

Predicting Change in Life Satisfaction During a Summer Treatment Program for
Children with ADHD and ASD

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Abstract

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Life satisfaction in children is associated with psychological well-being as well as quality social relationships, physical health, and positive schooling experiences. Children with attention-deficit/hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) tend to experience lower life satisfaction compared to their typically developing peers. One intervention that is well-evidenced in promoting a range of positive outcomes for children with ADHD and ASD, including increasing prosocial behaviors and decreasing challenging behaviors, is the Summer Treatment Program (STP). While the majority of research on the STP has focused on behavior change, skill acquisition, and social relationships, the current study investigated changes in life satisfaction across the STP intervention for children ages 8 to 12 ($M_{\text{age}} = 10$ years, 1 month) with diagnosed ADHD, ASD, and co-morbid ADHD and ASD. Linear multilevel modeling was used

to evaluate whether children participating in the STP self-reported changes in life satisfaction across the STP, examine the differences in life satisfaction trajectories of children based on their peer relationships developed by the end of the STP, and explore differences in life satisfaction trajectories of children based on their diagnoses. Results indicated children participating in the STP, regardless of bunk membership, diagnostic status, or peer relationships formed, self-reported statistically significant increases in life satisfaction each week of the five-week intervention. There were no statistically significant trajectories in life satisfaction based on diagnosis or peer relationships. Interestingly, children who reported more social relationships by the end of the STP were predicted to report greater life satisfaction at the beginning of the STP. Implications for clinical and school-based practice as well as future research are discussed.

Keywords: Attention-deficit/hyperactivity disorder, autism spectrum disorder, internalizing behaviors, life satisfaction, positive psychology, subjective well-being, summer treatment program.

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Chapter 1: Introduction

Understanding the subjective well-being of school-age children is about more than just the experience of positive emotions during childhood. While all children deserve to feel good about themselves and enjoy moments of joy, passion, excitement, adventure, glee, and triumph in their lives, subjective well-being is a significant and often overlooked facet of child development (Diener & McGavran, 2008; Huebner & Diener, 2008; Park, 2004; Suldo & Shaffer, 2008). Subjective well-being as a construct has long been evidenced over the past several decades to be beneficial for individuals across the lifespan (Diener et al., 2018), and research indicates that subjective well-being is a particularly important aspect of youth development in early childhood through adolescence (Bird & Markle, 2012; Park, 2004). In other words, children's subjective well-being matters. First, subjective well-being matters because it is a predictor of and a critical dimension of children's mental health and overall well-being (Huebner & Diener, 2008; Park, 2004; Suldo & Shaffer, 2008). Specifically, the effort to measure and understand subjective well-being contributes to a more comprehensive understanding of youth mental health (Huebner & Diener, 2008; Park, 2004; Suldo & Shaffer, 2008). Second, subjective well-being matters because it predicts positive youth development (Diener et al., 2018; Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Huebner & Diener, 2008; Huebner et al., 2014; Park, 2004; Suldo & Shaffer, 2008; Zullig et al., 2011). Subjective well-being in school-age children is positively correlated with many meaningful life outcomes, such as quality peer and adult relationships (Diener et al., 2018; Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Suldo & Shaffer, 2008; Zullig et al., 2011), good physical health (Diener et al., 2018; Park, 2004; Suldo & Shaffer, 2008), and satisfying schooling experiences (Huebner et al., 2014; Suldo et al., 2006; Zullig et al., 2011). Third, subjective well-being matters because it serves as a protective

factor against negative life experiences (Lewinsohn et al., 1991; Park, 2004; Suldo & Huebner, 2004). Subjective well-being in childhood specifically acts as a “buffer” against depression (Lewinsohn et al., 1991), stressful life events (Suldo & Huebner, 2004), and lack of parenting support (Suldo & Huebner, 2004).

Subjective Well-Being and its Relation to Life Satisfaction

Subjective well-being is defined as a personal evaluation of one’s quality of life, which includes both affective and cognitive evaluations (Huebner & Diener, 2008; Park, 2004). Affective evaluations of subjective well-being include experiences of emotional states ranging from positive to negative (Larsen & Eid, 2008). Specifically, the frequency of positive affective states compared to negative affective states across the lifespan shape one’s experience of subjective well-being (Larsen & Eid, 2008). The experience of frequent positive affect and infrequent negative affect predicts high levels of subjective well-being (Huebner & Diener, 2008; Larsen & Eid, 2008). Additionally, subjective well-being is strongly dependent on cognitive judgments of life satisfaction, or the extent that one perceives their life as of good quality (Huebner & Diener, 2008; Larsen & Eid, 2008). With these elements in combination, it can be understood that individuals with high levels of subjective well-being will typically report a personal evaluation that their life is generally going well (i.e., high life satisfaction) in addition to relatively high levels of positive affect compared to relatively low levels of negative affect (Diener et al., 2009; Park, 2004).

