

**Does Parental Support Moderate the Relationship Between Gender Identity and Sleep?**

by

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A thesis submitted to the Graduate Faculty of  
Auburn University  
in partial fulfillment of the  
requirements for the Degree of  
Master of Science in Marriage and Family Therapy

Auburn, Alabama  
August 9, 2025

**Keywords:** gender-diverse youth, sleep, parental support, parental acceptance, resilience

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## **Abstract**

Compared to their cisgender peers, gender-expansive (GE) youth are more likely to experience less-optimal sleep. Although it is clear that sleep differences exist between GE and cisgender youth, little research has focused on protective factors that could influence this relationship. In cisgender youth, parental support has been shown to impact sleep. In this thesis, we aimed to investigate whether parental support moderates the relationship between gender identity and sleep. In our sample, GE status was associated with earlier wake times and greater variability in sleep midpoint. Higher levels of parental support were associated with increased sleep duration. Although parental support moderated the relationship between GE status and sleep duration, it did so in an unexpected direction. GE youth with higher levels of parental support slept for fewer minutes, on average, than youth with lower levels of parental support.

## **Acknowledgements**

It is challenging to write an acknowledgements section when you have so many people to thank. First, I would like to thank my committee for their support; I truly appreciate the hours you spent reviewing and editing my work. I am especially grateful to Brian, who is the best major professor anyone could ask for. If I am ever in a mentorship position, I hope to emulate Brian's support, warmth, and understanding. I would also like to extend thanks to my friends and family. Thank you so much for supporting me through what has been a grueling two years. Your love means more to me than I could convey in writing.

Finally, I must express my most sincere love and appreciation for my partner, Jack. Honestly, with all you've done for me over the past two years, you deserve a master's degree of your own. You have anchored me during this process, and without you, I truly don't think I could have done it. Thank you for your tangible and intangible support; from making me lunch in the mornings to talking me through rough days, you have been there every step of the way. The world would be a much kinder place if everyone could have a partner like you.

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## **List of Abbreviations**

ABCD Study = Adolescent Brain Cognitive Development Study

BFST = Bowen Family Systems Theory

CRPBI = Children's Report of Parental Behavior Inventory

EFFT = Emotionally Focused Family Therapy

GE = gender-expansive

GMSR = Gender Minority Stress and Resilience

WASO = wake after sleep onset

## **Chapter 1: Introduction**

Across multiple domains of sleep quality, gender-expansive (GE) youth, or youth whose gender identity differs from their sex assigned at birth, experience poor sleep compared to their cisgender peers. Prior research has determined that GE youth experience longer sleep latency, shorter sleep duration, higher rates of sleep disturbance, and report poorer subjective sleep quality compared to their cisgender peers (Leonard et al., 2024; Levenson et al., 2021).

Caregivers of GE youth report that their children take longer to fall asleep, have shorter sleep duration, and wake more during the night than caregivers of cisgender children (Ricklefs et al., 2025). Parental support, a construct encompassing parental warmth, emotional support, affection, and acceptance, and has been identified as a protective factor for GE youth (Grossman et al., 2021; Meanley et al., 2021). Throughout the literature, the construct of parental support is also referred to as parental acceptance and parental warmth. Like the current study, prior research has investigated the role of global parental and familial support, not specifically gender affirmation. The present study will examine parental support as a moderator of the relationship between GE status and youth sleep.

### **Relations between GE status and sleep in adolescence**

A growing body of research is consistently demonstrating that GE youth experience sleep disparities across multiple domains, including sleep duration, quality, and daytime sleepiness. GE youth experience short sleep duration. Bowen et al. (2021) collected objective and subjective sleep data from ten transgender male youth (aged 13-16) recruited from a gender-diversity clinic. The youth, on average, reported sleeping for 7.3 hours on weekdays and 7.6 hours on weekends, less than the 8-10 hours recommended for adolescents (Hirshkowitz et al., 2015). Similarly, Martin-Storey et al. found that youth outside of the gender binary slept for an average of 7.51

hours on weeknights, while peers who identified as male or female slept for an average of 8.29 hours.

Poor sleep quality is another concern among GE youth. Bowen et al. (2021) found that half the transgender male youth in their study reported symptoms of insomnia, while Martin-Storey et al. (2024) found that youth (14-17) outside the gender binary reported difficulty falling asleep. Similar findings were reported by Levenson et al. (2021) in a cohort of 14- to 18-year-olds, where GE participants reported poorer overall sleep quality relative to cisgender peers.

Two studies investigating sleep among gender-minority youth have used data from the Adolescent Brain Cognitive Development (ABCD) Study. Leonard et al. (2024) determined that among youth aged 10-14, GE participants had higher odds of long sleep latency and sleep disturbance compared to non-gender minority youth. Ricklefs et al. (2025) found that caregivers of GE adolescents (aged 12-13) reported that their children experienced shorter than recommended sleep duration for their age group. GE adolescents were also at higher risk of sleep disturbance, insomnia symptoms, and excessive sleepiness. Notably, both studies of GE youth from ABCD have utilized subjective reports of sleep.

### **Why GE youth sleep less/worse than other youth: Minority stress and resilience**

GE youth may experience sleep disparities due to the impact of minority stress (Brooks, 1981; Meyer, 2003; Testa et al., 2015). The minority stress model posits that repeated experiences of discrimination and prejudice, including existing in environments that are inherently hostile to minority groups, result in chronic stress that leads to mental and physical health problems. Like other minority groups, GE youth experience multiple forms of discrimination. Experiences of discrimination are particularly common in school settings, where

GE youth report experiencing microaggressions, peer victimization, and violence (McBride, 2021). As a result, school-aged GE youth may be especially vulnerable to minority stress.

