EARLY ANTECEDENTS OF ACADEMIC AND PSYCHOSOCIAL OUTCOMES FOR STUDENTS IDENTIFYING AS LGBQ

BY

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DISSERTATION

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ABSTRACT

Peer and parental relationships across childhood and adolescence have an important role in later psychosocial adjustment for all youth. For youth who experience subjectively more minority stress or more encounters with peer victimization, such as youth who identify as LGBQ, these relationships may have a particularly important protective role against psychosocial problems in later adolescence. In this study, we explore these relationships with a particular lens for students identifying as LGBQ. Using a matched sample of 82 students, half of whom identify as LGBQ at age 15, we examined the relationships between this identity and psychosocial outcomes (e.g., mental health, academic skills, and peer victimization). We also investigated the role that changes in the quality of peer and parental relationships from age 11 to 15 have in psychosocial outcomes, especially for students identifying as LGBQ. The findings suggest that, consistent with previous research, LGBQ identity is associated with worse mental health outcomes compared to their peers, but similar findings were not replicated for academic skills. Like previous research, we also found that peer victimization was associated with worse mental health outcomes, though not academic skills in our sample. Additionally, higher quality parental relationships in early adolescence were associated with better mental health outcomes in later adolescence, but the finding was not replicated with regards to academic skills, nor was positive peer relationships found to be a significant protective factor. Findings from our study will inform future longitudinal studies and concerning peers’ and parents’ influence on adolescents’ mental health and academic achievement. Potential implications for prevention work for identity-based victimization among middle and high school students are discussed.

Keywords: = LGBQ, academic achievement, peer relationships, parental relationships, mental health, peer victimization
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# TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION ........................................................................................................1

CHAPTER 2: LITERATURE REVIEW ..............................................................................................5

CHAPTER 3: METHODS ..............................................................................................................22

CHAPTER 4: RESULTS ..............................................................................................................35

CHAPTER 5: DISCUSSION .........................................................................................................41

CHAPTER 6: LIMITATIONS AND FUTURE DIRECTIONS ..........................................................54

REFERENCES ..........................................................................................................................59

APPENDIX A: ALL MODELS ..................................................................................................74

APPENDIX B: TABLES AND FIGURE ......................................................................................78
CHAPTER 1: INTRODUCTION

Research has shown that students identifying as LGBQ report higher levels of mental health problems than their peers (Birkett, Espelage, & Koenig, 2009; Koh & Ross, 2006). Although much research exists examining the factors that contribute to poorer mental health outcomes (including depression, loneliness, and internalizing behaviors) for LGBQ youth, far less research examines the effects of students’ LGBQ identity on their academic skills. Yet, research has clearly demonstrated that ethnic identity is linked with student achievement (Ferguson, 2002; Ferguson & Mehta, 2004; Gordon & Cui, 2018), thus suggesting that other social identities may be linked to academic skills. Additional research understanding the role of other identities in both psychosocial and academic outcomes is needed. Furthermore, examining the significance of risk and protective factors over time (i.e., experiences with victimization, parental relationships, and peer relationships) for mental health and academic skills can provide a more nuanced understanding of the development of students identifying as LGBQ than what currently exists in the literature. Parents and peers are important for positive youth development, not just in adolescence, but also across childhood and adolescence (Walters & Stinnett, 1971; Watson, Barnett, & Russell, 2016). Few studies have examined the role that these relationships play in mental health and, even more so, academic skills for students identifying as LGBQ. No study, to our knowledge, examines whether changes in these relationships over time might serve to protect or exacerbate youth from poor developmental outcomes. Exploring these longitudinal associations may illuminate specific interventions that can inform prevention work. Thus, in this study, we seek to understand the relationship between students who identify as LGBQ and their mental health and academic skills, marked by performance on tests of cognitive ability and achievement, potential exacerbating experiences with peer victimization, and potential protective
experiences such as parental relationships and friendships.

The association between LGBQ identity and poor mental health outcomes has been explained through minority stress theory (Meyer, 1995; Meyer 2003; Meyer, Schwartz, & Frost 2008). Minority stress theory suggests that identifying as LGBQ in a system that discriminates against the social position of such individuals exposes them to increased stress and fewer resources for coping with this stress compared to people who identify as heterosexual. For students identifying as LGBQ, this can be particularly problematic given their increased likelihood for encountering peer victimization as well as their poorer mental health outcomes in comparison to their heterosexual peers. Indeed, students identifying as LGBQ are victimized at an alarming rate compared to their peers identifying as heterosexual. As of 2017, nearly 19% of high school students nationwide reported experiences with bullying and/or victimization according to the Youth Risk Behavior Surveillance survey (National Center for Education Statistics, 2018), which is an overall reduction of 3% since the 2013 survey (National Center for Education Statistics, 2015). Still, prevalence rates continue to be higher among gay, lesbian, and bisexual students (33.0%) than heterosexual students (17.1%) and students who report being unsure of their sexual identity (24.3%). Students who identify as LGBQ continue to experience victimization at school and the effects of this victimization are associated with negative psychosocial adjustment (Russell, et al., 2011). Importantly, identifying as a sexual minority at a younger age has been associated with greater risk for victimization (D’Augelli, 2002; D’Augelli, Pilkington, & Hershberger, 2002; Pilkington & D’Augelli, 1995).

There may also be protective resources within students’ home and social lives that buffer against the adverse effects of minority stress and peer victimization. Previous research suggests that family (Ryan, et al., 2010; Rodas, Zeedyk, & Baker, 2016) and peer (Doty et al., 2010;
Sheets & Mohr, 2009; Snapp et al., 2015) acceptance and support of students identifying as LGBQ predicts fewer internalizing behaviors and better adjustment. That is, the more marginalized youth are accepted and supported by their family and friends, the more likely they are to report fewer poor mental health outcomes than their peers without this support. For example, in a study of 245 LGBT White and Latino youth, Snapp and colleagues (2015) showed that family, friend, and community support were strong predictors of positive outcomes such as life situation, self-esteem, and LGBT-identity esteem. The authors found that when students’ families accept and support their LGBT identity, adjustment was better throughout their young adult years. This positive adjustment was also seen when other supports (friends and community) were accepting and supportive. Despite this evidence, there is little research examining how parent and peer relationships might support positive psychosocial development among youth identifying as LGBQ and/or buffer them from the negative effects of peer victimization.

Given the extant literature, a secondary aim of this study was to add to the existing literature showing that experiences with peer victimization in early adolescence influence mental health and academic skills in high school, particularly for LGBQ youth. In line with existing research, we expected that students who identify as LGBQ would report more peer victimization than their heterosexual peers and that students who were victimized would demonstrate poorer mental health as well as lower academic skills, marked by cognitive abilities and achievement. We also sought to add a longitudinal component to the existing research examining parental and peer relationships, students’ identities, and their mental health and academic skills (again, though we measured cognitive abilities and achievement). Specifically, we examined how the quality of parental and peer relationships from early adolescence (age 11) to later adolescence (age 15) were associated with potential differences in mental health and academic skills. We did this by
examining the effect of the quality of parental and peer relationships at each time point (11 and 15 years-old) and then examined their association (at age 11) with students’ mental health and academic skills (at age 15). Understanding the potential protective role of these relationships can suggest potential areas of intervention to help inform prevention work.
CHAPTER 2: LITERATURE REVIEW

Consistently, research has shown that the experiences of students identifying as LGBQ places them at risk for comparatively worse mental health and academic outcomes than their peers who do not identify as LGBQ. In the current study, we sought to further understand this dynamic and explore potential risk and protective factors for students identifying as LGBQ. First, we provide an overview of the extant literature examining mental health and academic outcomes, with a particular focus on students identifying as LGBQ. We aim to illuminate the disproportionately high rates of poor mental health outcomes associated with minority stress, a theory often credited for describing the mechanisms responsible for these outcomes, and also important for understanding academic outcomes among youth identifying as LGBQ. Given that the prevalence of mental health (Breslau et al., 2005) and academic (Ferguson, 2002; Ferguson & Mehta, 2004) disparities by race and ethnicity, we have reason to believe that a student’s perceived LGBQ identity may be related to poorer academic skills as well. Though some literature exists to support this hypothesis, it is not as advanced as the literature examining the relationship between LGBQ identity and mental health outcomes.

Given the prevalence of these poor outcomes among students identifying as LGBQ compared to their peers who do not identify as LGBQ, there is a critical need to identify risk and protective factors early in life. Thus, we then discuss the literature on peer victimization as a risk factor, the overrepresentation of students identifying as LGBQ in the bullying literature, and its implications on poor mental health and academic outcomes. We propose, consistent with previous research, that peer victimization is a risk factor for comparatively worse mental health and academic skills for students identifying as LGBQ. Finally, we conclude by examining the literature on parental and peer relationships and mental health and academic outcomes and
among students identifying as LGBQ. Though this body of literature is not as expansive as the
literature on peer victimization and LGBQ identity, supportive parental and peer relationships, as
we propose, can serve as a protective factor for students with increased exposure to minority
stress.

**LGBQ Identity, Mental Health Outcomes, and Academic Skills**

Students identifying as LGBQ tend to report poorer mental health outcomes than their peers (Bontempo & D’Augelli, 2002; Robinson & Espelage, 2011). Though there are multiple explanations in the extant literature, our study was informed by the minority stress model (Meyer, 1995, 2003; Meyer et al., 2014). The minority stress model posits that students who identify as LGBQ are particularly at risk for worse mental health outcomes because they are exposed to repeated stressors related to their sexual identity. For example, Robinson and Espelage (2012) found that students who identify as LGBQ are 3.3 times more likely to experience suicidal ideation and three times more likely to attempt suicide than their heterosexual peers. In another study, Bontempo and D’Augelli (2002), using a representative sample of 1,988 high school students, found that mental health-related outcomes such as increased substance use, suicidality, and sexually risky behaviors are reported at higher rates by youth who identify as LGB. They found that this trend is likely a result of experiencing higher levels of victimization than their peers who identify as heterosexual. Similarly, Russell and Toomey (2013) note the severity of such mental health disparities. Using the Add Health data during a similar time period as the current study, the researchers used a random sample of 12,000 high school students to show that students who identify as a sexual minority experience significantly more suicidal thoughts than their peers who identify as heterosexual. In sum, the evidence suggests that students who identify as LGBQ experience comparatively worse mental
health outcomes compared to their peers who identify as heterosexual.

The scant literature examining the academic outcomes among students who identify as LGBQ suggests that these students are more likely to report poorer academic outcomes compared to their heterosexual counterparts (Birkett, Russell, & Corliss, 2014; Rostosky et al., 2003; Watson, Barnett, & Russell, 2016). First, using a sample from the Youth Risk Behavior Surveillance Study of students in grades 9 through 12, Birkett, Russell, and Corliss (2014) found that youth who identified as LGB reported significantly higher odds of lower grades and truancy compared to their peers. They also found a moderating role of peer victimization in this study, such that students who experienced higher levels of victimization also reported even worse school outcomes (more truancy and lower grades). In another study of 1,279 high school students, again using the Add Health data, Watson and Russell (2014) assessed students’ level of engagement in school. Among the “engaged” group, the results suggested significantly better mental health outcomes at one and six years after the assessment in high school (e.g., fewer depressive symptoms and less alcohol use), and more occupational and educational achievement eleven years after the assessment. As expected, students identifying as LGBQ, who are less likely to report high levels of engagement in school according to the study, are thus particularly vulnerable. No study, my our knowledge, has investigated whether students identifying as LGBQ score significantly different form the peers on tests of cognitive abilities.

Even though all students can be at risk for mental health problems based on a number of factors (i.e., race, Breslau et al., 2005; gender, Dagher, Chen, & Thomas, 2015; disability status, Rose, Simpson, & Moss, 2015), we posit that minority stress is an additional, unwanted stress for students identifying as LGBQ, who may be considered “a stigmatized and disadvantaged minority group in society” (Meyer, Frost, & Nezhad, 2014, p. 177). Furthermore, the mental
health disparities (e.g., anxiety, depression, and internalizing behaviors) experienced by people identifying as LGBQ compared with those who identify as heterosexual may be a product of a homophobic and stigmatizing environment in which they live. We propose that the disadvantaged social position of people identifying as LGBQ places them at risk for poorer mental health and academic outcomes and fewer coping resources compared to people who identify as heterosexual (Meyer, Schwartz, & Frost, 2008). Thus, we used this theory to guide our understanding of the development of LGBQ youth.

In the following section, we explore the prevalence of peer victimization and mental health problems for students identifying as LGBQ. Given the disparity in mental health and academic outcomes discussed above, this is likely the mechanism for worse academic outcomes. However, we do not address or hypothesize about the specific mechanisms in the current study.