While subjective well-being is comprised of perceptions of life satisfaction, positive affective experiences, and negative affective experiences, life satisfaction alone is understood in the research literature as a meaningful indicator of an individual’s subjective well-being (Huebner & Diener, 2008; Park, 2004). Unsurprisingly, life satisfaction and subjective well-

being have been identified as highly predictive of one another (Medvedev & Landhuis, 2018). Life satisfaction can be defined as both global (i.e., overall sense of life satisfaction) and specific (e.g., specific sense of satisfaction with school or family; Suldo & Shaffer, 2008). While subjective well-being is positively correlated with high quality social relationships (Diener et al., 2018; Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Suldo & Shaffer, 2008; Zullig et al., 2011), physical health (Diener et al., 2018; Park, 2004; Suldo & Shaffer, 2008) and schooling experiences (Huebner et al., 2014; Suldo et al., 2006; Zullig et al., 2011), life satisfaction is too (Diener et al., 2018; Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Huebner et al., 2014; Suldo et al., 2006; Suldo & Shaffer, 2008; Zullig et al., 2011).

Life Satisfaction and Social Relationships in School-Age Children

Just as children's life satisfaction predicts quality social relationships, positive experiences of social relationships are an important source of life satisfaction for children ages 8 to 12 (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a). Social support is evidenced as beneficial given that individuals with close social relationships cope more effectively with stress (Diener & McGavran, 2008). Relationship quality matters because social relationships of minimal quality and of high conflict are associated with higher levels of stress and anxiety as well as lower levels of life satisfaction (Diener & McGavran, 2008). Family relationships, specifically caregiver-child relationships, are strongly correlated with life satisfaction in early childhood and into early adolescence (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Park, 2004). Additionally, peer relationships are important in fostering life satisfaction throughout childhood (Goswami, 2012; Huebner & Diener, 2008). While positive experiences of social relationships with peers are fundamental in children's younger years, positive peer relationships along with positive self-perceptions take on an increasingly important role as

children mature into early adolescence (Park, 2004). Positive family and peer relationships are the strongest predictors of life satisfaction for children ages 10 to 15 in comparison to school experiences, perceptions of self, and community factors (e.g., neighborhood; Goswami, 2012; Huebner, 1991a).

Social Relationships for Children with ADHD and ASD

Within the United States, it is estimated that 9.4% of children are diagnosed with attention-deficit/hyperactivity disorder (ADHD; Danielson et al., 2018), and 1 in 44 children are diagnosed with autism spectrum disorder (ASD) by the age of eight (Maenner et al., 2021). ADHD and ASD are recognized as distinct neurodevelopmental disorders with differentiating symptomatology as categorized by the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association, 2013). However, both disorders are commonly associated with impairments in social relationships, including difficulties with social skills and making and maintaining relationships with others (Azad et al., 2017; Hoza, 2007; Johnston & Mash, 2001; Kasari et al., 2011; McQuade & Hoza, 2015; Mikami & Normand, 2015; Rogers et al. 2009).

As part of an ASD diagnosis, diagnostic criteria must be met in which the individual is identified as having “persistent deficits in social communication and social interaction across multiple contexts” (American Psychiatric Association, 2013). These impairments include but are not limited to difficulties with reciprocating social interactions, engaging in imaginative or cooperative play, developing and maintaining social relationships, as well as utilizing and navigating nonverbal communication in conversation (American Psychiatric Association, 2013). Therefore, it is unsurprising that children with ASD commonly have challenges with forming and maintaining positive and reciprocal peer relationships (Azad et al., 2017; Kasari et al., 2011).

In contrast to an ASD diagnosis, deficits in social functioning are not required to meet criteria for an ADHD diagnosis (American Psychiatric Association, 2013). However, evidence that presenting symptoms interfere with or decrease daily functioning is necessary, which can include social functioning (American Psychiatric Association, 2013). Additional research shows that children with ADHD commonly experience difficulties in their social relationships with peers, particularly in their ability to acquire social skills and attend to social norms and in their experience of peer rejection related to the hyperactive and impulsive behaviors characteristic of ADHD (Hoza, 2007; McQuade & Hoza, 2015; Mikami & Normand, 2015). Children with ADHD tend to perceive minimal social support from their friendships and relationships with parents and teachers (Mastoras et al., 2018).

Life Satisfaction for Children with ADHD and ASD

In addition to their difficulties with social relationships, children with neurodevelopmental disorders like ADHD and ASD report lower levels of life satisfaction compared to their typically developing peers (Franke et al., 2019; García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016). Specifically for children with ADHD, self-reported symptom severity is negatively correlated with life satisfaction (Nadeau et al., 2015; Ogg et al., 2016). While there is substantial research on the life satisfaction of parents of children with ASD (Conti, 2015; Lu et al., 2015; Neff & Faso, 2015; Salas et al., 2017), much less is known about the life satisfaction of children with ASD themselves (Franke et al., 2018). However, there is initial evidence to suggest that like children with ADHD, children with ASD tend to report lower levels of life satisfaction compared to neurotypical children (Franke et al., 2019). Given the well-evidenced correlation between social relationships and life satisfaction, it makes sense that children with ADHD and ASD are more likely to experience minimal or less satisfactory social

relationships (Azad et al., 2017; Hoza, 2007; Johnston & Mash, 2001; Kasari et al., 2011; McQuade & Hoza, 2015; Mikami & Normand, 2015; Rogers et al. 2009) and are additionally less likely to experience high levels of life satisfaction (Franke et al., 2019; Nadeau et al., 2015; Ogg et al., 2016).

