**The Role of Family Support and Outness to Family in Depression Severity among Gender Minority Youth**

by

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Abstract

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University of Pittsburgh, 2020

**Abstract**

**Introduction:** Estimates of gender minority youth (GMY) in the US continue to increase, and studies show severe disparities in depression diagnoses and severity among GMY (as compared to cisgender youth). Recent research has identified associations between increased family support and lower depression severity among GMY. However, no studies have examined the role of outness to families in depression severity. This study aims to examine associations between family support and depression severity, outness to family and depression severity, as well as the potential effect modification of outness to family on associations between family support and depression severity among GMY.

**Methods:** Data came from the baseline survey of a convenience sample of GMY and cisgender sexual minority youth (SMY) who participated in a two-arm RCT. Generalized linear models (GLMs) adjusting for race/ethnicity, parent education, and sexual identity assessed differences in family support, outness to family, and depression severity among GMY and cisgender SMY. Among GMY only, GLMs adjusting for the same covariates examined associations between family support and depression severity, outness to family and depression severity, and the interaction of outness to family on associations between family support and depression severity.

**Results:** Of 240 participating youth, 118 were GMY. GMY had lower levels of outness to family regarding gender identity and higher depression severity than cisgender SMY (𝞫 [95% CI]: -1.86 [-2.26, -1.46] and 3.54 [1.50, 5.57], respectively). Among GMY only, increased family support was associated with lower depression severity (-1.61 [-2.46, -0.76]). Outness to family was not associated with depression severity, and associations between family support and depression severity did not differ by outness to family.

**Discussion:** This study corroborates the results of other recent studies showing associations between family support and depression severity among GMY. Further research is needed to identify intermediate factors on the pathway between family support and depression severity. Future studies should also measure aspects of family support specific to gender minorities and assess differences in the association of gender-affirming family support and depression severity by outness to family. Such studies will elucidate the etiology of mental health disparities among GMY, a significant public health concern.

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**Preface**

I wish to thank my family, friends, mentors, advisors, readers, and coworkers for supporting me in my pursuit of my MPH and the completion of this essay. It’s been such a long road, and I would not have gotten to the end without the compassion and guidance of each and every one of you. I’m grateful beyond measure.

This essay is dedicated to the memory of queer, trans, and nonbinary youth who lost their lives as a result of structural violence. We mourn the dead, and fight for the living.

# 1.0 Introduction

‘Gender minority’ is a term used in research contexts to describe individuals whose gender identity differs from their sex assigned at birth. In addition to, or instead of the word transgender, people of similar experience may identify as being between or outside of the gender binary. Some identify as nonbinary, genderqueer, gender fluid, and/or other identities (see Appendix 1 for additional examples). Additionally, transfeminine and transmasculine are words individuals both on and outside of the binary may use to describe where their gender identity falls on the gender spectrum. A cisgender person is an individual whose gender matches their sex assigned at birth (Institute of Medicine, 2011). According to a secondary analyses of a nationally representative sample by Flores et al. (2016), transgender-identified adults are estimated to make up 0.6% of the population in the US (Flores, Herman, Gates, & Brown, 2016). This study used data from the 19 states measuring gender identity in the 2014 Behavioral Risk Factor Surveillance System (BRFSS). Estimates of the transgender population in the 31 remaining states were calculated using a Monte Carlo estimator to impute gender identity. Imputation accounted for individual-level demographics, as well as regional and state-level characteristics.

In comparison to adults, the percentage of gender minority youth (GMY) has been measured as high as 2.7%, based on a recent study by Rider et al. (2018) (Rider, McMorris, Gower, Coleman, & Eisenberg, 2018). In this population-based study of 80,929 Minnesota high school students (Minnesota School Survey; MSS), 2163 identified as gender minority youth. Differences in the size of the gender minority population among adults versus youth may be due to age-cohort effects, and/or measurement bias. Regarding age-cohort effects, suicide attempt rates are high among gender minorities (Grant, Mottet, Tanis, Herman, & Keisling, 2011), and gender minority adults have had more time in their lives to have died by suicide than gender minority youth. In addition, the national climate is more affirming of gender minority individuals today than it was for GMY in previous generations. This shift in national climate has manifested in increased resources, media representation, and legal protections for gender minority youth; being raised in such a climate may have reduced the risk of death by suicide among current gender minority youth, and increased likelihood of disclosing their gender identity earlier in life. Additionally, limited research has shown that transgender adults of color are at increased risk of death by homicide (Dinno, 2017); these deaths may also account for smaller estimates of the gender minority population among adults in comparison to youth.

