Spring 2023

The Relation Between ADHD Symptoms and Life Satisfaction/ Self-Esteem Among Youth: Family Structure and Parenting Practices as Moderators

Yvette Rother

THE RELATION BETWEEN ADHD SYMPTOMS AND LIFE SATISFACTION/SELF-ESTEEM AMONG YOUTH: FAMILY STRUCTURE AND PARENTING PRACTICES AS MODERATORS

by

Yvette Rother

Bachelor of Science
Syracuse University, 2019

Submitted in Partial Fulfillment of the Requirements

For the Degree of Master of Arts in

Psychology

College of Arts and Sciences

University of South Carolina

2023

Accepted by:

Kate Flory, Director of Thesis

Kim Becker, Committee Member

Cheryl L. Addy, Interim Vice Provost and Dean of the Graduate School

DEDICATION

I am dedicating this thesis to all of you who have been with me every step of the way and made an enormous impact on me. I've been fortunate to have various mentors throughout my life, all who have contributed to my passion for mental health. To my parents, who always encouraged me to follow my dreams, even when those dreams involved spending countless hours in front of a computer screen. Thank you for always believing in me, even when I didn't believe in myself. To all my friends, who listened patiently as I ranted about this thesis and never once judged me for sending ten-minute-long voice memos. I want to give a shout-out to Brian, Sydney, and Natalia specifically, as they have been my biggest supporters throughout this process.

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation to Dr. Kate Flory for her guidance, unwavering support, and encouragement throughout this process. Her wisdom, patience, and feedback have been invaluable, and I am honored to have the opportunity to work with such a wonderful and dedicated mentor. I also want to thank Dr. Kim Becker for her vital feedback, insightful comments, and support. Her expertise and contributions have truly enhanced the quality of this work.

ABSTRACT

Children and adolescents with attention-deficit/hyperactivity disorder (ADHD) may be particularly vulnerable to lower life satisfaction and self-esteem, given negative perceptions about their abilities and self, as well as related impairments in academic, social, and interpersonal functioning. Family factors, such as family structure and parenting behaviors, can impact youth development and behaviors. However, it is unclear what role family factors play in the relation between ADHD symptoms and life satisfaction and self-esteem among youth. This study therefore examined whether ADHD symptoms have an impact on the life satisfaction and self-esteem of children and adolescents in grades 4-12. Moreover, it explored whether family structure (i.e., single vs. dual parents in the household) and parent-reported parenting practices (i.e., involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, corporal punishment) moderated the relation between ADHD symptoms and life satisfaction and self-esteem. In addition, one exploratory aim focused on whether moderation effects differ by reporter (i.e., parent- vs. child-reported parenting practices). Participants (N = 378; M_{age} = 12.52) were children and adolescents with and without ADHD in South Carolina who participated in the Replication of the Project to Learn about Youth-Mental Health (Re-PLAY-MH) study. Measures were administered to both parents and youth to evaluate ADHD symptoms, family structure, parenting practices, as well as life satisfaction and self-esteem. Linear regressions showed that ADHD symptoms were significantly associated with life satisfaction and self-esteem, such that higher ADHD

symptoms were related to lower life satisfaction and self-esteem. Multiple regression analyses showed that family structure and parent-reported parenting practices did not moderate the relation between ADHD symptoms and life satisfaction and self-esteem. However, child-reported negative parenting practices moderated the relation between ADHD symptoms and life satisfaction and self-esteem, such that regardless of the severity of ADHD symptoms, lower life satisfaction and self-esteem are still a concern when it comes to high levels of negative parenting practices, whereas with moderate or low levels of negative parenting practices, ADHD symptoms play a significant role. The results from the current study will contribute to the existing ADHD literature and may help inform case conceptualizations and interventions that incorporate subjective well-being and parenting elements.

TABLE OF CONTENTS

Dedication iii

Acknowledgements iv

Abstract v

List of Tables viii

List of Figures x

List of Abbreviations xi

Chapter 1: Introduction 1

Chapter 2: Method 13

Chapter 3: Results 24

Chapter 4: Discussion 45

References 64

LIST OF TABLES

Table 2.1 Sociodemographic Characteristics of Participants 23

Table 3.1 Descriptive Statistics 37

Table 3.2 Bivariate Correlations Among Study Variables 38

Table 3.3 Linear Regression of ADHD Symptoms on Life Satisfaction 39

Table 3.4: Linear Regression of ADHD Symptoms
on Life Satisfaction with Covariates 39

Table 3.5 Linear Regression of ADHD Symptoms on Self-Esteem 39

Table 3.6: Linear Regression of ADHD Symptoms
on Self-Esteem with Covariates 39

Table 3.7: Multiple Regression of ADHD Symptoms and
Life Satisfaction Moderated by Family Structure 40

Table 3.8: Multiple Regression of ADHD Symptoms and
Self-Esteem Moderated by Family Structure 40

Table 3.9: Multiple Regression of ADHD Symptoms and Life Satisfaction
Moderated by Parent-reported Positive Parenting Practices 40

Table 3.10: Multiple Regression of ADHD Symptoms and Life Satisfaction
Moderated by Parent-reported Negative Parenting Practices 41

Table 3.11: Multiple Regression of ADHD Symptoms and Self-Esteem
Moderated by Parent-reported Positive Parenting Practices 41

Table 3.12: Multiple Regression of ADHD Symptoms and Self-Esteem
Moderated by Parent-reported Negative Parenting Practices 41

Table 3.13: Multiple Regression of ADHD Symptoms and Life Satisfaction
Moderated by Child-reported Positive Parenting Practices 42

Table 3.14: Multiple Regression of ADHD Symptoms and Life Satisfaction
Moderated by Child-reported Negative Parenting Practices 42

Table 3.15: Multiple Regression of ADHD Symptoms and Self-Esteem Moderated by Child-reported Positive Parenting Practices 42

Table 3.16: Multiple Regression of ADHD Symptoms and Self-Esteem Moderated by Child-reported Negative Parenting Practices 43

LIST OF FIGURES

Figure 3.1: Interaction between ADHD Symptoms and Child-Reported Negative Parenting Practices on Life Satisfaction 44

Figure 3.2: Interaction between ADHD Symptoms and Child-Reported Negative Parenting Practices on Self-Esteem 44

LIST OF ABBREVIATIONS

ADHD.....Attention-deficit/hyperactivity disorder
APQ.....Alabama Parenting Questionnaire
BMSLSS.....Brief Multidimensional Students' Life Satisfaction Scale
CBCL.....Child Behavior Checklist
CDC.....Center for Disease Control and Prevention
DSM.....Diagnostic Statistical Manual
GPA.....Grade Point Average
Re-PLAY-MH.....Replication of the Project to Learn about Youth-Mental Health
RSE.....Rosenberg Self-Esteem Scale
VIF.....Variance Inflation Factor

CHAPTER 1

INTRODUCTION

Attention-deficit/hyperactivity disorder (ADHD) is the most common childhood neurodevelopmental disorder (Fulton et al., 2009; Wigal et al., 2012), with an estimated prevalence rate of 9.4% in children ages 2-17 (Danielson et al., 2018). ADHD is characterized by symptoms of inattention, hyperactivity, and/or impulsivity (American Psychiatric Association, 2013). Some prior studies show a relation between ADHD and lower self-esteem and life satisfaction (Cook et al., 2014; Nadeau et al., 2015), yet inconsistencies and gaps in this research area exist. It is important to further identify factors that contribute to the relation between ADHD and self-esteem/life satisfaction to improve understanding of the impact of ADHD on individuals and their overall well-being, as well as help inform interventions and prevention efforts. Family structure and parenting practices have been found to be associated with both ADHD and life satisfaction/self-esteem in children and adolescents (Carballo et al., 2013; Ellis & Nigg, 2009; Kearney, 2000; Smokowski et al., 2015; Zullig et al., 2005) and therefore may influence the relation between ADHD and life satisfaction/self-esteem. The current study aims to examine the main effects of ADHD symptoms in relation to both life satisfaction and self-esteem, and the role of family structure and parenting practices as potential moderators of this relation.

Attention-Deficit/Hyperactivity Disorder in Youth

ADHD often leads to impairments in academic, social, and interpersonal functioning (Antshel et al., 2011). For example, in comparison to children without ADHD, children who display higher symptoms of inattention, hyperactivity, and impulsivity are at risk for lower academic and educational achievements (e.g., lower GPAs and standardized test scores, increased rates of grade repetition and detention; Loe et al., 2007). Children with ADHD also often experience social difficulties such as peer rejection and victimization, and have trouble maintaining quality friendships (Hoza, 2007). Moreover, high levels of ADHD symptoms and untreated ADHD in childhood have been associated with unhealthy behaviors and lifestyle choices later in life (Holton & Nigg, 2020). Indeed, ADHD has been linked to increased alcohol and tobacco use (Whalen et al., 2002) and substance use disorders (Wilens & Fusillo, 2007) during adolescence and adulthood. These health risk behaviors specifically and overall poorer physical health contribute to increasing mortality rates in individuals with childhood ADHD (Cherkasova et al., 2022).

ADHD etiology is complex and multidimensional – the literature suggests multiple frameworks and pathways that include genetic, environmental, and neurobiological factors, and their interactions (Killeen et al., 2011). Meta-analyses reveal that the SNAP-25 gene, dopaminergic genes (DRD4, DRD5, DAT1), and serotonergic genes (5HTT, HTR1B) are associated with ADHD, while no significant genome-wide gene variants have been found (Thapar et al., 2013). Twin studies estimate the heritability of clinically diagnosed ADHD to be high (approximately 76%-88%; Faraone et al., 2005; Larsson et al., 2014). Environmental factors, such as prenatal lead and nicotine exposure

(Froehlich et al., 2009), as well as low birth weight (Nigg & Breslau, 2007) are also associated with ADHD.

To receive an ADHD diagnosis in the United States, the criteria of the 5th edition of the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders (DSM-5) must be met (American Psychiatric Association, 2013). The DSM-5 diagnostic criteria for ADHD include symptoms on the two dimensions of inattention and hyperactivity-impulsivity, which, depending on exact symptom expression, present as subtypes of ADHD: predominantly inattentive subtype, predominantly hyperactive-impulsive subtype, and combined subtype (American Psychiatric Association, 2013). The heterogeneity of symptom domains may explain the heterogeneity in the patterns of functional impairments across individuals with ADHD (Garner et al., 2013). ADHD symptom dimensions also relate differentially to certain functional impairments; for instance, inattention symptoms predict academic impairments, while hyperactivity/impulsivity symptoms relate to classroom disruption (Garner et al., 2013). A meta-analysis found that the ADHD symptom domains are valid, meaning distinctions between symptoms of inattention and hyperactivity-impulsivity exist, yet there is mixed evidence for discriminant validity across DSM ADHD subtypes (Willcut et al., 2012). These DSM subtypes can also be inconsistent over time due to systematic and random changes that occur throughout development (Willcut et al., 2012). Thus, a dimensional approach when evaluating children with ADHD should be used, focusing on describing a child's level of ADHD symptoms rather than only determining if they meet the threshold for a diagnosis (Krakowski et al., 2022) or the categorization of subtypes (Marcus &

Barry, 2011; Willcut et al., 2012). Following this guidance, the current study examines ADHD in a continuous manner.

Subjective Well-Being

One conceptual framework within positive psychology (Gable & Haidt, 2005) that contributes to understanding the overall mental health and functioning of an individual is subjective well-being (i.e., an individual's report of well-being based on evaluation of their own life; Moksnes & Espnes, 2013). Life satisfaction is one important cognitive component of subjective well-being (Nickerson & Nagle, 2004; Proctor et al., 2009). Children and adolescents experience unique changes and challenges during development that can impact their general satisfaction with life (Moksnes & Espnes, 2013). Self-esteem, an individual's perceived self-worth, can influence how youth react and respond to these challenges (Orth & Robins, 2014), and can therefore impact life satisfaction. Self-esteem and life satisfaction are positively associated, even when controlling for gender and age (Moksnes & Espnes, 2013). For example, in a study of 79 students in grades 5-7 of a midwestern rural school district, children who reported high life satisfaction also reported higher self-esteem (Huebner, 1991). Although life satisfaction measures are appropriate for children and adolescents (Huebner & Dew, 1996), research evaluating subjective well-being, life satisfaction, and related constructs like self-esteem in youth populations is severely lacking compared to within adult populations (Huebner, 1991; Moksnes & Espnes, 2013). This current study is important not only for filling in the aforementioned gaps in research, but also because incorporating self-esteem and life satisfaction components could help with the development of interventions that promote youth mental health. The current study will therefore examine

both life satisfaction and self-esteem as related to ADHD symptoms among children and adolescents.

ADHD and Life Satisfaction

Life satisfaction is a well-documented predictor of overall well-being and positive functioning (Suldo et al., 2006). Life satisfaction can be measured unidimensionally (i.e., global life satisfaction) and multidimensionally (i.e., across specific life domains; Gilman & Huebner, 2003). Multiple life domains, including academic or school-related domains, life events and experiences, and friendships, can have significant impacts on childrens' and adolescents' life satisfaction (Gilman & Huebner, 2003; Suldo et al., 2006). Yet there are significant gaps within the ADHD and life satisfaction literature – namely, research often examines life satisfaction in nonclinical populations as well as adult populations (Barfield, 2018; Barfield & Driessnack, 2018). There is little knowledge on how children and adolescents with ADHD assess their satisfaction with life, and how these assessments differ from their neurotypical peers (Barfield, 2018; Barfield & Driessnack, 2018). One study using a college student sample found that ADHD symptoms and their related negative outcomes were associated with lower life satisfaction (Gudjonsson et al., 2009). ADHD symptoms were also negatively associated with self-reported life satisfaction within a youth sample, ages 8-17 (Nadeau et al., 2015). Overall, it is important to understand how ADHD symptoms among youth are associated with life satisfaction ratings to inform the development of more effective treatments/interventions for ADHD and promote improved subjective well-being in comprehensive care settings. The outcomes of this study may also help with case conceptualization for individuals with ADHD, for instance, by helping to improve our understanding of the impact of ADHD on

individuals and their life satisfaction. Self-esteem is a construct closely related to life satisfaction that was also examined in the current study.

ADHD and Self-Esteem

Throughout childhood and adolescence, individuals with ADHD often feel different from their peers without ADHD and have negative perceptions about their abilities (Young et al., 2008). As ADHD is also associated with adverse childhood experiences (ACES) and negative outcomes across multiple domains of functioning, it may impact self-esteem development (Brown et al., 2017; Mazzone et al., 2013). For example, in a study that examined the relation between ADHD symptoms and self-esteem/self-perception in 564 early adolescents, severe inattentive symptoms negatively affected self-esteem, while hyperactive-impulsive symptoms impacted non-academic self-perception (Kita & Inoue, 2017). Other studies have also found that ADHD is associated with lower self-esteem among children and adolescents (Foley-Nicpon et al., 2012; Harpin et al., 2016). However, some studies have found that self-esteem might not differ between children with ADHD and non-ADHD controls due to children with ADHD overestimating their own competence (Gresham et al., 1998; Hoza et al., 2002), suggesting that more research is needed to clarify the association between ADHD symptoms and self-esteem among youth. Overall, children with ADHD with higher self-esteem may be able to overcome everyday life challenges and failures more effectively (Edbom et al., 2006), and thus interventions should aim to promote higher self-esteem in youth with ADHD. In addition to examining life satisfaction and self-esteem as related to ADHD symptoms among youth, the current study also investigates several family factors as potential moderators of these relations.