The Summer Treatment Program

One intervention that is well-evidenced in promoting a range of positive outcomes for children with ADHD and ASD, including increasing prosocial behaviors and decreasing disruptive behaviors, is the Summer Treatment Program (STP; Fabiano et al., 2014; Mitchell et al., 2015). Initially designed and implemented for children with ADHD, the STP is a social and behavioral intervention program that positively supports the development of children ages 5 to 16 with ADHD, ASD, and more broadly defined, externalizing behavior problems (Graziano et al., 2014; Mitchell et al., 2015; Pelham et al., 2012a). The comprehensiveness and intensity of the STP is unique. In a single summer, participating children receive between 150 to 300 hours of behavioral intervention, which is equivalent to 3 to 6 years of weekly, hour-long intervention sessions (Mitchell et al., 2015).

Extensive evidence indicates that the STP is an effective intervention to support the social and behavioral development of children with ADHD (Fabiano et al., 2014). Specifically for children with ADHD, the STP has been shown to have positive effects on prosocial and negative behaviors (Chronis et al., 2004; Coles et al., 2005; Pelham et al., 2000), sports skills and knowledge (O'Connor et al., 2014), academic outcomes (Chronis et al., 2004; Coles et al., 2005; Pelham et al., 2000), and peer and adult relationships (Chronis et al., 2004; Pelham et al., 2000). There is additional evidence that children with ASD benefit from participation in the STP as well (Mitchell et al., 2015; Mrug & Hodgens, 2008). In particular, children with ASD participating in

the STP have demonstrated improvements in socially appropriate engagement in group-based activities (Mitchell et al., 2015; Mrug & Hodgens, 2008) and positive peer interactions (Mrug & Hodgens, 2008) as well as reduced instances of negative verbal behaviors (e.g., complaining/whining; Mitchell et al., 2015; Mrug & Hodgens, 2008).

The majority of research on the STP has focused on skill acquisition and social relationships. As such, few studies have focused on the effect of the STP on internalizing behaviors, like self-esteem, subjective well-being, or symptoms of depression (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012). Of those studies, only one study has examined the effect of the STP on changes related to mood and subjective well-being, in which adolescents with ADHD and their parents, teachers, and counselors reported improvements in mood/well-being after STP participation (Sibley et al., 2011). No published studies to date have explored changes in life satisfaction specifically across time for children participating in the STP.

The Present Study

Despite the lack of evidence that children with ADHD and ASD self-report changes in their life satisfaction in response to the STP, a promising theoretical argument suggests otherwise. First, positive social relationships in childhood are well-evidenced predictors of high levels of life satisfaction (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a), and children with ADHD and ASD are vulnerable to experiencing difficulties in forming and maintaining positive social relationships (Azad et al., 2017; Hoza, 2007; Johnston & Mash, 2001; Kasari et al., 2011; McQuade & Hoza, 2015; Mikami & Normand, 2015; Rogers et al., 2009) and lower life satisfaction compared to typically developing peers (Franke et al., 2019; Nadeau et al., 2015; Ogg et al., 2016). Second, as a social and behavioral intervention designed

to target social relationships (Pelham et al., 2012a; Pelham et al., 2012b), the STP has a notable evidence base supporting the development of positive peer and adult relationships for children with ADHD and ASD (Chronis et al., 2004; Mrug & Hodgins, 2008; Pelham et al., 2000).

Therefore, it is expected that children with ADHD and ASD participating in the STP also would report improvements in their life satisfaction.

The current study seeks to expand the literature by exploring changes in life satisfaction across the STP intervention. This study has three aims. The first aim is to explore whether children participating in the STP, including those with diagnoses of ADHD, ASD, and co-morbid ADHD and ASD, report changes in their life satisfaction across the STP, and if so, the nature of those changes. The second aim is to examine the differences in life satisfaction trajectories of children participating in the STP based on their peer relationships developed by the end of the STP. The third and final aim is to explore differences in life satisfaction trajectories of children participating in the STP based on their diagnoses, including ADHD, ASD, and co-comorbid ADHD and ASD.

Chapter 2: Literature Review

Life Satisfaction in School-Age Children

Most school-age children report that they are happy with their overall lives and report satisfaction across key domains in their lives, including family, friends, and school (Huebner, 1991a; Huebner & Diener, 2008). Children's perceptions of global life satisfaction are also correlated positively with perceptions of satisfaction across specific domains of the home environment (e.g., family, neighborhood) and perceptions of school, friends, and self (Huebner, 1991a). These findings are consistent across age and gender for children ages 3 to 12 (Huebner, 1991a; Huebner & Diener, 2008), although the majority of research on youth life satisfaction focuses on children ages eight and older (Goswami, 2012; Huebner, 1991a; Huebner et al., 2014; Liu et al., 2021; Suldo & Shaffer, 2008; Tian et al., 2016; Zullig et al., 2011).