Regarding measurement bias, both studies measured gender identity differently. The 2014 BRFSS asked participants, “Do you consider yourself to be transgender? (Y/N)”; consequently, gender minority individuals who do not identify as transgender, but do identify as genderqueer, nonbinary, or another non-cisgender gender identity may not have been identified as gender minorities by this question. Additionally, the BRFSS is administered through an interview with a research staff member, and some gender minority participants may not have felt comfortable disclosing their gender identity verbally to a stranger. In comparison, the MSS asked the following question via a self-administered survey, “Do you consider yourself transgender, genderqueer, gender fluid, or unsure about your gender identity? (Y/N)”, which is more inclusive of gender minorities who do not identify as transgender. This question also includes youth who are questioning their gender as gender minority, which is a more expansive (compared to the BRFSS) and developmentally appropriate measurement of gender given that many gender minority individuals first recognize their gender identity during puberty. The differences in the text and administration of these measures may account for differences in estimation of the gender minority population.

It is also important to note the likelihood of underestimation of the size of the gender minority population due to selection bias in both studies given that gender minority youth and adults are more likely to be homeless than their cisgender counterparts (Grant et al., 2011). Gender minorities are consequently less likely to have had the opportunity to participate in surveys via phone (BRFSS) or in schools (MSS). As a result, the gender minority population is likely larger than estimated.

## 1.1 Disparities in Depression Experienced by GMY

GMY experience many mental health disparities, including disparities in experience of depression. Two matched retrospective cohort studies have compared depression diagnoses among cisgender and GMY using electronic medical record (EMR) data. Becerra-Culqui et al. (2018) matched 10 cisgender male and 10 cisgender female youth to each of 1,333 transgender youth ages 10-17 using multi-site EMR data from 2006-2014 (Becerra-Culqui et al., 2018). Participants were matched on age, race/ethnicity, site, and EMR enrollment date; depression diagnosis was determined from ICD-9 diagnostic codes, and gender minority identity was determined either from an ICD-9 codes, or from keywords in free text fields. The prevalence ratio (PR) for lifetime diagnosis of depression was over four times higher (PR: 4.4 [95% CI: 3.9-5.0]) for transfeminine youth compared to cisgender female youth. When comparing depression diagnosis prevalence in the past six months, the prevalence was ten times higher (PR: 10.1 [95% CI: 8.4-12.2]). Among transmasculine youth, the prevalence for lifetime depression diagnosis was seven times higher (PR: 7.0 [95% CI: 6.4-7.8]) compared to cisgender male youth, and for depression diagnosis in the past six months, it was over 20 times higher (PR: 22.8 [95% CI: 19.0-27.3]).

 Reisner at al. (2015) used similar data to Becerra-Culqui et al. (2018), however their study designs differed in that Reisner et al. (2015) had a smaller sample size and match ratio (180 GMY matched 1:1 to cisgender controls). This study also came from a single urban adolescent community health center, GMY were aged 12-29, and analyses were also not stratified by gender (Reisner et al., 2015). Participants were matched on gender identity, age, race/ethnicity, and date of first visit; data came from visits between 2002-2011. Depression diagnosis was assessed using DMS-4 criteria, and gender identity was determined by self-report on forms, diagnosis of gender identity disorder (GID), or from notes regarding direct communication from patient to provider. Despite differences in the sample and analytic design to Bercerr-Culqui et al. (2018), this study found similar results; the risk of diagnosis of depression among when adjusting for age, race/ethnicity, and use of hormone replacement therapy (HRT) was nearly four times higher (RR: 3.95 [95% CI: 2.60-5.99]). In addition to having similar results, both of these studies likely experience bias towards underreporting of depression, as GMY with less resources and affirming parents are less likely to have access to medical support, which may result in increased risk of depression (see section 1.3 for more detail). Therefore, the true magnitude of these disparities may be even higher.

 Four studies of depression in GMY have been conducted using cross-sectional surveys. While most of these studies analyzed convenience samples, Clark et al. (2014) examined a nationally representative sample of 8500 New Zealand high schoolers (Clark et al., 2014). Depression was measured using the Reynolds adolescent depression scale, and gender identity was assessed by asking, “Do you think you are transgender? This is a girl who feels like she should have been a boy, or a boy who feels like he should have been a girl (e.g., Trans, Queen, Fa’faffine, Whakawahine, Tangataira Tane, Genderqueer)?” Based on their response options, participants were categorized in to four groups: “non-transgender”, transgender, not sure of their gender, and those who did not understand the question. Models adjusted for age, sex, race/ethnicity, and socioeconomic position, and showed that transgender youth had 5.7 higher odds (95% CI: 3.6-9.2) of having significant depression symptoms when compared to non-transgender youth. Results were similar, among youth who were unsure of their gender identity (OR: 3.4; 95% CI: 2.5-4.6).