Family Influences on Youth Development

Family plays a critical role in child and adolescent development, behavior, and well-being (Kotchick & Forehand, 2002). Literature drawing on socialization frameworks examines the process of how youth develop knowledge, skills, behaviors, attitudes, and values through interactions with others (Peterson & Rollins, 1987). A bidirectional relationship between the parent and child exists during socialization, in which parents are the primary source of shaping their child's acquisition of values and standards using various methods, yet the child also decides whether to accept and internalize these messages (Grusec et al., 2000). Therefore, not only can family structure (e.g., marital status of parents) impact children and adolescents (Anderson, 2014; Carballo et al., 2013), but micro-level processes such as parenting behaviors and parent-child relationships are even stronger predictors of youth development (Murry & Lippold, 2018). Exploration of this research is important because understanding family influences can inform the development of programs and interventions aimed at promoting positive youth development, as well as the creation and presentation of psychoeducation protocols. The current study therefore examines family structure and parenting practices as important factors that may impact the association between ADHD symptoms and subjective well-being outcomes.

ADHD and Family Structure

Due to structural changes in marriage and family life, increased divorce rates, and other factors, there has been a shift from the "traditional" biological, heterosexual, two-parent families to single-parent families (Parke, 2017). Children who grow up in a single-parent family often experience negative outcomes (Ermisch & Francesconi, 2001) and

mental health disorders (Moilanen & Rantakallio, 1988), though several factors (e.g., birth order, family size, socioeconomic level) potentially mitigate these outcomes (Carballo et al., 2013). Indeed, studies found that children who live in single/divorced households were more likely to have an ADHD diagnosis (Carballo et al., 2013; Lingineni et al., 2012; Behere et al., 2017). Single parents are likely to experience high levels of stress, possibly complicating parent-child relationships and impacting parent perception of their child's ADHD symptoms (Bax et al., 2019; Behere et al., 2017). Given the complex nature of family structure, the effect of the number of parents in the household on the relation between ADHD symptoms and life satisfaction and self-esteem was investigated in the current study.

ADHD and Parenting Practices

Parenting practices can also impact child development and behaviors. For example, when parents utilize harsh, inconsistent, and passive disciplinary strategies, a child's current and future behavioral problems increase (Romano et al., 2006). Nonetheless, current research continues to yield ambiguity regarding the extent to which parenting influences ADHD symptoms (Clerkin et al., 2007). Some studies looking at youth within the U.S. and Germany found that negative parenting practices (e.g., inconsistent discipline, low involvement, poor monitoring, more corporal punishment) in particular are related to ADHD symptom domains (Ellis & Nigg, 2009; Wirth et al., 2019), while others found that parenting practices were not associated with ADHD (Hinshaw, 2002; Schroeder & Kelley, 2008). Specifically, when examining child ADHD symptom domains and parent-reported parenting practices (e.g., involvement, positive parenting, poor supervision, inconsistent discipline), Ellis and Nigg (2009) found

associations between both maternal inconsistent discipline and ADHD-combined subtype, and paternal low involvement and ADHD across all subtypes. The current study further investigates the effect of parenting practices (e.g., involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, corporal punishment) on the relation of ADHD symptoms to life satisfaction and self-esteem.

Family Variables and Life Satisfaction/Self-Esteem

It is clear that parent-child relationships in general can have a large impact on youth developmental outcomes like mental health and well-being (Smokowski et al., 2015). With regard to family structure and life satisfaction, family structure can affect adolescents' life satisfaction, yet differentiating effects exist across gender and race groups (Zullig et al., 2005). For example, it was found that White adolescents living in a nuclear family were significantly less likely to be dissatisfied with life as compared to Black adolescents (Zullig et al., 2005). Furthermore, parenting practices can also influence the life satisfaction of children and adolescents (Behmani & Singh, 2018; Pérez-Fuente et al., 2019). For example, in one study with a sample of 705 Russian primary school children, child life satisfaction was negatively associated with corporal punishment and poor supervision (Leto et al., 2019). With regard to family structure and self-esteem, mixed findings have been reported in the literature (McKenna, 1995). Several studies report that adolescents from single-parent families endorse lower self-esteem than adolescents from nuclear families, yet the negative effects that emerge may be mitigated by high familial satisfaction (Kearney, 2000; McKenna, 1995). Other studies did not find significant mean differences in self-esteem across different family structures for children and adolescents (Causey et al., 2015; Clark & Barber, 1994). In terms of

parenting practices and self-esteem, negative and high-conflict parenting is associated with decreased self-esteem in youth (Smokowski et al., 2015).

The Current Study

Building on existing literature, the current study utilizes cross-sectional data from children and adolescents in grades 4-12 in a rural/suburban South Carolina school district to examine the association of ADHD symptoms with self-esteem and life satisfaction. This study also examines family structure and parenting practices as possible moderators of these associations. Findings will fill gaps in research and make a significant contribution to existing literature. This study will also highlight potential areas for case conceptualization and intervention in order to better understand and improve the mental well-being of children and adolescents with significant symptoms of ADHD. The study aims to answer the following research questions:

1a. Are ADHD symptoms related to life satisfaction among children and adolescents in grades 4-12?

1b. Are ADHD symptoms related to self-esteem among children and adolescents in grades 4-12?

We hypothesized that greater ADHD symptoms would be significantly associated with lower life satisfaction and self-esteem scores.

2a. Is the relation between ADHD symptoms and life satisfaction moderated by family structure (i.e., single vs. dual parents in household) among children and adolescents?

2b. Is the relation between ADHD symptom severity and self-esteem moderated by family structure (i.e., single vs. dual parents in household) among children and adolescents?

We hypothesized that family structure would buffer the relation between ADHD symptoms and life satisfaction/self-esteem, such that when children live in a nuclear household, the connection between ADHD symptoms and life satisfaction/self-esteem would be less strong. In other words, aspects of family structure will serve as a protective factor.

3a. Is the relation between ADHD symptoms and life satisfaction moderated by parent-reported parenting practices (i.e., involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, corporal punishment)?

3b. Is the relation between ADHD symptoms and self-esteem moderated by parent-reported parenting practices (i.e., involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, corporal punishment)?

We hypothesized that parenting practices would buffer the relation between ADHD symptoms and life satisfaction/self-esteem, such that when parents report more positive parenting practices (i.e., involvement, positive parenting), the connection between ADHD symptoms and life satisfaction/self-esteem would be less strong. Positive parenting practices will serve as a protective factor.

4. Finally, as an exploratory aim, the current study examines whether findings for research questions 3a and 3b differ if we examine child-reported parenting practices.

Prior research has demonstrated significant discrepancies between child and parent ratings of child psychopathology (De Los Reyes & Kazdin, 2005), quality of life (Klassen et al., 2006), and parental rearing practices (Bögels & van Melick, 2004). It is therefore important to continue to investigate whether reporter type has an impact on outcomes, such as those investigated in the current study. The two research questions for this exploratory aim are:

4a. Is the relation between ADHD symptoms and life satisfaction moderated by child-reported parenting practices (i.e., involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, corporal punishment)?

4b. Is the relation between ADHD symptoms and self-esteem moderated by child-reported parenting practices (i.e., involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, corporal punishment)?

Because these research questions are exploratory, there were no hypotheses.

In addition to these research questions, the current study examines age, gender, and race as covariates given that these demographic factors were found to have an effect on the outcomes in some prior studies. Although inconsistencies exist, Moksnes and Espnes (2013) reported gender and age effects on self-esteem and life satisfaction; for instance, boys endorsed higher self-esteem and life satisfaction than girls during adolescence. In terms of ADHD, the extent to which factors like gender, culture, and ADHD subtype impact the relation of ADHD to family factors is unknown (Johnston & Mash, 2001). This lack of research highlights the need for further exploration of these variables to understand outcomes.

CHAPTER 2

METHOD

Participants

The current study used data from the Replication of the Project to Learn about Youth-Mental Health (Re-PLAY-MH) conducted between December 2015 and September 2017. The central aim of Re-PLAY-MH, funded by the U.S. Centers for Disease Control and Prevention (CDC), was to estimate the prevalence of mental disorders among school-aged children and adolescents. Participants were students in a rural/suburban central South Carolina school district that included 20 schools serving students in kindergarten through grade 12.

The current study specifically used data from the parent-interview stage (Stage 2) of the RE-PLAY-MH study, which included 572 students in grades K-12. Parents reported that 47.5% of the students identified as female, while 52.5% identified as male. They also reported that 61.9% of the students were non-Hispanic White, 28.8% were non-Hispanic Black, 2.2% were Hispanic, and 7.1% identified with another racial category. Furthermore, 47.5% of students were enrolled in K-5th grade, 22.8% were enrolled in 6th-8th grade, and 29.7% were enrolled in 9th-12th grade. By design, life satisfaction and self-esteem were not measured in young children in Re-PLAY-MH; therefore, the current study restricted the sample to participants in grades 4-12 (ages 9-19; N = 378) who completed all of the study measures. Given the restriction, the overall study sample was comprised of 174 (46%) females and 204 (54%) males with a mean age of

12.52 years. Approximately 52% of participants identified as White (n = 198) while approximately 48% identified as "Non-White" (n = 180). Refer to Table 2.1 for more demographic information.

Procedure

For data collection, the Re-PLAY-MH study applied a two-stage sampling design. Stage 1 consisted of online teacher screenings for emotional and behavioral concerns using the Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997) and the Proxy Report Questionnaire (PRQ; Linazasoro et al., 2006). A passive consent process was used for Stage 1 with all district students in grades K-12 eligible for participation. Parents had multiple opportunities to learn about the study and decline their child's inclusion in the teacher screener stage. For example, a detailed website that included information about procedures, risks and benefits, and a copy of the questions included in the teacher screener was developed and shared with parents. Moreover, parents received two informational mailings about the study that included a postage-paid opt-out postcard. A press release and automated phone call from the superintendent's office also described the study. Parents had approximately three weeks to opt out of Stage 1.

A total of 10,454 students were enrolled in the district at the start of Stage 1, with approximately 8% of parents choosing to opt out. Therefore, 9,648 students were eligible for teacher screening. Out of these 9,648 students, one teacher (main teacher for elementary school students, first block or period teacher for middle and high school students) completed the online screener for a total of 6,886 students, resulting in a screener completion rate of 71.4%. Teachers were compensated with $4 for each screener completed. The teacher screener data was then used to stratify students into low- and

high-risk categories – to be considered high risk, the SDQ total score had to be above 11 or prior/current tics had to be reported on the PRQ. To select participants for Stage 2 of the study, students were stratified by risk status, sex, and grade level (elementary vs. middle/high school) and then randomly selected from among these groups to receive an invitation for Stage 2.

Stage 2 data collection, which took place in person at a centrally-located school in the district, involved parent interviews and questionnaires for all participating children and child-report measures completed only by children in grades 4-12. Parents provided informed consent and participating youth provided assent before data collection commenced. Parents of 2,999 students were invited to participate in Stage 2, and 572 families completed the Stage 2 protocol and received $75 for their participation. The estimated median interval between Stage 1 and Stage 2 data collection was approximately 12 months. All Stage 1 and 2 study procedures were approved by the University of South Carolina Institutional Review Board. All measures to be used in the current study (described below) were collected in Stage 2.

Measures

Demographics

The study examined demographic variables such as the child's age, grade level, gender, and race using information obtained from one parent or guardian (typically the mother) who filled out a detailed questionnaire. In the study's demographic questionnaire, caregivers were asked to report the child's date of birth and age. Caregivers were also asked about the child's gender, choosing either 0 ("Female") or 1 ("Male"). Information about race was obtained from an item asking about the child's

race, with 7 categorical response options of 1 (“American Indian or Alaskan Native”), 2 (“Black or African American”), 3 (“Native Hawaiian or Other Pacific Islander”), 4 (“Asian”), 5 (“Hispanic or Latino”), 6 (“White”), and 7 (“Other (please specify)”). In congruence with the U.S. Census and to simplify the data analytic process, this variable was recoded as 0 (“non-White”) and 1 (“White”) – in which all youth whose caregiver identified them as other than White was collapsed into the category “non-White.”

ADHD

The Child Behavior Checklist for Ages 6-18 (CBCL; Achenbach, 1991) is a comprehensive inventory of items related to domains of social functioning, mood and anxiety symptoms, and externalizing symptoms over the past six months. The CBCL is a 113-item questionnaire, scored on a Likert scale of 0 (“not true (as far as you know)”, 1 (“somewhat or sometimes true”), and 2 (“Very true or often true”). This measure has high reported internal consistency, with a coefficient alpha of 0.91 for parent- and teacher-report versions (Tehrani-Doost et al., 2011). The subscales are significantly correlated (p<0.01), indicating good cross-informant agreement and validity (Tehrani-Doost et al., 2011). To specifically assess symptoms of inattention, hyperactivity, and impulsivity, the current study used the Attention Deficit/Hyperactivity Problems DSM-oriented subscale of the CBCL. The Attention Deficit/Hyperactivity Problems subscale includes seven items, with sample items of “inattentive or easily distracted” and “impulsive or acts without thinking.” The current study used the parent-reported total score of the Attention Deficit/Hyperactivity Problems subscale of the CBCL, which is the sum of all seven ADHD-specific items. The seven ADHD-related items demonstrated good internal consistency in our dataset, with a Cronbach’s alpha of 0.89.

Life Satisfaction and Self-Esteem

The current study used the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS; Seligson et al., 2003), which measures self-reported life satisfaction across five domains: self, family, friends, school, and living environment. The five questionnaire items ask participants to rate their life satisfaction on a Likert scale, ranging from 1 ("terrible") to 7 ("delighted"). Sample items include "I would describe my satisfaction with my family life as…" and "I would describe my satisfaction with my school experience as…". This measure was found to have a coefficient alpha of 0.75 for the BMSLSS total score in an adolescent sample, which indicates good internal consistency (Seligson et al., 2003). Alpha estimates for each subscale fall within the following ranges: 0.72 to 0.84 for self, 0.79 to 0.85 for family, 0.81 to 0.85 for friends, 0.83 to 0.85 for school, and 0.79 to 0.83 for living environment (Huebner & Gilman, 2002). The five BMSLSS items also displayed good item-total correlations, which supports the measure's validity (Seligson et al., 2003; Tian et al., 2015). For the current study, the BMSLSS total score was used, which is a sum of responses on all items. The five life satisfaction items in our dataset have an acceptable internal consistency, with a Cronbach's alpha of 0.74.

The current study used the Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1979) to measure self-esteem. This measure includes 10 items (e.g., "I feel that I'm a person of worth", "I feel I do not have much to be proud of," "I feel that I have a good number of qualities") with responses rated on a 4-point Likert scale ranging from 0 ("strongly disagree") to 3 ("strongly agree"). The self-esteem questionnaire is reliable and has excellent internal consistency, as supported by a Guttman scale coefficient of 0.92 and

correlations of 0.85 and 0.88 (Rosenberg, 1979). The current study used the RSE total score, which is the sum of all the items after reverse-scoring negatively worded items. The 10 self-esteem items in our dataset demonstrated good internal consistency, with a Cronbach's alpha of 0.82.