Importance of Life Satisfaction

Life satisfaction can and should be understood as a key facet of youth development (Bird & Markle, 2012; Park, 2004). Measuring and considering both life satisfaction and psychopathology in combination contributes to a more complete understanding of youth mental health (Huebner & Diener, 2008; Park, 2004; Suldo & Shaffer, 2008). However, evaluating life satisfaction by itself also provides insight into the lived experiences of young children. Importantly, life satisfaction predicts positive youth development and serves as a protective factor against negative life experiences (Park, 2004).

Life Satisfaction as a Positive Indicator of Mental Health. Psychopathology is defined as symptoms of internalizing and externalizing psychological disorders, such as anxiety, depression, or conduct disorder (Suldo & Shaffer, 2008). Mental health, including mental health among school-age children, has historically been understood as the absence of psychopathology,

which is incomplete and misleading (Huebner & Diener, 2008; Park, 2004; Suldo & Shaffer, 2008). While psychopathology serves as a negative indicator of mental health status, subjective well-being and life satisfaction are positive indicators of mental health (Suldo & Shaffer, 2008). Attention should be paid to the balance of these positive and negative indicators of mental health in order to develop a more comprehensive understanding of children's internal experiences (Park, 2004; Suldo & Shaffer, 2008). In reality, significant symptoms of psychopathology can co-occur with high levels of life satisfaction, and low levels of psychopathology can co-occur with low life satisfaction (Suldo & Shaffer, 2008). In other words, not all children with significant symptoms of psychopathology also report low levels of life satisfaction (Suldo & Shaffer, 2008).

The dual factor model provides an alternative framework for understanding youth mental health, in which psychopathology and subjective well-being, which includes life satisfaction, are considered distinct, yet related dimensions of mental health (Huebner & Diener, 2008; Suldo & Shaffer, 2008). In a study by Suldo and Shaffer (2008), children between the ages of 10 to 16 provided evidence of the dual-factor model because they endorsed one of four presentations of mental health status. Suldo and Shaffer (2008) found that while "youth with complete mental health" reported high levels of subjective well-being and low levels of psychopathology, "troubled youth" endorsed low subjective well-being and high psychopathology. "Vulnerable youth" indicated they had low levels of subjective well-being and low levels of psychopathology (Suldo & Shaffer, 2008). The last group, "symptomatic but content youth," reported high psychopathology, yet high subjective well-being (Suldo & Shaffer, 2008).

In addition to identifying psychopathology and subjective well-being as two dimensions of mental health, Suldo and Shaffer (2008) found that the combinations of these dimensions were

correlated with unique academic, physical, and social functioning in children ages 10 to 16. Specifically, students with average to high levels of subjective well-being (i.e., complete mental health, symptomatic but content) reported better social relationships with peers, social support from adults, and physical health compared to peers with lower levels of subjective well-being and similar levels of psychopathology (Suldo & Shaffer, 2008). Additionally, students with complete mental health (i.e., low psychopathology and high subjective well-being) were more likely to perform better academically compared to vulnerable students (i.e., low psychopathology and low subjective well-being), which suggests that subjective well-being plays a role in fostering academic performance beyond the absence of psychopathology (Suldo & Shaffer, 2008). However, students with high psychopathology and high subjective well-being were also at-risk academically, which indicates that high subjective well-being alone is insufficient in nurturing academic success (Suldo & Shaffer, 2008). This information indicates that to comprehensively understand the mental health of youth, it is necessary to consider the role of psychopathology and also the role of subjective well-being, which includes cognitive perceptions of life satisfaction (Huebner & Diener, 2008; Park, 2004; Suldo & Shaffer, 2008).

Life Satisfaction as a Predictor of Positive Youth Development. Psychopathology aside, school-age children's life satisfaction is predictive of positive development, including quality social relationships (Diener et al., 2018; Diener & McGavran, 2008; Huebner, 1991a; Huebner et al., 2014; Park, 2004; Suldo & Shaffer, 2008; Zullig et al., 2011), less risk for psychological disorders (Park, 2004), better physical health (Diener et al., 2018; Park, 2004; Suldo & Shaffer, 2008), and healthy individual characteristics, such as self-efficacy (Greenspoon & Saklofske, 2001). First and foremost, life satisfaction is predictive of quality social support and relationships, which is an important element of positive youth development (Diener &

McGavran, 2008; Huebner, 1991a; Park, 2004). It is well evidenced that life satisfaction is correlated with relationships in early childhood and through adolescence between children and their families, peers, and teachers (Diener et al., 2018; Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Park, 2004; Suldo & Shaffer, 2008; Zullig et al., 2011). Children ages 10 to 15 who experience greater life satisfaction also report having more consistent positive experiences of social relationships (Goswami, 2012).

Additionally, children with high levels of life satisfaction are predicted to be at lower risk for presenting with symptoms of psychological disorders, such as depression and anxiety (Huebner, 1991a; Park, 2004). More broadly, children who report higher levels of life satisfaction also report lower levels of internalizing (e.g., loneliness, nervousness) and externalizing (e.g., aggression, non-compliance) behaviors (Huebner & Diener 2008; Park, 2004; Suldo et al., 2006). Life satisfaction is additionally correlated with self-esteem, in which children in 3rd through 7th grade with high life satisfaction also tend to report high self-esteem (Huebner, 1991a; Huebner & Diener, 2008; Yang et al., 2018). These findings are consistent with the assertion of Suldo and Shaffer (2008) that subjective well-being, including perceptions of life satisfaction, plays a critical role in youth mental health.