 All other cross-sectional studies located for this literature review were comprised of GMY only, and rates of depression in these studies were compared to national averages. Veale, Watson et al. (2017) conducted analysis on data from the Canadian Trans Youth Health Survey (CTYHS), an online convenience sample of 923 Canadian GMY (Veale, Watson, Peter, & Saewyc, 2017). Depression was assessed using the DSM-5 diagnostic criteria, and gender identity was assessed with the following question: “When a person’s sex and gender do not match, they might think of themselves as transgender. Sex is what a person is born. Gender is how a person feels. Which one response best describes you?” Response options were, “ I am not transgender, ”“I am transgender and identify as a boy or man,” “I am transgender and identify as a girl or woman,” and “I am transgender and identify in some other way.” In this sample, 71.1% of GMY reports a major depressive episode in the past year. The authors compared this proportion to that among youth nationally (7.8%) from the national Canadian Community Health survey using a chi-squared test and found a significant difference (p<0.01). Smith et al. (2014) conducted a similar online cross-sectional convenience study of 189 GMY ages 14-25 and found similar results. Depression was measured as lifetime diagnosis of depression from a healthcare professional, and gender identity was measured as a check all that apply question with 15 different options for gender identity. Across the sample, 50% of GMY had been diagnosed with depression by a healthcare professional; the authors noted that this is prevalence is substantially higher than the prevalence of depression in national surveys with similar measures (6.7%). Lastly, Reisner et al. (2016) conducted a cross-sectional analysis of the baseline survey from an RCT of 298 sexually active transgender women, ages 16-29. Depression was measured based on DSM-4 criteria, as part of a brief, structured interview, and self-identification as a transgender woman was an eligibility requirement (Reisner et al., 2016). The prevalence of lifetime major depressive episodes was 35%, which the authors noted was higher than the national average.

With the exception of Smith et al. (2014), in these survey-based studies, participants who were unsure of their gender identity, or who did not identify as cisgender or transgender were not included in these studies, indicating that some GMY were excluded (Smith et al., 2014). Further research is needed to determine if this exclusion may have biased results. All three of these studies likely suffered from selection bias due to convenience sampling, and were also not able to conduct rigorous analytic testing when comparing depression among GMY and cisgender youth. However, despite these limitations, the magnitude of disparities in depression among GMY remained large, indicating a need for further study.

 Lastly, three clinic-based studies used EMR data to report the prevalence of depression among GMY and compared that prevalence to the national prevalence. Spack et al. (2012) examined the prevalence of depression diagnosis among gender minority children and youth ages 4-20 between 1988-2009 at Boston Children’s Hospital and found that 25.8% had been diagnosed with depression, which is higher than the national average of 13.3% (CBHSQ, SAMHSA, HHS, & RTI International, 2019). Gender identity in this study was measured differently in the EMR at different points between 1988-2009, which may have biased results in undetermined ways (Spack et al., 2012). J. Olson et al. (2015) analyzed a sample of 96 youth ages 12-24 who enrolled in a gender care clinic between 2011-2013 and also found a high prevalence of depression (J. Olson, Schrager, Belzer, Simons, & Clark, 2015). In this study, GMY needed to both have a gender identity that differed from what they were assigned at birth and have a desire to undergo physical transition with HRT. Beck depression scores were measured via a health questionnaire on a youth’s first visit, and 24% of youth reported a score of moderate depression severity or greater, which the authors compared to national rates of 6.7% among 12-17 year-olds and 11% of 18-24 year-olds nationally. Finally, Chodzen et al. (2019) analyzed a sample of 109 self-identified GMY ages 12-18 who completed a DMS-5 form (Youth Inventory-4) for major depressive disorder at their first clinic visit (Chodzen, Hidalgo, Chen, & Garofalo, 2019). At the time of their first visit, 33% met the criteria for MDD, compared to 13.3% of youth nationally who have had an MDD diagnosis in the past year (CBHSQ et al., 2019). As was mentioned previously, clinic-based studies are subject to biases which may result in depression severity being underreported. However, in spite of potential bias, disparities in depression prevalence and severity among GMY remain high in clinical settings, which supports the findings of non-clinical studies.

Overall, all studies presented above which examined depression among GMY measured depression and gender identity used a variety of analytic techniques on different samples, yet all reported similar finding. While further population-level research is needed, current literature consistently indicates the presence of large disparities in experience of depression among GMY compared to cisgender youth.