Family Structure

The study's demographic questionnaire also assessed parent-report of family structure. Specifically, caregivers were asked about their marital status, with response options of 1 ("Single"), 2 ("Married"), 3 ("Living with a partner"), 4 ("Separated"), 5 ("Divorced"), and 6 ("Widowed"). For the current study, if the parent reported being single, separated, divorced, or widowed, their response was recoded to 0 ("Single-parent"). If the parent reported being married or living with a partner, their response was recoded to 1 ("Dual-parent").

Parenting Practices

The Alabama Parenting Questionnaire (APQ; Frick, 1991) was used to measure positive and negative parenting practices, with both parent- and child-report versions available. The questionnaires ask respondents to rate the frequency of 42 items occurring on a Likert scale that ranges from 1 ("Never") to 5 ("Always") across five domains: parental involvement, positive parenting, poor monitoring/supervision, inconsistent discipline, and corporal punishment. Parent-reported example items include "you let your child know when he/she is doing a good job with something" or "you don't check that your child comes home at the time he/she was supposed to," while child-reported example items include "your parents/caregivers let you know when you are doing a good job with something." The Parent Global Report version of the APQ demonstrates good

internal consistency for involvement and positive parenting (Cronbach's alphas of 0.80), acceptable internal consistency for poor monitoring/supervision and inconsistent discipline (Cronbach's alphas of 0.67), and low internal consistency for corporal punishment (Cronbach's alpha of 0.46; Shelton et al., 1996). The Child Global Report version of the APQ demonstrates acceptable to good internal consistency for involvement (Cronbach's alphas of 0.72 for mothers and 0.83 for fathers), acceptable internal consistency for positive parenting (Cronbach's alpha of 0.74), poor monitoring/supervision (Cronbach's alpha of 0.69) and inconsistent discipline (Cronbach's alpha of 0.56), and poor internal consistency for corporal punishment (Cronbach's alpha of 0.44). Discriminant validity was also adequate for all subscales (Shelton et al., 1996). For the current study, the subscales were combined into a total score of positive parenting practices (i.e., parental involvement, positive parenting) and a total score of negative parenting practices (i.e., poor monitoring/supervision, inconsistent discipline, corporal punishment) in alignment with previous studies investigating parenting practices (Dadds, Maujean, & Fraser, 2003; Essau, Sasagawa, & Frick, 2006). These were used for each reporter (child and parent) separately. The 16 positive parenting items in our dataset demonstrated good internal consistency with Cronbach's alphas of 0.86 for parent reporters and 0.88 for child reporters. The 19 negative parenting items in our dataset demonstrated acceptable internal consistency with Cronbach's alphas of 0.76 for parent reporters and 0.79 for child reporters.

Analytic Plan

Statistical analyses were conducted using IBM SPSS Statistics software (v. 28) and the PROCESS Macro for SPSS (Hayes, 2013). A final sample of 378 participants in

grades 4-12 was used for the analyses. Several study procedures were in place to reduce instances of missing data. In any given analysis, the percentage of missing data ranged between 0.53% - 2.12%. Given this low rate of missing data, listwise deletion was used.

Before conducting the regression analyses, assumptions, including linearity, homoscedasticity, normality, and multicollinearity, were assessed (Osborne & Waters, 2002). First, we examined the association between the independent and dependent variables to assess whether this relation was linear (e.g., as ADHD symptoms increase, life satisfaction decreases) through scatter plots. The scatter plots revealed that the relations between the independent variable and dependent variable were linear. Next, we tested for the assumption of homoscedasticity (i.e., a constant variance of residuals) through a fitted value vs. residual plot. The residual plots revealed that the data for all models with dependent variables were heteroscedastic, violating the assumption of homoscedasticity. To address this, the dependent variable was square root-transformed and analyses were rerun to evaluate whether the transformation changed the pattern of findings. When the general pattern of findings did not change, the original findings were presented for ease of interpretation. Third, we tested for the assumption of normality (i.e., normal distribution of residuals) both visually and through analytical normality tests (i.e., P-P plots and a Shapiro-Wilk test). The data violated the normality assumption in the analytical normality test. In order to address this, we attempted a logarithmic transformation, square root transformation, and inverse transformation on the dependent variables, given that the data had a negative skew. The transformations failed and the normality assumption continued to be violated when using the analytic normality test. The assumption, however, was not violated when we examined the residuals graphically.

Given this, and that our data having a negative skew was consistent with literature that shows that subjective well-being variables such as life satisfaction are reported to be mostly in the positive range in children and adolescents (Proctor, Linley, & Maltby, 2009), we decided to proceed with analyses. Finally, we tested for the absence of multicollinearity using variance inflation factor (VIF) values. The VIF values for the variables in the model were below five, meaning that the variables were not highly internally correlated, and the assumption was met. As our sample size was sufficiently large, we decided to proceed (Maas & Hox, 2004).

The present study used multiple regression to test whether ADHD symptoms and life satisfaction or self-esteem had an association moderated by family structure or parenting practices. A standard linear regression was used to examine whether ADHD symptoms (i.e., independent variable) were related to life satisfaction or self-esteem (i.e., dependent variable) among children and adolescents in grades 4-12 (Primary Aim 1). To assess Primary Aim 2, total ADHD symptoms were entered as the independent variable and family structure was entered as the moderating variable. To assess Primary Aim 3, total ADHD symptoms were entered as the independent variable and parent-reported parenting practices (i.e., positive parenting, negative parenting) were entered as moderating variables. Given that the dependent variables were continuous, simple moderation models with ordinary least squares estimation were utilized for the moderation models examining life satisfaction or self-esteem as a dependent variable. Finally, for the exploratory aims, analyses for Primary Aim 3 were repeated, but child-reported parenting practices were entered as the moderating variables rather than parent-

reported parenting practices. Covariates (i.e., age, gender, race) were included in all the models assessing primary and exploratory aims.

Post-hoc power analyses were conducted using G-Power statistical software to determine whether the sample size for the current study was adequate (i.e., does the study have enough statistical power to detect a significant result when an effect exists; Erdfeder et al., 1996). Given the different number of predictors in both the linear regression analyses and moderation analyses, we carried out separate power analyses. For the linear regression analyses, with a sample size of 378 participants and an alpha level of 0.05, the power to detect a small effect (B=0.10) was 1.00. For the moderation analyses, with a sample size of 378 participants and an alpha level of 0.05, the power to detect a small effect (B=0.10) was also 1.00. Therefore, the current study had adequate power to detect a small effect.

Table 2.1 Sociodemographic Characteristics of Participants

Variable	*n*	%	Min	Max	*M*	*SD*
Age	378		9	19	12.52	.123
Grade	375		4	12	6.85	.118
Gender	378					
Female	174	46.0				
Male	204	54.0				
Race	378					
White	198	52.4				
Non-White	180	47.6				
American Indian or Alaska Native	3	0.8				
Black or African American	138	36.5				
Native Hawaiian or Other Pacific Islander	0	0				
Hispanic or Latino	6	1.6				
Other	6	1.6				
Multiracial	27	7.1				
Family Structure	377					
Single-parent household	141	37.3				
Single	80	21.2				
Separated	25	6.6				
Divorced	31	8.2				
Widowed	5	1.3				
Dual-parent household	236	62.4				
Married	210	55.6				
Living with a partner	26	6.9				

CHAPTER 3

RESULTS

Descriptive Analyses and Correlations for Study Variables

Descriptive analyses were first conducted (see Table 3.1). Scores on the Attention Deficit/Hyperactivity Problems DSM-oriented subscale of the CBCL ranged from 0 to 14, with a mean score of 3.29 (SD = .188). The youth participants reported being very satisfied with life (M = 34.77, SD = .285) and having high self-esteem (M = 22.41, SD = .255) on average. Thus, scores for life satisfaction and self-esteem were negatively skewed. Of the scales representing positive parenting, parents reported higher positive parenting practices (M = 67.23, SD = .382) than their children did (M = 61.12, SD = .579). Of the scales representing negative parenting, children reported higher negative parenting practices (M = 37.52, SD = .529) than their parents did (M = 32.72, SD = .377).

Bivariate correlations were computed using these variables of interest: total ADHD symptoms, overall life satisfaction, overall self-esteem, family structure, parent-reported positive parenting practices, parent-reported negative parenting practices, child-reported positive parenting practices, child-reported negative parenting practices, and covariates (e.g., age, gender, race). Table 3.2 presents bivariate correlations among these study variables. Results demonstrated that ADHD symptoms were significantly negatively correlated with life satisfaction (r = -.13, p < .05), thus indicating that as ADHD symptoms increase, life satisfaction decreases. ADHD symptoms were also

significantly negatively correlated with self-esteem (r = -.17, p < .01), indicating that as ADHD symptoms increase, self-esteem decreases. In addition to previously mentioned correlations, the moderators (i.e., family structure, parenting practices) and covariates (i.e., age, gender, ethnicity) were included in the bivariate correlation. ADHD symptoms were significantly negatively related to family structure (r = -.17, p < .01), such that as ADHD symptoms increase, it is more likely that a child lives in a single-parent household. Furthermore, ADHD symptoms were also significantly negatively correlated with parent-reported positive parenting practices (r = -.17, p < .01) and child-reported positive parenting practices (r = -.17, p < .01), highlighting that as ADHD symptoms increase, positive parenting practices decrease. On the other hand, ADHD symptoms were significantly positively correlated with parent-reported negative parenting practices (r = .16, p < .01) and child-reported negative parenting practices (r = .11, p < .05), suggested that as ADHD symptoms increase, negative parenting practices also increase. In terms of the covariates, ADHD symptoms were significantly negatively related to age (r = .14, p < .01), such that as ADHD symptoms are more prevalent in children of younger age.

The results of the bivariate correlations also showed that the strongest correlation exists between life satisfaction and self-esteem, with a positive Pearson correlation coefficient of 0.61 (p < .01). This demonstrates that as life satisfaction increases, so does overall self-esteem. Overall life satisfaction was significantly positively related to parent-reported positive parenting practices (r = .19, p < .05) and child-reported positive parenting practices (r = .50, p < .01), such that as overall life satisfaction increases, positive parenting practices also increases. In contrast, overall life satisfaction was

significantly negatively correlated only with child-reported negative parenting practices (r = -.30, p < .01). Overall life satisfaction was negatively correlated with age (r = -.13, p < .05), which means that younger children reported greater life satisfaction. No significant correlation existed between overall life satisfaction and family structure (r = .10). Self-esteem was found to be significantly positively correlated with family structure (r = .18, p < .01), parent-reported positive parenting practices (r = .13, p < .05), and child-reported positive parenting practices (r = .33, p < .01), indicating that higher self-esteem was associated with the likelihood of living in a dual-parent household and higher levels of positive parenting practices. Self-esteem was also found to be significantly negatively correlated with child-reported negative parenting practices (r = .29, p < .01), meaning that lower levels of self-esteem are present when more negative parenting practices are reported.

Family structure was significantly negatively correlated with parent-reported negative parenting practices (r = -.17, p < .01) and child-reported negative parenting practices (r = -.11, p < .05), indicating that children living in dual-parent households were less likely to report negative parenting practices. Family structure was significantly positively correlated with ethnicity, such that it had a positive Pearson correlation coefficient of .27 (p < 0.01). This means that children who live in dual-parent households were more likely to identify as White. Parent-reported positive parenting practices were significantly negatively related to parent-reported negative parenting practices (r = -.28, p < .01), child-reported negative parenting practices (r = -.17, p < .01), and age (r = -.22, p < .01), such that higher levels of parent-reported positive parenting practices meant lower levels of parent- and child-reported negative parenting practices were present. Younger

children received higher levels of parent-reported positive parenting practices. A significant positive correlation was found between parent-reported positive parenting practices and child-reported positive parenting practices ($r = .35$, $p < .01$). Furthermore, parent-reported negative parenting practices were significantly positively related to child-reported negative parenting practices ($r = .33$, $p < .01$) and age ($r = .31$, $p < .01$), thus indicating that as parent-reported negative parenting practices increase, so does child-reported negative parenting practices and age. A significant negative correlation was found between parent-reported negative parenting practices and ethnicity ($r = -.16$, $p < .01$), such that children who were more likely to identify as White reported receiving less negative parent-reported parenting practices. Child-reported positive parenting practices were negatively related to child-reported negative parenting practices ($r = -.16$, $p < .01$) and gender ($r = -.15$, $p < .01$). Specifically, higher levels of child-reported positive parenting practices were related to lower levels of child-reported negative parenting practices and a lower likelihood of being male. Child-reported negative parenting practices were positively correlated with age and gender, such that the correlations had a Pearson correlation coefficient of .26 ($p < 0.01$) and .12 ($p < .05$), respectively. This means that higher levels of child-reported negative parenting practices were related to a being male and older in age. Child-reported negative parenting practices were negatively correlated with ethnicity, such that it had a Pearson correlation coefficient of -.18 ($p < 0.01$), indicating that children who were more likely to identify as White reported receiving lower levels of negative parenting practices. The covariates were not correlated with each other.

Primary Analyses

To determine whether ADHD symptoms were significantly associated with life satisfaction or self-esteem among children and adolescents (Primary Study Aim 1), simple linear regressions were conducted (see Tables 3.3 - 3.6). An alpha level of 0.5 was used to determine statistical significance. With only ADHD in the model, total ADHD symptoms explained 1.6% of the variance in life satisfaction. The overall regression was statistically significant ($R^2 = .016$, $F(1, 375) = 6.017$, $p = .015$). It was found that ADHD symptoms were significantly associated with overall life satisfaction ($\beta = -.191$, $p = .015$). When the covariates were included in the model, total ADHD symptoms, age, gender, and race explained 4.4% of the variance in life satisfaction. The overall regression was statistically significant ($R^2 = .044$, $F(4, 372) = 4.268$, $p = .002$). The child's age ($\beta = -.147$, $p = .004$) and ADHD symptoms ($\beta = -.168$, $p = .002$) were significantly associated with overall life satisfaction, while gender ($\beta = .065$, $p = .227$) and race ($\beta = .052$, $p = .311$) were not significant.

With only ADHD symptoms in the model, total ADHD symptoms explained 3.0% of the variance in self-esteem. The overall regression was statistically significant ($R^2 = .030$, $F(1, 373) = 11.554$, $p < .001$). It was found that ADHD symptoms were significantly associated with overall self-esteem ($\beta = -.236$, $p < .001$). When the covariates were included in the model, total ADHD, age, gender, and race explained 5.1% of the variance in self-esteem. The overall regression was statistically significant ($R^2 = .051$, $F(4, 370) = 4.995$, $p < .001$). The child's gender ($\beta = .135$, $p = .012$) and ADHD symptoms ($\beta = -.218$, $p < .001$) were significantly associated with overall self-

esteem, while age (β = -.008, p = .877) and ethnicity (β = .066, p = .196) were not significant.