Not only is children's life satisfaction connected with mental health, life satisfaction is also predictive of physical health and well-being (Diener et al., 2018; Park, 2004; Suldo & Shaffer, 2008). Specifically, life satisfaction in youth is positively correlated with healthy eating and exercise behaviors (Park, 2004). Additionally, children who report high life satisfaction, especially children ages 12 or younger, have been found to be less at-risk of substance use or abuse compared to peers with low life satisfaction (Park, 2004).

Lastly, children's life satisfaction positively predicts specific, healthy individual characteristics that promote adaptive and positive functioning across home and school environments (Huebner, 1991a; Huebner & Diener, 2008; Park, 2004). Specifically, high levels of life satisfaction are correlated with greater intrinsic motivation, self-efficacy, self-reliance, and optimism for children in 3rd through 8th grade (Greenspoon & Saklofske, 2001; Huebner, 1991a). Additionally, life satisfaction of children in 5th through 7th grade is positively predictive of internal locus of control, which is the degree to which an individual believes they are in control of the outcomes of their life rather than at the mercy of external forces beyond their influence (Huebner, 1991a; Huebner & Diener, 2008). In other words, children who are generally satisfied with their lives typically believe that they play an active role in shaping the course of their lives (Huebner, 1991a). All of these individual differences are ideal characteristics in fostering positive youth development (Park, 2004).

Life Satisfaction as a Protective Factor. Life satisfaction is also of critical importance because it serves as a protective factor against stress and negative life experiences (Park, 2004). Life satisfaction in childhood specifically serves as a protective factor against depression (Lewinsohn et al., 1991), and children's life satisfaction acts as a "buffer" in response to stressful events encountered as part of youth (Park, 2004). Those with high life satisfaction typically have better developed problem-solving skills, quality social relationships, resistance to stress, and valuable characteristics like forgiveness and generosity, all of which can be utilized to manage challenges that emerge in daily life (Park, 2004). Adolescents ages 11 and older who both reported high life satisfaction and experiences of stressful events developed fewer externalizing behaviors one year later compared to adolescents who reported low life satisfaction (Suldo & Huebner, 2004). This finding provides encouraging evidence to indicate that even children in

early adolescence can experience positive development despite challenging life circumstances, with perceptions of life satisfaction as a moderator (Suldo & Huebner, 2004). Similarly, while life satisfaction is positively correlated with quality family relationships for children across ages (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a), life satisfaction also operates as a moderator that can mitigate the effect of lack of parenting social support in adolescence (Suldo & Huebner, 2004). Adolescents aged 11 and older with little social support from their caregivers and high levels of life satisfaction experienced less of a negative effect of lacking social support compared to those with low life satisfaction (Suldo & Huebner, 2004). In sum, life satisfaction both predicts positive outcomes of child development and protects against negative experiences in childhood and adolescence.

Malleable Factors of Life Satisfaction

Research is clear that there is no sole determinant of children's subjective well-being or life satisfaction (Larson & Eid, 2008). While evidence suggests that biological and genetic factors influence perceptions of life satisfaction, environmental factors play a critical role (Diener et al., 2018; Larson & Eid, 2008). Specifically, it is estimated that only 30% to 40% of the variance in individuals' subjective well-being is accounted for by genetic heritability (Diener et al., 2018). Research shows that life satisfaction in children is minimally influenced by socio-demographic factors such as age, grade, and gender (Dinisman & Ben-Arieh, 2015; Huebner, 1991a; Huebner & Diener, 2008) or intelligence (Huebner, 1991a; Suldo et al., 2006).

Given that 30% to 40% of the variance in subjective well-being is accounted for by biological factors, that leaves 60% to 70% of the variance accounted for by environmental, situational, and malleable factors (Diener et al., 2018). In other words, environments are vital in shaping subjective well-being, including life satisfaction, both in youth and later in adulthood

(Diener et al., 2018). Influential environments for children span across home, community, and school settings (Goswami, 2012).

Social Relationships and Life Satisfaction. Positive experiences of social relationships serve as an important foundation of subjective well-being for children ages 8 to 12 (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a). Social support is considered highly beneficial because research shows that individuals with close social relationships cope more effectively with stress (Diener & McGavran, 2008). However, relationship quality does matter. Social relationships of low quality and of high conflict are correlated with lower life satisfaction and greater stress and anxiety (Diener & McGavran, 2008).