**Peer Victimization as a Risk Factor for Students Identifying as LGBQ**

Victimization continues to be a problem facing youth regardless of their sexual orientation. In a national study examining the prevalence of bullying in United States’ schools, it was reported that up to 22% of middle and high school students experienced peer victimization (National Center for Education Statistics, 2015). When rates of bullying and victimization are examined within the context of a single identity, students with certain identities are more likely to report higher rates of peer victimization than others. For instance, students identifying as LGBQ report higher levels of victimization than their peers who identify as heterosexual (Espelage, Aragon, Birkett, & Koenig, 2008; Robinson & Espelage, 2011; Robinson & Espelage, 2012). Further, Russell et al. (2014) explain that the psychosocial outcomes of students who identify as LGBQ are largely influenced by peer victimization more so than their actual identity or decision to come out. Said differently, this suggests that identity alone is not associated with
worse outcomes, but the stigma and victimization related to the identity. The Centers for Disease Control and Prevention’s 2015 “Sexual Identity, Sex of Sexual Contacts, and Health-Related Behaviors Among Students in Grades 9–12” (Kann et al., 2016) survey of 15,624 students in the United States reports that 34% of students identifying as LGBQ were bullied on school property and 28% were bullied electronically. Additionally, 42% of students identifying as LGBQ reported that they considered suicide in the past 12 months, 38% actually made a plan, and 29% attempted. Even further, the 2013 National School Climate Survey of 8,854 sixth through twelfth grade students across the United State reports that 74% of youth who identify as LGBQ were verbally harassed in the past year, 56% of students identifying as LGBQ reported homophobic remarks, 56% of students reported feeling unsafe at school, 49% reported cyber bullying, and 36% reported physical harassment (Kosciw, Greytak, Palmer, & Boesen, 2014). There is a clear link between victimization, students’ LGBQ identity, and poor psychosocial outcomes (Bowleg, 2008; Duke, 2011; Holt et al., 2015; King et al., 2017).

Numerous studies have indicated that there is a higher prevalence of suicidal ideation, suicide attempts, drug use, and depression for individuals identifying as LGBQ (DuRant et al., 1998; Faulkner & Cranston, 1998; Birkett, Espelage, & Koenig, 2009). Additionally, studies of mental health disorders also reveal higher prevalence of anxiety, mood disorders, and substance use disorders for individuals identifying as LGBQ (Fergusson et al., 1999; Gilman et al., 2001; Sandfort et al., 2001). Furthermore, compared to their peers who identify as heterosexual, students who identify as LGBQ are also at a higher risk for experiencing suicidal ideation (D’Augelli et al., 2005; Eisenberg & Resnick, 2006; Robinson & Espelage, 2011). Bullying and victimization may exacerbate this link, as evidenced in a study by Bontempo and D’Augelli (2002). In this study, the authors used a sample of 1,988 high school students to show that when
students who identify as LGBQ report higher levels of peer victimization, they also tend to report higher rates of substance use, suicidality, and risky sexual behaviors. In another study using data from the Fragile Families and Child Wellbeing Study, which is a cohort study of children born across the United States between 1998 and 2000, Mittleman (2018) explored the longitudinal relationship between peer victimization and mental health. In this study, participants reported their sexual minority status during interviews conducted when they were teens; the author used multivariate regression analyses to examine the relationship between peer victimization and mental health at ages 5, 9, and 15, similar to the structure of the current study. Findings suggested that students identifying as LGBQ experienced similar rates of peer victimization at age 5 compared to their heterosexual peers. However, at ages 9 and 15, students identifying as LGBQ experienced significantly higher rates of peer victimization, which was associated with significant disparities in mental health at age 15. In sum, there is clear evidence that a relationship exists between peer victimization, mental health, and identity related to sexual orientation, and this relationship exists over time.

Much research exists examining the long-term psychosocial impact of bullying as well. In one longitudinal study, 1,420 students ages 9, 11, and 13 in the southeastern United States were later followed up at ages 19, 21, and 24 to 26 to assess for physical illness and other health outcomes, involvement in risky or illegal behaviors, socioeconomic status, and social relationships (Wolke et al., 2013). This study added a nuanced perspective to the literature such that the study discerned not only how involvement in bullying in adolescence was associated with adult health and mental health outcomes, but also the type of involvement and chronicity while accounting for adverse family relationships and other problems in childhood. Wolke and colleagues (2013) found that simply being involved in bullying of any sort in childhood was
associated with negative financial, health, social, and behavioral outcomes in adulthood. However, the type of involvement matters. For example, the authors found that health disparities among bully-victims in adolescence were most pronounced in later adulthood compared to the other outcomes. Because students who identify as LGBQ are more likely to report poor mental health outcomes, the current study sought to explore potential protective factors such as peer relationships.

Although it is clear that peer victimization is related to poor mental health outcomes for students identifying as LGBQ, the extant research on academic outcomes is more limited, but does suggest a moderating role of peer victimization on academic outcomes. For instance, in a study using teacher interviews, Warwick, Appleton, and Douglas (2001) explain that teachers report that their students who experience anti-gay harassment also experience worse academic performance in their class. Additionally, they reported that these students are more likely to withdraw, participate less in class, and are less motivated to complete their assignments than students who do not experience this harassment. In a study of 484 students identifying as LGBQ, Button (2016) used General Strain Theory (GST; Agnew, 1992) to examine the relationship between victimization and outcomes such as academic performance, substance use, and suicidality. GST, generally used in sociology research, posits that strain (or stress) is a central cause of crime, delinquency, and other negative behaviors that can take different forms (e.g., the failure to achieve goals, a discrepancy between expectations and achievements, the absence of positive stimuli, the presence of negative stimuli). Thus, in this case, strain can be equated to victimization (i.e., the presence of a negative stimuli) and this strain results in negative behaviors (i.e., internalizing behaviors, delinquency, and acting out). Results of the Button (2016) study revealed that victimization predicted poorer academic performance and higher rates of substance
use and suicidality among youth identifying as LGBQ. Similar results are also supported in a statewide study of all students measuring academic, amongst other, outcomes. In the 2007 Wisconsin Youth Risk Behavior Study (YRBS), compared to students identifying as heterosexual, students who identify as LGBQ were more likely to report that victimization negatively impairs their academic performance (Wisconsin YRBS, 2007). More recent research has also shown the meditational role of victimization on academic outcomes and truancy for students who identify as LGBQ and their peers. For instance, Birkett, Russell, and Corliss (2014) and Aragon and colleagues (2014) found that students identifying as LGBQ reported lower grades and higher rates of truancy than their peers.

Clearly peer victimization poses a particular risk for mental health and academic outcomes among students identifying as LGBQ. Given the higher prevalence of mental health problems and potential for poorer academic performance among individuals identifying as LGBQ, in conjunction with studies reporting higher rates of victimization directed towards individuals identifying as LGBQ, it may be especially important to provide coping resources during adolescence via positive parental and peer relationships, a topic explored in this study.

**Parent and Peer Ecologies: The Protective Effects for Mental Health and Academic Skills**

Students identifying as LGBQ report poorer mental health and academic outcomes than their peers. Given this disparity, uncovering protective antecedents associated with mental health and academic outcomes in later adolescence may prove useful for intervention efforts at the individual and institutional levels. In the following section, we first review the literature examining the links between parental and peer relationships and mental health and academic outcomes for all students. We then discuss how support from both parents and peers may be a protective factor against the negative outcomes, specifically for students identifying as LGBQ.
Social Support: A Review of Parental and Peer Relationships

In a review of the antecedents and consequences of bullying, Rodkin, Espelage, and Hanish (2015) noted that antecedents of aggression and bullying might come from two distinct spheres: family history and the peer social ecology. As the authors note, this distinction is important because aggression may be linked to more adaptive qualities, such as appropriate responsiveness to situational factors, while bullying may be linked to more maladaptive qualities, such as low self-esteem (Rodkin, Espelage, & Hanish, 2015). We examine the two distinct spheres as explained in Rodkin, Espleage, and Hanish (2015)—family history (e.g., parental relationship quality) and peer social ecology (e.g., friendship quality)—to understand their importance as antecedents to mental health outcomes for students identifying as LGBQ.

Social support has been defined in the literature to mean the degree to which individuals believe support (emotional or otherwise) is available in their social networks (see Button, 2016). Researchers have used the concept to generally examine its role in adjustment across time. More recently, researchers have broken down social support into two categories: general and specific support. General (or global) support is a term meant to describe the extent to which an individual thinks that support is available to them (Sheets & Mohr, 2009). Specific social support commonly means coupling a specific form of social support to a specific problem within a population (e.g., Gay-Straight Alliance clubs in schools). For the purposes of this study, social support is defined somewhere in between the two categories, as the focus is on the quality of support, and not whether students believe support is available. Largely, studies examining general support among youth identifying as LGBQ show that this form of support is a protective factor against later adjustment problems (Espelege et al. 2008; Teasdale & Bradley-Engen, 2010). As described in a study by Russell et al. (2014), students who receive support from their
peers when they come out (i.e., implicitly supporting their identity) is an example of specific support. Feeling accepted by peers (a form of specific support) for being out positively predicted later adjustment above and beyond a school culture that generally accepts a student’s LGBQ identity. For studies including students identifying as LGBQ, specific support tends to surpass the benefits of general support. Ideally, however, both forms of support are preferable and are likely to result in even better adjustment; this means that specific support may come from family and peers, where as general support comes from receiving affirmation in environments such as the home and school.

Although the specific type of social support is less important to this study, the concept drives the theory that support from family and peers matters. From a developmental perspective, the individuals with whom students look to for support changes over time. That is, whereas familial support is relied upon in early and middle childhood, peers become an increasingly important source of support during adolescence and young adulthood (Weinstein et al., 2006). For students identifying as LGBQ, receiving support from peers may be particularly important because they face higher levels of conflict with their families of origin than their peers who identify as heterosexual (Bouris et al., 2010). Mufioz-Plaza, Quinn, and Rounds (2002) suggest that students identifying as LGBQ will rely on peers for support if they experience rejection by their parents. In testing this theory, Parra et al. (2018) predicted that social support from peers would moderate the association between negative family relationships (including rejection from parents) and psychosocial adjustment in a sample of 62 individuals identifying as LGBQ (ages 17 to 27). Specifically, they predicted that experiencing more peer support would predict lower levels of anxiety, depression, and internalized minority stress, and higher self-esteem, especially when rejected by one’s family. The authors found that social support from peers moderated the
association between negative family attitudes and anxiety. Similarly, this support moderated the association between family victimization and depression. In the absence of familial support, a supportive peer or friend group may protect against mental health problems and poor academic achievement outcomes for individuals identifying as LGBQ. In this study, we examine both forms of support (parental and peer) and its potential protective role on mental health and academic skills (again, as marked by cognitive ability and achievement).

*Parental relationships, mental health, and academic achievement outcomes*

Parental relationships are fundamental in childhood and adolescence. The quality of these relationships (with regards to intimacy, frequency of conflict, trust, and acceptance) greatly influences a child’s development (Maccoby, 1992; Walters & Stinnet, 1971) and mental health in later adulthood (Meadows, Brown, & Elder, 2006; Morgan, Brugha, Fryers, & Stewart-Brown, 2012). In a longitudinal cohort study of 1,334 Finnish adolescents, Berg, Kiviruus, Karvonen, Rahkonen, and Huurre (2017) examined parental relationships at age 16 and assessed mental health at 22, 32, and 42 years old. The researchers defined problems in family relationships as a poor relationship with an adolescent’s mother and father, a lack of parental support in adolescent’s individuation process, and a poor home atmosphere. Results indicated that problematic adolescent family relationships were associated with psychological distress later in life. Thus, it is apparent that a relationship between parental relationships and psychosocial adjustment later in life for every individual exists.

In a comprehensive review of the literature examining longitudinal relationships between childhood bullying and victimization and adult mental health outcomes (e.g., anxiety, depression, substance use, and conduct disorders), Smokowski and Kopasz (2005) identified several early antecedents of parental relationships associated with later negative mental health outcomes for
students who are bullied. These include parents who are overprotective and sheltering, overly involved in their student’s activities, and conflict-avoidant. Although the current study does not seek to illuminate the specific elements of parental relationships associated with mental health and academic outcomes of students who are victimized, we did measure the overall quality of parental relationship, including both closeness and conflict. For particular groups of students who are already vulnerable to bullying, we predicted that higher quality parental relationships at age 11 were associated with changes mental health and academic skills at age 15.

The extant literature also suggests that parental relationships may serve a protective role for academic outcomes specifically among students identifying as LGBQ. It has even been suggested that the parent-child relationship for sexual minorities, because of their increased experiences with peer victimization, are especially important (Ryan et al., 2009; Toomey et al., 2010). In a sample of 12,064 seventh through twelfth grade students across the United States, Watson, Barnett, and Russell (2016) investigated the association between perceived parental support (defined as warm, firm, and accepting parental bonds) and educational outcomes. For the entire sample of students (LGBQ and heterosexual), parental support was associated with higher GPAs, more school belonging, and fewer school troubles. Amongst the sample of students identifying as LGBQ, however, only the interaction between sexual minority status and parental support was significant for the school belonging outcome. Specifically, students who identified as LGBQ in the sample who reported low parental support also reported significantly lower levels of school belonging compared to students who identified as heterosexual.