Assessing the Moderating Role of Family Structure in the Relation Between ADHD Symptoms and Life Satisfaction

To evaluate whether the relation between ADHD symptoms and life satisfaction was moderated by family structure among children and adolescents (Primary Study Aim 2a), a simple moderation model was applied. This analysis found that the overall multiple regression model was significant (F(6,369) = 2.9910, p = .0073, R^2 = .0464). ADHD symptoms, family structure, the interaction between the two variables, and the covariates accounted for 4.64% of the variance in life satisfaction. Within the model, ADHD symptoms (p = .0996) and family structure (p = .2963) were not significant predictors of life satisfaction (see Table 3.7). Covariates were also included in the model; age, by itself, was the only variable that had a significant influence on overall life satisfaction (p = .0055). The older the child, the more likely it was that they reported lower life satisfaction. Gender (p = .2579) and race (p = .8445) were not significant. No significant interaction effect in terms of our hypothesis (F(1,369) = .0385, p = .8445, ΔR^2 = .0001) existed. The interaction between ADHD symptoms and family structure accounted for only .01% of the variance in life satisfaction.

Assessing the Moderating Role of Family Structure in the Relation Between ADHD Symptoms and Self-Esteem

To evaluate whether the relation between ADHD symptoms and self-esteem was moderated by family structure among children and adolescents (Primary Study Aim 2b), a simple moderation model was applied. This analysis found that the overall multiple

regression model was significant ($F(6,367) = 4.5291$, $p = .0002$, $R^2 = .0689$). ADHD symptoms, family structure, the interaction between the two variables, and the covariates accounted for 6.89% of the variance in self-esteem. Within the model, ADHD symptoms ($p = .1210$) were not a significant predictor of self-esteem (see Table 3.8 for outcomes). However, family structure ($p = .0140$) was a significant predictor, such that children from a two-parent household were more likely to have higher self-esteem. Covariates were also included in the model; gender was the only variable that had a significant influence on overall self-esteem ($p = .0188$). The more likely that a child was male, the higher their self-esteem. Age ($p = .9637$) and race ($p = .8445$) were not significant. No significant interaction effect in terms of our hypothesis ($F(1,367) = .8101$, $p = .3687$, $\Delta R^2 = .0021$) existed. The interaction between ADHD symptoms and family structure accounted for only .21% of the variance in self-esteem.

Assessing the Moderating Role of Parent-Reported Parenting Practices in the Relation Between ADHD Symptoms and Life Satisfaction

To evaluate whether the relation between ADHD symptoms and life satisfaction was moderated by parent-reported parenting practices among children and adolescents (Primary Study Aim 3a), two moderation models for positive and negative parenting practices were used. In the first model, the overall multiple regression model was significant ($F(6,365) = 4.3178$, $p = .0003$, $R^2 = .0663$). ADHD symptoms, parent-reported positive parenting practices, their interaction, and the covariates explained 6.63% of the variance in life satisfaction. However, the results showed that neither ADHD symptoms ($p = .1919$) nor parent-reported positive parenting practices ($p = .1780$) were a significant predictor of life satisfaction (see Table 3.9). Covariates were also

considered in the model, and age was found to have a significant effect on life satisfaction (p = .0332), with increased age being linked to lower life satisfaction. Gender (p = .1868) and race (p = .4712) were not significant. No significant interaction effect in terms of our hypothesis ($F(1,365) = .9412$, p = .3326, $\Delta R^2 = .0024$) existed. The interaction between ADHD symptoms and parent-reported positive parenting practices accounted for only .24% of the variance in life satisfaction.

In the second model, the overall multiple regression model was significant ($F(6,368) = 3.3414$, p = .0032, $R^2 = .0517$). ADHD symptoms, parent-reported negative parenting practices, their interaction, and the covariates explained 5.17% of the variance in life satisfaction. ADHD symptoms were a significant predictor of life satisfaction (p = .0223), such that the higher the amount of ADHD symptoms, the lower the life satisfaction of youth (see Table 3.10). Parent-reported negative parenting practices, however, were not a significant predictor of life satisfaction (p = .2725). Covariates were included in the model, and age was found to have a significant effect on life satisfaction (p = .0079), with increased age being linked to lower life satisfaction. Gender (p = .2204) and race (p = .3000) were not significant. No significant interaction effect in terms of our hypothesis ($F(1,368) = 2.7327$, p = .0992, $\Delta R^2 = .0070$) existed. The interaction between ADHD symptoms and parent-reported negative parenting practices accounted for only .70% of the variance in life satisfaction.

Assessing the Moderating Role of Parent-Reported Parenting Practices in the Relation Between ADHD Symptoms and Self-Esteem

To evaluate whether the relation between ADHD symptoms and self-esteem was moderated by parent-reported parenting practices among children and adolescents

(Primary Study Aim 3b), two moderation models with positive and negative parenting practices were used. In the first model, the overall multiple regression model was significant ($F(6,363) = 4.0879$, $p = .0006$, $R^2 = .0633$). ADHD symptoms, parent-reported positive parenting practices, their interaction, and the covariates explained 6.63% of the variance in self-esteem. However, the results showed that ADHD symptoms ($p = .3152$), and parent-reported positive parenting practices ($p = .2811$) were not a significant predictor of self-esteem (see Table 3.11). Covariates were also considered in the model, and gender was found to have a significant effect on self-esteem ($p = .0099$), such that males reported higher self-esteem. Age ($p = .7285$) and race ($p = .3054$) were not significant. No significant interaction effect in terms of our hypothesis ($F(1,363) = .3091$, $p = .5786$, $\Delta R^2 = .0008$) existed. The interaction between ADHD symptoms and parent-reported positive parenting practices accounted for only .08% of the variance in self-esteem.

The overall regression model was also significant ($F(6,366) = 3.7027$, $p = .0014$, $R^2 = .0572$) in the second model. ADHD symptoms, parent-reported negative parenting practices, their interaction, and the covariates explained 5.72% of the variance in self-esteem. In addition, the results showed that ADHD symptoms were a significant predictor of self-esteem ($p = .0225$), such that the higher the amount of ADHD symptoms, the lower the self-esteem of youth (see Table 3.12). Parent-reported negative parenting practices, however, were not a significant predictor of self-esteem ($p = .2188$). Covariates were included in the model, and gender was found to have a significant effect on self-esteem ($p = .0140$), such males reported higher self-esteem. Age ($p = .9850$) and race ($p = .2128$) were not significant. No significant interaction effect in terms of our hypothesis

($F(1,366) = 2.1146$, $p = .1468$, $\Delta R^2 = .0054$) existed. The interaction between ADHD symptoms and parent-reported negative parenting practices accounted for only .54% of the variance in self-esteem.

Exploratory Analyses

Assessing the Moderating Role of Child-Reported Parenting Practices in the Relation Between ADHD Symptoms and Life Satisfaction

To evaluate whether the relation between ADHD symptoms and life satisfaction was moderated by child-reported parenting practices among children and adolescents (Exploratory Study Aim 4a), two moderation models for positive and negative parenting practices were used. In the first model, the overall multiple regression model was significant ($F(6,366) = 23.5950$, $p = .0000$, $R^2 = .2789$). ADHD symptoms, child-reported positive parenting practices, their interaction, and the covariates explained 27.89% of the variance in life satisfaction. The results showed that ADHD symptoms were not a significant predictor of life satisfaction ($p = .5252$), yet child-reported positive parenting practices were a significant predictor of life satisfaction ($p = .0000$; see Table 3.13). All three covariates (i.e., age, gender, and race) were found to have a significant effect in the model. Specifically, age had an influence on overall life satisfaction ($p = .0387$), with increased age being linked to lower life satisfaction. Gender also had an influence on overall life satisfaction ($p = .0303$), with males reporting higher self-esteem. Lastly, race has a significant effect on life satisfaction ($p = .0180$), with identifying as White being linked to higher life satisfaction. The interaction between ADHD symptoms and parent-reported positive parenting practices was not significant ($F(1,366) = 1.0219$, $p = .3127$, $\Delta R^2 = .0020$). This interaction also accounted for only .20% of the variance in

life satisfaction.

The overall regression model was also significant ($F(6,365) = 8.5481$, $p = .0000$, $R^2 = .1232$) in the second model. ADHD symptoms, child-reported negative parenting practices, their interaction, and the covariates explained 12.32% of the variance in life satisfaction. In addition, the results showed that ADHD symptoms were a significant predictor of life satisfaction ($p = .0031$), such that the higher the amount of ADHD symptoms, the lower the life satisfaction of youth (see Table 3.14). Child-reported negative parenting practices were also a significant predictor of life satisfaction ($p = .0000$). If a child reported higher amounts of negative parenting practices, then they reported lower life satisfaction. Covariates were included in the model, and age ($p = .2367$), gender ($p = .0811$), and race ($p = .7854$) did not have a significant effect on life satisfaction. The interaction between ADHD symptoms and child-reported negative parenting practices was significant ($F(1,365) = 5.7550$, $p = .0169$, $\Delta R^2 = .0138$). However, this interaction accounted for only 1.38% of the variance in life satisfaction. See Figure 3.1 to view the interaction plot. It shows that at very high levels of child-reported negative parenting practices, ADHD symptoms do not make much of a difference in life satisfaction (i.e., negative parenting practices have a large impact, such that ADHD symptoms do not matter much as life satisfaction is low regardless of level of ADHD symptoms). However, at medium and low levels of child-reported negative parenting practices, as ADHD symptoms increase, life satisfaction greatly decreases.

Assessing the Moderating Role of Child-Reported Parenting Practices in the Relation Between ADHD Symptoms and Self-Esteem

To evaluate whether the relation between ADHD symptoms and self-esteem was moderated by child-reported parenting practices among children and adolescents (Exploratory Study Aim 4b), two moderation models for positive and negative parenting practices were used. In the first model, the overall multiple regression model was significant ($F(6,364) = 11.6326$, $p = .0000$, $R^2 = .1609$). ADHD symptoms, child-reported positive parenting practices, their interaction, and the covariates explained 16.09% of the variance in self-esteem. The results showed that ADHD symptoms were not a significant predictor of self-esteem ($p = .8376$; see Table 3.15). Child-reported positive parenting practices were a significant predictor of self-esteem ($p = .0000$), such that if more positive parenting practices were endorsed, children reported higher self-esteem. Covariates were also considered in the model. Gender was found to have a significant effect on self-esteem ($p = .0010$), such that males reported higher self-esteem. Race was also found to have a significant effect on self-esteem ($p = .0304$), with identifying as White being linked to higher self-esteem. Age was not significant ($p = .4860$). The interaction between ADHD symptoms and child-reported positive parenting practices was not significant ($F(1,364) = .7552$, $p = .3854$, $\Delta R^2 = .0017$). This interaction also accounted for only .17% of the variance in self-esteem.

The overall regression model was significant ($F(6,363) = 9.8453$, $p = .0000$, $R^2 = .1400$) in the second model. ADHD symptoms, child-reported negative parenting practices, their interaction, and the covariates explained 14.00% of the variance in self-esteem. In addition, the results showed that ADHD symptoms were a significant predictor

of self-esteem (p = .0037), such that the higher the ADHD symptoms, the lower the self-esteem of youth (see Table 3.16). Child-reported negative parenting practices were also a significant predictor of self-esteem (p = .0000), such that if more negative parenting practices were endorsed, children reported lower self-esteem. Covariates were also included in the model, and gender was found to have a significant effect on self-esteem (p = .0018), such that males reported higher self-esteem. Age (p = .0883) and race (p = .7014) were not significant. The interaction between ADHD symptoms and child-reported negative practices was significant ($F(1,363) = 4.3976$, p = .0367, $\Delta R^2 = .0104$). This interaction accounted for 1.04% of the variance in self-esteem. See Figure 3.2 to view the interaction plot. It shows that at very high levels of child-reported negative parenting practices, ADHD symptoms do not make much of a difference in self-esteem (i.e., negative parenting practices have a great impact on self-esteem, such that ADHD symptoms do not matter much as self-esteem is lower regardless of ADHD symptom level). However, at medium and low levels of child-reported negative parenting practices, as ADHD symptoms increase, self-esteem greatly decreases.

Table 3.1 Descriptive Statistics

Variable	*n*	Min	Max	*M*	*SD*
Attention Deficit/Hyperactivity Problems (CBCL)	378	0	14	3.29	.188
Life Satisfaction (BMSLSS)	377	17	42	34.77	.285
Self-Esteem (RSE)	375	6	30	22.41	.255
Parent-reported Positive Parenting (APQ-PGR)	373	45	80	67.23	.382
Parent-reported Negative Parenting (APQ-PGR)	376	19	57	32.72	.377
Child-reported Positive Parenting (APQ-CGR)	374	27	80	61.12	.579
Child-reported Negative Parenting (APQ-CGR)	373	19	85	37.52	.529

APQ-CGR = Alabama Parenting Questionnaire-Child Global Report, APQ-PGR = Alabama Parenting Questionnaire-Parent Global Report, BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale, CBCL = Child Behavioral Checklist, RSE = Rosenberg Self-Esteem Scale

Table 3.2 Bivariate Correlations Among Study Variables

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Total ADHD Symptoms	-										
2. Overall Life Satisfaction	-.126*	-									
3. Overall Self-Esteem	-.173**	.616**	-								
4. Family Structure[a]	-.165**	.101	.176**	-							
5. Parent-reported Positive Parenting Practices	-.171**	.185**	.125*	.083	-						
6. Parent-reported Negative Parenting Practices	.162**	-.081	-.066	-.166**	-.267**	-					
7. Child-reported Positive Parenting Practices	-.175**	.496**	.330**	.070	.353**	-.092	-				
8. Child-reported Positive Parenting Practices	.112*	-.298**	-.285**	-.108*	-.165**	.331**	-.159**	-			
9. Child Age	-.142**	-.127*	.015	.007	-.216**	.307**	-.088	.263**	-		
10. Child Gender[b]	.323**	.017	.067	.025	-.061	-.002	-.145**	.115*	-.035	-	
11. Child Race[c]	.005	.057	.069	.271**	.041	-.164**	-.095	-.179**	-.030	.033	-

[a] 0 = Single-parent and 1 = Dual-parent.
[b] 0 = Female and 1 = Male.
[c] 0 = Non-White and 1 = White.
*p < 0.05, ** p< 0.01

Table 3.3 Linear Regression of ADHD Symptoms on Life Satisfaction

	Sum of Squares	*df*	Mean Square	*F*	*p*
Regression	182.140	1	182.140	6.017	.015*
Residual	11352.242	375	30.273		
Total	11534.382	376			

Table 3.4 Linear Regression of ADHD Symptoms on Life Satisfaction with Covariates

	Model 1		
Variable	*B*	*SE B*	*p*
Child Age	-.342	.119	.004**
Child Gender	.721	.595	.227
Child Ethnicity	.571	.562	.311
ADHD Symptoms	-.256	.082	.002**
R^2		.044	

*p< 0.05, **p< 0.01

Table 3.5 Linear Regression of ADHD Symptoms on Self-Esteem

	Sum of Squares	*df*	Mean Square	*F*	*p*
Regression	274.872	1	274.872	11.554	<.001**
Residual	8874.061	373	23.791		
Total	9148.933	374			

Table 3.6 Linear Regression of ADHD Symptoms on Self-Esteem with Covariates

	Model 1		
Variable	*B*	*SE B*	*p*
Child Age	-.016	.106	.877
Child Gender	1.339	.530	.012*
Child Ethnicity	.649	.501	.196
ADHD Symptoms	-.297	.073	<.001**
R^2		.051	

*p< 0.05, **p< 0.01

Table 3.7 Multiple Regression of ADHD Symptoms and Life Satisfaction Moderated by Family Structure