## 1.3 Associations Between Family Support and Depression Among GMY

Some studies have shown positive association between family support and depression severity for GMY. Gower at al. (2018) analyzed a cross-sectional sample of 2168 GMY from the MSS and found a one unit increase in parental connectedness was associated with a 33% reduction in odds of depressive symptoms (OR: 0.77 [95% CI: 0.64, 0.92]) when adjusting for other protective factors, sex assigned at birth, grade, socioeconomic position, urbanicity, and race/ethnicity (Gower et al., 2018). (Depression symptoms were measured with the Patient Health Questionaire-2 as any depressive symptoms in the past two weeks, and parental connectedness was measured with investigator-generated questions.) Veale, Peter, et al. (2017) analyzed data from 600 19-25 year-old GMY in the CTYHS and found that increased parental connectedness was associated with 49% lower odds of being diagnosed with depression in the past year (OR: 0.51 [955 CI: 0.19, 1.36]), when adjusting for age, enacted stigma, and social support.(Veale, Peter, Travers, & Saewyc, 2017) (Parental connectedness was measured with the Parental Connectedness Scale(Resnick et al., 1997).) Finally, Simons et al. (2013) conducted an analysis of 66 GMY at a gender clinic in Los Angeles California who desired HRT. They found that participants with increased family support had lower scores on the Beck Depression Inventory II when controlling for age, nationality, race/ethnicity, and sex assigned at birth (β=0.263; p=0.0499; no measure of standard error given.(Simons, Schrager, Clark, Belzer, & Olson, 2013)) Of these three studies, no two used the same measures of depression or family support, which limits comparability. Simons et al. (2013) also restricted enrollment to a subset of GMY who desired HRT, though still had similar results, so results may not be generalizable to GMY as a whole. Further research with consistent measures of gender identity, depression and family support with nationally representative data sets are needed, though preliminary research indicates an association between increased family support and a reduction in depression among GMY.

### 1.3.1 Factors Related to Family Support

Family support may increase the likelihood of GMY having access to social transition-related resources, and (if needed) gender affirming care. Both social transition and gender affirming care have been associated with reduced mental health disparities. For instance, one indicator of social transition is whether or not GMY with chosen names (names that they have selected as part of affirming their gender identity) are able to use these names in various contexts in their lives (e.g. work, home, school, with friends). In a multi-site convenience sample of 74 GMY ages 15-21 with a chosen names, Russell et al. (2018) found that a one-unit increase in the number of contexts in which GMY could use a chosen name resulted in a 5.27-unit decrease (95% CI: -8.20, -2.55) in depressive symptoms (Russell, Pollitt, Li, & Grossman, 2018). This study adjusted for social support, study site, socioeconomic position, age, sexual identity, race/ethnicity, and gender identity; depression was measured with the Beck Depression Inventory. Additionally, Pollitt et al. (2019) analyzed a multi-site convenience sample of 129 GMY ages 15-21 and found that, among those who had a chosen name, use of a chose name at home was associated with fewer depression symptoms (β=-0.52; SE=0.18) (Pollitt, Ioverno, Russell, Li, & Grossman, 2019). (In this univariate model, depression symptoms scores came from the Beck Depression Inventory.)

Another marker of social transition is the correct use of pronouns. Durwood et al. (2017) conducted an analysis of 63 binary-identified GMY ages 9-14 who had socially transitioned and 63 age-matched controls (Durwood, McLaughlin, & Olson, 2017). In this study, social transition was defined as a youth using their affirmed pronouns in all contexts. Using the PROMIS scale T-scores for depression, the authors found no difference in depression scores between GMY, cisgender controls, or national averages. K. R. Olson et al. (2016) conducted a similar study of 73 socially transitioned GMY, ages 3-12 from a national convenience sample, and 73 gender-matched cisgender controls (K. R. Olson, Durwood, DeMeules, & McLaughlin, 2016). In this study, social transition was defined as both being out as their gender and using affirming pronouns in all contexts. T score comparisons showed no difference in depression symptoms (as measured by an NIH-validated parental proxy short form) between GMY, matched controls, or national averages, indicating that social transition may mitigate depression severity among GMY.

An additional indicator of gender-specific family support can be access to gender afforming medical care, including pubertal blockers. Turban et al. (2020) conducted a retrospective cohort study of 3494 gender minority individuals form the US Transgender survey among adults who had ever received or wanted to receive pubertal blockers (Turban, King, Carswell, & Keuroghlian, 2020). They found that access to pubertal blockers before the age of 17 reduced odds of suicidal ideation across the lifetime by 70% (OR: 0.3 [95% CI: 0.2-0.6]) when adjusting for demographics correlated with suicidal ideation, including family support, sexual identity, education level, employment status, and total household income. Overall, existing literatures shows that access to social and medical transition can reduce GMY depression disparities, and family support may play a critical role in ensuring such access.