Testa et al. (2015) expanded on minority stress theory by creating the Gender Minority Stress and Resilience (GMSR) model. The GMSR includes community connectedness as a resilience factor. Testa et al. (2015) also found that community connectedness was significantly correlated with perceived social support. In his commentary on the interplay between resilience and minority stress, Meyer (2015) proposed that individual and community-level resilience factors exist on a continuum. Because parental support is a source of social support that increases individual resilience, it bridges individual and community resilience. Support and connection, therefore, may play a crucial role in buffering against the effects of minority stress.

### **Relations between parental support and sleep in adolescence**

The relationship between parental support and sleep has not been studied among GE youth. However, it is clear that the parent-child relationship impacts sleep in the general population of youth. Among adolescents, parental support is associated with longer sleep duration (Tsai et al., 2018), and parent-child relationship quality is positively associated with sleep quality (Meijer, Reitz, & Deković, 2016). Parental warmth is associated with less adolescent daytime sleepiness and longer sleep duration on school nights (Khor et al., 2021; Richardson et al., 2023). Additionally, youth who report higher parental warmth during bedtime and waketime experience better sleep quality (Ewing et al., 2024).

### **Why parental support is associated with sleep: Family systems theory and Parental Socialization of Emotion**

Bowen Family Systems Theory (BFST) posits that families are emotional systems and that each member of the family exerts influence on the others (Bowen, 1978). BFST has

important implications for parenting; parenting style can impact the family's emotional system, which influences the emotional health of children. Parental acceptance, a construct encompassing parental emotional support, responsiveness, and warmth, has been shown to predict psychological adjustment in children (Rohner, 2005).

Developmentalists have proposed that the way parents socialize their children determines how children learn to emotionally regulate. The Parental Emotion Socialization Model (Eisenberg et al., 1998) describes how emotion-related parenting practices (e.g. reactions to the child's emotions, discussion of emotion, and emotional expressiveness) impact the physiological and psychological arousal of children, which then influence how children experience, express, and regulate their emotions in different contexts. As we are operationalizing parental support as parental warmth, emotional support, affection, and acceptance, it can be considered an emotion-related parenting practice. Thus, it follows that greater parental support may decrease children's physiological arousal, promoting more restful sleep.

Parental support may also promote bedtime routines that soothe children before bed and decrease physiological arousal. Philbrook et al. (2022) examined the relationship between parental bedtime behaviors and youth sleep. They found that greater parenting sensitivity at bedtime was associated with longer sleep duration and higher sleep efficiency. Even among adolescents, parental involvement and warmth around bedtime are essential to sleep health. Both parental involvement at bedtime and less parent-adolescent conflict before bed are associated with longer sleep duration among adolescents (Gunn et al., 2019; Peltz et al., 2020).

### **Parental support as a moderator**

Support and acceptance from caregivers may be an important source of resilience among youth. This relationship is particularly relevant for GE youth, who may experience sleep deficits due to the impact of minority stress and discrimination. There is a small but growing body of

literature that has investigated parental support as a moderator among GE youth. In a cohort of Dutch adolescents, van Beusekom et al. (2015) found that among participants assigned male at birth, higher *paternal* acceptance weakened the association between GE status and both psychological distress and social anxiety. Similarly, Holt et al. (2023) found that among transgender youth, family support moderated the relationship between peer victimization and suicide attempts. Parental support has also been studied as a moderator among non-GE youth. Notably, parental warmth has been found to buffer the relationship between stress and negative affect in youth (Lippold et al., 2016) and to ameliorate the link between parent-teen conflict and teen positive affect (Silva, Ford, & Miller, 2020). This is particularly relevant for our population, as minority stress has been shown to contribute to negative affect in LGBTQ+ youth (Mereish et al., 2021, 2023).

Parental warmth buffers youth from many other adverse outcomes. For example, among Chinese adolescents, maternal warmth has been shown to weaken the relationship between *paternal* rejection and rumination (Meng et al., 2024). Similarly, Papadaki & Giovazolias (2013) found that *paternal* acceptance moderated the relationship between maternal rejection and depressive symptoms at ages 10–12. Parental warmth also moderates the connection between parental internalizing problems and adolescent irritability (McKinney, Steele, & Story, 2019) and helps buffer against poor school performance in children with underdeveloped inhibitory control (Yang et al., 2025).

### **Present Study**

Existing research has established that GE youth experience poor sleep. This relationship is likely impacted by minority stress. Although previous studies have focused on the role of factors that contribute to minority stress and its effects, few have investigated factors that

increase resilience (Meyer, 2015). As parental acceptance has been identified as a protective factor for GE youth (van Beusekom et al., 2015), the present study will examine whether parental support moderates the relationship between GE status and youth sleep. This relationship has not been examined in previous literature. If we determine that higher levels of parental support weaken the relationship between GE status and sleep, clinicians and parents could target parental support in interventions that aim to improve the sleep quality of GE youth. Using sleep actigraphy data from the ABCD study, we will assess whether 1) there is a relationship between GE status and sleep duration, efficiency, latency, and wake after sleep onset (WASO), respectively, and 2) whether parental support moderates these relationships. We expect that GE status will be negatively associated with each sleep parameter, and that parental support will weaken these relationships.