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.2142	.1279	.0996
Family Structure	.8766	.8382	.2963
Child Age	-.3334	.1194	.0055**
Child Gender	.6789	.5991	.2579
Child Ethnicity	.3574	.5867	.5428
ADHD x Family Structure	-.0316	.1612	.8445
R^2		.0464	

*p< 0.05, ** p< .01

Table 3.8 Multiple Regression of ADHD Symptoms and Self-Esteem Moderated by Family Structure

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.1782	.1147	.1210
Family Structure	1.8227	.7384	.0140*
Child Age	-.0048	.1053	.9637
Child Gender	1.2474	.5287	.0188*
Child Ethnicity	.2914	.5173	.5736
ADHD x Family Structure	-.1285	.1427	.3687
R^2		.0689	

*p< 0.05, **p< 0.01

Table 3.9 Multiple Regression of ADHD Symptoms and Life Satisfaction Moderated by Parent-reported Positive Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.8849	.6769	.1919
Parent-reported Positive Parenting Practices	.0695	.0515	.1780
Child Age	-.2579	.1206	.0332*
Child Gender	.7811	.5906	.1868
Child Ethnicity	.4014	.5565	.4712
ADHD x Parent-reported Positive Parenting Practices	.0099	.0102	.3326
R^2		.0663	

*p< 0.05, ** p< 0.01

Table 3.10 Multiple Regression of ADHD Symptoms and Life Satisfaction Moderated by Parent-reported Negative Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.8508	.3707	.0223*
Parent-reported Negative Parenting Practices	-.0614	.0559	.2725
Child Age	-.3376	.1263	.0079**
Child Gender	.7340	.5979	.2204
Child Ethnicity	.5925	.5709	.3000
ADHD x Parent-reported Negative Parenting Practices	.0179	.0108	.0992
R^2		.0517	

*p< 0.05, **p< 0.01

Table 3.11 Multiple Regression of ADHD Symptoms and Self-Esteem Moderated by Parent-reported Positive Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.6172	.6136	.3152
Parent-reported Positive Parenting Practices	.0500	.0463	.2811
Child Age	.0377	.1086	.7285
Child Gender	1.3814	.5326	.0099**
Child Ethnicity	.5157	.5025	.3054
ADHD x Parent-reported Positive Parenting Practices	.0051	.0092	.5786
R^2		.0633	

*p< 0.05, **p< 0.01

Table 3.12 Multiple Regression of ADHD Symptoms and Self-Esteem Moderated by Parent-reported Negative Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.7578	.3308	.0225*
Parent-reported Negative Parenting Practices	-.0611	.0496	.2188
Child Age	.0021	.1128	.9850
Child Gender	1.3180	.5340	.0140*
Child Ethnicity	.6366	.5101	.2128
ADHD x Parent-reported Negative Parenting Practices	.0140	.0097	.1468
R^2		.0572	

*p< 0.05, **p< 0.01

Table 3.13 Multiple Regression of ADHD Symptoms and Life Satisfaction Moderated by Child-reported Positive Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	.2295	.3608	.5252
Child-reported Positive Parenting Practices	.2690	.0327	.0000**
Child Age	-.2167	.1044	.0387*
Child Gender	1.1443	.5261	.0303*
Child Ethnicity	1.1736	.4937	.0180*
ADHD x Child-reported Positive Parenting Practices	-.0060	.0059	.3127
R^2		.2789	

*p< 0.05, **p< 0.01

Table 3.14 Multiple Regression of ADHD Symptoms and Life Satisfaction Moderated by Child-reported Negative Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.9136	.3067	.0031**
Child-reported Negative Parenting Practices	-.2171	.0407	.0000**
Child Age	-.1422	.1200	.2367
Child Gender	1.0124	.5787	.0811
Child Ethnicity	.1506	.5526	.7854
ADHD x Child-reported Negative Parenting Practices	.0189	.0079	.0169*
R^2		.1232	

*p< 0.05, **p< 0.01

Table 3.15 Multiple Regression of ADHD Symptoms and Self-Esteem Moderated by Child-reported Positive Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	.0716	.3492	.8376
Child-reported Positive Parenting Practices	.1697	.0317	.0000**
Child Age	.0705	.1011	.4860
Child Gender	1.7001	.5104	.0010**
Child Ethnicity	1.0422	.4794	.0304*
ADHD x Child-reported Positive Parenting Practices	-.0050	.0058	.3854
R^2		.1609	

*p< 0.05, **p< 0.01

Table 3.16 Multiple Regression of ADHD Symptoms and Self-Esteem Moderated by Child-reported Negative Parenting Practices

	Model 1		
Variable	*B*	*SE B*	*p*
Total ADHD Symptoms	-.7940	.2717	.0037**
Child-reported Negative Parenting Practices	-.1997	.0360	.0000**
Child Age	.1822	.1066	.0883
Child Gender	1.6176	.5144	.0018**
Child Ethnicity	.1886	.4915	.7014
ADHD x Child-reported Negative Parenting Practices	.0146	.0070	.0367*
R^2		.1400	

*p< 0.05, **p< 0.01

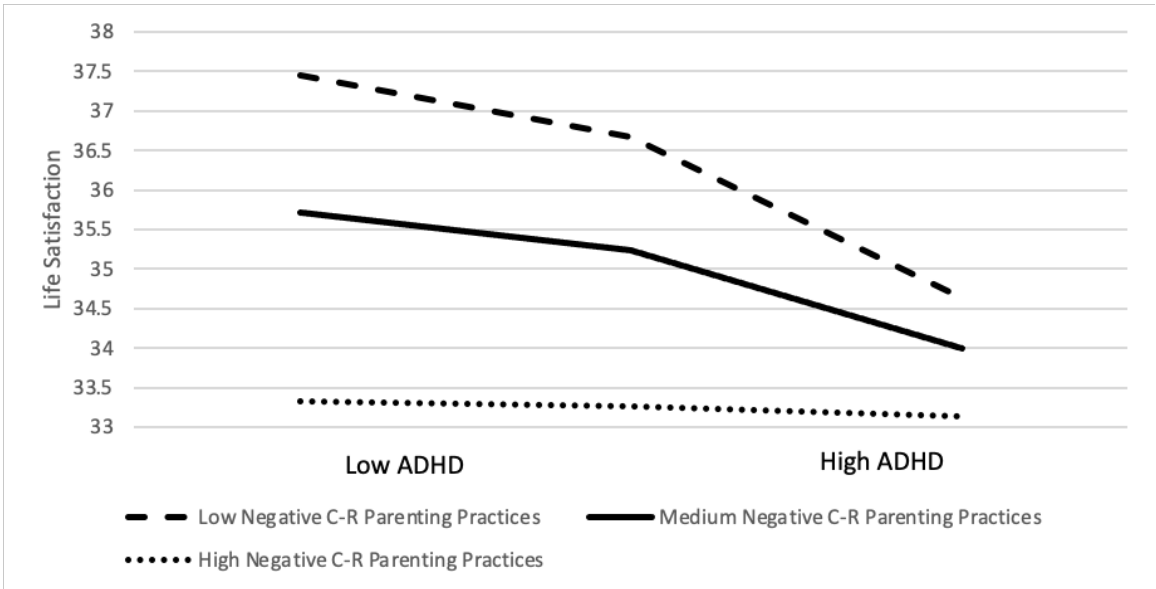

Figure 3.1 Interaction between ADHD Symptoms and Child-Reported Negative Parenting Practices on Life Satisfaction

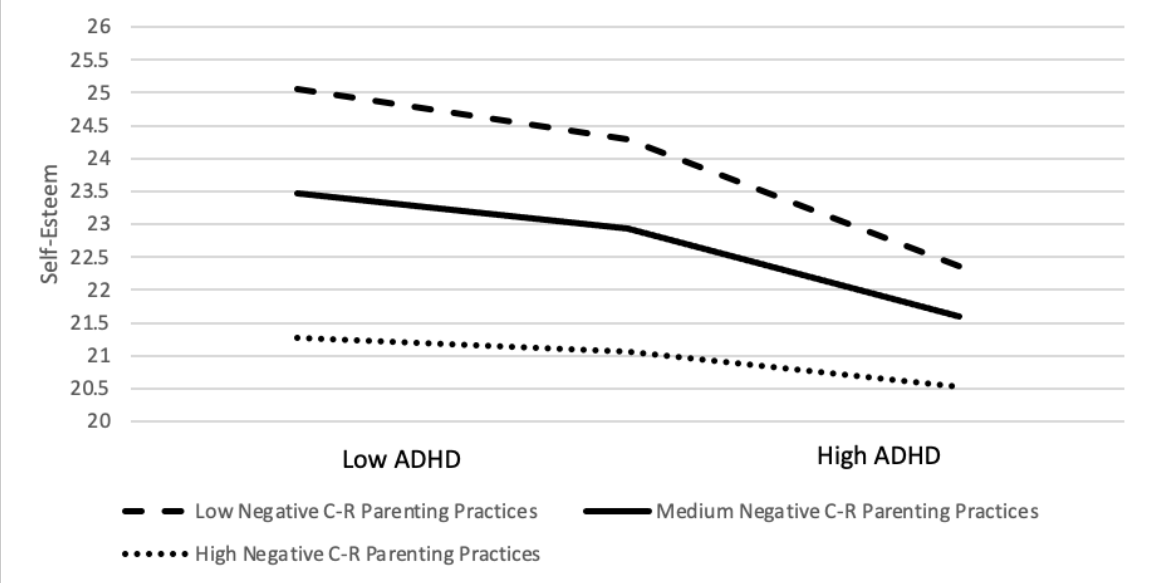

Figure 3.2 Interaction between ADHD Symptoms and Child-Reported Negative Parenting Practices on Self-Esteem

CHAPTER 4

DISCUSSION

The purpose of the current study was to obtain an understanding of how ADHD symptoms are related to life satisfaction and self-esteem. ADHD often results in difficulties with academic, social, and interpersonal functioning (Antshel et al., 2011). These impairments in various life domains may affect the subjective well-being of youth, specifically their life satisfaction and self-esteem. To gain insight into the associations of these variables (i.e., ADHD symptoms, life satisfaction, self-esteem), the study had four aims. First, we examined whether ADHD symptoms were related to life satisfaction or self-esteem among children and adolescents in grades 4-12. Second, we examined if family structure moderated the relation between ADHD symptoms and life satisfaction or self-esteem among these youth. Third, we examined if parent-reported parenting practices moderated the relation between ADHD symptoms and life satisfaction or self-esteem among these youth. For our exploratory analyses, our fourth aim examined whether child-reported parenting practices moderated the relation between ADHD symptoms and life satisfaction or self-esteem among children and adolescents in grades 4-12.

The first aim sought to investigate whether ADHD symptoms were related to life satisfaction or self-esteem. It was hypothesized that greater ADHD symptoms would be significantly associated with lower life satisfaction and self-esteem. Both hypotheses were supported, as ADHD symptoms did significantly predict overall life satisfaction and self-esteem in the expected directions. Although little research exists on how children

and adolescents with ADHD assess their satisfaction with life, results from this study were consistent with prior research that found that ADHD symptoms were negatively associated with self-reported life satisfaction within a youth sample (Nadeau et al., 2015) and a college student sample (Gudjonsson et al., 2009). Our results also mirrored other studies that found significant associations between ADHD and low self-esteem among children and adolescents (Foley-Nicpon et al., 2012; Harpin et al., 2016; Kita & Inoue, 2017). A possible explanation for these findings may be that more ADHD symptoms – such as inattention, hyperactivity, and impulsivity – contribute to greater impairment and challenges across different life domains (Garner et al., 2013). For example, children with ADHD often encounter deficiencies in both the academic (Daley & Birchwood, 2010) and social domains (Landau, Milich, & Diener, 1988), in addition to showing a higher likelihood of having other psychological disorders alongside their ADHD (Connor et al., 2003). These impairments and challenges may impact how individuals perceive themselves and the world around them. Difficulties in these areas have been linked to lower levels of life satisfaction and self-esteem in children and adolescents in general (Gilman & Huebner, 2006; Huebner, 2004; Karande, & Kulkarni, 2005; Martinsen et al., 2016). Despite our hypotheses being supported, it is important to note that ADHD symptoms accounted for only a small amount of the variance in life satisfaction and self-esteem, so there are likely many other factors besides ADHD that relate to youth subjective well-being, some of which may be broadly associated with ADHD, but more proximally associated with self-esteem or life satisfaction (e.g., social impairment, poor grades). However, the fact that ADHD symptoms contributed a statistically unique amount of the variance in life satisfaction and self-esteem suggests that ADHD symptoms

may still be important predictors of life satisfaction and self-esteem. Further research is needed to gain additional insight into the relation between ADHD symptoms and life satisfaction/self-esteem.

The second aim sought to investigate whether the association between ADHD symptoms and life satisfaction or self-esteem was moderated by family structure. Both overall multiple regression models were significant. However, the results indicated that none of the predictors (e.g., ADHD symptoms, family structure) were significant predictors of life satisfaction, whereas family structure was found to be a significant predictor of self-esteem, with children from dual-parent households reporting higher self-esteem. Thus, family structure rather than ADHD symptoms may be a more important factor in the development of self-esteem in children and adolescents. A significant interaction effect was not found in either model. Because findings in prior research have shown that children with ADHD frequently reside in single-parent households (Carballo et al., 2013; Lingineni et al., 2012; Behere et al., 2017) and family structure has been associated with life satisfaction and self-esteem among children and adolescents (Kearney, 2000; McKenna, 1995; Zullig et al., 2005), it was expected that family structure may moderate the relation between ADHD symptoms and life satisfaction and self-esteem. Essentially, a two-parent household could act as a buffer against the negative impact of ADHD symptoms on life satisfaction and self-esteem. However, our hypotheses formulated on this prior literature were not supported. Therefore, it is possible that other factors or variables besides family structure (e.g., social support, environmental stressors) may be influencing the relation between ADHD symptoms and life satisfaction and self-esteem. Further research could explore additional factors that may impact this

relation and help identify potential interventions that could improve subjective well-being for individuals with ADHD.

The third aim sought to investigate whether the association between ADHD symptoms and life satisfaction/self-esteem was moderated by parent-reported parenting practices (e.g., positive parenting practices, negative parenting practices). It was hypothesized that the relation between ADHD symptoms and life satisfaction and self-esteem would be influenced by parent-reported parenting practices, such that parent-reported positive parenting practices would serve as a protective factor (i.e., would lead to a weaker association between ADHD symptoms and life satisfaction/self-esteem) and parent-reported negative parenting practices would serve as a risk factor (i.e., would lead to a stronger association between ADHD symptoms and life satisfaction/self-esteem). However, none of the four models testing this hypothesis revealed significant moderation effects. Further, although all four overall multiple regression models were significant, the only significant findings for the main variables of interest were that ADHD symptoms were a significant predictor of life satisfaction and self-esteem in the models that included parent-reported negative parenting practices, such that higher levels of ADHD symptoms were associated with lower life satisfaction and lower self-esteem, mirroring findings from the first aim. Therefore, our hypothesis was not supported, and it may be possible that other factors or variables such as social support or environmental stressors influence the relation between ADHD symptoms and life satisfaction/self-esteem.