## 1.4 Outness Among GMY

An additional factor that may be associated with mental health disparities among GMY is outness to families. Outness (or disclosure) is the degree to which a sexual or gender minority individual is to others open about their identity. While outness can be measured as dichotomous (i.e. “Does everyone in your life (your friends, family members, coworkers, etc.) know your gender identity?), a gender minority individual can be out to varying degrees in different context of their life. For example, someone may be out to all friends, only immediate family members, and no coworkers. Among GMY, literature on outness is limited, and outness to family has rarely been examined. Of those studies identified for this literature review three studies examining GMY, two occurred in campus settings and examine outness as an outcome of factors such as positive school climate, social support, and less discrimination and stigma. di Bartolo (2013) analyzed data on the outness of 519 GMY from a national survey of college campuses (di Bartolo, 2013). The author found harassment was associated with 33% lower odds of being out (OR: 0.665, p-value: 0.002), greater perceived safety was associated with greater 44% odds of being out (OR: 1.440, p-value: 0.046), greater perception of classroom safety was associated with 30% greater odds of being out (OR: 1.298, p-value: 0.015), and greater campus response to harassment was associated with 18% greater odds of being out (OR: 1.182, p-value: 0.018). (All constructs mentioned were included as covariates in a single model.) Mansh et al. (2015) conducted a study of gender minority medical students from medical schools across the US and Canada.(Mansh et al., 2015) Of the 5812 respondents, 35 were gender minorities. Of those gender minorities, 12 were out at school, 21 were not, and 2 declined to answer. GMY who were not out identified their reasons for not being out as fear of discrimination in school (9/21; 42.9%) and lack of support (9/21; 42.9%).

One study found outness to family to be associated with greater odds of GMY reporting using a chosen name at home (Pollitt et al., 2019). Pollitt et al. (2019) analyzed a sample of 129 GMY ages 15-21 recruited at community groups or college campuses and reported greater outness to family was associated with 3.92 times higher odds of using a chosen name at home (95% CI: 2.00, 7.68), among those who had a chosen name (Pollitt et al., 2019). This may be because GMY who come out to their families are more likely to come out if they perceive their families as supportive. Additionally, GMY who are out to their families may receive more family support than GMY who are not out if their families affirm their use of a chosen name, pronouns, and/or help them access gender affirming medical care, This may in turn reduce depression severity, indicating that outness to family may interact with associations between family support and depression severity. Further research is needed to explore whether outness to family moderates associations between family support and depression severity among gender minority youth.

## 1.5 Gaps in Knowledge

All future studies of GMY should employ an inclusive, culturally competent measure of gender identity. Population-level studies should continue to assess the size of the gender minority populations among adults and adolescents. Further nationally representative cohort studies are also needed to examine disparities in depression experienced by GMY compared to cisgender youth. Large, nationally representative cohort studies of GMY are needed to assess the role of family support in mitigating these disparities, as well as mediators of the pathway between family support and depression severity. Studies should also use rigorous analytic techniques to adjust for potential confounders. No studies have examined relationships between outness to families and depressive symptoms to depressive symptoms. Additionally, no studies have examined potential relationships between family support, outness to families, and depressive severity.

## 1.6 Public Health Significance

Disparities of depression diagnoses and severity among GMY as compared to cisgender youth are stark and require intervention. Additionally, estimates of the GMY population are growing, which further highlights the importance of this public health concern. By examining potential protective factors (family support and outness to family) for depression severity among GMY, this study will add to a growing body of literature seeking to identify causes of and subsequently reduce substantial mental health disparities experienced by GMY.

# 2.0 Objectives

The first objective of this study was to assess associations between gender identity (independent variable) and family support, gender identity and outness to family, and gender identity and depression severity in a sample of sexual and gender minority youth (SGMY). We hypothesized that GMY would report less family support, less outness to family, and greater depression severity than cisgender SMY. The second objective was to assess associations among GMY between family support and depression severity, and between outness to family and depression severity. We hypothesized that family support would be associated with less depression severity and that outness to family would be associated with less depression severity. The last objective was to assess whether outness to family serves as an effect modifier of an association between family support and depression severity. We hypothesized that as outness to family increased, the magnitude of the association between family support and depression severity would be greater.

# 3.0 Methods

## 3.1 Study Sample

Data came from the baseline survey of participants enrolled in a pilot testing of a 2-arm RCT for a game-based intervention designed to increase self-efficacy and reduce disparities in substance use, victimization, and mental health outcomes among SGMY. Eligible youth were English literate, living in the United States, were between ages 14-18, had experienced bullying or cyberbullying in the past year, identified as a sexual or gender minority, had access to a personal computer, and had an email address. This study had a waiver of parental consent so that youth were not required to disclose their sexual or gender identity to parents in order to participate. Recruitment occurred through advertisements on social media platforms, predominantly Facebook and Instagram. (Coulter et al., 2019)

