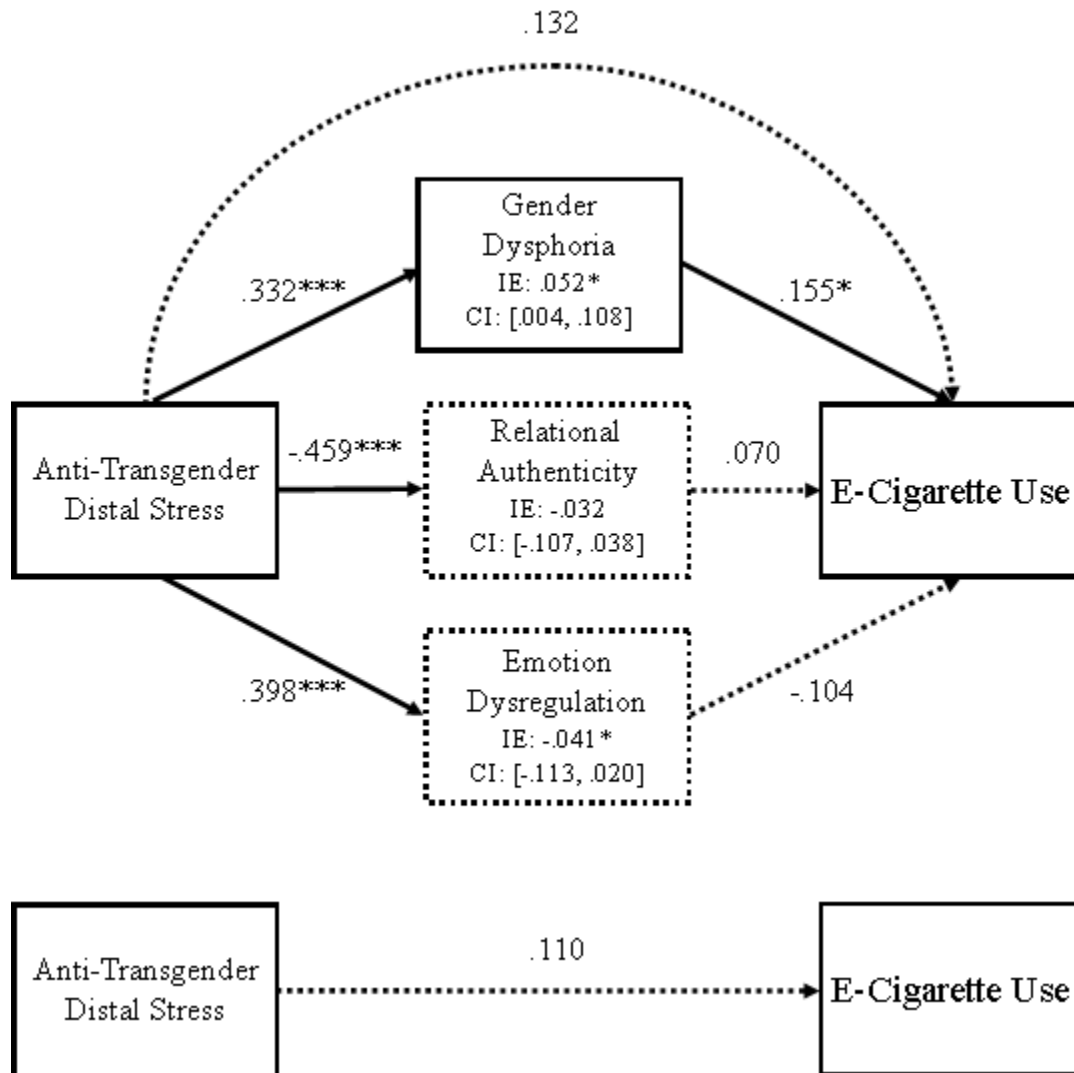
Note. IE = Indirect Effect; CI = 95% Confidence Intervals; Dotted lines indicate non-significant

pathways; dotted boxes indicate non-significant indirect effects; *p < .05, **p < .01, ***p < .001

Table 1

Means, Standard Deviations, and Correlation Coefficients for Study and Demographic Variables

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Birth Sex	-	-	-													
2. Gender Identity	-	-	-.23**	-												
3. Age	21.77	3.00	.02	.09	-											
4. Race	-	-	.01	.05	.07	-										
5. Education	-	-	-.09	.13*	.63**	.02	-									
6. Income	-	-	-.08	.04	-.18**	-.02	-.04	-								
7. Trans Stat.	-	-	-.01	-.30**	.12	-.16*	.12	.08	-							
8. Distal Stress	23.54	7.24	.00	.17**	-.04	.14*	.03	-0.16*	-.15*	-						
9. Gen. Dysphoria	54.42	9.13	.13*	-.36**	-.09	.00	-.17**	-.12	.16*	.35**	-					
10. Emo. Dysreg.	59.38	15.20	.04	.11	-.13*	.06	-.09	-.20**	.16*	.43**	.42**	-				
11. Relation. Auth.	14.25	5.97	-.07	-.42**	.06	-.05	-.01	-.02	.44**	-.42**	.10	-.18**	-			
12. Psyc. Distress	12.85	4.90	.01	.03	-.12	-.05	-.09	-.22**	-.16*	.41**	.36**	.57**	-.21**	-		
13. E-Cigarette	.53	2.15	-.02	-.06	.08	.04	-.12	-.14*	-.07	.13*	.18**	.02	.04	.05	-	
14. Alcohol	4.12	5.13	-.14*	-.06	.35**	.00	.28**	-.06	.11	.07	.05	.03	.18**	-.01	.10	-

Note. $*p < .05$, $**p < .01$

Table 2

Direct Effects on Psychological Distress

Variable	β	SE	t	p
Distal Stress	.14	.05	2.07	.04*
Dysphoria	.14	.03	2.15	.03*
Emotion Dysregulation	.41	.02	6.5	< .001**
Relational Authenticity	-.06	.05	-.85	.40
Covariate: Income	-.09	.05	-1.69	.09
Covariate: Transition Status	-.09	.25	-1.45	.15

Note. $*p < .05$, $**p < .01$

Table 3

Direct Effects on Alcohol Use

Variable	*β*	*SE*	*t*	*p*
Distal Stress	.14	.004	1.85	.07
Dysphoria	.02	.003	.31	.76
Emotion Dysregulation	.06	.002	.83	.41
Relational Authenticity	.21	.005	3.06	< .01**
Covariate: Assigned Sex	-.14	.059	-2.31	.02*
Covariate: Age	.34	.008	5.72	< .001**

*Note. *p< .05, **p< .01*

Table 4

Direct Effects on E-Cigarette Use

Variable	*β*	*SE*	*t*	*p*
Distal Stress	.13	.003	1.61	.11
Dysphoria	.16	.002	2.05	.04*
Emotion Dysregulation	-.10	.001	-1.37	.17
Relational Authenticity	.07	.003	.93	.36
Covariate: Income	-.12	.003	-1.82	.07

*Note. *p< .05, **p< .01*