The fourth aim examined whether the association between ADHD symptoms and life satisfaction/self-esteem was moderated by child-reported parenting practices (e.g., positive parenting practices, negative parenting practices) to determine if reporter (i.e.,

parent vs. child) impacted the findings from the third aim. No hypotheses were formed for this exploratory aim. However, given that the fourth aim was an extension of the third aim, we applied comparable rationale about the impact of parenting practices on life satisfaction/self-esteem. All four multiple regression models were found to be significant. In the model looking at the relation between ADHD symptoms and life satisfaction moderated by child-reported positive parenting practices, only child-reported positive parenting practices were positively associated with life satisfaction. These results suggest that positive parenting practices perceived by youth, rather than ADHD symptoms, may be a more important factor in the development of life satisfaction in children and adolescents. The interaction between ADHD symptoms and child-reported positive parenting practices was not significant. The model looking at the relation between ADHD symptoms and life satisfaction moderated by child-reported negative parenting practices found that ADHD symptoms and child-reported negative parenting practices were negatively associated with life satisfaction. Further, the interaction between ADHD symptoms and child-reported negative parenting practices was significant, indicating children who exhibit higher levels of ADHD symptoms and perceive more negative parenting practices may be at greater risk for lower life satisfaction than children who exhibit higher levels of ADHD symptoms and perceive fewer negative parenting practices. These findings supported the hypothesis that negative parenting practices influence the relation between ADHD symptoms and life satisfaction (i.e., negative parenting practices serve as a risk factor for lower self-esteem in children who endorse higher levels of ADHD symptoms).

In terms of self-esteem, the model looking at the relation between ADHD symptoms and self-esteem moderated by child-reported positive parenting practices showed that only child-reported positive parenting practices were a significant predictor of self-esteem, with children reporting higher self-esteem when more positive parenting practices were present. The interaction between ADHD symptoms and child-reported positive parenting practices was not significant. Finally, similar to the results for life satisfaction, the model examining the relation between ADHD symptoms and self-esteem moderated by child-reported negative parenting practices found that child-reported negative parenting practices and ADHD symptoms were both associated with lower self-esteem. Further, the interaction between ADHD symptoms and child-reported negative parenting practices was significant such that children who exhibit higher levels of ADHD symptoms and perceive more negative parenting practices may be at greater risk for lower self-esteem than children who exhibit higher levels of ADHD symptoms and perceive fewer negative parenting practices. These findings supported the hypothesis that the relation between ADHD symptoms and self-esteem is affected by negative parenting practices. Specifically, negative parenting practices may be a risk factor for lower self-esteem in individuals with higher levels of ADHD symptoms.

One potential explanation for these findings could be that negative parenting practices perceived by the child, such as poor monitoring/supervision, inconsistent discipline, and corporal punishment, could contribute to feelings of low self-worth and undermine the development of life satisfaction/self-esteem, particularly among children with high levels of ADHD symptoms. These practices may exacerbate symptoms of ADHD and create a negative cycle where the child's behavior is increasingly affected by

feelings of failure and frustration. On the other hand, positive parenting practices perceived by the child, such as parental involvement and positive parenting, may not necessarily have a direct impact on life satisfaction/self-esteem in children with ADHD symptoms, although they could still contribute to positive mental health outcomes and overall well-being. This could be because positive parenting practices may not always accurately reflect the quality of parenting experiences, or other factors beyond parenting, such as social support, cultural background, and individual temperament, that may also influence the development of life satisfaction/self-esteem. However, Pérez-Fuentes and colleagues (2019) found that strong practices of affect and communication, high self-disclosure, low psychological control, and a strong sense of humor in parenting were associated with increased life satisfaction in adolescence. That study highlights the importance of fostering warm, affectionate parent-child relationships, as parental support that is based on acceptance, open communication, and affect may predict life satisfaction. Another study found that adolescents who reported having authoritative parents (as measured by above-average scores on both acceptance/involvement and strictness/supervision scales) had higher life satisfaction and self-esteem than those whose parents exhibited authoritarian or neglectful parenting styles (Milevsky, A., Schlechter, M., Netter, S., & Kheen, D., 2007). The results of these studies are contrary to our current study, given that they found positive associations between higher scores on "positive" parenting practices and life satisfaction/self-esteem. However, these studies classified parenting practices differently (i.e., using different measures) and did not examine ADHD.

It is important to note that discrepancies in outcomes were found in our study when comparing the findings from parent reporters and child reporters, and in fact the only significant moderation effects were found when child report of parenting practices was used. This underscores the significance of considering children's unique viewpoints and personal experiences when seeking to comprehend the elements that impact their overall well-being. In research and clinical work (e.g., formal assessments, clinical interviewing), it is important to strike a balance between gathering information about experiences. This study emphasizes that all voices, especially children's voices, need to be amplified. For example, when parents report their own parenting practices, they may be influenced by factors such as social desirability bias, memory biases, or subjective interpretations of their own behavior (Morris, Robinson, & Eisenberg, 2006). Thus, it is ultimately the child's interpretation of these parenting practices that has the greatest influence on their own well-being. In fact, children's assessments of their parent's behaviors may be more balanced and nuanced than those of parents, given that a child's interpretation is what ultimately affects them.

For all primary aims, each statistical model that assessed the relation between ADHD symptoms and life satisfaction found that age was the only covariate that had a significant influence on overall life satisfaction, with older children reporting lower life satisfaction. Although the research is sparse on the topic, this finding is consistent with another study that found that, as children get older, their life satisfaction decreased (Aymerich et al., 2021). After the age of 11 years, Aymerich and colleagues (2021) found a significant reduction in life satisfaction with increased emotional and psychological susceptibility beyond this age. Instead of increased levels of anxiety and depression

(which had low correlations with life satisfaction in the study), sexual hormones during puberty and sociocultural pressures on each gender could be potential explanations for the impact on life satisfaction beyond the age of 11. For the exploratory aim, the statistical model that assessed the relation between ADHD symptoms and life satisfaction moderated by child-reported positive parenting practices found that age, gender, and race had a significant effect on overall life satisfaction, such that being older, female, and Non-White corresponded to a lower likelihood of reporting high life satisfaction. Although various studies report mixed findings, our results were consistent with other studies that examined age, race, and gender associations with life satisfaction (e.g., Goldbeck et al., 2007; Huebner et al., 2004; Moskes & Espness, 2013). No significant covariates (e.g., age, gender, race) were found in the model that assessed the relation between ADHD symptoms and life satisfaction moderated by child-reported negative parenting practices. Overall, the understanding that life satisfaction tends to decrease as children get older can help parents/caregivers, educators, and clinicians set realistic expectations and goals for young people. A need for cultivating resilience and coping skills important to navigating the ups and downs of life may exist.

Furthermore, each statistical model that assessed the relation between ADHD symptoms and self-esteem found that gender had a significant influence on overall self-esteem, with male children having higher self-esteem than female children. Other studies found similar patterns, such that females reported lower self-esteem than males (Agam, Tamir, & Golan, 2015; Kearney-Cooke, 1999). The study by Agam, Tamir, and Golan (2015) reasoned that distinct gender roles (e.g., self-confidence is often seen as a trait associated with males, so when females display self-confidence, it is viewed as deviating

from traditional gender roles), societal standards for ideal body types, and vulnerability factors (e.g., females appear more vulnerable than males to negative psychological health effects of stress during adolescence) exist. The statistical model that examined the relation between ADHD symptoms and self-esteem moderated by child-reported positive parenting practices, specifically, found gender and race to be significant. Overall, as low self-esteem can lead to a range of negative outcomes, the understanding that girls may have lower self-esteem than boys can help parents/caregivers, educators, clinicians, and researchers develop strategies to promote positive self-image and self-worth among girls. This might include creating more opportunities for girls to build skills and confidence, providing positive role models and mentors, and challenging gender stereotypes and societal expectations that can contribute to a negative self-image.

Strengths

This study has several key strengths that contribute to its significance and rigor. First, the study deliberately implemented procedures during data collection to ensure low levels of missing data, which allowed the research team to collect complete data from a high proportion of participants. When missing data inevitably occurred, we minimized its impact through the careful selection of appropriate statistical processes (i.e., listwise deletion). Low levels of missing data enhanced the reliability and validity of the study findings. Another key strength is the sample size (N = 378), as a larger sample allows for more precise estimates of effect sizes and enhances statistical power. Indeed, our power analysis confirmed that the current study had adequate power to detect a small effect. Furthermore, the sample demographic breakdown in this study was well-balanced (i.e., the sample was diverse in terms of demographic characteristics, such that the current

study included approximately equal numbers in gender and race). This can be considered a strength because it enhances the representativeness of the findings. This reduces the risk of bias and ensures that the findings can be applied to a broader population.

Given that prior research is limited, our study questions were theory driven. A study that is grounded in a strong theoretical framework can be a strength because it enhances the conceptual clarity and coherence of the research. Specifically, this study integrated principles of positive psychology, neurodevelopmental psychopathology, and socialization, which, to the best of our knowledge, had not been applied in this context before. Therefore, the study adds novel and innovative findings to the literature that can be built upon in future studies. Although only a few of our hypotheses were supported, this study still provided meaningful results that may guide case conceptualization, treatment, and future research.

Limitations

While the present study contributes to the literature on the impact of ADHD and family variables on subjective well-being outcomes, there are several limitations that should be considered. For example, the study design was cross-sectional and thus interpreting the outcomes of the study and drawing conclusions warrants caution. Specifically, cross-sectional studies only capture a snapshot in time, which can make it difficult to establish causal relations or track changes over time. However, cross-sectional data has several strengths that make it a valuable research tool and appropriate for our research questions. One strength is that cross-sectional studies are relatively quick and easy to conduct compared to longitudinal studies. The study was able to recruit a large sample with adequate power to detect a small effect. Cross-sectional studies can also

provide insight into a population's characteristics or behaviors at a specific point in time, which can be useful for identifying patterns and trends. These can provide important information and be used to generate hypotheses for further research. As research in this area is scarce, our results provide useful information even with a cross-sectional design. Future studies should consider using longitudinal or experimental designs to address these limitations and further the research in this area.

Another limitation is the heavily skewed nature of the dependent variables in the sample. On average, youth participants in this study reported high life satisfaction and high self-esteem. This may limit the generalizability of the findings to individuals who do not have high self-esteem or life satisfaction and possibly lead to an overestimation or underestimation of the true effects of the ADHD symptoms on these outcomes. Multiple attempts to transform these dependent variables to reduce skew were made and failed. However, the skewed nature of life satisfaction and self-esteem may be reflective of the general population as literature that examines variables such as life satisfaction reported these factors to generally be in the positive range in children and adolescents (Proctor, Linley, & Maltby, 2009). Future research with a more normally distributed sample may be needed to confirm the findings of this study.

Another limitation of the current study is the collapsing of the race variable into White versus non-White groups rather than allowing for additional race classifications. By collapsing minorities into a single group, this approach may overlook important differences between subgroups and limit the generalizability of findings, which is especially relevant to this study as it examined race as a covariate. Additionally, this approach may perpetuate the history of marginalization and discrimination against

minority groups, as it reinforces a binary classification system that privileges White individuals. To avoid perpetuating social hierarchies based on race, studies should also refrain from using the terms "minority" and "non-White," which are used to describe social groups in relation to a dominant racial group. Given that few of our participants identified as American Indian or Alaska Native, Hispanic or Latino, or multiracial, it was necessary to combine these groups to be able to detect possible statistical effects. However, future research should consider using more nuanced measures of race and ethnicity that allow for greater precision and sensitivity to subgroups, as well as acknowledge the heterogeneity within and across racial and ethnic categories. Furthermore, intentional recruitment efforts should be made to recruit participants from racially diverse backgrounds.

Another limitation is that this study only incorporated the marital status and parent-reported parenting practices of one caregiver. We did not consider information about the other primary caregiver because it was not collected in the study. The effects of family structure, for example, could differ if both caregivers are divorced as opposed to one being divorced and the other remarried. However, it is likely that the caregiver who responded to the questionnaires is the primary caregiver with whom the child lives. Therefore, we likely still captured the most salient effects of family structure. Furthermore, parent-reported parenting practices may differ among both caregivers, yet we only examined the parenting practices that were reported by the primary caregiver who filled out the questionnaires. The majority of our parent sample identified as female. Ellig and Nigg (2009) found that inconsistent discipline from mothers was linked to inattention and hyperactivity, whereas low involvement and inconsistent discipline from

fathers were associated with inattention only. Thus, effects might vary based on whether the reporting caregiver identifies as female or male. Future studies would benefit from gathering parent-reported parenting practices from both caregivers whenever possible.

A final limitation of this study is that cross-sectional studies often rely on self-report measures, which may introduce certain biases and affect the accuracy of the findings. Self-report measures, in particular, are susceptible to recall bias, where participants may not accurately remember or report on their experiences, and social desirability bias, where participants may respond in ways that they believe are socially acceptable rather than reflecting their true experiences. However, researchers have found that self-reported scores show correlations with other well-being measures that are not solely based on self-reports, thus emphasizing that self-reporters are not necessarily worse reporters when it comes to well-being measures (Diener, Inglehart, & Tay, 2013). For instance, estimates of life satisfaction from family and friends that were collected for target participants exhibited moderate correlations with the participants' self-reports (Sandvik, Diener, & Seidlitz, 1993). In fact, Huebner (1991) states that the most appropriate way to measure life satisfaction is through self-report since it is an internal and subjective construct. Another related limitation is that ADHD symptoms were collected via parent report rather than allowing for self-report of ADHD symptoms. However, prior research has shown that caregivers are accurate reporters of ADHD symptoms (Bied, Biederman, & Faraone, 2017), especially among youth. Future research may benefit from incorporating more objective measures of constructs.

Implications

Understanding the association between ADHD and life satisfaction or self-esteem can help with case conceptualization by providing clinicians with a more comprehensive understanding of how ADHD affects an individual's overall well-being. Case conceptualization is considered the "heart of evidence-based practice" and provides a structure to integrate significant past experiences, thoughts, and actions to form theories about the origin and persistence of a client's mental health issues (Bieling & Kuyken, 2003; Eells, Kendjelic, & Lucas, 1998). Case conceptualization can also be helpful for establishing treatment goals (Nezu et al., 2004). For example, the results of this study suggest that ADHD symptoms may have some impact on the life satisfaction and self-esteem of children and adolescents and thus developing more tailored treatment goals that consider the impact of ADHD on subjective well-being is important. These outcomes can also be used to identify areas where interventions may be most effective in improving the lives of individuals with ADHD and be helpful for evaluating the success of treatment.

Treatment (e.g., programs and interventions) can also be informed by the findings in this study. Various programs and interventions already exist that target life satisfaction and self-esteem in children and adolescents. Suldo and colleagues (2014) examined a 10-week group wellness-promotion intervention for middle school students who reported lower life satisfaction and found success in improving life satisfaction. Furthermore, a meta-analysis found that interventions that involve physical activity in school-based and gymnasium-based settings may increase self-esteem in children and adolescents (Liu, Wu, & Ming, 2015). These interventions could be adapted to meet the needs of youth with ADHD, as healthcare providers and clinicians may want to consider interventions

that not only address the core symptoms of ADHD but also aim to improve overall subjective well-being (e.g., life satisfaction and self-esteem). This may involve a combination of medication, behavioral therapy, and other interventions that address the social and emotional aspects of the disorder.