For all students, having parental support is important psychosocially and academically, but we know far less about the role of these relationships in the development of youth identifying as LGBQ. For students who are already more likely to experience minority stress and peer
victimization, understanding how parental relationships influences later mental health and academic skills may be particularly important. In the current study, we explored the association between parental relationship quality from age 11 to age 15 and students’ mental health and academic skills, marked by student performance on tests of cognitive ability and achievement, with a particular focus on the students identifying as LGBQ.

Peer relationships, mental health, and academic achievement outcomes

The short- and long-term implications of peer relationships on mental health and adjustment in late adolescence and adulthood had been well established in the literature (Hartup, 1996; Hymel, Rubin, Rowden, & LeMare, 1990; Shin, Cho, Shin, & Park, 2016). In a longitudinal study including 166 Finish children ages seven to nine, Laursen et al. (2007) examined the association between social isolation and adjustment problems. The authors proposed that early social engagement in one’s peer ecology was associated with later reports of internalizing and externalizing behaviors. Those who were subjectively rated by their peers to participate with other peers in first grade were less socially isolated in second grade. Students who did not report having friends and who were isolated during first grade reported more internalizing problems during second grade. The authors concluded that social exclusion and no friendships are associated with poor mental health outcomes (e.g., increased internalizing behaviors), but having even one friend can reduce reported internalizing behaviors. Laursen et al. (2007) not only provides a framework for examining associations between antecedents of later mental health problems, but also presents clear implications for prevention (e.g., fostering friendship among isolated students). In a longitudinal study of 169 ninth and tenth grade students in the southeastern United States followed over a ten-year period from ages 15 to 25, Narr, Allen, Tan, and Loeb (2017) examined the association between adolescents’ close friendship
strength and their peer group’s preference to affiliate with them with changes in depressive symptoms, self-worth, and social anxiety symptoms. The authors found that close friendships were associated with increases in self-worth and decreases in both depressive and anxiety symptoms in early adulthood. They concluded that their findings suggest that a strong close friendship serves a protective function.

Considering the implications of the above studies and the increased likelihood of students identifying as LGBQ to be victimized, peer relationships may matter with regards to later mental health and academic skills. That said, how peers respond to a student’s decision to disclose their sexual orientation during the school years may also matter. This is especially true because peers are a critical source of support, especially if rejected by their families. In a retrospective study of 245 LGBT adults examining their disclosure of their sexual orientation in young adolescence at school and their later psychosocial outcomes, Russell et al. (2014) address this very issue. The authors were interested in the relationship between coming out in school (to peers and/or parents), peer victimization, and later psychosocial adjustment in young adulthood (21–25 years old). Interestingly, the authors found that students who came out in school reported better psychosocial adjustment (i.e., lower rates of depression and higher reported life satisfaction and self-esteem) in young adulthood. However, LGBQ-related peer victimization during their school years was strongly associated with negative adjustment. Said differently, peer victimization negatively influenced the protective factor of coming out during school. But, it should not be ignored that being out in school was a significant protective factor for positive adjustment in young adulthood. Although the authors did not specifically address why this might be, considering that students turn to their peers when rejected by their families as discussed above,
having a space to come out and receive support from others may be the mechanism underlying positive adjustment.

Studies with students identifying as LGBQ typically indicate that support from multiple sources (e.g., family, teachers, and peers) is a protective factor against negative academic outcomes. In one study, Russell et al. (2001) used a sample of LBQ girls and GBQ boys to examine the impact of their relationship with their peers and teachers. Results indicated that, for LBQ girls, getting along with and feeling as if teachers are treating them fairly was associated with fewer behavioral problems and higher homework completion rates at school. For GBQ boys, feeling socially accepted, getting along with peers, and feeling as though they are being treated fairly by peers and teachers was associated with fewer problems at school. In sum, when students feel as if they are accepted and socially connected to their various support systems, they report better academic outcomes.

Close friendships appear to be a protective factor against peer victimization, poor mental health, and academic problems for all students. For students who are more likely to experience minority stress (i.e., students identifying as LGBQ), friendship quality may have an even greater effect. In the current study, we examined the association between peer friendship quality from age 11 to age 15 and mental health and academic skills at age 15 for students who identify as LGBQ. We believe these findings can add to the extant literature addressing protective factors for youth who are more likely to experience peer victimization and increased levels of minority stress.

Perceived Sexual Minority Identity

Family and peers’ perceptions of one’s sexual orientation are of note with regards to the current study. That is, because the students in this study may not be out to their family and peers
(i.e., fifth grade may is before the average age in which one comes out; Dunlap, 2016), others’ perceptions of their sexual orientation status may be important to consider. Discrimination based on an individual’s sexual orientation status has been found to be related to mental health outcomes. In a study including 1,032 students from ages 13 to 19 in a large metropolitan city in the northeastern United States, Almeida et al. (2009) examined whether the perception of the students sexual orientation was associated with emotional distress and depressive symptomology. The researchers found that students who identified as LGBT were significantly more likely to report perceived discrimination on the basis of their minority sexual orientation status. Additionally, there were notable gender differences in the relationship between discrimination and depressive symptomology. Specifically, based on sexual orientation, perceived discrimination more strongly accounted for increased depressive symptoms for boys who identified as GBT in this study. Regardless, more emotional distress was reported for students who identified as LGBT and were discriminated against on the perception of their sexual orientation. Thus, it is important to consider that the results of the current study may actually reflect perceived sexual orientation, given the age of the subjects and the uncertainty about whether or not they have come out to their family and peers.

The Current Study

Although it is clear there is an association between poor mental health, academic outcomes, and identifying as (or being perceived as) LGBQ, longitudinal research is needed to examine early correlates of these outcomes. Though the several studies included in this review concerning different forms of social support (specifically, Rodkin, Espelage, & Hanish, 2015; Wolke et al., 2013; Laursen et al., 2015; Rodkin & Rosiman, 2010) do not focus on LGBQ identity specifically, they do provide a rationale for examining these psychosocial outcomes
among youth as well as a methodological approach for understanding development that guides the current study. In the current study, we sought to add to the extant literature by specifically examining the associations between parental and peer relationship quality at age 11 to age 15 and our mental health and academic skills (again, as marked by cognitive ability and achievement) from age 11 to age 15 for students identifying as LGBQ. We predict that for students who are most vulnerable to the effects of peer victimization (e.g., students who identify as or are perceived as LGBQ), the quality of peer and parental relationships will influence their reported outcomes. As such, the following research questions guided the current study:

1. Is LGBQ identity associated with changes in mental health outcomes and academic skills (marked by cognitive ability and achievement) from childhood (age 11) to adolescence (age 15)?

2. Is peer victimization in middle childhood associated with changes in mental health outcomes and academic skills (marked by cognitive ability and achievement) from childhood (age 11) to adolescence (age 15)?

3. Is the association between peer victimization and changes in mental health outcomes and academic skills (marked by cognitive ability and achievement) from childhood (age 11) to adolescence (age 15) moderated by LGBQ identity?

4. (a) Do early parent and peer relationships predict changes in mental health outcomes and academic skills (marked by cognitive ability and achievement) from childhood (age 11) to adolescence (age 15)? (b) Do parent and peer relationships moderate the association between peer victimization and changes in mental health outcomes and academic skills from childhood (age 11) to adolescence (age 15)? (c) Do these patterns of association differ for LGBQ and non-LGBQ students?
CHAPTER 3: METHODS

Sample

The data for the current study were derived from the National Institute of Child Health and Human Development (NICHD) Study of Early Child Care and Youth Development (SECCYD). The SECCYD was a wide-ranging, longitudinal study of children’s development from birth through adolescence that began in 1991 and continued through 2008. A diverse sample of participants was recruited from ten locations across the United States, resulting in a sample reflecting the demographics of the data collection locations; the entire sample, however, was not representative of the US population. The researchers collected extensive information from families for participating youth as well as from the youth themselves beginning at 1-month and continuing through age 15. Other than the demographic variables (which were collected via maternal reports at one month), we used data collected at grade 5 (about 11 years-old) and grade 10 (about 15 years-old). Data were collected via maternal and paternal reports, direct assessments, and child/adolescent reports (please see NICHD ECCRN, 2001, for information regarding the sample selection and study procedures).

Of the 1,364 original study participants, a total of 41 students identified as LGBQ at age 15. This is slightly earlier than the age at which people typically came out compared to the national average (approximately 16 to 17 years-old) for people born around the same time (Dunlap, 2016). These 41 individuals were carefully matched to a group of participants who did not self-identify as LGBQ (who we refer to as heterosexual in this study) using a set of key demographic characteristics (see below). Thus, the final sample resulted in total sample of 82 students. Matching variables were selected based on prior literature related to demographic and sociocultural variables that predict mental health and academic outcomes, thereby minimizing
differences among our LGBQ and non-LGBQ sample on factors independent of their sexual orientation. Researchers obtained human subjects approval from their university for all assessments at the time of data collection across the various sites. We also have obtained human subjects approval (the project was deemed exempt) for the current study.

In the analytic sample, 68.3% of students identified as White, while 19.5% of students identified as Black, and 12.2% of students identified with another race. This was consistent with the overall sample, but, in general, more students identified as White in our sample than would be expected in the general population. With regards to our other demographic variables, 73.2% of our sample identified as female and 26.8% identified as male. Additionally, 51.2% of the sample had parents who were married, 14.6% of students had parents or caregivers who were partnered, 17.1% of students had a parent who was in a relationship but not living together, and 17.1% students had a single parent. More than half of the sample (53.7%) had a mother with an associate’s degree or higher. Finally, 73.2% of the sample reported an income to needs ratio greater than 1. In other words, the majority of the sample was not living below the poverty line. The sample was matched pairwise specifically on these demographic variables.

With regards to the matching procedures, each subject who identified as LGBQ was individually hand-matched with a subject who identified as heterosexual. More specifically, each student was first matched on gender, then race, then mother’s marital status, mother’s education, and, finally, mother’s income. For example, we took a student identifying as LGBQ who identified as male and searched through the data to find a student who did not identify as LGBQ and also identified as male. Of this group of students, we identified students in the non-LGBQ group who identified with the same race as the student who identified as LGBQ. We continued this process for each variable until only a handful of students in the non-LGBQ group remained.
However, because typically more than one student in the non-LGBQ group had the potential to be matched with the student who identified as LGBQ in these demographic variables, we attempted to ensure students were evenly distributed by geographic region. With this method, there is a potential for sampling bias. When tested, there were no meaningful significant differences between the samples of students identifying as LGBQ and heterosexual; $t_{race} (80) = 0.19, p = 0.84$; $t_{marital\ status} (80) = -0.76, p = 0.45$; $t_{maternal\ edu} (80) = -0.17, p = 0.84$. Additionally, the maternal economic status variable was matched exactly in both samples.

**Measures: Outcome Variables**

Psychosocial factors were measured by the mental health and academic skills variables. Specifically, three observed variables (mother reported internalizing behavior and youth reported depression and loneliness) were used to create a weighted average based on factor loadings from a confirmatory factor analysis representing mental health at ages 11 and 15. Higher scores indicate more mental health problems. Similarly, three observed variables (Applied Problems, Passage Comprehension, and Picture Vocabulary) from the Woodcock-Johnson were used to create a weighted average based on factor loadings from a confirmatory factor analysis representing academic skills (i.e., cognitive abilities and achievement) at ages 11 and 15. Again, higher scores indicate greater academic skills. Each of these variables is described in more detail below.

**Internalizing behavior**

The Child Behavior Checklist 4-18 (CBCL; Achenbach, 1991) was used to gather mother’s reports of children’s internalizing behavior problems at ages 11 and 15. We used a single broadband composite variable comprised of 31 items from the Withdrawn, Somatic, and Anxious/Depressed subscales of the CBCL for the current study. This composite variable reflects
an individual’s social inhibition, anxiety, and depression. Mothers were asked to describe their children’s behavior over the past two months using specific statements in the measure. Items were scored using a three-point scale (0 = not true, 1 = sometimes true, 2 = very true). Some example items include: “lonely”, “cries”, “harms self”, “complains that no one loves him/her”, “worthless”, “sad”, etc. Mothers’ responses were summed using software that allows users to enter and edit data and create raw and standardized scores. Higher scores are indicative of more internalizing behaviors. Extensive psychometric information is available on these measures in the manuals and the many publications on the CBCL and its uses. The CBCL is highly reliable and internally consistent and has excellent concurrent and predictive validity (Achenbach, 1991). In our sample, reliability was adequate at age 11 (α = .71) and age 15 (α = .79). Finally, the CBCL is one of the most widely used screening instruments for tracking the emergence of problem behavior (Achenbach, 1991).