## Chapter 2: Method

### Participants

This project analyzes data from the ABCD Study. The ABCD Study involves data collected from 11,875 youth and their caregivers. Participants were recruited from elementary schools near data collection sites in the United States. Youth were between the ages of 9 and 10 when they completed their baseline assessments between September 2016 and October 2018. Annual and semi-annual assessments were conducted thereafter.

At the two-year follow-up (September 2018 to January 2020), approximately 4,300 participants were provided with Fitbit devices to monitor their sleep patterns. This was the first wave at which a large number of participants provided objective sleep information. Of these participants, 2,979 had at least five nights of data collected within a one-week period, yielding sufficient data for analysis.

Participants in the analytic sample ranged from 10.08 to 13.58 years old ( $M = 11.96$  years,  $SD = 7.80$  months). Of these, 51.19% were assigned male at birth, and 48.81% were assigned female at birth. 4.16% ( $N = 124$ ) were gender-diverse (see Measures for coding of gender-diverse). This is roughly analogous to the 5.10% of young people in the U.S. population who are estimated to identify as GE (Brown, 2022). Parents reported the majority to be in mid-puberty (40.39%), with 14.36% in pre-puberty, 27.67% in early puberty, 17.27% in late puberty, and 0.31% in post-puberty. Regarding ethnicity, 19.38% were identified as Hispanic, Latino, or Latina, and 79.42% as non-Hispanic. Among the non-Hispanic participants, racial identities included White (86.30%), Black (12.73%), Asian (8.12%), American Indian or Alaska Native (2.88%), Native Hawaiian or Pacific Island Native (0.76%), or another race (0.89%). Among the Hispanic participants, racial identities included White (69.84%), Black (7.45%), Asian (3.12%),

American Indian or Alaska Native (5.03%), Native Hawaiian or Pacific Island Native (0.52%), or another race (25.13%). Most participants (64.96%) were from middle-class or higher socioeconomic backgrounds based on the income-to-needs ratio. Additionally, 20.97% were from families at or near the poverty line, and 14.06% were lower middle class.

## **Procedures**

The ABCD Study received approval from the University of California, San Diego Institutional Review Board (IRB). Auburn University's IRB classified the current secondary data analysis as exempt from human-subjects protocol. Auburn University signed a data use certification to obtain access to data from the National Institute of Mental Health Data Archive.

The procedures relevant to our analyses are outlined below. Complete procedures for the ABCD study can be found here (Karcher & Barch, 2021). During the baseline visit, caregivers provided consent, and youth gave their assent. At each visit, caregivers and youth attended an ABCD study site to complete questionnaires using digital tablets and provide demographic information. At the one-year follow-up, youth completed the parental acceptance measure. During the two-year follow-up visit, youth filled out additional surveys and received Fitbit devices to monitor sleep. They were instructed to wear the Fitbit for the next 21 days.

## **Measures**

*Gender-expansive status.* Youth were classified as gender-diverse if they answered "Yes" or "Maybe" to the question, "Are you transgender?" ( $n = 12$ ). Youth assigned male at birth were also classified as gender-diverse if they responded "Not at all," "A little," or "Somewhat" to the question, "How much do you feel like a boy?," ( $n = 28$ ) or if they responded "Totally," "Mostly," or "Somewhat" to the question, "How much do you feel like a girl?" ( $n = 18$ ). Similarly, youth assigned female at birth were classified as gender-diverse if they responded

“Not at all,” “A little,” or “Somewhat” to the question “How much do you feel like a girl?,” ( $n = 70$ ) or if they responded “Totally,” “Mostly,” or “Somewhat” to the question, “How much do you feel like a boy?” ( $n = 56$ ).

*Parental support* At the 1-year follow-up visit (August 2017 to January 2020), youth completed the acceptance subscale from the Children’s Report of Parental Behavior Inventory (CRPBI), which is designed to measure parental social support and acceptance. This instrument uses six items to score each caregiver. For this analysis, we used the data collected for the child’s primary caregiver. When completing the CRPBI, participants responded 1 = *Not like him/her*, 2 = *Somewhat like him/her*, or 3 = *A lot like him/her* to items such as, “My caregiver makes me feel better after talking over my worries with him/her” and “My caregiver believes in showing his/her love for me.”

*Sleep.* Sleep data were collected using a FitBit Charge HR device. The weekly sleep measures included average sleep duration (the average number of minutes the youth slept each week), average sleep efficiency (the percentage of time spent asleep while in bed, relative to the total time in bed), average sleep latency (the average time it took for the youth to fall asleep after going to bed), and average wake after sleep onset (WASO), or the average number of minutes spent awake after sleep onset. For individual nights, the data collected included sleep onset time (the time when the youth fell asleep), wake time (the time when they woke up in the morning), sleep midpoint (the halfway point between sleep onset and wake time), and variability in sleep onset, wake time, sleep midpoint, and sleep duration.

*Covariates.* Caregivers provided information on each youth’s sex assigned at birth (*female* or *male*), age, race, ethnicity, and sexual minority status at baseline. Youth pubertal status was assessed using the Pubertal Development Scale (Petersen et al., 1988). Socioeconomic

status was calculated using the income-to-needs ratio, which was determined by dividing the family's income by the federal poverty threshold for the household size. Study staff measured waist circumference in inches to assess body adiposity.