The current study found that child-reported negative parenting practices were related to lower outcomes in life satisfaction and self-esteem among youth with ADHD (i.e., it is not the presence of child-reported positive parenting practices, but the absence of child-reported negative parenting practices that seems to significantly impact our study sample). Although parent management trainings often place an emphasis on positive parenting behaviors, which are grounded in empirical research and crucial, these may not have the strongest impact on subjective well-being for children with high ADHD symptoms. In addition, it is important for clinicians to consider that children and parents may differ in their reports of behavior, like parenting practices (Tein, Roosa, & Michaels, 1994). The study confirmed that there are discrepancies between parent and child reports, particularly regarding the impact of negative parenting practices on the relation between ADHD symptoms and life satisfaction and self-esteem. This difference is important to consider. It may be useful to encourage the exploration of family dynamics and potential areas of conflict, as well as subjective well-being outcomes, in clinical work. Discrepancies between the reports of parents and children could indicate a lack of communication and understanding between family members or the presence of power imbalances within the family. In this case, it may be helpful to explore the child's feelings and work towards improving the parent-child relationship. A program called Your Family, Your Neighborhood (YFYN) was created with the goal of enhancing the

relationships between parents and children, and Lechuga-Peña and colleagues (2020) found that parent-child relationships and communication showed improvement. While providing treatment for ADHD, clinicians may adapt interventions and programs that improve parent-child relationships and communication between the parent and the child to fit the needs of those with ADHD. This could help create a more positive and supportive family environment.

Future Directions

In addition to the previously-mentioned future research suggestions, the literature base would benefit from several additional future directions. One such suggestion is to intentionally recruit a clinical sample with ADHD, in addition to youth with low ADHD symptoms, to ensure that the effects of ADHD symptoms can be adequately assessed. To the best of our knowledge, Nadeau and colleagues (2015) is the only investigator who has examined life satisfaction in a clinical population. Although we intentionally chose to examine ADHD symptoms in a continuous manner, differences in results may emerge when more variability within the independent variable of ADHD symptoms exists. Indeed, if there are differences in the effects of ADHD symptoms on life satisfaction and self-esteem based on diagnosis criteria, simply counting the number of symptoms (which we opted to do) may not be sufficient for assessing the impact of ADHD on a child's subjective well-being. It could also suggest that different presentations of ADHD may have varying impacts on life satisfaction and self-esteem. This would have important implications for treatment, as different subtypes or symptom profiles may require different interventions to improve subjective well-being.

Similarly, another future direction that could benefit the literature base is to examine different symptom clusters individually within the context of these research questions regardless of formal ADHD status. For example, do more inattentive symptoms or more hyperactive-impulsive symptoms impact life satisfaction and self-esteem? Would the significance of the moderators and interaction effects of the overall moderation models change if the independent variable of ADHD symptoms were split into symptom clusters? A study by Kita and Inoue (2017) found that severe inattentive symptoms negatively affected self-esteem, while hyperactive-impulsive symptoms impacted non-academic self-perception (Kita & Inoue, 2017). It might be useful to explore this further. Our study also grouped parenting subscales together, such that positive parenting practices were comprised of involvement and positive parenting, and negative parenting practices were comprised of poor monitoring/supervision, inconsistent discipline, and corporal punishment. Future studies should examine if there are specific subscales of positive and negative parenting practices that are most relevant to the relation between ADHD symptoms and life satisfaction or self-esteem.

Future research should aim to integrate paternal perspectives into studies of child development and family dynamics. This could involve actively involving fathers in data collection as reporters. For example, new methodological approaches have emerged that incorporate increased input and direct involvement from fathers, as well as the creation of novel measures that specifically capture unique or salient aspects of father-child relationships (Paquette, Coyl-Shepherd, & Newland, 2013). It may be important to examine how fathers' involvement and perspectives may differ from those of mothers, especially when it comes to parenting practices, and how these differences may influence

child development and subjective well-being. Jansen and colleagues (2017) found that when comparing parental reports on child anxiety, significant differences were found between mothers' and fathers' scores. This highlights the significance of collecting information from both parents individually.

In future research, it will be important to collect and analyze longitudinal data regarding ADHD symptoms, family structure, and parenting practices, to gain a deeper understanding of how various factors impact life satisfaction and self-esteem over time. For example, while parental child-rearing orientations tend to exhibit continuity from early childhood to early adolescence, the areas of emphasis within these orientations often align with age-appropriate developmental changes (Roberts, Block, & Block, 1984). Furthermore, the progression and associated symptoms of ADHD, as well as comorbidities, may vary and evolve over time (Franke et al., 2018). Given these temporal impacts on variables of interest, it would be interesting to explore that further. Longitudinal data can also provide strong evidence for causality, particularly when combined with experimental designs or statistical methods such as mediation or moderation analyses. Thus, future research should examine our variables of interest across time to predict causality.

REFERENCES

Achenbach, T. M. (1991). Manual for the Child Behavior Checklist/4-18 and 1991 profile. *University of Vermont, Department of Psychiatry*.

Agam, R., Tamir, S., & Golan, M. (2015). Gender differences in respect to self-esteem and body image as well as response to adolescents' school-based prevention programs. *Journal of Psychology and Clinical Psychiatry*, *2*(5), 00092.

American Psychiatric Association. (2013). Cautionary statement for forensic use of DSM-5. In *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.). https://doi.org/10.1176/appi.books.9780890425596.

Anderson, J. (2014). The impact of family structure on the health of children: Effects of divorce. *The Linacre Quarterly*, *81*(4), 378-387.

Antshel, K. M., Hargrave, T. M., Simonescu, M., Kaul, P., Hendricks, K., & Faraone, S. V. (2011). Advances in understanding and treating ADHD. *BMC Medicine*, *9*(1), 1-12.

Aymerich, M., Cladellas, R., Castelló, A., Casas, F., & Cunill, M. (2021). The evolution of life satisfaction throughout childhood and adolescence: Differences in young people's evaluations according to age and gender. *Child Indicators Research*, *14*(6), 2347-2369.

Barfield, P. A. (2018). Life satisfaction in children with attention deficit hyperactivity disorder: Looking beyond proxy reports. *Journal of Child and Adolescent Psychiatric Nursing*, *31*(4), 102-108.

Barfield, P. A., & Driessnack, M. (2018). Children with ADHD draw-and-tell about what makes their life really good. *Journal for Specialists in Pediatric Nursing*, *23*(2), e12210.

Bax, A. C., Bard, D. E., Cuffe, S. P., McKeown, R. E., & Wolraich, M. L. (2019). The association between race/ethnicity and socioeconomic factors and the diagnosis and treatment of children with attention-deficit hyperactivity disorder. *Journal of Developmental & Behavioral Pediatrics*, *40*(2), 81-91.

Behere, A. P., Basnet, P., & Campbell, P. (2017). Effects of family structure on mental health of children: A preliminary study. *Indian Journal of Psychological Medicine*, *39*(4), 457-463.

Behmani, R. K., & Singh, V. (2018). Influence of parenting style on life satisfaction of the adolescents: A review. *IAHRW International Journal of Social Sciences Review*, *6*(2), 226-230.

Bied, A., Biederman, J., & Faraone, S. (2017). Parent-based diagnosis of ADHD is as accurate as a teacher-based diagnosis of ADHD. *Postgraduate Medicine*, *129*(3), 375-381.

Bieling, P.J., & Kuyken, W. (2003). Is cognitive case formulation science or science fiction? *Clinical Psychology-Science and Practice, 10*, 52-69.

Bögels, S. M., & van Melick, M. (2004). The relationship between child-report, parent self-report, and partner report of perceived parental rearing behaviors and anxiety in children and parents. *Personality and Individual Differences*, *37*(8), 1583-1596.

Brown, N. M., Brown, S. N., Briggs, R. D., Germán, M., Belamarich, P. F., & Oyeku, S. O. (2017). Associations between adverse childhood experiences and ADHD diagnosis and severity. *Academic Pediatrics*, *17*(4), 349-355.

Carballo, J. J., García-Nieto, R., Álvarez-García, R., Caro-Cañizares, I., López-Castromán, J., Muñoz-Lorenzo, L., de Leon-Martinez, V., & Baca-García, E. (2013). Sibship size, birth order, family structure and childhood mental disorders. *Social Psychiatry and Psychiatric Epidemiology*, *48*(8), 1327-1333.

Causey, S. T., Livingston, J., & High, B. (2015). Family structure, racial socialization, perceived parental involvement, and social support as predictors of self-esteem in African American college students. *Journal of Black Studies*, *46*(7), 655-677.

Chen, X., Cai, Z., He, J., & Fan, X. (2020). Gender differences in life satisfaction among children and adolescents: A meta-analysis. *Journal of Happiness Studies*, *21*, 2279-2307.

Cherkasova, M. V., Roy, A., Molina, B. S., Scott, G., Weiss, G., Barkley, R. A., Biederman, J., Uchida, M., Hinshaw, S. P., Owens, E. B., & Hechtman, L. (2022). Adult outcome as seen through controlled prospective follow-up studies of children with attention-deficit/hyperactivity disorder followed into adulthood. *Journal of the American Academy of Child & Adolescent Psychiatry*, *61*(3), 378–391.

Clark, J., & Barber, B. L. (1994). Adolescents in postdivorce and always-married families: Self-esteem and perceptions of fathers' interest. *Journal of Marriage and the Family*, 608-614.

Clerkin, S. M., Halperin, J. M., Marks, D. J., & Policaro, K. L. (2007). Psychometric properties of the Alabama Parenting Questionnaire–preschool revision. *Journal of Clinical Child and Adolescent Psychology*, *36*(1), 19-28.

Connor, D. F., Edwards, G., Fletcher, K. E., Baird, J., Barkley, R. A., & Steingard, R. J. (2003). Correlates of comorbid psychopathology in children with ADHD. *Journal of the American Academy of Child & Adolescent Psychiatry*, *42*(2), 193-200.

Cook, J., Knight, E., Hume, I., & Qureshi, A. (2014). The self-esteem of adults diagnosed with attention-deficit/hyperactivity disorder (ADHD): A systematic review of the literature. *ADHD Attention Deficit and Hyperactivity Disorders*, *6*(4), 249-268.

Goodman, R. (1997). The Strengths and Difficulties Questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, *38*(5), 581-586.

Gresham, F. M., MacMillan, D. L., Bocian, K. M., Ward, S. L., & Forness, S. R. (1998). Comorbidity of hyperactivity-impulsivity-inattention and conduct problems: Risk factors in social, affective, and academic domains. *Journal of Abnormal Child Psychology*, *26*(5), 393-406.

Dadds, M. R., Maujean, A., & Fraser, J. A. (2003). Parenting and conduct problems in children: Australian data and psychometric properties of the Alabama Parenting Questionnaire. *Australian Psychologist*, *38*(3), 238-241.

Daley, D., & Birchwood, J. (2010). ADHD and academic performance: Why does ADHD impact on academic performance and what can be done to support ADHD children in the classroom?. *Child: Care, Health and Development*, *36*(4), 455-464.

Danielson, M. L., Bitsko, R. H., Ghandour, R. M., Holbrook, J. R., Kogan, M. D., & Blumberg, S. J. (2018). Prevalence of parent-reported ADHD diagnosis and associated treatment among US children and adolescents, 2016. *Journal of Clinical Child & Adolescent Psychology*, *47*(2), 199-212.

De Los Reyes, A., & Kazdin, A. E. (2005). Informant discrepancies in the assessment of childhood psychopathology: A critical review, theoretical framework, and recommendations for further study. *Psychological Bulletin*, *131*(4), 483.

Diener, E., Inglehart, R., & Tay, L. (2013). Theory and validity of life satisfaction scales. *Social Indicators Research*, *112*, 497-527.

Edbom, T., Lichtenstein, P., Granlund, M., & Larsson, J. O. (2006). Long-term relationships between symptoms of attention deficit hyperactivity disorder and self-esteem in a prospective longitudinal study of twins. *Acta Paediatrica*, *95*(6), 650-657.

Eells, T., Kendjelic, E.M., & Lucas, C. (1998). What's in a case formulation? Development and use of a content coding manual. *Journal of Psychotherapy Practice and Research, 7*(2), 144-153.

Ellis, B., & Nigg, J. (2009). Parenting practices and attention-deficit/hyperactivity disorder: New findings suggest partial specificity of effects. *Journal of the American Academy of Child & Adolescent Psychiatry*, *48*(2), 146-154.

Erdfelder, E., Faul, F., & Buchner, A. (1996). GPOWER: A general power analysis program. *Behavior Research Methods, Instruments, & Computers*, *28,* 1-11.

Ermisch, J. F., & Francesconi, M. (2001). Family structure and children's achievements. *Journal of Population Economics*, *14*(2), 249-270.

Essau, C. A., Sasagawa, S., & Frick, P. J. (2006). Psychometric properties of the Alabama Parenting Questionnaire. *Journal of Child and Family Studies*, *15*, 595-614.

Faraone, S. V., Perlis, R. H., Doyle, A. E., Smoller, J. W., Goralnick, J. J., Holmgren, M. A., & Sklar, P. (2005). Molecular genetics of attention-deficit/hyperactivity disorder. *Biological Psychiatry*, *57*(11), 1313-1323.

Foley-Nicpon, M., Rickels, H., Assouline, S. G., & Richards, A. (2012). Self-esteem and self-concept examination among gifted students with ADHD. *Journal for the Education of the Gifted*, *35*(3), 220-240.

Franke, B., Michelini, G., Asherson, P., Banaschewski, T., Bilbow, A., Buitelaar, J. K., ... & Reif, A. (2018). Live fast, die young? A review on the developmental trajectories of ADHD across the lifespan. *European Neuropsychopharmacology*, *28*(10), 1059-1088.

Frick, P. J. (1991). The Alabama Parenting Questionnaire. *Unpublished rating scale, University of Alabama*.

Froehlich, T. E., Lanphear, B. P., Auinger, P., Hornung, R., Epstein, J. N., Braun, J., & Kahn, R. S. (2009). Association of tobacco and lead exposures with attention-deficit/hyperactivity disorder. *Pediatrics*, *124*(6), e1054-e1063.

Fulton, B. D., Scheffler, R. M., Hinshaw, S. P., Levine, P., Stone, S., Brown, T. T., & Modrek, S. (2009). National variation of ADHD diagnostic prevalence and medication use: health care providers and education policies. *Psychiatric Services*, *60*(8), 1075-1083.

Gable, S. L., & Haidt, J. (2005). What (and why) is positive psychology?. *Review of General Psychology*, *9*(2), 103-110.

Garner, A. A., O'Connor, B. C., Narad, M. E., Tamm, L., Simon, J., & Epstein, J. N. (2013). The relationship between ADHD symptom dimensions, clinical correlates and functional impairments. *Journal of Developmental and Behavioral Pediatrics: JDBP*, *34*(7), 469-477.

Gilman, R., & Huebner, S. (2003). A review of life satisfaction research with children and adolescents. *School Psychology Quarterly*, *18*(2), 192.

Gilman, R., & Huebner, E. S. (2006). Characteristics of adolescents who report very high life satisfaction. *Journal of Youth and Adolescence*, *35*, 293-301.

Grusec, J. E., Goodnow, J. J., & Kuczynski, L. (2000). New directions in analyses of parenting contributions to children's acquisition of values. *Child Development*, *71*(1), 205-211.

Gudjonsson, G. H., Sigurdsson, J. F., Smari, J., & Young, S. (2009). The relationship between satisfaction with life, ADHD symptoms, and associated problems among university students. *Journal of Attention Disorders*, *12*(6), 507-515.