Depressive symptoms

The Children’s Depression Inventory, Short Form (CDI; Kovacs, 1992) was administered at age 11 and 15 to measure youth self-reported depressive symptoms. Ten sets of three statements were provided to the children. They were asked to select the one that best described the way he/she felt over the last two weeks. The CDI assesses dysphoric mood, lack of pleasure, and low self-esteem. Children’s responses were coded on a three-point scale (0 = normative behavior, 1 = a middle statement, and 2 = a depressive symptom) and summed to create a total score (0 to 20), with higher scores indicating higher overall self-reported depressive symptoms. Scores of more than 8 were considered to be “well above average” for girls. Scores above 10 were considered to be “well above average” for boys. Reliability was adequate at age 11 (α = .73) and age 15 (α = .81) in the total sample. In our sample, the reliability was not as strong at
age 11 ($\alpha = .64$) and age 15 ($\alpha = .71$). The CDI short form has good internal consistency (.80) and correlates well with the full measure ($r = .89$).

Loneliness

The *Loneliness and Social Dissatisfaction Questionnaire* (Asher, Hymel, & Renshaw, 1984) was administered at age 11 and 15 to assess loneliness and social dissatisfaction. Youth were asked to indicate how well each of 16 statements described their feelings of social distress using a 5-point scale (1= not at all true to 5 = always true). This scale assessed loneliness, feelings of social adequacy, subjective estimations of peer status, and appraisals of whether important relationship provisions (i.e., warmth, acceptance) were being met. Responses were summed to create a total score (ranging from 16 to 80) with high internal reliability ($\alpha = .91$) at age 11 and 15 in the whole sample, but not as strong in our sample ($\alpha = .67$ at age 11 and $\alpha = .75$ at age 15). Higher scores indicated greater loneliness. The *Loneliness and Social Dissatisfaction Questionnaire* has demonstrated adequate predictive validity (Asher, Hymel, & Renshaw, 1984) and is a widely used measure of social distress in children.

Academic skills

At age 11 and 15, students were administered subscales of the Revised Woodcock-Johnson Psycho-Educational Battery (WJ-R; Woodcock, 1989, 1990). The WJ-R is a wide-ranging and comprehensive set of individually administered tests. These tests are designed to measure a student’s cognitive abilities and academic achievement. The Tests of Cognitive Abilities measures a student’s long-term retrieval, short-term memory, processing speed, auditory and visual processing, comprehension, knowledge, and reasoning. The Tests of Achievement measures a student’s mastery of broad academic areas such as mathematics, written language, reading, and general knowledge. We used scores on the Picture Vocabulary...
subscale from the Tests of Cognitive Abilities and on the Applied Problems and Passage Comprehension subscales from the Tests of Achievement in the current study. The three observed variables (Picture Vocabulary, Applied Problems, and Passage Comprehension) were averaged to reflect academic skills (i.e., cognitive abilities and academic achievement) at age 11 and 15. High scores indicate higher academic skills. Reliability for the WJ-R ranged from $\alpha = .91$ to $\alpha = .96$, while validity ranged from .80 to .87 for the individual tests for the whole sample. In our sample, reliability was adequate at age 11 ($\alpha = .68$) and age 15 ($\alpha = .71$).

Measures: Predictor Variables

**LGBQ identity**

At age 15, students were asked to complete the 43-item the *Romantic Relationship Questionnaire*, which measures dating, love, and romantic relationships among adolescents. Respondents were asked to address the following statement: “I prefer romantic partners who are…” and had the option to choose one of the following: “male,” “female,” or “male and female.” Each response was then compared to the respondent’s own sex; students were given 1 if they responded “male and female” or if their own sex matched the sex of their response. Otherwise, respondents received a 0.

**Peer victimization**

Four items measuring peer victimization were used from the University of Illinois Victimization Scale (Espelage & Holt, 2001). Students were asked how often the following happened to them: “Other students called me names”, “Other students made fun of me”, “Other students picked on me”, and “I got hit and pushed by other students.” Response options ranged from 0 through 3: “Never”, “1 or 2 times”, “3 or 4 times”, or “5 or more times.” Items were summed and higher self-reported scores indicate more victimization. This scale is reported to
have good construct validity as well as internal consistency, with a Cronbach’s alpha coefficient of .85 (Espleage & Holt, 2001). The construct validity of this scale has been supported by exploratory and confirmatory analysis (Espleage & Holt, 2001). Scores have converged with peer nominations of victimization (Espleage & Holt, 2001).

*Parental relationships*

Parents completed the 30-item “Child-Parent Relationship Scale” questionnaire at age 11 and 15, which measures parents’ perceptions of the positive aspects of their relationship with their child, as well as the level of conflict in the relationship, and is said to be an indicator of the child’s attachment to their parent. Parents were asked to respond to statements such as the following: “I share an affectionate, warm relationship with my child”, “My child values his/her relationship with me”, and “My child openly shares his/her feelings and experiences with me.” Responses ranged from 1 (“Definitely does not apply”) to 5 (“Definitely applies”). Scores were summed with higher scores representing a higher quality relationship with ones parent(s). Reliability scores ranged as follows: $\alpha = .65$ for mothers and $\alpha = .80$ for fathers at grade 3, $\alpha = .76$ for mothers, and $\alpha = .82$ for fathers. Moderate correlations exist between some Child-Parent Relationship Scale codes and behavioral ratings (Pianta, 1992).

Children completed the 34-item “Getting Along with My Parent” questionnaire at age 11 and age 15, which measured parental warmth, support, and hostility. Seventeen items were about the primary adult in the household (parent #1) and another 17 items were about another adult in the household (if present, parent #2). Children were asked to respond to the prompt “How often does your mother [father] . . .” Sample items include, “Help you do something that is important to you?”, “Criticize you or your ideas”, “Act supportive and understanding toward you?”, and “Insult or swear at you?” Responses ranged from 1 (“Never”) to 4 (“Always”) on a four-point
scale. Scores were summed with a higher score indicating a better relationship with one’s parent. Conger et al. (2002) report internal consistency of .79 for the hostility scale and .78 for the warmth scale.

**Peer relationships**

The 29-item “My Best Friend & Me” questionnaire asks students to consider the quality of their friendships with their best friends. Students completed this questionnaire at age 11 and 15. This questionnaire is designed to assess the perceptions of a student’s friendship with their friends, regardless of the frequency of contact with that friend. Students chose the response from 1 (“Not at all true”) to 7 (“Really true”) to measure the qualitative aspects of their friendship. Sample items include, “If other kids were talking behind my back, this friend would always stick up for me”, “This friend and I are always telling each other about our problems”, and “This friend doesn’t’ listen to me.” Average scores were calculated, with higher scores indicating higher friendship quality with the friend they list.

**Demographics**

Maternal reports of children’s demographic factors were collected when children were one month of age. The demographic variables we considered in the current study are as follows: sex (1 = male), race (1 = ethnic minority), and mothers’ years of education. Maternal reports of family income were also collected when the children were 15 years old. An income-to-needs ratio was computed at one month of age (US Bureau of the Census, 2004). This ratio was then dichotomized such that families were given a score of 1 if their income-to-needs ratio less than 1.85 (e.g., “working poor”), while all other families were given a score of 0. About 70% of our sample obtained a score greater than one (see Table 1). Additionally, whether or not a single mother raised their child was assessed via maternal reports. This variable was dichotomized (1 =
single mother; 0 = otherwise). Each of the above variables was used to match students who identify as LGBQ with students who do not in order to limit variability in demographic dimensions. Each of the 41 students identifying as LGBQ were matched pairwise in the following order: sex, race, mother’s education, family income, and parental status (i.e., single or partnered).

**Analytic Plan**

We began by examining means, standard deviations, and intercorrelations among the primary study variables. Next, linear regression models addressing each of our research questions were estimated in SPSS Version 24.0. The effects of child (e.g., sex, ethnicity) and family (e.g., family income, single-parent household) demographic factors on the outcome variables were initially included in the analysis. However, because results suggested that race was the only demographic variable that predicted any significant variability in the models, we removed all other demographic variables. This decision can be justified in numerous ways. Most importantly, this decision was rooted in the technique used to match subjects. Students were matched pairwise on each demographic variable and thus, we would not expect these factors to differ significantly between students identifying as LGBQ and those students identifying as heterosexual. Furthermore, given the small sample size and limited degrees of freedom, we felt removing the non-significant demographic variables was justified. However, because race (1=ethnic minority) was consistently significant in our models, we retained this variable in all of our controlled models. Thus, the final models only included child’s race in addition to the outcome and independent variables of interest in this study.

To address our first research question about whether students who identified as LGBQ report poorer mental health or academic skills (i.e., cognitive ability and achievement) than their
peers who identified as heterosexual at age 15, we used linear regression. More specifically, we regressed our composite variable representing mental health or academic skills (or our observed indicator representing peer victimization) on the dichotomous variable indicating whether or not the participant identified as LGBQ at age 15 and on race. Thus, the parameter estimates associated with LGBQ told us about the relationship between LGBQ identity and our mental health and academic skills (i.e., cognitive ability and achievement), controlling for participant race. Note, however, that because mental health from age 11 to 15 was highly stable, as evidenced by the significant correlation over time (r = .45) and the fact that the change in mental health from age 11 to age 15 was not significant, we opted to remove age 11 mental health and academic skills from all subsequent models. Importantly, upon further consideration, we realized that we would not expect LGBQ identity to predict changes in psychosocial factors across this period, especially academic skills marked, in part by cognitive abilities, as most youth will not have yet identified as LGBQ by age 11. Furthermore, we would expect cognitive abilities, in particular, to be relatively stable over time. Thus, a question about whether this identity predicts changes in any outcome from middle childhood through adolescence may not make as much developmental sense as it would during a later time period. So, the remainder of the research questions will not be interpreted as “changes” over time. In the models below, “MH” represents our mental health variable and “AS” represents our academic skills variable (i.e., cognitive abilities and achievement).

The models addressing RQ1 can be written as follows:

Model 1a: \( MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + e_{ij} \)

Model 1b: \( AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + e_{ij} \)

To address our second research question concerning whether peer victimization in middle
childhood is associated with mental health and academic skills in adolescence, we again used linear regression. Recall that given the relative stability of our outcomes from age 11 to 15 (as well as the developmental timing of when youth identify as LGBQ), we are no longer asking about whether our predictors are associated with changes in our outcomes. Models were again estimated separately for mental health and academic skills, but our dichotomous indicator of LGBQ was replaced with our peer victimization variable. Thus, we are interpreting the effect of peer victimization on mental health and academic skills at age 15. The models can be represented as follows:

Model 2a: \[ MH = \beta_0 + \beta_1(Race)_1 + \beta_2(Peer\ Victimization)_2 + e_{ij} \]

Model 2b: \[ AS = \beta_0 + \beta_1(Race)_1 + \beta_2(Peer\ Victimization)_2 + e_{ij} \]

To address our third research question regarding the potential moderating role of LGBQ identity on the association between peer victimization and mental health and academic skills, we again fit a series of linear regression models that included a set of interaction terms. Again, we are no longer assessing change over time. We began by regressing mental health (or academic skills) on LGBQ identity and peer victimization variables, as well as race, our remaining control variable. We then added to each model the interaction between LGBQ and peer victimization, giving us the following models:

Model 3a: \[ MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer\ Victimization)_3 + e_{ij} \]

Model 3b: \[ AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer\ Victimization)_3 + e_{ij} \]

Model 3c: \[ MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer\ Victimization)_3 \\
+ \beta_4(LGBQ \ast Peer\ Victimization)_4 + e_{ij} \]

Model 3d: \[ AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer\ Victimization)_3 \\
+ \beta_4(LGBQ \ast Peer\ Victimization)_4 + e_{ij} \]
A statistically significant regression coefficient for the interaction term would suggest that the effect of peer victimization on mental health (or academic skills) differs by LGBQ status (and vice versa).

Finally, our fourth research question included a number of components. To address the first component of the question concerning whether the quality of parent or peer relationship between age 11 and 15 are associated with mental health and academic skills, we regressed mental health (and academic skills) on LGBQ and parental relationship quality (or friendship quality) at age 15, controlling for child race. More specifically, we fit the following models:

Model 4a: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Parental \ Relationship)_3 + e_{ij}$

Model 4b: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Parental \ Relationship)_3 + e_{ij}$

Model 4c: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Friendship \ Quality)_3 + e_{ij}$

Model 4d: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Friendship \ Quality)_3 + e_{ij}$

We then added the age 11 peer victimization variable to our models along with the interaction between peer victimization and parental (or friendship) quality to assess the potential moderating role of parents and peers in the relationship between peer victimization and mental health (or academic skills) at age 15. We listed the structure for the next set of models here (please see Appendix A for the additional models).