### **Plan of Analysis**

Preliminary analyses were conducted using SPSS 29. For all continuous exogenous variables, we assessed normality, central tendency measures, and distribution, using a cutoff of skewness  $\leq -2.00$  or  $\geq 2.00$  (see Table 1 for descriptive statistics). Variables outside of this cutoff were trimmed to the next highest observation within 3 SDs of the mean, using Mahalanobis distance (Kline, 2011) as a guide. Continuous exogenous variables were mean centered, and the interaction of Gender-Expansive Status x Caregiver Support was created as the product of the two variables.

Amos 29 was used to fit multiple linear regression models. Models regressed each sleep parameter onto the main predictor (gender-expansive status), moderator (caregiver support), and the interaction term (Gender-Expansive Status x Caregiver Support). We controlled for sex assigned at birth, pubertal status, race, ethnicity, sexual minority status, socioeconomic status, and body adiposity. All exogenous variables were covaried in analyses. Significant interactions were plotted using an online utility (Preacher et al., 2006) to calculate points to plot and to test whether simple slopes are significantly different from zero. Effect sizes for moderation are reported in  $R^2$ s.

## Chapter 3: Results

### Preliminary Analyses

Youth in our full sample slept an average of 7 hours and 31 minutes. Average sleep onset and wake times were 11:01 PM and 7:07 AM, respectively. For a full list of descriptive statistics for continuous study variables, please see Table 1. Table 2 presents correlations among continuous study variables.

We observed a few key differences in study variables. GE youth slept 14.22 minutes less, on average, compared to their cisgender peers ( $M$  for GE = 451.45 minutes,  $M$  for non-GE = 437.22 minutes,  $t = 3.79$ ,  $p < 0.001$ ). Compared to non-GE youth, GE youth experienced 3.01 fewer minutes of WASO ( $M$  for GE = 54.96 minutes,  $M$  for non-GE = 57.97 minutes,  $t = 2.69$ ,  $p = 0.01$ ), and 17.74 minutes later sleep onset ( $M$  for GE = 11:17 PM,  $M$  for non-GE = 10:59 PM,  $t = -2.49$ ,  $p = 0.01$ ). GE youth also experienced greater average variability in sleep onset ( $M$  for GE = 0.0604,  $M$  for non-GE = 0.0486,  $t = -3.42$ ,  $p < 0.001$ ), midpoint ( $M$  for GE = 0.05,  $M$  for non-GE = 0.04,  $t = -3.34$ ,  $p = 0.001$ ), and duration ( $M$  for GE = 0.17,  $M$  for non-GE = 0.14,  $t = -3.96$ ,  $p < 0.001$ ). GE youth also reported lower parental support on average, compared to non-GE youth ( $M$  for GE = 13.77,  $M$  for non-GE = 14.1,  $t = 2.68$ ,  $p < 0.01$ )

Compared to cisgender youth, GE youth had a higher percentage of individuals assigned female at birth (GE assigned female at birth = 75.00%, non-GE assigned female at birth = 47.67%,  $\chi^2 = 35.52$ ,  $p < .001$ ), more advanced pubertal status ( $M$  GE = 3.03,  $M$  non-GE = 2.60,  $t = -4.64$ ,  $p < 0.001$ ), higher waist circumference ( $M$  GE = 29.62,  $M$  non-GE = 28.41,  $t = -2.81$ ,  $p < 0.01$ ), and lower family income ( $M$  GE = 3.56,  $M$  non-GE = 4.23,  $t = 3.01$ ,  $p < 0.01$ ). Therefore, we created a propensity score-matched sample on these key demographic variables.

The resulting sample was comprised of 220 youth ( $n = 124$  GE youth,  $n = 96$  non-GE youth) who had no differences on the four demographic variables.

### **Associations Between GE Status and Sleep Measures**

GE status was associated with earlier wake time ( $B = -34.88$ ,  $SE = 13.50$ ,  $p = 0.01$ ) and greater variability in sleep midpoint ( $B = 0.01$ ,  $SE = 0.004$ ,  $p = 0.03$ ; Table 3.6). On average, GE youth awoke 34.88 minutes earlier than their cisgender peers. GE status was not associated with any of the other sleep outcomes.

### **Associations Between Parental Support and Sleep Measures**

Higher levels of parental support were only associated with increased sleep duration ( $B = 7.00$ ,  $SE = 3.33$ ,  $p = 0.04$ ), indicating that youth who reported higher levels of parental support slept seven additional minutes on average (Table 3.1). Parental support was not related to any additional sleep outcomes.

### **Moderation**

Parental support moderated the relationship between GE status and sleep duration ( $B = -11.10$ ,  $SE = 4.09$ ,  $p = 0.01$ ; Table 3.1). Under the condition of higher parental support (1 *SD* above the mean), GE youth slept 20.85 fewer minutes, on average, than cisgender youth (Figure 1). Under the condition of lower parental support (1 *SD* below the mean), GE youth slept 10.23 more minutes than cisgender youth. The interaction of GE Status x Parental Support accounted for 3.10% of the total variance in sleep minutes; this is a small effect size. Parental support did not moderate the relationship between GE status and other sleep outcomes (Tables 3.2–3.10).