Harpin, V., Mazzone, L., Raynaud, J. P., Kahle, J., & Hodgkins, P. (2016). Long-term outcomes of ADHD: A systematic review of self-esteem and social function. *Journal of Attention Disorders*, *20*(4), 295-305.

Hayes, A.F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. Guilford Publications.

Hinshaw, S. P. (2002). Preadolescent girls with attention-deficit/hyperactivity disorder: I. Background characteristics, comorbidity, cognitive and social functioning, and parenting practices. *Journal of Consulting and Clinical Psychology*, *70*(5), 1086.

Holton, K. F., & Nigg, J. T. (2020). The association of lifestyle factors and ADHD in children. *Journal of Attention Disorders*, *24*(11), 1511-1520.

Hoza, B., Pelham Jr, W. E., Dobbs, J., Owens, J. S., & Pillow, D. R. (2002). Do boys with attention-deficit/hyperactivity disorder have positive illusory self-concepts?. *Journal of Abnormal Psychology*, *111*(2), 268.

Hoza, B. (2007). Peer functioning in children with ADHD. *Journal of Pediatric Psychology*, *32*(6), 655-663.

Huebner, E. S. (1991). Correlates of life satisfaction in children. *School Psychology Quarterly*, *6*(2), 103.

Huebner, E. S., & Dew, T. (1996). The interrelationships of positive affect, negative affect, and life satisfaction in an adolescent sample. *Social Indicators Research*, *38*(2), 129-137.

Huebner, E.S., & Gilman, R. (2002). An introduction to the multidimensional student's life satisfaction scale. *Social Indicators Research, 60*(1), 115-122.

Huebner, E. S. (2004). Research on assessment of life satisfaction of children and adolescents. *Social Indicators Research*, *66*, 3-33.

Huebner, E. S., Suldo, S., Valois, R. F., Drane, J. W., & Zullig, K. (2004). Brief multidimensional students' life satisfaction scale: sex, race, and grade effects for a high school sample. *Psychological Reports*, *94*(1), 351-356.

Jansen, M., Bodden, D. H., Muris, P., van Doorn, M., & Granic, I. (2017, October). Measuring anxiety in children: The importance of separate mother and father reports. In *Child & Youth Care Forum* (Vol. 46, pp. 643-659). Springer US.

Johnston, C., & Mash, E. J. (2001). Families of children with attention-deficit/hyperactivity disorder: Review and recommendations for future research. *Clinical Child and Family Psychology Review*, *4*(3), 183-207.

Karande, S., & Kulkarni, M. (2005). Poor school performance. *The Indian Journal of Pediatrics*, *72*, 961-967.

Kearney-Cooke, A. (1999). Gender differences and self-esteem. *The Journal of Gender-Specific Medicine: JGSM: The Official Journal of the Partnership for Women's Health at Columbia*, *2*(3), 46-52.

Kearney, K. (2001). *"In the looking glass": Adolescent girls and self-esteem*. (Doctoral dissertation, John F. Kennedy University).

Killeen, P. R., Tannock, R., & Sagvolden, T. (2011). The four causes of ADHD: A framework. *Behavioral Neuroscience of Attention Deficit Hyperactivity Disorder and its Treatment*, 391-425.

Kita, Y., & Inoue, Y. (2017). The direct/indirect association of ADHD/ODD symptoms with self-esteem, self-perception, and depression in early adolescents. *Frontiers in Psychiatry*, *8*, 137.

Klassen, A. F., Miller, A., & Fine, S. (2006). Agreement between parent and child report of quality of life in children with attention-deficit/hyperactivity disorder. *Child: Care, Health and Development*, *32*(4), 397-406.

Kotchick, B. A., & Forehand, R. (2002). Putting parenting in perspective: A discussion of the contextual factors that shape parenting practices. *Journal of Child and Family Studies*, *11*(3), 255-269.

Krakowski, A. D., Cost, K. T., Szatmari, P., Anagnostou, E., Crosbie, J., Schachar, R., Duku, E., Georgiades, S., Ayub, M., Kelley, E., Nicolson, R., Pullenayegum, E., & Barnett-Tapia, C. (2022). Characterizing the ASD–ADHD phenotype: Measurement structure and invariance in a clinical sample. *Journal of Child Psychology and Psychiatry*.

Landau, S., Milich, R., & Diener, M. B. (1998). Peer relations of children with attention-deficit hyperactivity disorder. *Reading & Writing Quarterly Overcoming Learning Difficulties*, *14*(1), 83-105.

Larsson, H., Chang, Z., D'Onofrio, B. M., & Lichtenstein, P. (2014). The heritability of clinically diagnosed attention deficit hyperactivity disorder across the lifespan. *Psychological Medicine*, *44*(10), 2223-2229.

Lechuga-Peña, S., Brown, S. M., Mitchell, F. M., Becerra, D., & Brisson, D. (2020). Improving parent-child relationships: Effects of the your family, your neighborhood intervention. *Children and Youth Services Review*, *119*, 105690.

Leto, I. V., Petrenko, E. N., & Slobodskaya, H. R. (2019). Life satisfaction in Russian primary schoolchildren: Links with personality and family environment. *Journal of Happiness Studies*, *20*(6), 1893-1912.

Linazasoro, G., Van Blercom, N., & Ortiz De Zárate, C. (2006). Prevalence of tic disorder in two schools in the Basque country: Results and methodological caveats. *Movement Disorders: Official Journal of the Movement Disorder Society*, *21*(12), 2106-2109.

Lingineni, R. K., Biswas, S., Ahmad, N., Jackson, B. E., Bae, S., & Singh, K. P. (2012). Factors associated with attention deficit/hyperactivity disorder among US children: results from a national survey. *BMC Pediatrics*, *12*(1), 1-10.

Liu, M., Wu, L., & Ming, Q. (2015). How does physical activity intervention improve self-esteem and self-concept in children and adolescents? Evidence from a meta-analysis. *PloS one*, *10*(8), e0134804.

Loe, I. M., & Feldman, H. M. (2007). Academic and educational outcomes of children with ADHD. *Journal of Pediatric Psychology*, *32*(6), 643-654.

Maas, C. J., & Hox, J. J. (2004). Robustness issues in multilevel regression analysis. *Statistica Neerlandica*, *58*(2), 127-137.

Marcus, D. K., & Barry, T. D. (2011). Does attention-deficit/hyperactivity disorder have a dimensional latent structure? A taxometric analysis. *Journal of Abnormal Psychology*, *120*(2), 427.

Martinsen, K. D., Neumer, S. P., Holen, S., Waaktaar, T., Sund, A. M., & Kendall, P. C. (2016). Self-reported quality of life and self-esteem in sad and anxious school children. *BMC Psychology*, *4*, 1-10.

Mazzone, L., Postorino, V., Reale, L., Guarnera, M., Mannino, V., Armado, M., Fatta, L., De Peppo, L., & Vicari, S. (2013). Self-esteem evaluation in children and adolescents suffering from ADHD. *Clinical Practice and Epidemiology in Mental*

Health.

McKenna, S. (1995). *A causal model of family influence: The effects of family structure, birth order, familial satisfaction, and parentification.* (Doctoral dissertation, University of Arkansas).

Milevsky, A., Schlechter, M., Netter, S., & Keehn, D. (2007). Maternal and paternal parenting styles in adolescents: Associations with self-esteem, depression and life-satisfaction. *Journal of Child and Family Studies*, *16*, 39-47.

Moilanen, I., & Rantakallio, P. (1988). The single parent family and the child's mental health. *Social Science & Medicine*, *27*(2), 181-186.

Moksnes, U. K., & Espnes, G. A. (2013). Self-esteem and life satisfaction in adolescents—gender and age as potential moderators. *Quality of Life Research*, *22*(10), 2921-2928.

Morris, A. S., Robinson, L. R., & Eisenberg, N. (2006). Applying a Multimethod Perspective to the Study of Developmental Psychology. In M. Eid & E. Diener (Eds.), *Handbook of multimethod measurement in psychology* (pp. 371–384). American Psychological Association.

Murry, V. M., & Lippold, M. A. (2018). Parenting practices in diverse family structures: Examination of adolescents' development and adjustment. *Journal of Research on Adolescence*, *28*(3), 650-664.

Nadeau, J. M., Jacob, M. L., Keene, A. C., Alderman, S. M., Hacker, L. E., Cavitt, M. A., Alvaro, J. L. & Storch, E. A. (2015). Correlates and mediators of life satisfaction among youth with attention-deficit/hyperactivity disorder. *Children's Health Care*, *44*(2), 169-182.

Nezu, A.M., Nezu, C.M., Lombardo, E.R. (2004). Cognitive-behavioral case formulation and treatment design: A problem-solving approach. New York: Springer.

Nickerson, A. B., & Nagle, R. J. (2004). The influence of parent and peer attachments on life satisfaction in middle childhood and early adolescence. In *Quality-of-life Research on Children and Adolescents* (pp. 35-60). Springer, Dordrecht.

Nigg, J. T., & Breslau, N. (2007). Prenatal smoking exposure, low birth weight, and disruptive behavior disorders. *Journal of the American Academy of Child & Adolescent Psychiatry*, *46*(3), 362-369.

Orth, U., & Robins, R. W. (2014). The development of self-esteem. *Current Directions in Psychological Science*, *23*(5), 381-387.

Osborne, J. W., & Waters, E. (2002). Four assumptions of multiple regression that researchers should always test. *Practical Assessment, Research, and Evaluation*,

8(1), 2.

Parke, R. D. (2017). Family psychology: Past and future reflections on the field. *Journal of Family Psychology*, *31*(3), 257.

Paquette, D., Coyl-Shepherd, D. D., & Newland, L. A. (2013). Fathers and development: New areas for exploration. *Early Child Development and Care*, *183*(6), 735-745.

Pérez-Fuentes, M. D. C., Molero Jurado, M. D. M., Gázquez Linares, J. J., Oropesa Ruiz, N. F., Simón Márquez, M. D. M., & Saracostti, M. (2019). Parenting practices, life satisfaction, and the role of self-esteem in adolescents. *International Journal of Environmental Research and Public Health*, *16*(20), 4045.

Peterson, G. W., & Rollins, B. C. (1987). Parent-child socialization. In *Handbook of Marriage and the Family* (pp. 471-507). Springer, Boston, MA.

Preacher, K. J., Curran, P. J., & Bauer, D. J. (2006). Computational tools for probing interactions in multiple linear regression, multilevel modeling, and latent curve analysis. *Journal of Educational and Behavioral Statistics*, *31*(4), 437-448.

Proctor, C. L., Linley, P. A., & Maltby, J. (2009). Youth life satisfaction: A review of the literature. *Journal of Happiness Studies*, *10*(5), 583-630.

Roberts, G. C., Block, J. H., & Block, J. (1984). Continuity and change in parents' child-rearing practices. *Child Development*, 586-597.

Romano, E., Tremblay, R. E., Farhat, A., & Côté, S. (2006). Development and prediction of hyperactive symptoms from 2 to 7 years in a population-based sample. *Pediatrics*, *117*(6), 2101-2110.

Rosenberg, M., Schooler, C., Schoenbach, C., & Rosenberg, F. (1995). Global self-esteem and specific self-esteem: Different concepts, different outcomes. *American Sociological Review*, 141-156.

Sandvik, E., Diener, E., & Seidlitz, L. (1993). Subjective well-being: The convergence and stability of self-report and non-self-report measures. *Journal of Personality*, *61*(3), 317-342.

Schroeder, V. M., & Kelley, M. L. (2009). Associations between family environment, parenting practices, and executive functioning of children with and without ADHD. *Journal of Child and Family Studies*, *18*(2), 227-235.

Seligson, J. L., Huebner, E. S., & Valois, R. F. (2003). Preliminary validation of the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS). *Social Indicators Research*, *61*(2), 121-145.

Shelton, K. K., Frick, P. J., & Wootton, J. (1996). Assessment of parenting practices in families of elementary school-age children. *Journal of Clinical Child Psychology*, *25*(3), 317-329.

Smokowski, P. R., Bacallao, M. L., Cotter, K. L., & Evans, C. B. (2015). The effects of positive and negative parenting practices on adolescent mental health outcomes in a multicultural sample of rural youth. *Child Psychiatry & Human Development*, *46*(3), 333-345.

Suldo, S. M., Riley, K. N., & Shaffer, E. J. (2006). Academic correlates of children and adolescents' life satisfaction. *School Psychology International*, *27*(5), 567-582.

Suldo, S. M., Savage, J. A., & Mercer, S. H. (2014). Increasing middle school students' life satisfaction: Efficacy of a positive psychology group intervention. *Journal of Happiness Studies*, *15*, 19-42.

Tehrani-Doost, M., Shahrivar, Z., Pakbaz, B., Rezaie, A., & Ahmadi, F. (2011). Normative data and psychometric properties of the child behavior checklist and teacher rating form in an Iranian community sample. *Iranian Journal of Pediatrics*, *21*(3), 331.

Tein, J. Y., Roosa, M. W., & Michaels, M. (1994). Agreement between parent and child reports on parental behaviors. *Journal of Marriage and the Family*, 341-355.

Thapar, A., Cooper, M., Eyre, O., & Langley, K. (2013). Practitioner review: What have we learnt about the causes of ADHD?. *Journal of Child Psychology and Psychiatry*, *54*(1), 3-16.

Tian, L., Zhang, J., & Huebner, E. S. (2015). Preliminary validation of the brief multidimensional students' life satisfaction scale (BMSLSS) among Chinese elementary school students. *Child Indicators Research*, *8*(4), 907-923.

Whalen, C. K., Jamner, L. D., Henker, B., Delfino, R. J., & Lozano, J. M. (2002). The ADHD spectrum and everyday life: Experience sampling of adolescent moods, activities, smoking, and drinking. *Child Development*, *73*(1), 209-227.

Wigal, S. B., Emmerson, N., Gehricke, J. G., & Galassetti, P. (2013). Exercise: applications to childhood ADHD. *Journal of Attention Disorders*, *17*(4), 279-290.

Wilens, T. E., & Fusillo, S. (2007). When ADHD and substance use disorders intersect: Relationship and treatment implications. *Current Psychiatry Reports*, *9*(5), 408-414.

Willcutt, E. G., Nigg, J. T., Pennington, B. F., Solanto, M. V., Rohde, L. A., Tannock, R., Loo, S. K., Carlson, C. L., McBurnett, K., & Lahey, B. B. (2012). Validity of DSM-IV attention deficit/hyperactivity disorder symptom dimensions and

subtypes. *Journal of Abnormal Psychology*, *121*(4), 991.

Wirth, A., Reinelt, T., Gawrilow, C., Schwenck, C., Freitag, C. M., & Rauch, W. A. (2019). Examining the relationship between children's ADHD symptomatology and inadequate parenting: The role of household chaos. *Journal of Attention Disorders*, *23*(5), 451-462.

Young, S., Bramham, J., Gray, K., & Rose, E. (2008). The experience of receiving a diagnosis and treatment of ADHD in adulthood: A qualitative study of clinically referred patients using interpretative phenomenological analysis. *Journal of Attention Disorders*, *11*(4), 493-503.

Zullig, K. J., Valois, R. F., Huebner, E. S., & Drane, J. W. (2005). Associations among family structure, demographics, and adolescent perceived life satisfaction. *Journal of Child and Family Studies*, *14*(2), 195-206.