Model 4e: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \ Victimization)_3 + \beta_4(Parental \ Relationship)_4 + e_{ij}$

Finally, to address the potential three-way interaction between LGBQ identity, peer victimization and parental relationship or friendship quality. However, we first tested the two-way interactions (i.e., parental relationship and LGBQ identity, see appendix A). We then generated the following models:
Model 4q: \[ MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer\Victimization)_3 \\
+ \beta_4(Parental\Relationship)_4 + \beta_5(LGBQ*Parental\Relationship)_5 \\
+ \beta_6(Parental\Relationship*Peer\Victimization)_6 \\
+ \beta_7(LGBQ*Peer\Victimization)_7 \\
+ \beta_8(LGBQ*Parental\Relationship*Peer\Victimization)_8 + e_{ij} \]

Model 4r: \[ AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer\Victimization)_3 \\
+ \beta_4(Parental\Relationship)_4 + \beta_5(LGBQ*Parental\Relationship)_5 \\
+ \beta_6(Parental\Relationship*Peer\Victimization)_6 \\
+ \beta_7(LGBQ*Peer\Victimization)_7 \\
+ \beta_8(LGBQ*Parental\Relationship*Peer\Victimization)_8 + e_{ij} \]

The final three-way interactions for the friendship quality variable can be found in Appendix A.

Although there was minimal missing data in the sample (about 3%), we chose to avoid list wise deletion of students who did not provide data for all items or all variables due to our small sample size. Thus, to ensure all students were accounted for in the model, we used multiple imputation (MI, \( k = 5 \)) using the SPSS 24.0 multiple imputation algorithm. Given the low percentage of missing data and using full conditional specification (FCS), the MI algorithm is appropriate for handling missing data and provides an unbiased estimate (van Buuren, 2007). Thus, the entire sample of students (\( n = 82 \)) was included in the results.
CHAPTER 4: RESULTS

The means, standard deviations, and percentages for all of the outcome, predictor, and control variables are presented in Table 1. As expected, LGBQ students reported significantly higher mental health problems at both age 11 (M = 16.38, SD = 4.22) and at age 15 (M = 20.02, SD = 5.74) than students who identified as heterosexual at age 11 (M = 14.24, SD = 3.65) and age 15 (M = 17.51, SD = 4.11); \( t_{11}(80) = 2.46, p = 0.02; \) \( t_{15}(80) = 2.28, p = 0.03. \) Students who identified as heterosexual reported somewhat higher academic skills scores at age 11 (M = 100.3, SD = 10.74) and at age 15 (M = 96.96, SD = 16.55) than students who identified as LGBQ at age 11 (M = 99.87, SD = 17.05) and age 15 (M = 96.74, SD = 16.55), but the differences at either time point were not significant; \( t_{11}(80) = -0.14, p = 0.89; \) \( t_{15}(80) = -0.07, p = 0.94. \) All students reported relatively low levels of peer victimization (M_5 = 0.94, SD = 0.80; M_15 = 0.67, SD = 0.85), with students who identified as LGBQ (M = 0.98, SD = 0.81) reporting slightly higher levels of peer victimization that their peers who identified as heterosexual (M = 0.90, SD = 0.80) at age 11, though the difference was not significant; \( t_{11}(80) = 0.48, p = 0.63. \) Unexpectedly, students who identified as heterosexual (M = 0.70, SD = 0.87) reported higher levels of peer victimization at age 15 than students who identified as LGBQ (M = 0.64, SD = 0.83), though again not significant; \( t_{15}(80) = -0.33, p = 0.75. \)

With regards to our parent and peer variables, initial descriptive results were as expected. First, at age 11, students who identified as heterosexual (M = 64.20, SD = 7.27) reported significantly higher quality relationships with their parents than students who identified as LGBQ (M = 59.91; SD = 7.49); \( t_{11}(80) = -2.63, p = 0.01. \) At age 15, once again students who identified as heterosexual (M = 59.60; SD = 9.05) reported significantly higher quality relationships with their parents than students who identified as LGBQ (M = 54.33; SD = 9.59);
$t_{15}(80) = -2.74, p = 0.01$. Next, at age 11, students who identified as heterosexual ($M = 4.19, SD = 0.59$) reported non-significantly higher mean levels of peer relationship quality than students who identified as LGBQ ($M = 4.16; SD = 0.55$); $t_{11}(80) = -0.27, p = 0.79$. At age 15, students who identified as heterosexual ($M = 4.34, SD = 0.42$) reported somewhat higher quality relationships with their peers than students who identified as LGBQ ($M = 4.24; SD = 0.50$); $t_{15}(80) = -0.99, p = 0.33$.

Before conducting regression analyses to test our hypothesis, we first examined the associations among variables for the sample of students who identified as LGBQ (Table 3) and the sample of students who identified as heterosexual (Table 4). As shown in Tables 3 and 4, for students identifying as LGBQ and students identifying as heterosexual, reporting higher levels of peer victimization at age 11 was associated with higher levels of peer victimization at age 15, mental health problems at age 11, and mental health problems at age 15, as well as poorer friendship quality at age 11, parental relationship at age 11, and parental relationship at age 15. For both samples, peer victimization at age 15 was associated with poorer mental health outcomes at age 15 as well. Additionally, positive correlations between friendship quality at age 11 and at age 15 were observed in both groups. Similarly, higher quality friendships were associated with fewer mental health problems. In both samples, parental relationship at age 11 was positively associated with parental relationship at age 15 and negatively associated with mental health problems at age 11, such that stronger parental relationships were associated with fewer mental health problems. The same trend was observed for age 15 parental relationship and mental health. Finally, in both samples, mental health problems at age 11 were positively associated with mental health problems at age 15 and negatively associated with academic skills at age 11 and 15, such that students who reported higher levels of mental health problems also
reported worse academic skills scores. The same patterns of findings were found for mental health and academic skills at age 15.

**Regression Models Predicting Mental Health and Academic Skills**

For our first research question, contrary to our hypothesis we did not find that students who identify as LGBQ report significantly greater changes in mental health outcomes from middle childhood to adolescence. As such, we are no longer asking about changes in mental health or academic skills over time. To investigate the significant differences in mental health scores at age 15 for youth who identify as LGBQ and those who do not, a simple linear regression was estimated. We found that students identifying as LGBQ reported significantly more mental health problems than their peers at age 15 ($\beta = 2.53$, SE = 1.11, $p < .05$; Table 6, Model 1). With an $R^2$ of 0.07, LGBQ identity and race account for 7% of the variance in mental health at age 15. LGBQ identity was associated with a 2.53 unit difference in mental health score, such that students identifying as LGBQ reported higher mental health scores (i.e., problems) at age 15 than did their non-LGBQ peers. Contrary to expectation, we did not find that LGBQ identity significantly predicted academic skills at age 15 ($\beta = 0.10$, SE = 2.89, $p > .05$; Table 7, Model 1). As a follow-up analysis to determine whether this finding was driven by our race variable, we re-fit our regression model without race and found that LGBQ identity remained a non-significant predictor of academic skills ($\beta = -0.21$, SE = 3.08, $p > .05$).

**Regression Models for Peer Victimization, Mental Health, and Academic Skills**

For our second research question, we inquired about the association between peer victimization and mental health or academic skills for all students (regardless of LGBQ identity). Again, we will report the outcome variables at age 15 given that we did not find changes over time in our main effects models in the first research question. A linear regression was estimated...
to predict mental health scores at age 15 from students’ peer victimization scores at age 11 and race. Students who reported more peer victimization also reported significantly more mental health problems ($\beta = 1.52$, $SE = 0.70$, $p < .05$; Table 6, Model 2) than their peers who reported lower levels of peer victimization. Our model explained approximately 6% of the variation in mental health ($R^2 = 0.06$). Every additional unit of peer victimization reported was associated with a 1.52 unit difference in mental health. In other words, students who reported higher levels of peer victimization also reported higher mental health problems at age 15. These associations were not significantly replicated for academic skills ($\beta = 0.51$, $SE = 1.81$, $p > .05$; Table 7, Model 2).

For our third research question, we tested whether LGBQ identity moderates the association between peer victimization and mental health or academic skills. We began by estimating a main effects linear regression in which we predicted mental health (or academic skills) scores at age 15 from students’ peer victimization scores, LGBQ identity, and race. Controlling for race and peer victimization, LGBQ identity was significantly associated with mental health problems (see Table 6, Model 1), but not for academic skills at age 15 (see Table 7, Model 1). Similarly, controlling for LGBQ identity and race, peer victimization was significantly associated with mental health problems (see Table 6, Model 2), but not academic skills (see Table 7, Model 2). When we put the above variables and their interaction term into the model (Model 3), our model explained approximately 12% of the variation in mental health and approximately 13% of the variation in academic skills. We then added our interaction term (peer victimization*LGBQ) to the model and found no evidence to suggest that the effects of peer victimization on mental health ($\beta = 1.02$, $SE = 1.41$, $p > .05$; Table 6, Model 3) or academic skills ($\beta = -0.44$, $SE = 3.69$, $p > .05$; Table 7, Model 3) were moderated by LGBQ identity.
In the first part of our final research question, we predicted that parental and peer relationships would be associated with mental health and academic skills at age 15. To test this hypothesis, we fit a simple linear regression to predict mental health (or academic skills) scores at age 15 from the quality of parental relationships at age 11. We found that students who reported higher quality parental relationships than their peers also demonstrated significantly fewer mental health problems ($\beta = -0.15$, $SE = 0.08$, $p < .05$; Table 6, Model 4a), with an $R^2$ of 0.10. Reporting higher quality parental relationships was associated with a -0.15-unit change in mental health scores, such that students who reported higher quality parental relationships also reported lower mental health scores (i.e., problems) at age 15. We did not find a student’s LGBQ identity to have a moderating effect as predicted. That is, higher quality parental relationships did not appear to matter more for students identifying as LGBQ than students identifying as heterosexual. Contrary to expectation, there was no main effect or moderating effect of parental relationship quality on academic skills. Specifically, students who reported higher quality parental relationships did not report significantly different academic skills scores than their peers at age 15 ($\beta = 0.28$, $SE = 0.20$, $p > .05$; Table 7, Model 4a).

Next, a simple linear regression was calculated to predict mental health (or academic skills) scores at age 15 from friendship quality. We found that students who reported higher quality friendships than their peers demonstrated slightly fewer mental health problems ($\beta = 0.07$, $SE = 1.04$, $p > .05$; Table 6, Model 4b), but this relationship was not significant. We did, however, find that a student’s LGBQ identity had a moderating effect as predicted. Though it is not reported in either table, we did test the interaction LGBQ identity and friendship quality separately. For students who identified as LGBQ and reported higher quality friendships with
their peers, this was associated with a -0.19-unit difference in mental health scores (see Figure 1). That is, students who identified as LGBQ and reported higher quality friendships at age 11 than their peers reported significantly less mental health problems at age 15. We did not find this same pattern of findings for academic skills. That is, there was no main effect of friendship quality on academic skills ($\beta = -1.92$, $SE = 2.71$, $p > .05$; Table 7, Model 4b), nor was LGBQ identity a moderator. Because we did not find a significant interaction between students LGBQ identity and peer victimization, we did not test the whether or not LGBQ identity moderates the relationship between these types of relationships and mental health and academic skills, as proposed in research question 3c.

For the last part of our final research question, we predicted that parental and peer relationships would moderate the relationship between peer victimization and mental health or academic skills. We found that neither interaction was significant. Students who were victimized more than their peers and reported higher quality parental relationships demonstrated more mental health problems than their peers ($\beta = 0.02$, $SE = 0.10$, $p > .05$; Table 6, Model 4c). Additionally, we found that students who were victimized more than their peers and reported better friendship quality with their peers demonstrated fewer mental health problems than their peers ($\beta = -0.82$, $SE = 0.80$, $p > .05$; Model 4d). Similarly, students who were victimized more than their peers and reported higher quality parental relationships reported higher academic skills scores than their peers ($\beta = 0.11$, $SE = 0.25$, $p > .05$; Table 7, Model 4c). Finally, students who were victimized more than their peers and reported better friendship quality with their peers also reported higher academic skills scores ($\beta = 1.83$, $SE = 2.16$, $p > .05$; Table 7, Model 4d). Again, these interactions were not significant, so it was not necessary to test the three way interactions with LGBQ identity.
CHAPTER 5: DISCUSSION

The current study adds to the extant literature on students who identify as LGBQ by examining not just their mental health outcomes but also their academic outcomes, and adds a set of developmental antecedents to these outcomes. Although we were not able to examine whether LGBQ identity predicted changes in our mental health or academic skills as we had hoped, we were able to explore early risk and protective factors (i.e., peer victimization and parental and peer relationships) associated with these outcomes across middle childhood and adolescence. Additionally, the findings suggest an area for future research.