## **Chapter 4: Discussion**

### **Summary of Key Findings**

GE youth experience numerous mental and physical health disparities. Prior research has identified that GE youth experience high rates of anxiety, depression, substance use, disordered eating, suicidal ideation, and suicidal behavior (Eisenberg et al., 2017; Linsenmeyer et al., 2021; Reisner et al., 2015; Wittlin et al., 2023). These youth also report poorer overall health compared to their cisgender peers (Rider et al., 2018) and sleep disparities across multiple domains (Leonard et al., 2024; Levenson et al., 2021). This is particularly concerning, as poor sleep can contribute to a litany of physical illnesses, mental health problems, and poor school performance (Irwin, 2015; Shochat et al., 2014; Spruyt, 2019), compounding the disparities that GE youth experience. As marriage and family therapists, we are uniquely situated to intervene on family-level variables that impact sleep. The present study examined whether parental support moderated the relationship between GE status and sleep performance.

In our sample, GE status was associated with earlier wake times and greater variability in sleep midpoint. On average, GE youth woke up approximately 35 minutes earlier than their cisgender peers, and may have less consistent sleep schedules. As expected, higher levels of parental support were associated with increased sleep duration. Although parental support moderated the relationship between GE status and sleep duration, it did so in an unexpected direction. GE youth with higher levels of parental support slept for fewer minutes, on average, than youth with lower levels of parental support.

### **Interpretation of Findings**

In our sample, GE youth had significantly shorter sleep duration than their cisgender peers. They also went to sleep later and showed greater variability in sleep onset, midpoint, and duration. This aligns with previous literature establishing that GE youth experience significant sleep

disparities (Leonard et al., 2024; Levenson et al., 2021, Ricklefs et al., 2025). Although GE youth had fewer average minutes of WASO, this may be attributable to their overall shorter sleep duration.

Regression analyses found that GE status was associated with earlier wake times and greater variability in sleep midpoint. Parental support was associated with longer sleep duration. This finding aligns with existing research showing that parental support is linked to better sleep outcomes (Gunn et al., 2019; Peltz et al., 2020; Philbrook et al., 2022). Parental support may improve sleep by reducing physiological arousal at bedtime, which promotes more restful sleep (Dahl, 1996).

Prior research has suggested that many GE youth experience low levels of parental support compared to their cisgender peers (Kidd et al., 2023). Low parental support and parental rejection are also frequently reflected in media depicting GE youth. Although the GE youth in our sample reported significantly lower average parental support, it is important to acknowledge that their average reported parental support did not differ greatly from non-GE youth (13.77 vs. 14.1), and is still quite high (13.77 out of 15 points). While our study did not measure gender identity affirmation, this observation may reflect a broader trend of increasing parental support for GE youth (Human Rights Campaign Foundation, 2024).

With the exception of sleep duration, parental support did not moderate the relationship between GE status and any sleep outcomes. Unexpectedly, GE youth with higher levels of parental support slept for fewer minutes, on average, than youth with lower levels of parental support. The overall lack of moderation results may be attributable to the developmental stage of the GE youth in our sample. Developmentally, these are youth who are entering adolescence (12 years old, on average), a period of increasing youth autonomy. Some evidence suggests that in

early adolescence, youth begin disclosing less information to their parents (Keijsers & Poulin, 2013; Padilla-Walker et al., 2018) and using more strategies to conceal information from their parents (Laird et al., 2013). This may be more true for GE youth, as prior research has shown that GE youth are less likely than their cisgender peers to seek support from parents (McQuillan et al., 2024). Additionally, as adolescents age, they often begin relying more on peer support (Papini et al., 1990). This is particularly true for GE youth, who may be more comfortable disclosing information (especially information about gender identity) to peers over parents (Alonso et al., 2025). As a result, even if parents are emotionally responsive and available to youth, their support may have little impact if the youth is uncomfortable sharing information with them.

The extent to which GE youth are comfortable disclosing to parents may be impacted by the parents' affirmation of their gender identity. It's important to reiterate that our study investigated the role of global parental support, not support for gender identity. Parental affirmation of gender identity is vital to the well-being and mental health of GE youth (Belmont et al., 2024; Durwood et al., 2017; Olson et al., 2016), and parental rejection of gender identity is associated with a litany of negative outcomes (Hubachek et al., 2023; Johnson et al., 2020; Ryan et al., 2010), including disconnection between parents and children (McKay et al., 2025). Thus, it's possible that global parental support may not have benefited the GE youth in our sample because we have no knowledge of how affirming these parents were.

### **Clinical Implications**

In our sample, higher levels of parental support were associated with longer sleep duration. As Marriage and Family Therapists, we understand that parental support is a highly modifiable family-level variable. In this study, parental support was measured using the CRPBI. The individual items on the CRPBI capture emotional responsiveness, warmth, and acceptance.

There are a variety of models and interventions that target these domains of parenting. For example, TheraPlay (Booth & Jernberg, 2009) is a model that targets parent-child attachment. In a TheraPlay session, parents and children engage in play-based exercises that target four different domains of parenting: Structure, Engagement, Nurturing, and Challenging. The interventions listed under the Engagement and Nurturing domains would be particularly relevant for targeting parental support, as they focus on parent-child attunement, connection, and care. Although the limited research on TheraPlay effectiveness is mixed (Money et al., 2021), some studies have suggested that it is effective at improving parent-child attachment (Bojanowski & Ammen, 2011; Brayman, 2016). Practitioners of TheraPlay have also reported that it is effective at targeting the parent-child relationship (Hong, 2014).