## 3.2 Measures

### 3.2.1 Predictors

Gender minority status was determined through a “check-all that apply” question with over 20 different gender identity choices (Appendix 1). Answers to this question were compared to a question regarding sex assigned at birth. Any individuals who expressed gender discordance (wherein their sex assigned at birth did not match their gender identity), or who identified as a gender minority were coded as gender minority youth. Family support was measured using the validated family support subscale in the Multidimensional Scale of Perceived Social Support and a mean score variable was created (range 1-7). (Zimet, Dahlem, Zimet, & Farley, 1988) Outness to family was assessed with a single question asking participants to describe their level of outness to family on a 5 point scale of “no one knows” to “everyone knows”. (A R D’Augelli, Hershberger, & Pilkington, 1998)

### 3.2.2 Covariates

Youth were asked to self-report the demographic information, including race/ethnicity, parent education, and sexual identity. Race/ethnicity was measured with two separate questions; one regarding racial identity, and one regarding Hispanic or Latinx ethnic identity. For parent education, youth selected one of five options indicating the highest level of education that a parent or guardian had obtained: “Did not finish high school,” “Graduated from high school,” “Attempted college but did not complete a 4 year degree,” “Graduated college,” and “Don’t know.” Sexual identity was measured as a check-all that apply question with six options (Heterosexual, Gay/Lesbian, Bisexual, Queer, Another non-heterosexual identity, Not sure.) Covariates were selected *a priori* based on previous literature, which has showed differences in mental health outcomes among gender minorities based on race/ethnicity, socioeconomic position, and sexual identity (Grant et al., 2011; Turban et al., 2020).

### 3.2.3 Outcome

Depression severity was measured and scored as a summary variable using the Patient Health Questionnaire-9 ( PHQ-9; range 0-27), a scale with high validity and reliability for adults and adolescents (Kroenke, Spitzer, & Williams, 2001; Richardson et al., 2010).

## 3.4 Statistical Analysis

T-test and chi square tests determined unadjusted differences by gender identity in demographic characteristics, family support, outness to family regarding gender identity, and depression severity. Generalized linear models with an identity link and gaussian family assessed differences in family support, outness to family, and depression severity by gender identity (comparing gender minorities to cisgender sexual minorities), controlling for race/ethnicity, parent education, and sexual identity.

Among GMY only, we examined association of family support and outness to family on depression severity using generalized linear models with an identity link and gaussian family. Unadjusted bivariate models assessed differences between depression severity and family support, and depression severity and outness to family. Model 1A examined association between family support and depression severity, controlling for race/ethnicity, parent education, and sexual identity. Model 1B examined association between outness to family and depression severity, controlling for race/ethnicity, parent education, and sexual identity. Model 2 contained both independent variables and all covariates. A final model included all variables in Model 2, as well as the interaction term between family support and outness to family. All analyses were conducted in Stata SE 15.1.

# 4.0 Results

The total sample (N=240) was predominantly white (62%) and Latinx (21%). GMY represented 49% (n=118) of the entire sample (Table 1). There were no differences in age, race/ethnicity, or parent education by gender identity. Sexual orientation differed significantly by gender identity, where GMY were less likely (25% vs 64%) to identify as gay/lesbian and more likely to identify as queer (19% vs 3%), as multiple sexual orientations (28% vs 9%), or as another sexual identity (12% vs 3%) (Table 1). T-tests indicated that GMY were less out to their families regarding their gender identity than cisgender SMY (Mean ± standard deviation: 2.7 ± 1.5 vs 4.4 ± 1.3) and had greater depression severity (17.2 ± 6.9 vs 12.9 ± 6.7). There were no differences in family support by gender identity.

Adjusting for demographics, GMY had lower levels of outness to family regarding gender identity than cisgender sexual minority youth (𝞫 [95% CI]: -1.86 [-2.26, -1.46]). Additionally, GMY (versus cisgender SMY) had significantly higher depression severity (𝞫 [95% CI]: 3.54 [1.50, 5.57]) (Table 2). Gender identity was not associated with family support (𝞫 [95% CI]: -0.41 [-0.89, 0.04]) (Table 2).

Among GMY, increased family support was associated with lower depression severity (Models 1A and 2, Table 3). On the other hand, outness to family was not associated with depression severity (Models 1B and 2). The interaction of family support and outness to family was not significant, (𝞫 [95% CI]: -0.02 [-0.60, 0.57]; p= 0.958), indicating that the association between family support and depression severity did not differ by outness to family.

# 5.0 Discussion

GMY were more likely to identify as queer and with multiple sexual identities in comparison to cisgender SMY (Table 1). GMY were also less likely to be out to their families about their gender identity than cisgender sexual minority youth (SMY) and had greater depression severity. Among GMY, family support, but not outness to family, was associated with lower depression severity. Outness to family did not moderate the associations between family support and depression.