The results of our study suggest that that students who identify as LGBQ report comparatively worse mental health outcomes than their peers who identify as heterosexual in later adolescence. These findings are consistent with those found in previous studies (Espelage et al., 2008; Kosciw et al., 2010; Poteat et al., 2011; Robinson & Espelage, 2011). Although research suggests that academic outcomes in later adolescence may differ between students identifying as LGBQ and their peers who do not (Birkett, Russell, & Corliss, 2014; Pearson, Muller, & Wilkonson, 2007; Robinson & Espelage, 2011), our study did not support this association with any significant findings. One potential explanation for this is that our academic skills variable reflects cognitive abilities and academic achievement. We would not expect to find significant differences in cognitive abilities between the samples. A future study may consider different indicators of academic achievement, such as grades. Nevertheless, the pattern of findings was in the expected direction in most cases, meaning that limitations in the sample size and/or other factors discussed below may account for our contradictory findings. We will discuss these potential explanations as well as how future studies may be better able to examine
the relationship between LGBQ identity and academic outcomes in particular over time and highlight the need for such research.

**Understanding Longitudinal Risk and Protective Factors for Mental Health and Academic Skills**

Though there is a body of literature (discussed previously) examining mental health outcomes, peer victimization, and a student’s LGBQ identity, less research exists for students’ academic outcomes. However, there is literature to suggest that peer victimization (Rueger & Jenkins, 2014) and LGBQ identity (Pearson, Muller, & Wilkinson, 2007) are independently related to poorer academic outcomes. In our study, though the results are not significant and we could not truly measure change over time, we can offer a trend that supports our hypothesis. Students who were victimized more than their peers and identify as LGBQ reported scoring comparatively worse in academic skills (as measured by cognitive abilities and academic achievement) at age 15. Because previous studies report that either peer victimization or identifying as LGBQ is related to comparatively worse academic outcome scores, we predicted that peer victimization would exacerbate the negative association between LGBQ identity and mental health and academic skills. Though the finding is not significant, it is a direction for future studies to pursue with different measures of academic achievement, as this seems to be a gap in the literature. Specifically, with a large enough sample size, future studies may wish to explicitly study factors that exacerbate the relationship, but also other factors that serve a protective role.

There is a need to examine the longitudinal antecedents (i.e., parental and peer relationships) on academic outcomes specifically, especially for students who identify as LGBQ (Russell, Seif, & Truong, 2001; Pearson, Muller, & Wilkinson, 2007). That is, students who
identify as LGBQ come out to different people (family, friends, peers, teachers, etc.) at different points in their life, and each time can be associated to their academic outcomes (Watson, Wheldon, & Russell, 2015). Thus, as we attempted to understand that relationship further in this study, it is possible that having strong pre-existing relationships with one’s family and peers can buffer against the negative impact that the decision to come out to one’s family or peers can have. Because students who identify as LGBQ are more likely to experience victimization, marginalization, isolation, and/or rejection as a result of coming out or simply experience minority stress in their everyday life, the antecedents may have a particularly important buffering effect. Unfortunately, there were a number of limitations that prevented us from achieving this goal (discussed below), but we believe that a future study that can address these imitations can provide a more nuanced perspective. For instance, a larger sample size in a study where our predictor variables and outcomes were measured at multiple time points may help. Furthermore, a future study may wish inquire about a student’s sexual orientation after the age of 15, which is more developmentally appropriate for when students typically come out in multiple social contexts (Dunlap, 2016).

**LGBQ Identity, Mental Health, and Academic Achievement**

As mentioned above, research on minority stress has generally shown that students who identify as LGBQ are exposed to more stress than their peers who identify as heterosexual (Meyer et al., 2008). As a result, students who identify as LGBQ experience adverse mental health and academic consequences (Herek & Garnets, 2007; Lick, Durso, & Johnson, 2013; Robinson and Espelage, 2011). Contrary to our hypotheses, keeping in mind the effect of minority stress in generating our hypotheses, LGBQ identity did not significantly predict changes in mental health or academic skills in our sample. We chose not to measure change for
the remainder of the research questions given this finding.

With regard to LGBQ identity, we may not have found longitudinal effects in our predictor variables, as predicted, possibly because of students’ stage of development and awareness of their sexual orientation. It is possible that the students identifying as LGBQ in this study had not become aware of or reported their sexual orientation as early as 11 years old. If so, predicting the developmental implications of their LGBQ identity in various relationships may not be the best approach. That is, the results of the study may better be interpreted with the understanding that peer victimization and minority stress are based on a student’s perceived sexual orientation identity. A future study may wish to consider the age and to whom a student chooses to disclose their sexual orientation.

Still, a student’s disclosure of their sexual orientation has implications on academic outcomes. Using a sample of 1,031 middle and high school students, Watson, Wheldon, and Russell (2015) found that a student’s level of “outness” impacted their academic achievement and harassment. Specifically, youth who are not out at all or not out to everyone reported the highest grades and lowest levels of harassment. Youth in the study who were out to their families, but not their peers reported the worst academic outcomes and the highest rates of harassment. For the purposes of our study, theoretically this would mean that we would not anticipate seeing significant differences in our outcomes in childhood (i.e., age 11) that would be explained by minority stress. That is, we would not expect students who do not yet identify as LGBQ (at age 11) to experience minority stress and cannot, of course, encounter peer victimization based on their sexual orientation, unless it is a result of perceived identity status. This was indeed a limitation to the study, as sexual orientation was only assessed at age 15, meaning we could not accurately test the longitudinal component to our questions involving a
student’s sexual orientation.

*Peer victimization as a risk factor*

Peer victimization partly accounted for the differences in mental health scores for all students at age 15. This is consistent with a well-established body of previous research, both in childhood and later adolescence (Espelage & Holt, 2001; Juvonen, Graham, & Schuster, 2003; Poteat & Espelage, 2007). This underscores the continued importance of addressing bullying and victimization at all levels of school regardless of any individually held identities. Contrary to our hypotheses, students who identified as LGBQ did not report significantly higher levels of peer victimization than their peers at both time points. In fact, in our sample, students who identified as LGBQ reported less (though not significant) peer victimization at age 15. This finding was inconsistent with previous research, which strongly supports that students identifying as LGBQ disproportionately report higher levels of peer victimization than their peers (Bontempo & D’Augelli, 2002; Robinson & Espelage, 2012). These higher levels of peer victimization are typically associated with higher levels of poor mental health outcomes, often explained via minority stress theory. We will further discuss the limitations, but this finding may in part be due to the small sample size or, again, “outness” to peers.

Although we would have expected a similar pattern of findings with regards to academic skills, given the effects of peer victimization on academic achievement (Watson, Wheldon, & Russell, 2015), there were no significant differences in academic skill (i.e., cognitive abilities and academic achievement) scores across the study. However, this should not deter from the fact that this is a potential future area of study. Though there is a limited body of research, studies do suggest that academic outcomes may differ for students who identify as LGBQ. For example, Pearson, Muller, & Wilkinson (2007) found that students who identify as LGBQ are more likely
to report school-related problems, such as feeling less socially integrated, having difficulty paying attention in class, and skipping classes more often, leading to impaired academic achievement. Similarly, it has been well established that peer victimization is negatively related to academic outcomes for all students, and may be even more impactful for students identifying as or perceived to identify as LGBQ (Birkett, Russell, & Corliss, 2014). Though the current study failed to add to this body of research, we believe it is a future area that can be explored with a large enough sample. It would also be essential to assess “outness” in the sample in a future study.

Next, we hypothesized that, assuming there were significant differences in our outcomes associated with a student’s sexual orientation, this identity would moderate the impact of peer victimization on the outcomes. Though we did not find this to be significant, we did identify a trend in the data that would suggest that a moderating effect could exist in a larger sample. We found that the interaction between a student’s LGBQ identity and peer victimization did suggest that students who identify as LGBQ and are victimized at higher rates than their peers and they report higher levels of mental health problems and worse academic skills at age 15. Again, the effect was not significant, so this can only be interpreted as a potential trend to be explored in a future study. To this point, multiple studies have shown that students who identify as LGBQ and are victimized at higher rates than their peers report worse mental health outcomes (Bontempo & D’Augelli, 2002; Robison & Espelage, 2011; Robinson & Espelage, 2012). However, there seems to be lacking a longitudinal focus to this body of research.

Parental and peer relationships as protective factors

As addressed in previous research, other variables that can mitigate the negative effects of peer victimization on students’ mental health and academic achievement is their relationship

46
with parents and peers (Espelage et al., 2008; Poteat, 2008; Watson, Barnett, & Russell, 2016). Though our findings did not find a significant effect related to academic skills, we did find that the relationship with one’s parents was related to our mental health outcomes. Specifically, students who reported higher quality relationships with their parents reported fewer mental health problems at age 15. Because we observe a significant difference in reported parental relationship quality, such that students identifying as LGBQ reported significantly worse relationships with their parents at both age 11 and age 15, this finding may be particularly meaningful in that it provides a potential area for intervention beyond the school. In one study, Watson, Barnett, and Russell (2016) examined the impact of parental relationships on student academic achievement with a sample of 12,064 middle and high school students. Parental support was positively related to GPA and school belonging, and negatively related to school troubles for the entire sample. For the sample of students identifying as LGBQ, the authors found that low levels of parental support were associated with poor school belonging. This suggests that parental support seems to be related to a student’s academic outcomes. Though we tested the interactive effect of parental relationship and LGBQ identity and did not find a significant interaction, it is worth noting that the trend showed that students who identified as LGBQ and reported higher quality parental relationships reported fewer mental health problems and higher academic achievement at age 15. Thus, parental acceptance of a student’s LGBQ identity may have implications on their mental health and academic success.

Interestingly, we did not find the same pattern of results for peer relationships. This finding is intriguing given it is contradictory to a well established body of literature suggesting that positive peer relationships are a protective factor against poor mental health (Narr et al., 2017; Shin, Cho, Shin, & Park, 2016) and academic outcomes (Knifsend, 2018). However, our
finding is not significant, meaning we cannot add to the existing body of literature. One possibility for why we did not find that positive peer relationships are negatively related to mental health problems at age 15 may be because students have not identified their sexual orientation at age 11 and, thus, are not at risk for peer victimization based on their LGBQ identity. That is not to suggest that students who come out to their peers at an earlier age are always at risk for worse mental health outcomes. Rather, it is to suggest that higher quality peer relationships can be a protective factor for LGBQ students who experience peer victimization (Healy & Sanders, 2018). Our findings should not deter from the fact that peer relationships are important for students who identify as LGBQ and are victimized more than their peers. We will explore what schools can do to build peer networks and support students identifying as LGBQ.

As a secondary analysis not explicit in our research questions, we did explore a possible interaction effect of LGBQ identity and peer relationships on our outcomes. Interestingly, we did find that students who identified as LGBQ and reported higher quality friendships did report fewer mental health problems at age 15. Thus, friendships may play an important protective role. Previous research has explored the protective role of supportive friendships during adolescence. D’Augelli (2003), using a sample of lesbian and bisexual girls, found that girls in the sample reported better mental health outcomes if they did not lose their friendships upon disclosing their sexual orientation, assuming they had parental support. In a study including a sample of bisexual college-aged students, Sheets and Mohr (2009) found that measures of adjustment (e.g., depression and life satisfaction) were associated with support from friends and family. Interestingly, the sexual orientation of one’s friends may also matter. For example, Doty and colleagues (2010) tested this idea by assessing sexuality-related social support from different groups in an LGBQ person’s life, such as their family, sexual minority friends, and heterosexual
friends. The authors found that when there was specific support from other friends who identified as LGBQ, the psychosocial outcomes were better (e.g., lower levels of emotional distress).

Considering minority stress theory, it is not surprising that sexual minority friends provided the most sexuality-related support (i.e., a specific support), while family and heterosexual friends were more likely to provide a more general form of support. As expected, experiencing all forms of sexual orientation-related support at higher levels was associated with lower levels of emotional distress and sexual orientation-related stress (Doty et al., 2010). Considering the role of specific and general support above, it seems that lasting close friendships may contribute to improved mental health and academic outcomes. As explored below, fostering friendships may be an especially important task for schools, and, given the fact sexual orientation-related support is associated with positive psychosocial outcomes, specific spaces where this form of support is encouraged may be a strong protective factor.

Finally, because we found that peer victimization is significantly related to mental health outcomes at age 15, we were interested in whether parental or peer relationships could moderate this relationship. As stated, we did not find a significant relationship with peer relationships and mental health outcomes, but we did with parental relationships and mental health outcomes. When we tested the interaction effect of parental relationships and peer victimization, we did not find a significant effect. Still, given the limitations to this study, it may be worth examining in a future study. Future research may support our original hypotheses, but we could not lend support from our results. We did not test whether or not the patterns differed for students who identified as LGBQ versus their peers (e.g., a three-way interaction) since the previous models did not lend support for this effect.
What Can Be Done?