Emotionally Focused Family Therapy (EFFT; Johnson & Lee, 2000) is another model that intervenes on parental support. EFFT targets parent-child attachment and focuses on developing emotional connectedness and open communication within families. These goals align with many of the items on the CRPBI, including “[My caregiver] makes me feel better after talking over my worries with them” and “[My caregiver] is easy to talk to.” EFFT works in three stages to de-escalate the family’s negative interactional cycle, restructure the interactional cycle to help family members meet emotional needs, and integrate these changes into the family relationships (Johnson & Lee, 2000). Like TheraPlay, the research on EFFT’s effectiveness is limited. However, the existing research suggests that EFFT is effective at targeting the parent-child relationship and improving parental self-efficacy in supporting children through mental health difficulties (Foroughe et al., 2023; Stavrianopoulos et al., 2014; Wilhelmsen-Langeland et al., 2019).

## **Future Directions**

We recommend that future research investigate within-group differences among GE youth. In our sample, we treated GE status as a dichotomous variable. In reality, GE individuals form an extremely diverse group, and differ in their experiences of minority stress (Hunter et al., 2021; Poquiz et al., 2021). As a result, GE youth may experience within-group differences in their sleep quality. Future researchers should also consider investigating how parental support moderates the sleep of older GE youth. While our study investigated the sleep of youth aged 10 to 13, parental support impacts GE adjustment across the lifespan. For example, among transgender teens and young adults, higher levels of parental support are associated with lower depressive symptoms and LGBTQ-identity disclosure stress (Grossman et al., 2021). Given our unexpected moderation results, we also recommend that future research investigate multiple domains of support for GE youth. GE youth do not receive support exclusively from parents; prior research has suggested that GE youth may rely on peer support over parental support (Alonso et al., 2025). Thus, understanding the combined effect of parent and peer support may provide a more complete picture of how social support impacts sleep in GE youth. Finally, we suggest investigating the role of parental affirmation of gender identity. Prior research has determined that gender identity affirmation from parents is an important determinant of GE youth mental health (Belmont et al., 2024; Durwood et al., 2017; Olson et al., 2016), but its effect on sleep has not been explored.

### **Strengths and Limitations**

This study is among the first to use an objective measure of sleep quality for GE youth. This advances our understanding of GE youth sleep by drawing on state-of-the-research methods for assessing sleep in naturalistic (i.e., home) environments. Moreover, prior research has shown that self-reported sleep duration aligns well with actigraphy measurement, while sleep quality is discrepant due to misestimations of nighttime wakefulness (Kiss et al., 2025). Additionally, our

study drew from a racially and ethnically diverse group of adolescents, aiding generalizability across U.S. youth. Further, we selected a strengths-based approach to identifying under what conditions transgender youth are sleeping optimally, finding that GE youth with high parental support are sleeping well. Such an approach is recommended by proponents of minority stress theory, which, despite its name, is concerned equally with minority stress and relationship-based sources of resilience (Meyer et al., 2015; Testa et al., 2015). A strengths-based approach is also beneficial in clinically oriented work such as this because it results in clear indications for clinical practice. As described, our results point directly to the importance of parental support, which marriage and family therapists are well-suited to intervene on.

Our study has a few notable limitations. In the ABCD Study, sleep data were collected at the 2-year follow-up visit, while parental support was assessed at the 1-year visit. Although we assume that parental support would remain relatively stable over one year, it is possible that parental support at year 2 differed from the levels reported at year 1. Additionally, our sample reported a high average SES. Prior research has demonstrated that SES is an important determinant of sleep quality (Sosso et al., 2021), and that individuals who are socioeconomically disadvantaged report more sleep problems than their high SES peers (Grandner et al., 2010). As a result, the sleep quality observed in our sample may not be representative of the general population.

We were also limited by the measures available in the ABCD dataset. The CRPBI assesses parental support using a three-point Likert scale. As MFTs, we recognize that parental support encompasses a wide range of behaviors and experiences that cannot be neatly reduced to three categories. As a result, our findings may not reflect the complex nature of how parental support impacts GE youth sleep.

Additionally, we decided to treat GE status as a dichotomous variable. However, as previously discussed, GE individuals represent a diverse population with varying experiences of minority stress. Had we examined specific subgroups within the GE population, we may have gained a more comprehensive understanding of how GE status relates to sleep outcomes.

## **Conclusion**

Sleep is integral to the mental health and development of youth. Given that GE youth have been demonstrated to experience significant sleep disparities, the present study sought to identify resilience factors that could mitigate the impact of minority stress on sleep. Our findings reestablish that GE youth experience significant sleep disparities, and that parental acceptance is associated with longer sleep duration. In our sample, parental support only moderated the relationship between GE status and sleep duration; GE youth with higher levels of parental support slept for fewer minutes, on average, than youth with lower levels of parental support. As GE youth continue to face discrimination and structural barriers to care, we urge researchers to continue investigating potential sources of resilience for this population.