Social Relationships with Adults. Family relationships, specifically caregiver-child relationships, are strongly associated with life satisfaction in early childhood and into early adolescence (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Park, 2004). In fact, multiple studies have found positive family relationships to be the strongest predictor of life satisfaction for children ages 10 to 15, in comparison to peer relationships, school experiences, perceptions of self, and community factors like neighborhood (Huebner, 1991a; Goswami, 2012). However, perceived relationship quality, especially perceptions of social support, is key for nurturing life satisfaction in early childhood through adolescence (Goswami, 2012; Huebner & Diener, 2008; Park, 2004). Positive relationships with teachers at school (Goswami, 2012; Suldo et al., 2006; Zullig et al., 2011) and mentors within the community (Goswami, 2012) also predict greater life satisfaction for school-age children. Quality continues to matter in these social relationship dynamics, in which negative experiences of being treated unfairly by adults are correlated with decreases in life satisfaction in children ages 10 to 15 (Goswami, 2012).

Social Relationships with Peers. In addition to the importance of relationships with adults throughout childhood (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a; Park, 2004; Suldo et al., 2006; Zullig et al., 2011), peer relationships in community and school settings are important in fostering life satisfaction in early childhood and into adolescence (Goswami, 2012; Huebner & Diener, 2008; Suldo et al., 2006; Zullig et al., 2011). Positive peer relationships are correlated positively with high levels of life satisfaction for school-age children (Goswami, 2012). Similarly in relationships with adults, the quality of peer relationships matters more than the quantity (Goswami, 2012; Park, 2004). By contrast, negative peer relationships, including experiences of negative friendships and bullying by peers, are inversely associated with life satisfaction for children ages 10 to 15 (Goswami, 2012). There is also evidence of a bidirectional relationship between life satisfaction and prosocial behavior for children in 3rd through 4th grade (Chen et al., 2020), and prosocial behavior in children ages 8 to 12 is predictive of life satisfaction two years later (Liu et al., 2021). While positive experiences of peer relationships are important in in early and middle childhood, peer relationships take on an increasingly significant role as children transition to early adolescence (Park, 2004).

Life and Community Experiences and Life Satisfaction. In addition to the significance of social relationships in fostering life satisfaction, frequent experiences that nurture a sense of joy, personal interest, passion, purpose, accomplishment, and belonging are important in the development of life satisfaction (Park, 2004). School-age children are more likely to experience greater life satisfaction when they engage in daily positive life experiences (Diener et al., 2009; Gilman et al., 2001; Huebner & Diener, 2008; McCullough et al., 2000; Park, 2004) or make progress toward individualized and meaningful goals (Diener & McGavran, 2008; Yi et al., 2020). Specific environmental characteristics, such as sense of safety and belongingness,

additionally are correlated positively with perceptions of life satisfaction (Huebner et al., 2014; Suldo et al., 2006; Tian et al., 2016; Zullig et al., 2011).

Daily Life Experiences. A key predictor of life satisfaction in childhood is the experience of positive life events within home and community settings (Diener et al., 2009; Huebner & Diener, 2008; Park, 2004). Even daily, small, positive life experiences such as talking with friends, helping others, or engaging in a hobby are correlated positively with life satisfaction (McCullough et al., 2000). Participation in enrichment or extracurricular activities that are meaningful and challenging to an individual child is another example of a daily life event that is related to life satisfaction (Gilman, 2001). Young adolescents who participate in a greater number of structured activities after school, like team sports or quality time with friends, report greater life satisfaction compared to those who spend their time after school studying and watching television (Gilman, 2001).

Progression Toward Goals. Another significant predictor of life satisfaction in school-age children is progress toward individual goals (Diener & McGavran, 2008). Across home, school, and community settings, children set and make progress toward individualized goals, particularly goals related to fostering connection with others, which contribute to positive affective experiences and increased perceptions of life satisfaction (Diener & McGavran, 2008). It is hypothesized that this emphasis on goal orientation is even more strongly related to life satisfaction when situated within a cultural context that values effort and goal orientation (Yi et al., 2020).

Environmental Characteristics. Research on school climate and its relationship with life satisfaction shows promise that characteristics of environments can support the development of children's life satisfaction (Huebner et al., 2014; Suldo et al., 2006; Tian et al., 2016; Zullig et

al., 2011). First, perceptions of physical and psychological safety are correlated positively with life satisfaction in school for students in 3rd through 8th grade (Huebner et al., 2014). Second, there is a statistically significant bidirectional relationship between sense of school belongingness or connectedness and life satisfaction during middle childhood (Tian et al., 2016) and into adolescence (Zullig et al., 2011). Third, higher caregiver involvement in children's schooling experiences is associated with greater life satisfaction in children (Suldo et al., 2006). Lastly, children's experiences with disciplinary problems in school are inversely related with life satisfaction in adolescence (Park, 2004). These findings indicate that children who feel physically and psychologically safe (Huebner et al., 2014), connected within their community (Tian et al., 2016; Zullig et al., 2011), and sufficiently supported by their caregivers and educators (Park, 2004; Suldo et al., 2006) in their immediate environment also report greater levels of life satisfaction.