As suggested by this study and discussed elsewhere (e.g., Espelage et al., 2008; Poteat et al., 2009; Poteat et al., 2011; Robinson & Espelage, 2011), students who identify as LGBQ can experience psychological health and academic success throughout their adolescence just as their peers who identify as heterosexual. In the current study, we found that victimization partly accounts for differences between students identifying as LGBQ and their peers in the mental health outcomes. This suggests that peer victimization is a clear area of intervention that schools can work to mitigate. Most importantly in this intervention is creating supportive school environments that are inclusive and free from homophobic victimization (Chesir-Teran & Hughes, 2009; Hong & Espelage, 2012; Kosciw et al., 2014). Similarly, households (specifically, caregivers) that are accepting of a student’s identity and provide warmth and support are related to psychological health. So, just as schools can create an inclusive and supportive environment free from victimization, the same support should be extended at home. With this overarching goal in mind, school faculty and staff, peers, and parents must work together to create and maintain supportive climates for all students, but especially marginalized student populations such as students identifying as LGBQ. The following will provide specific suggestions for this endeavor.

The first primary intervention can be related to how educators, families, peers, and the community act and speak towards students who identify as LGBQ. This means examining and changing attitudes and behaviors that marginalize those who identify as LGBQ, as this contributes to the environment in which students develop. In a nation-wide survey of 7,261 high school students, Kosciw and colleagues (2010) found that nearly two-thirds of the sample reported that they heard teachers or other school staff make homophobic remarks. Unfortunately,
these same students reported that they did not believe that teachers and other school staff would intervene in situations in which they hear other staff make homophobic remarks. This is not to be taken as an indictment of school staff; rather, it can be an opportunity to provide training and support for staff concerning how to appropriately address homophobic teasing when they observe it and create a safe environment for their students. This is particularly important because students who identify as LGBQ who are in school environments with a supportive faculty and staff also reported feeling safer in their schools in the same study. Similarly, these same students reported a strong feeling of school belonging, higher attendance records, and greater GPAs. Thus, though supportive school environments with informed and efficacious staff members positively relate to students’ mental health, it also supports their academic success.

Next, the current findings continue to support the need for continued bullying prevention programs. Again, peer victimization was related to mental health outcomes and, although we did not find it to be significantly related to academic skills, victimized students tend to report lower academic achievement than their peers (Watson, Barnett, & Russell, 2016). To this end, schools may consider the impact of social emotional learning (SEL) interventions. SEL programs can help teach students strategies that target impulse control and reducing aggressive behaviors through identifying and managing their emotional responses to various situations (Espelage, 2012). In conjunction with these programs, it is also important to add lessons to the curriculum about topics such as sexual orientation, homophobia, and other identity-related issues. Implementing these lessons in SEL curriculum may indeed help develop environments that feel safer to students identifying as LGBQ and lead to positive psychosocial outcomes (Cianciotto & Cahill, 2012; Espelage et al., 2008; Robinson & Espelage, 2011; Russell et al., 2012).

In addition, creating spaces for both school staff and students to practice allyship and
giving students identifying as LGBQ a place to connect with one another can be another option for schools to consider. Gay–Straight Alliances (GSAs) offer such a space in schools. Several studies provide evidence to suggest that GSAs can create a school environment in which students feel more connected to their schools. Specifically, when students identifying as LGBQ feel more connected to their school, which is in part to having affirming spaces, it can moderate (specifically, protect) against negative psychological and academic outcomes (Griffin, Lee, Waugh, & Beyer, 2004; Heck, Flentje, & Cochran, 2011). Similarly, it can offer a space for students to form friendships with other students identifying as LGBQ and allies. Considering Doty and colleague’s (2010) research, connecting with other students who identify as LGBQ may be a particularly beneficial form of specific support.

With regard to the role of peers, previous research has shown that the school environment matters. One recommendation for educators is to create an environment in which all students feel represented in the curriculum. That is, extending beyond sexual orientation, peers are more likely to form friendships with students different than themselves with regards to some social identity if they are positively represented in the school curriculum. In the same study mentioned above, Kosciw and colleagues (2010) note that students are almost twice as likely to report that their classmates were “somewhat” or “very” accepting of students identifying as LGBQ if their school practiced a more inclusive curriculum with LGBQ representation. This is an important consideration even though our study did not significantly find a protective role of friendship quality alone. But, given the interaction of friendship quality and LBGQ identity, this suggestion may be especially interesting to consider. As noted earlier, the age in which students choose to come out may, in part, be related to how accepted they will feel by their peers. In environments where all students are accepting and promote tolerance, the negative effects of homophobic
teasing on mental health and academic outcomes will likely be mitigated. Again, this is an area for future research and a potential intervention.
CHAPTER 6: LIMITATIONS AND FUTURE DIRECTIONS

Limitations of the Study

No study is without limitations. First and foremost, the small sample size and degrees of freedom in each model likely impacted our ability to detect significant associations. This is particularly true for questions of moderation. Because the predictor variables were specifically matched pairwise a priori to limit any differences based on demographics in the sample, we removed all non-significant predictor variables from the model to free up degrees of freedom in the models. Nevertheless, because there were only 82 students in the entire sample (41 who identified as LGBQ and 41 who identified as heterosexual), even removing these variables may not have provided enough degrees of freedom to test our hypothesized effects adequately. However, the statistically significant associations we did identify are particularly noteworthy given our small sample size. In addition, the list wise matching strategy itself may be a limitation. A potentially better matching strategy would have been to take a student who identifies as LGBQ in the sample, find all possible matches based on the demographic variables in the heterosexual sample, and then randomly select one from that group of students.

Second, information on sexual orientation was only assessed at age 15. This means that some of the 41 students may have identified even earlier, but we could not capture that within the data. Thus, it was not possible to conclude whether changes in our outcomes were associated with sexual orientation or other developmental or contextual factors. Said differently, students who identified as LGBQ at age 15 might not have been aware of or disclosed their sexual orientation at age 11. This has implications because students who identify with their LGBQ identity at younger ages and disclose this identity to others at younger ages are at greater risk for victimization (D’Augelli et al., 2002; Pilkington & D’Augelli, 1995). Similarly, we were not able
to measure if reported victimization was due to a student’s identity, their perceived identity, or an unrelated reason. Thus, our findings related to peer victimization can only apply to general peer victimization at both time points and cannot suggest that identity-based peer victimization is related to the outcomes. This is because students were asked (at age 15), “I prefer romantic partners who are…” and had the option to choose one of the following: “male,” “female,” or “male and female.” Sexual orientation is more expansive than lesbian, gay, bisexual, and queer. Our findings are limited to students identifying with these identities, and cannot be extended to individuals identifying with another identity. Research has identified that questioning students, for instance, may have different experiences than students identifying as LGBQ or heterosexual (Espelage et al., 2008; Poteat et al., 2009). A future study may consider adding additional responses to this item or changing the item to be more inclusive and attempt to identify LGBQ identity at earlier and later time points. Similarly, a future study may wish to assess the specific type of victimization.

Next, the generalizability of the results should be interpreted with considerable caution given the time frame in which the data was collected and the demographic make-up of the sample. Although the study was conducted across several sites in the United States, it was conducted from 1990 through 2008. During the time when the participants in this study would have began to come out (approximately 16 years old; Dunlap 2016), about 3% to 3.5% of the United States population identified as LGBTQ+. Today, it is estimated that 4.3% of the United States population identifies as LGBTQ+ (Jones, 20017). So, although the social acceptability and attitudes towards being a sexual minority may be different today, the actual percentages of the population identifying as LGBTQ+ has not shifted considerably.

Approximately 70% of the sample identified as white and middle class or better
socioeconomically. Previous research has shown that white students and students with class privilege are less likely to report poorer mental health and academic outcomes than their non-white and low SES peers (Ferguson & Mehta, 2004; Gordon & Cui, 2018). However, it is consistent with racial identity makeup of national statistics at the time, with 64.4% of students at that time identifying as white nation-wide (Kosciw, Diaz, & Greytak, 2008). Similarly, about 74% of the students nationally at that time who identified at LGBQ, consistent with our sample, lived in a school district identified as “low” or “somewhat low” poverty. Additionally, approximately 73% of the current sample identified as female. This is an over-representation of female students with regards to gender identity. In the 2007 National School Climate Survey, which is around the time when students in this sample were 15 years old, 57.7% of the sample identified as female (Kosciw, Diaz, & Greytak, 2008). Future studies should consider a more diverse and accurately representative sample with respect to race, gender, social class, and other social identities in order to improve the generalizability of the findings.

Next, with regards to the measurement of academic skills, we used standardized test scores (e.g., the Woodcock-Johnson) rather than grades. Over time, standardized test scores are not as impacted by psychosocial factors in the same way other measurements of academic success. Grades may be a better reflection of school experiences that could be impacted by sexual identity, and may be considered in a future study.

Finally, because the primary method of data collection used in this study was survey data, the findings are based on self-report data from the participants and their families. There are always concerns related to self-reported data. Specifically, respondents are prone to making errors in their selection. Similarly, it is assumed that respondents understand the items and answer truthfully. Even in an anonymous survey, students may not have felt comfortable
disclosing their sexual orientation or responses to certain items on the survey. However, the proportion of students identifying as LGBQ reflected the population proportions at that time. Fortunately, missing data was minimal and accounted for via imputation.

Although the limitations to the study impact the generalizability of the study, we believe the results of the study do add to the literature and suggest an area for future research. Although we could not add a longitudinal component to the literature, our findings do continue to add evidence that peer victimization impacts mental health outcomes and parental relationships can protect against the negative effects. This suggests an area of intervention discussed above. Although there were no significant findings related to academic skills, the trends we found in our results do suggest that a study with a larger sample size may detect differences in the samples. These future directions are discussed below.

Future Directions

This study initially set out to examine mental health and academic outcomes for students identifying as LGBQ longitudinally and how factors such as peer victimization, parental relationships, and friendship quality influence this relationship. With methodological changes to the study, this can still be attainable. We found that students identifying as LGBQ report significantly worse mental health outcomes than their heterosexual peers. Further investigation may wish to include more time points, potentially beyond high school. That is, colleges, the workforce, or other post-secondary opportunities may protect against or exacerbate mental health outcomes. We also found that increasing levels of peer victimization was related to worse mental health outcomes. However, we did not find that it significantly differed for students identifying as LGBQ. Because this finding is inconsistent with a well-established body of research (Bontempo & D’Augelli, 2002; Robison & Espelage, 2011; Robinson & Espelage, 2012), it may
be worth understanding why this was not the case in our sample. As suggested previously, many of the demographic variables in our sample may have had a protective effect for students. A future study may consider examining which demographic variables beyond sexual orientation and those commonly explored in other studies (i.e., disability status; Rose, Simpson, & Moss, 2015) have a protective role.

As previously noted, previous research has shown that students who identify as questioning report differences in their psychological and educational outcomes compared to their peers who identify as LGBQ or as straight (Espelage et al., 2008; Poteat et al., 2009; Robinson & Espelage, 2011). Because our sample size was not large enough nor did it identify students identifying as questioning, we could not ask this research question. Thus, we have reason to believe a future study should also consider the experiences of students who identify with other sexual orientations, as transgender or transsexual, and other gender identities. Finally, given that we could not make definitive statements about the longitudinal effects of parental and peer relationships, a future study may consider adding additional time points. It is clear that parents (Stafford et al., 2016) and peers (Narr et al., 2017; Shin, Cho, Shin, & Park, 2016) have a meaningful impact on students’ psychological outcomes. A future study can add to the literature concerning students identifying as LGBQ and their academic outcomes.
REFERENCES


Available at: www.cdc.gov/yrbs.

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African American families: A replication and extension of the family stress model.

before, during, and after the great recession. *PLoS ONE, 10*(5), 1–18. doi:
10.1371/journal.pone.0124103.