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**Table 1***Descriptive Statistics for Continuous Study Variables by Gender-Expansive Status*

	<i>Gender Expansive Youth</i>					<i>Non-Gender Expansive Youth</i>				
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>Min.</i>	<i>Max.</i>
Parental support	121	13.77	1.51	5.00	15.00	2807	14.11	1.38	6.00	15.00
Sleep minutes	124	437.22	44.73	262.40	560.00	2855	451.45	37.05	287.20	598.80
Sleep efficiency	124	88.92	1.82	84.46	93.58	2855	88.66	1.68	81.28	93.89
Wake after sleep onset	124	54.96	12.22	18.00	83.00	2855	57.97	10.98	26.00	103.00
Sleep latency	124	6.76	4.97	1.00	31.00	2855	6.72	4.89	0.00	51.00
Sleep onset	124	11:17 PM	78.00	9:13 PM	3:07 AM	2855	10:59 PM	67.53	7:03 PM	5:35 AM
Wake	124	6:46 AM	110.88	8:41 PM	9:57 AM	2855	7:08 AM	72.61	4:21 PM	10:21 AM
Sleep midpoint	124	3:25 AM	71.82	12:50 AM	7:22 AM	2855	3:14 AM	61.88	11:15 PM	10:08 AM
Variability in sleep onset	124	0.06	0.04	0.01	0.28	2855	0.05	0.03	0.01	0.24
Variability in wake	124	0.21	1.22	-7.44	6.59	2855	0.23	1.14	-25.02	22.28
Variability in sleep midpoint	124	0.05	0.03	0.01	0.23	2855	0.04	0.02	0.01	0.22
Variability in sleep minutes	124	0.17	0.08	0.04	0.42	2855	0.14	0.06	0.01	0.44

**Table 2***Correlations Among Continuous Study Variables by Gender-Expansive Status*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Parental support	–	.08***	.02	.01	.01	-.09***	.02	-.08***	-.11***	-.01	-.09***	-.14***	.01	-.05**	.12***
2. Sleep minutes	-.14	–	-.04	.47***	.14***	-.37***	.13***	-.11***	-.24***	-.06**	-.24***	-.40***	-.10***	-.17***	.11***
3. Sleep efficiency	-.07	-.23**	–	-.90***	.24***	.15***	-.05**	.08***	.09***	.004	.10***	.07***	.11***	.04	-.05
4. Wake after sleep onset	.01	.62***	-.90***	–	-.15***	-.28***	.11***	-.11***	-.18***	-.03	-.19***	-.23***	-.14***	-.11***	.09***
5. Sleep latency	-.02	.04	.176	-.10	–	-.004	-.01	.02	.05**	.003	.07***	-.03	.05	-.003	-.04
6. Sleep onset	.07	-.40***	.11	-.26**	.05	–	.08***	.95***	.37***	.10***	.41***	.47***	.17***	.14***	-.22***
7. Wake	-.02	.03	.08	-.06	-.01	-.162	–	.13***	-.21***	-.10***	-.26***	-.21***	.003	-.10***	.07***
8. Sleep midpoint	.03	-.11	-.01	-.03	.05	.95***	-.16	–	.31***	.09***	.36***	.37***	.14***	.10***	.19***
9. Variability in onset	.06	-.12	-.03	-.01	.13	.48***	-.51***	.47***	–	.16***	.90***	.62***	.12***	.17***	-.20***
10. Variability in wake	-.07	-.23**	.01	-.12	-.08	.07	.28**	.002	-.15	–	.19***	.13***	.05**	.04	-.07***
11. Variability in sleep midpoint	.01	-.17	.01	-.06	.12	.51***	-.56***	.50***	.93***	-.04	–	.64***	.13***	.17***	-.20***
12. Variability in minutes	.09	-.47***	.07	-.25**	.13	.51***	-.38***	.40***	.61***	.03	.66***	–	.16***	.16***	-.23***
13. Pubertal status	-.17	-.13	.06	-.09	.07	.19	-.02	.16	.09	.02	.07	.22	–	.15***	-.04
14. Waist circumference	.03	-.21	-.03	-.07	-.01	.18	-.02	.13	.12	.12	.07	.19	.32**	–	-.17***
15. Family income	.02	.10	-.07	.11	.06	-.13	.09	-.12	-.17	-.12	-.17	-.31***	-.16	-.14	–

*Note.* Correlations for gender-expansive youth are shown below the diagonal; correlations for non-gender-expansive youth are shown above the diagonal.

\*\*  $p < .01$ . \*\*\*  $p < .001$ .

**Table 3.1**

*Associations Between Gender-Expansive Status and Sleep Minutes Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	-5.31	6.02	0.38
Parental support	7.00	3.33	0.04
Gender-Expansive Status x Parental Support	-11.10	4.09	0.01
Hispanic	-8.32	6.62	.21
Black	-29.16	8.60	<.001
Asian	8.91	14.30	0.53
Pacific Islander	12.34	39.33	0.75
American Indian or Alaska Native	-10.83	16.37	0.51
Other race or ethnicity	-10.10	39.66	0.80
Sexual-minority status	-5.22	6.60	0.43

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.2**

*Associations Between Gender-Expansive Status and Sleep Efficiency Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	-0.01	0.28	0.97
Parental support	0.13	0.15	0.38
Gender-Expansive Status x Parental Support	-0.21	0.19	0.25
Hispanic	-0.17	0.30	0.59
Black	-0.03	0.39	0.93
Asian	-0.10	0.65	0.88
Pacific Islander	0.12	1.80	0.95
American Indian or Alaska Native	-0.12	0.75	0.87
Other race or ethnicity	0.53	1.81	0.77
Sexual-minority status	0.22	0.30	0.47

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.3***Associations Between Gender-Expansive Status and WASO Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	-0.38	1.76	0.83
Parental support	0.12	0.97	0.90
Gender-Expansive Status x Parental Support	-0.10	1.19	0.93
Hispanic	-0.05	1.93	0.98
Black	-3.48	2.51	0.17
Asian	1.30	4.18	0.76
Pacific Islander	0.95	11.49	0.93
American Indian or Alaska Native	-0.25	4.78	0.96
Other race or ethnicity	-4.61	11.58	0.69
Sexual-minority status	-1.55	1.93	0.42