Promise of Intervention in Supporting Life Satisfaction

Some factors that predict subjective well-being and life satisfaction for children ages 8 to 12 are considered relatively stable over time, such as biological pre-disposition (Diener et al., 2018) and specific personality traits (e.g., extraversion; Huebner, 1991a; Huebner & Diener, 2008). However, many malleable factors related to life satisfaction have been evidenced, including but not limited to quality social relationships both in school (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a) and out of school (Huebner & Diener, 2008; Suldo et al., 2006; Zullig et al., 2011), life events within home and community settings (Diener et al., 2009; Huebner & Diener, 2008; Park, 2004), and schooling experiences (Huebner et al., 2014; Suldo et al., 2006; Zullig et al., 2011). Given that the majority of the variance in life satisfaction is accounted for by these malleable factors (Diener et al., 2018), intervention can be utilized to

promote experiences and establish environments that nurture healthy levels of life satisfaction across home, community, and school environments (Huebner & Diener, 2008). Research on the role of intervention in increasing subjective well-being is promising (Diener et al., 2009; Shoshani & Slone, 2017; Suldo et al., 2015).

Social Relationships. An obvious target of prevention and intervention in fostering the life satisfaction of children ages 8 to 12 is social relationships (Bird & Markle, 2012). As one of the strongest predictors of life satisfaction, positive family relationships, especially caregiver-child relationships, are important to target with intervention to nurture the development of life satisfaction (Park, 2004). Mentoring opportunities for children with adults in their community present another approach to fostering quality social relationships and therefore life satisfaction (Bird & Markle, 2012). Additionally, supporting school-age children in their ability to connect and build relationships with peers is a worthy focus of intervention in the interest of promoting children's life satisfaction (Huebner & Diener, 2008). Explicit instruction targeting social skills and other prosocial behaviors is valuable in empowering children with the tools they need to better connect with their peers (Chen et al., 2020). Additional intervention to support social relationships among peers could also include increased access to peers (e.g., opportunities to play with neighborhood peers, participation in enrichment activities).

Daily Positive Experiences. Another malleable factor that holds promise in supporting life satisfaction is children's daily positive experiences (Diener et al., 2009; Huebner & Diener, 2008; Park, 2004). Research suggests that children's cumulative and consistent access to opportunities that foster a sense of joy, passion, purpose, or personal interest increase the likelihood of developing high levels of life satisfaction (Park, 2004). These opportunities can include structured and meaningful enrichment or extracurricular activities (Bird & Markle, 2012;

Gilman, 2001), positive experiences of social relationships (Bird & Markle, 2012; Goswami, 2012), and structured or informal instances of helping others (Park, 2004).

Goal Setting. In addition to life experiences, children's life satisfaction is associated with underlying developmental processes that occur in response to various life events, specifically goal setting (Bird & Markle, 2012; Diener & McGavran, 2008). Children's ability to set and work toward meaningful goals related to personal interests is a promising component of intervention to increase life satisfaction (Bird & Markle, 2012; Diener & McGavran, 2008). With the support and encouragement of trusted adults, children can establish short-term goals they hope to work on, make plans to determine how they will accomplish that goal, and monitor and celebrate progress (Bird & Markle, 2012).

Positive and Supportive Environments. Promoting positive climates within naturalistic settings for children also promotes life satisfaction (Huebner et al., 2014; Suldo et al., 2006; Zullig et al., 2011). The bidirectional relationship between school belongingness and life satisfaction supports the benefit of establishing safe, supportive, and welcoming environments for children, both in school and within their community (Tian et al., 2016). Features of positive climates for children ages 8 to 12 include clear expectations and consistent routines (Huebner et al., 2014), active relationship building (Bird & Markle, 2012; Huebner et al., 2014), collaboration with families (Huebner et al., 2014), and promotion of healthy and balanced perceptions of self (e.g., social, esteem; Huebner et al., 2014).

Characteristics of Attention-Deficit/Hyperactivity Disorder

While the majority of school-age children report that they are satisfied with their overall lives (Huebner, 1991a; Huebner & Diener, 2008), specific populations like children with attention-deficit/hyperactivity disorder (ADHD) are susceptible to lower levels of life

satisfaction (García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016; Peasgood et al., 2016).

ADHD is a neurodevelopmental disorder characterized by persistent patterns of inattention, hyperactivity, and/or impulsivity (American Psychiatric Association, 2013). Current prevalence estimates indicate that 9.4% of children in the United States are diagnosed with ADHD, with boys (12.9%) more frequently diagnosed than girls (5.6%; Danielson et al., 2018). Three distinct categories of ADHD are described in the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5): predominantly inattentive presentation, predominantly hyperactive/impulsive presentation, and combined presentation (American Psychiatric Association, 2013). In order to meet criteria for ADHD of all subtypes, it is required that presenting symptoms are exhibited across two or more settings (e.g., home, school, with friends or relatives) and impede with daily social, academic, or occupational functioning (American Psychiatric Association, 2013). ADHD begins in childhood and impairments can persist into adulthood (American Psychiatric Association, 2013). For children with ADHD, difficulties with externalizing behaviors (Ahmad & Hinshaw, 2017; Bunford et al., 2018; Danielson et al., 2018; Dellapiazza et al., 2021; Elia et al., 2008; Goldin et al., 2013), social relationships (Hoza, 2007; Mastoras et al., 2018; McQuade & Hoza, 2015; Mikami et al., 2011; Mikami & Normand, 2015; Normand et al., 2013), and internalizing behaviors (Barber et al., 2005; Danielson et al., 2018; Dellapiazza et al., 2021; Elia et al., 2008; Kita & Inoue, 2017; Lerdpaisanskul et al., 2017; Mazzone et al., 2013; Mikami et al., 2011) are common.