D’Augelli, A. R. (2002). Mental health problems among lesbian, gay, and bisexual youths ages

doi:10.1300/J155v07n04_02.

impact of sexual orientation victimization of lesbian, gay, and bisexual youths in high


APPENDIX A: ALL MODELS

Research Question 1:

Model 1a: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + e_{ij}$

Model 1b: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + e_{ij}$

Research Question 2:

Model 2a: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(Peer Victimization)_2 + e_{ij}$

Model 2b: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(Peer Victimization)_2 + e_{ij}$

Research Question 3:

Model 3a: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 + e_{ij}$

Model 3b: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 + e_{ij}$

Model 3c: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 + \beta_4(LGBQ \times Peer Victimization)_4 + e_{ij}$

Model 3d: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 + \beta_4(LGBQ \times Peer Victimization)_4 + e_{ij}$

Research Question 4a:

Model 4a: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Parental Relationship)_3 + e_{ij}$

Model 4b: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Parental Relationship)_3 + e_{ij}$

Model 4c: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Friendship Quality)_3 + e_{ij}$

Model 4d: $AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Friendship Quality)_3 + e_{ij}$

Research Question 4b:

Model 4e: $MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 + \beta_4(Parental Relationship)_4 + e_{ij}$
Model 4f: \( AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \text{ Victimization})_3 + \beta_4(\text{Parental Relationship})_4 + e_{ij} \)

Model 4g: \( MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \text{ Victimization})_3 + \beta_4(\text{Parental Relationship})_4 + \beta_5(\text{Parental Relationship} \ast Peer \text{ Victimization})_5 + e_{ij} \)

Model 4h: \( MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \text{ Victimization})_3 + \beta_4(\text{Parental Relationship})_4 + \beta_5(\text{Parental Relationship} \ast Peer \text{ Victimization})_5 + e_{ij} \)

Model 4i: \( MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \text{ Victimization})_3 + \beta_4(\text{Friendship Quality})_4 + e_{ij} \)

Model 4j: \( AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \text{ Victimization})_3 + \beta_4(\text{Friendship Quality})_4 + e_{ij} \)

Model 4k: \( MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \text{ Victimization})_3 + \beta_4(\text{Friendship Quality})_4 + \beta_5(\text{Parental \text{ Relationship} \ast Peer \text{ Victimization}})_5 + e_{ij} \)

Model 4l: \( AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer \text{ Victimization})_3 + \beta_4(\text{Friendship Quality})_4 + \beta_5(\text{Friendship Quality} \ast Peer \text{ Victimization})_5 + e_{ij} \)

Model 4m: \( MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(\text{Parental Relationship})_3 + \beta_4(LGBQ \ast \text{Parental Relationship})_4 + e_{ij} \)

Model 4n: \( AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(\text{Parental Relationship})_3 + \beta_4(LGBQ \ast \text{Parental Relationship})_4 + e_{ij} \)
Model 4o: \[ MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Friendship Quality)_3 \\
+ \beta_4(LGBQ * Friendship Quality)_4 + e_{ij} \]

Model 4p: \[ AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Friendship Quality)_3 \\
+ \beta_4(LGBQ * Friendship Quality)_4 + e_{ij} \]

Research Question 4c:

Model 4q: \[ MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 \\
+ \beta_4(Parental Relationship)_4 + \beta_5(LGBQ * Parental Relationship)_5 \\
+ \beta_6(Parental Relationship * Peer Victimization)_6 \\
+ \beta_7(LGBQ * Peer Victimization)_7 \\
+ \beta_8(LGBQ * Parental Relationship * Peer Victimization)_8 + e_{ij} \]

Model 4r: \[ AS = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 \\
+ \beta_4(Parental Relationship)_4 + \beta_5(LGBQ * Parental Relationship)_5 \\
+ \beta_6(Parental Relationship * Peer Victimization)_6 \\
+ \beta_7(LGBQ * Peer Victimization)_7 \\
+ \beta_8(LGBQ * Parental Relationship * Peer Victimization)_8 + e_{ij} \]

Model 4s: \[ MH = \beta_0 + \beta_1(Race)_1 + \beta_2(LGBQ)_2 + \beta_3(Peer Victimization)_3 \\
+ \beta_4(Friendship Quality)_4 + \beta_5(LGBQ * Friendship Quality)_5 \\
+ \beta_6(Friendship Quality * Peer Victimization)_6 \\
+ \beta_7(LGBQ * Peer Victimization)_7 \\
+ \beta_8(LGBQ * Friendship Quality * Peer Victimization)_8 + e_{ij} \]
Model 4: AS = \beta_0 + \beta_1(Race) + \beta_2(LGBQ) + \beta_3(Peer Victimization) + \\
+ \beta_4(Friendship Quality) + \beta_5(LGBQ \times Friendship Quality) + \\
+ \beta_6(Friendship Quality \times Peer Victimization) + \\
+ \beta_7(LGBQ \times Peer Victimization) + \\
+ \beta_8(LGBQ \times Friendship Quality \times Peer Victimization) + e_{ij}
### Table 1: Descriptive Statistics for All Outcome, Predictor, and Moderator/Control Variables.

<table>
<thead>
<tr>
<th></th>
<th>Full Sample</th>
<th>Non-LGBQ</th>
<th>LGBQ</th>
<th>T-test</th>
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<td><strong>Age 11</strong></td>
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<tr>
<td>Academic Skills</td>
<td>100.09 (14.16)</td>
<td>100.30 (10.74)</td>
<td>99.87 (17.05)</td>
<td>-0.14 (0.89)</td>
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<td>Mental Health</td>
<td>15.31 (4.07)</td>
<td>14.24 (3.65)</td>
<td>16.38 (4.22)</td>
<td>2.46* (0.02)</td>
</tr>
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<td>Peer Victimization</td>
<td>0.94 (0.80)</td>
<td>0.90 (0.80)</td>
<td>0.98 (0.81)</td>
<td>0.48 (0.63)</td>
</tr>
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<td>Peer Relationship</td>
<td>4.17 (0.57)</td>
<td>4.19 (0.59)</td>
<td>4.16 (0.55)</td>
<td>-0.27 (0.79)</td>
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<tr>
<td>Parental Relationship</td>
<td>62.05 (7.65)</td>
<td>64.20 (7.27)</td>
<td>59.91 (7.49)</td>
<td>-2.63* (0.01)</td>
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<tr>
<td><strong>Age 15</strong></td>
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<tr>
<td>Academic Skills</td>
<td>96.85 (13.83)</td>
<td>96.96 (10.66)</td>
<td>96.74 (16.55)</td>
<td>-0.07 (0.94)</td>
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<td>Mental Health</td>
<td>18.76 (5.12)</td>
<td>17.51 (4.11)</td>
<td>20.02 (5.74)</td>
<td>2.28* (0.03)</td>
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<td>Peer Victimization</td>
<td>0.67 (0.85)</td>
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<td>0.64 (0.83)</td>
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<td>-0.99 (0.33)</td>
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<td>Parental Relationship</td>
<td>57.16 (9.69)</td>
<td>59.60 (9.05)</td>
<td>54.33 (9.59)</td>
<td>-2.74* (0.01)</td>
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<td><strong>Moderator/Control Variables</strong></td>
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<tr>
<td>Male</td>
<td>26.80%</td>
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<tr>
<td>Heterosexual</td>
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<tr>
<td>White</td>
<td>69.5%</td>
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<td>Maternal Marital Status (Married)</td>
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<td>Maternal Education</td>
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<tr>
<td>Income-to-Needs (&gt; 1.0)</td>
<td>70.70%</td>
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Table 2: Inter-correlations among key outcome and predictor variables for the full sample.

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<td>5. PR Age</td>
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<td>6. PR Age</td>
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Notes: PV = peer victimization; FQ = friendship quality; PR = parental relationship; MH = mental health; AS = academic skills; *.05; **.01; ***.001.
Table 3: Inter-correlations among key outcome and predictor variables for students identifying as LGBQ.

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<td>-.072</td>
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<td>-.225*</td>
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<td>-.440***</td>
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<td>-.267*</td>
<td>-.445***</td>
<td>.455***</td>
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<td>-.165</td>
<td>-.008</td>
<td>.026</td>
<td>.198</td>
<td>-.038</td>
<td>-.396***</td>
<td>-.076</td>
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<tr>
<td>10. AS Age</td>
<td>.024</td>
<td>-.064</td>
<td>.044</td>
<td>.045</td>
<td>.174</td>
<td>.057</td>
<td>-.315**</td>
<td>-.072</td>
<td>.86***</td>
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</table>

Notes: PV = peer victimization; FQ = friendship quality; PR = parental relationship; MH= mental health; AS = academic skills; *.05; **.01; ***.001.
Table 4: Inter-correlations among key outcome and predictor variables for students identifying as heterosexual.

<table>
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<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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<td>1. PV Age 11</td>
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<td>2. PV Age 15</td>
<td>.294*</td>
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<td>-.158</td>
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<td>.267*</td>
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<td>5. PR Age 11</td>
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<td>-.196</td>
<td>-.084</td>
<td>.026</td>
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<td>-.158</td>
<td>.023</td>
<td>.000</td>
<td>.418***</td>
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<td>7. MH Age 11</td>
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<td>.332**</td>
<td>-.226*</td>
<td>.002</td>
<td>-.395***</td>
<td>-.300**</td>
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<td>8. MH Age 15</td>
<td>.232*</td>
<td>.383***</td>
<td>.028</td>
<td>-.052</td>
<td>-.213</td>
<td>-.403***</td>
<td>.417***</td>
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<tr>
<td>9. AS Age 11</td>
<td>.019</td>
<td>-.165</td>
<td>-.008</td>
<td>.026</td>
<td>.198</td>
<td>-.038</td>
<td>-.396***</td>
<td>-.076</td>
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<tr>
<td>10. AS Age 15</td>
<td>.024</td>
<td>-.064</td>
<td>.044</td>
<td>.045</td>
<td>.174</td>
<td>.057</td>
<td>-.315**</td>
<td>-.072</td>
<td>.864***</td>
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</table>

Notes: PV = peer victimization; FQ = friendship quality; PR = parental relationship; MH = mental health; AS = academic skills; * .05; **.01; ***.001.
Table 5: Inter-correlations among key outcome/predictor variables and LGB identity.

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<tbody>
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<tr>
<td>2.</td>
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<td>3.</td>
<td>FQ Age 11</td>
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<td>5.</td>
<td>PR Age 11</td>
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<td>6.</td>
<td>PR Age 15</td>
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<td>7.</td>
<td>MH Age 11</td>
</tr>
<tr>
<td>8.</td>
<td>MH Age 15</td>
</tr>
<tr>
<td>9.</td>
<td>AS Age 11</td>
</tr>
<tr>
<td>10.</td>
<td>AS Age 15</td>
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</tbody>
</table>

Notes: PV = peer victimization; FQ = friendship quality; PR = parental relationship; MH = mental health; AS = academic skills; *p < .05; **p < .01; ***p < .001.
Table 6: Estimates for the mental health dependent variable models.

<table>
<thead>
<tr>
<th>Parameter Estimates (SE)</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4a</th>
<th>Model 4b</th>
<th>Model 4c</th>
<th>Model 4d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>17.46*</td>
<td>17.48***</td>
<td>16.88***</td>
<td>16.74*</td>
<td>17.36***</td>
<td>17.67**</td>
<td>17.65</td>
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<tr>
<td></td>
<td>(.74)</td>
<td>(.89)</td>
<td>(1.20)</td>
<td>(4.83)</td>
<td>(4.52)</td>
<td>(7.55)</td>
<td>(6.66)</td>
</tr>
<tr>
<td>Race</td>
<td>-0.85 (1.43)</td>
<td>-0.80 (1.44)</td>
<td>0.89 (1.40)</td>
<td>-1.07 (1.41)</td>
<td>-0.82 (1.52)</td>
<td>-0.99 (1.43)</td>
<td>-0.73 (1.51)</td>
</tr>
<tr>
<td>LGBQ</td>
<td>2.53* (1.11)</td>
<td>-</td>
<td>1.41 (1.68)</td>
<td>1.90 (1.13)</td>
<td>2.53* (1.12)</td>
<td>1.96 (1.14)</td>
<td>2.48* (1.09)</td>
</tr>
<tr>
<td>PV</td>
<td>1.52* (.70)</td>
<td>0.90 (.98)</td>
<td>-</td>
<td>-</td>
<td>-0.22 (5.56)</td>
<td>4.88 (3.25)</td>
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</tr>
<tr>
<td>LGBQ*PV</td>
<td>1.02 (1.41)</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
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<tr>
<td>PR</td>
<td>-0.15* (.08)</td>
<td>-</td>
<td>-</td>
<td>-0.13 (0.12)</td>
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</tr>
<tr>
<td>FQ</td>
<td>0.07 (1.04)</td>
<td>-</td>
<td>2.04 (1.53)</td>
<td>0.02 (.10)</td>
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<tr>
<td>PR*PV</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-0.82 (.80)</td>
<td>-</td>
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</tr>
</tbody>
</table>

Note: *p < .05, **p < .01, ***p < .001. PV = Peer Victimization; PR = Parental Relationship Quality; FQ = Friendship Quality.
Table 7: Estimates for the academic skills dependent variable models.

<table>
<thead>
<tr>
<th>Parameter Estimates (SE)</th>
<th>Model 1</th>
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<th>Model 3</th>
<th>Model 4a</th>
<th>Model 4b</th>
<th>Model 4c</th>
<th>Model 4d</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>99.15*</td>
<td>98.73***</td>
<td>98.49***</td>
<td>81.39***</td>
<td>107.32***</td>
<td>82.02***</td>
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<td>(3.23)</td>
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<td>0.05 (2.90)</td>
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<tr>
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<tr>
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</table>

Note: *p < .05, **p < .01, ***p < .001. PV = Peer Victimization; PR = Parental Relationship Quality; FQ = Friendship Quality.
Figure 1. Two-way interaction between LGBQ identity and peer relationship quality.