Differences in sexual identity by gender identity may be associated with nonbinary participants. Nonbinary participants are less likely to identify as gay/lesbian exclusively because gay/lesbian identities are rooted in binary concepts of gender (Galupo, Henise, & Mercer, 2016). Depression severity was positively associated with being a gender minority; these results corroborate the findings of previous studies (Chodzen et al., 2019; Grant et al., 2011; J. Olson et al., 2015; Reisner et al., 2015; Spack et al., 2012; Veale, Watson, et al., 2017).

Outness to family regarding gender identity was also associated with gender identity, as hypothesized. This is likely because cisgender people do not usually need to make the decision to disclose their gender identity to their family. Gender minority youth may not disclose their identity to their family for a variety of reasons, including fear of stigma and discrimination (Bry, Mustanski, Garofalo, & Burns, 2017; Anthony R. D’Augelli, Grossman, & Starks, 2005; Gartner & Sterzing, 2018). Additionally, level of family support may not have been different by gender identity because SMY have also been shown to have lower levels of family support (Pearson & Wilkinson, 2013).

Increased family support was associated with decreased depression severity among GMY. This finding supports the results of other studies (Gower et al., 2018; Pollitt et al., 2019; Russell et al., 2018; Simons et al., 2013; Veale, Peter, et al., 2017). While these data are cross sectional and causality cannot be inferred, increasing family support for GMY by providing families of GMY with gender minority-affirming resources may reduce depression severity among GMY. Additionally, multi-level associations may exist between structural discrimination, lack of family support and GMY depression severity (Gartner & Sterzing, 2018; Perez-Brumer, Hatzenbuehler, Oldenburg, & Bockting, 2015).

Outness to family was not associated with depression severity, nor did it moderate the association between family support and depression severity. This may be because increased outness to family may lead to two very different trajectories. For some youth, coming out to family may act to lessen current or future depression severity by allowing youth access to social transition and gender affirming care, which has been associated with improved mental health (Durwood et al., 2017; K. R. Olson et al., 2016; Pollitt et al., 2019; Russell et al., 2018; Turban et al., 2020). In contrast, for other youth, coming out may result in family rejection and discrimination, which have been associated with worsening mental health (Bry et al., 2017; Klein & Golub, 2016). Consequently, some youth who are out to their families may be at increased risk for depression severity, while other youth who are out to families may be at decreased risk depending on their family’s support of their gender identity. Measures of family support in this study did not capture information on gender-affirming family environment; including measures of family support of gender identity and experience of gender identity-based discrimination by family in future studies may further clarify potential relationships between outness to family, family support, and depression severity.

## 5.1 Limitations and Strengths

This study had some limitations. SGMY participants in this sample had reliable access to the internet and a computer. Additionally, Black youth were underrepresented in this sample (U.S. Census Bureau, 2017). For these reasons, the results of this study may not be generalizable to SGMY nationally. Some analyses compared GMY to cisgender SMY. As both populations have been shown to experience disparities in mental health and family support (Haas et al., 2011; Pearson & Wilkinson, 2013), cisgender SMY may not be the best comparator population for GMY. Comparing GMY to exclusively heterosexual cisgender youth, or to a nationally representative sample of cisgender heterosexual and SMY may have shown differences in family support and may have also shown an increase in the magnitude of association between depression severity and gender identity.

The study also had several strengths. First, gender identity was measured using a “check all that apply” question with over 20 different genders listed, as well as a write-in option. This question was designed with community feedback and may have been able to identify a higher percentage of GMY than less culturally competent questions in other studies. Additionally, to the best of the author’s knowledge, this is the first study to assess associations between outness to family and depression severity, as well as the role of outness to family as a potential moderator of associations between family support and outness to family. Lastly, by assessing associations between family support and depression severity, this study adds to a small and emerging body of literature identifying the potential importance of family support in mitigating mental health disparities faced by GMY.

## 5.2 Future Directions

While epidemiological studies of family support and depression severity studies exist, population-level studies rarely measure gender identity in ways that gender minorities find affirming (Temkin, Belford, McDaniel, Stratford, & Parris, 2017; White, Moeller, Ivcevic, & Brackett, 2018). Researchers should work in collaboration with GMY to develop culturally competent and developmentally appropriate measures of gender identity. Additionally, longitudinal research of family support and mental health outcomes among GMY is limited and urgently needed to better understand potential protective factors for mental health disparities. Future studies should also explore relationships between family support and other mental health outcomes, such as suicidality and anxiety. They should also examine relationships between outness to family, family support of gender identity, gender identity-based discrimination by family, and mental health outcomes. Future studies of interventions should explore opportunities to increase family support and assess potential effects on mental health of GMY.