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.4**

*Associations Between Gender-Expansive Status and Sleep Latency Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	-0.25	0.72	0.73
Parental support	0.06	0.40	0.89
Gender-Expansive Status x Parental Support	-0.12	0.49	0.81
Hispanic	-0.21	0.79	0.79
Black	-0.33	1.03	0.75
Asian	-0.37	1.71	0.83
Pacific Islander	1.05	4.70	0.82
American Indian or Alaska Native	7.47	1.96	<.001
Other race or ethnicity	0.42	4.74	0.93
Sexual-minority status	-0.18	0.79	0.82

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.5***Associations Between Gender-Expansive Status and Sleep Onset Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	-8.48	9.41	0.37
Parental support	-7.99	5.21	0.13
Gender-Expansive Status x Parental Support	11.75	6.39	0.07
Hispanic	32.19	10.35	0.002
Black	83.45	13.45	<.001
Asian	31.96	22.35	0.15
Pacific Islander	21.71	61.47	0.72
American Indian or Alaska Native	33.96	25.59	0.18
Other race or ethnicity	-16.17	61.99	0.79
Sexual-minority status	39.71	10.32	<.001

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.6***Associations Between Gender-Expansive Status and Wake Time Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	-34.88	13.50	0.01
Parental support	1.96	7.48	0.79
Gender-Expansive Status x Parental Support	-3.29	9.17	0.72
Hispanic	11.66	14.84	0.43
Black	-20.00	19.29	0.30
Asian	48.88	32.06	0.13
Pacific Islander	34.03	88.19	0.70
American Indian or Alaska Native	11.41	36.72	0.76
Other race or ethnicity	-7.01	88.94	0.94
Sexual-minority status	17.54	14.80	0.24

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.7**

*Associations Between Gender-Expansive Status and Sleep Midpoint Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	-9.43	8.66	0.28
Parental support	-3.81	4.79	0.43
Gender-Expansive Status x Parental Support	5.28	5.88	0.37
Hispanic	27.89	9.52	0.003
Black	65.68	12.37	<.001
Asian	33.19	20.56	0.11
Pacific Islander	28.40	56.55	0.62
American Indian or Alaska Native	33.22	23.54	0.16
Other race or ethnicity	-28.85	57.03	0.61
Sexual-minority status	37.56	9.49	<.001

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.8**

*Associations Between Gender-Expansive Status and Variability in Sleep Onset Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	0.01	0.004	0.27
Parental support	-0.003	0.002	0.24
Gender-Expansive Status x Parental Support	0.004	0.003	0.20
Hispanic	-0.003	0.01	0.49
Black	0.02	0.01	0.001
Asian	-0.004	0.01	0.72
Pacific Islander	0.01	0.01	0.72
American Indian or Alaska Native	-0.002	0.01	0.87
Other race or ethnicity	-0.02	0.03	0.50
Sexual-minority status	0.01	0.01	0.20

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.9**

*Associations Between Gender-Expansive Status and Variability in Wake Time Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	0.154	0.14	0.26
Parental support	-0.04	0.07	0.57
Gender-Expansive Status x Parental Support	-0.01	0.09	0.95
Hispanic	-0.05	0.15	0.72
Black	0.43	0.19	0.03
Asian	-0.22	0.32	0.49
Pacific Islander	-0.12	0.88	0.89
American Indian or Alaska Native	0.17	0.37	0.64
Other race or ethnicity	0.12	0.89	0.89
Sexual-minority status	-0.27	0.15	0.07

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.10**

*Associations Between Gender-Expansive Status and Variability in Sleep Midpoint Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	0.01	0.004	0.03
Parental support	-0.003	0.002	0.17
Gender-Expansive Status x Parental Support	0.003	0.002	0.27
Hispanic	-0.001	0.004	0.74
Black	0.02	0.01	0.002
Asian	-0.01	0.01	0.22
Pacific Islander	-0.001	0.02	0.96
American Indian or Alaska Native	-0.01	0.01	0.57
Other race or ethnicity	-0.002	0.02	0.92
Sexual-minority status	-0.001	0.004	0.72

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Table 3.11**

*Associations Between Gender-Expansive Status and Variability in Sleep Minutes Moderated by Parental Support*

	<i>B</i>	<i>SE</i>	<i>p</i>
Gender-expansive status	0.01	0.01	0.23
Parental support	-0.01	0.01	0.12
Gender-Expansive Status x Parental Support	0.01	0.01	0.10
Hispanic	0.01	0.01	0.64
Black	0.06	0.01	<.001
Asian	-0.03	0.02	0.19
Pacific Islander	0.02	0.06	0.78
American Indian or Alaska Native	-0.001	0.03	0.95
Other race or ethnicity	-0.03	0.06	0.59
Sexual-minority status	0.02	0.01	0.04

*Notes.*  $N = 220$ . Models were fit on a propensity score-matched sample ( $n = 124$  gender-expansive youth,  $n = 96$  non-gender-expansive youth) that was matched on sex assigned at birth, pubertal status, waist circumference, and family income. Race/ethnicity and sexual-minority status variables were included as covariates and were dummy coded as 1 = *Yes*, 0 = *No* (referent group for race/ethnicity was White).

**Figure 1**

*Association Between Gender-Expansive Status and Sleep Minutes Moderated by Parental Support*