This study adds to a growing body of evidence demonstrating the connection between family support and depression severity among GMY. The public health significance of this work relates to the exceptionally high disparities in mental health experienced by GMY. Further research in this field can help identify the causes of these disparities, as well as ways to ameliorate them.

**Appendix A Table**s

**Table 1 Demographic Characteristics by Gender Identity**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Total Samplen=240 | Gender Minorityn=118 | Cisgender n=122 | p-value |
| Age in years | 15.8 ± 1.1 | 15.7 ± 1.1 | 15.8 ± 1.1 | 0.27 |
| Race/Ethnicity  |  |  |  | 0.21 |
|   White | 149 (62.1) | 81 (68.6) | 68 (55.7) |  |
|   Latinx | 50 (20.1) | 18 (15.3) | 32 (26.2) |  |
|   Asian or Pacific Islander | 9 (3.8) | 5 (4.2) | 4 (3.3) |  |
|   Black | 8 (3.3) | 3 (2.5) | 5 (4.1) |  |
|   Multiracial | 24 (10.0) | 11 (9.3) | 13 (10.7) |  |
| Sexual Orientation  |  |  |  | <0.0001 |
|   Gay/Lesbian | 108 (45.0) | 30 (25.4) | 78 (63.9) |  |
|   Bisexual | 44 (18.3) | 19 (16.1) | 25 (20.5) |  |
|   Queer | 25 (10.4) | 22 (18.6) | 3 (2.5) |  |
|   Unsure | 1 (0.4) | 0 (0) | 1 (0.8) |  |
|   Multiple | 44 (18.3) | 33 (28.0) | 11 (9.0) |  |
|   Other | 18 (7.5) | 14 (11.9) | 4 (3.3) |  |
| Parent Education  |  |  |  | 0.97 |
|   Did not finish high school | 24 (10.0) | 12 (10.2) | 12 (9.8) |  |
|   Graduated high school | 38 (15.8) | 17 (14.4) | 21 (17.2) |  |
|   Attended college | 43 (17.9) | 22 (18.6) | 21 (17.2) |  |
|   Graduated College | 130 (54.2) | 65 (55.1) | 65 (53.3) |  |
|   Don’t know | 5 (2.1) | 2 (1.7) | 3 (2.5) |  |
| Family Support | 3.8 ± 1.5 | 3.6 ± 1.6 | 4.0 ± 1.5 | 0.054 |
| Outness to Family | 3.6 ± 1.6 | 2.7 ± 1.5 | 4.4 ± 1.3 | <0.0001 |
| Depression Severity | 15.0 ± 7.1 | 17.2 ± 6.9 | 12.9 ± 6.7 | <0.0001 |

Values are mean±standard deviation or n(%). P-values reported from t-tests, chi-squared tests, or Fischer’s exact tests, as appropriate. Percentages may not sum to 100 due to small amounts of missing data

**Table 2 Adjusted Models of Associations between Gender Minority Identity, Family Support, Outness to Family, and Depression Severity**

|  |  |  |  |
| --- | --- | --- | --- |
|  | Family Support𝞫 (95% CI) | Outness to Family𝞫 (95% CI) | Depression Severity𝞫 (95% CI) |
| Cisgender youth | REF | REF | REF |
| Gender minority youth | -0.41 (-0.86, 0.034) | -1.86 (-2.25, -1.46)\* | 3.54 (1.51, 5.56)\* |

CI: Confidence Interval. All models adjusted for race/ethnicity, parent education, and sexual orientation; \*p<0.05

**Table 3 Associations between Family Support and Outness to Families on Depression Severity Among Gender Minority Youth**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Unadjusted Bivariates𝞫 (95% CI) | Model 1A𝞫 (95% CI) | Model 1B𝞫 (95% CI) | Model 2(Model 1A + outness to family)𝞫 (95% CI) |
| Family Support | -1.46 (-2.25, -0.67)\* | -1.61 (-2.46, -0.76)\* | - | -1.70 (-2.57, -0.84)\* |
| Outness to Family | 0.16 (-0.70, 1.02) | - | 0.19 (-0.73, 1.10) | 0.51 (-0.37, 1.38) |

Models 1-3 adjusted for race/ethnicity, parental education, and sexual orientation. CI: Confidence Interval. \*Indicates p<0.05

**Appendix B Gender Identify Question**

Participants were asked “What is your current gender identity? (Check all that apply)” and given the following options:

Boy/Man

Girl/Woman

Trans boy/man

Trans girl/woman

Trans masculine

Demi gender (Demi boy/man or Demi girl/woman)

Trans feminine

Nonbinary

Genderqueer

Agender

Two spirit

Third gender

Bigender

Genderfluid

Intergender

Polygender

Pangender

Neutrois

Androgyne

Gender Variant

Transgender

Gender questioning

Gender noncomforming

Other (please specify)

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