Externalizing Behaviors in Children with ADHD

Children with ADHD often present with a range of co-morbid psychological disorders, including behavioral disorders (American Psychiatric Association, 2013). Externalizing behaviors are common for children with ADHD. It is estimated that 52% of children who have a

diagnosis of ADHD also present with a behavioral or conduct problem (Danielson et al., 2018).

Oppositional defiant disorder (ODD), which is characteristic of consistent patterns of irritability, negativity, and hostility related to noncompliance, has been found to be the most common co-morbid disorder of ADHD (American Psychiatric Association, 2013; Elia et al., 2008).

Specifically, Elia et al. (2008) found that 40.6% of children between ages 6 and 18 with ADHD had co-occurring ODD. However, not all children with ADHD are equally likely to also present with ODD symptoms (Elia et al., 2008; Factor et al., 2016). ADHD and ODD co-morbidity is disproportionately prevalent for children ages 6 to 18 with ADHD combined and predominantly hyperactive/impulsive presentations compared to predominantly inattentive (Elia et al., 2008).

Additionally, children ages 8 to 12 with ADHD who have minimal awareness of their emotions are more likely to meet criteria for a co-morbid externalizing behavior disorder like ODD (Factor et al., 2016).

Regardless of co-morbidity or additional diagnosis, children with ADHD are generally more likely to exhibit externalizing behavior problems compared to their neurotypical peers (Ahmad & Hinshaw, 2017; Bunford et al., 2018; Dellapiazza et al., 2021; Goldin et al., 2013). There is evidence that as severity of ADHD symptoms increases, externalizing behaviors increase (Dellapiazza et al., 2021). However, specific symptoms of ADHD have been found to be more predictive of externalizing behavior problems than others (Ahmad & Hinshaw, 2017). For example, childhood symptoms of hyperactivity and impulsivity are more likely to predict later rule-breaking behavior and physical aggression in adolescence and in early adulthood compared to childhood symptoms of inattention (Ahmad & Hinshaw, 2017).

Childhood ADHD is specifically associated with externalizing behaviors such as emotion dysregulation (Bunford et al., 2018; Goldin et al., 2013), physical aggression toward others

(Ahmad & Hinshaw, 2017; Bunford et al., 2018), and rule-breaking behavior (Bunford et al., 2018). Compared to typical peers their age, children with ADHD more commonly experience lack of attention to and awareness of emotional responses, inflexibility with their emotions, and slower returns to their emotional baseline after experiencing intense emotions (Bunford et al., 2018). Male children with ADHD are also even more likely to exhibit lack of knowledge about emotions, difficulty displaying socially appropriate emotional responses, and challenges with behavioral control (Bunford et al., 2018). These difficulties with emotion awareness and regulation are associated with other externalizing behaviors, such as physical aggression and rule-breaking behavior (Bunford et al., 2018; Factor et al., 2016; Melnick & Hinshaw, 2000). Predictably, children with ADHD who show high levels of physical aggression are significantly less likely to have effective and adaptive emotional coping compared to typically developing children and children with ADHD who have low levels of aggression (Melnick & Hinshaw, 2000).

Social Relationships in Children with ADHD

While impairments in social functioning are not a requirement to meet criteria for ADHD, it is essential that presenting symptoms diminish or interfere with daily functioning, which can include social functioning (American Psychiatric Association, 2013). However, children with ADHD are often reported by their caregivers and teachers to have difficulty with social functioning (Demopoulos et al., 2013), and they perform worse on tasks of facial and vocal affect recognition, judgment of social situations, and social problem-solving compared to their typically developing peers (Demopoulos et al., 2013). ADHD symptom severity is correlated with challenges in social relationships, in which children with more severe ADHD symptoms are more likely to demonstrate greater social impairments (Dellapiazza et al., 2021).

These difficulties with social relationships for children with ADHD can extend to family (Johnson & Mash, 2001; Leitch et al., 2019; Mastoras et al., 2018; Peasgood et al., 2016; Rogers et al., 2009) and peer relationships (Hoza, 2007; Mastoras et al., 2018; McQuade & Hoza, 2015; Mikami et al., 2011; Mikami & Normand, 2015; Normand et al., 2013). As such, children with ADHD are likely ideal candidates for social skills training (Demopoulos et al., 2013).

Family Relationships. Children with ADHD typically report less satisfaction with their families than typically developing children (Peasgood et al., 2016). Specifically, children diagnosed with ADHD tend to perceive minimal social support from their relationships with caregivers compared to typical peers, which becomes increasingly relevant as children with ADHD age and mature over time (Mastoras et al., 2018). Patterns of disrupted caregiver-child relationships (Johnson & Mash, 2001), negative caregiver-child interactions (Johnson & Mash, 2001; Rogers et al., 2009), high parenting stress (Leitch et al., 2019; Sikora et al., 2013), and other difficulties with family functioning (Leitch et al., 2019; Sikora et al., 2013) are common in families with children diagnosed with ADHD. From the parenting perspective, caregivers of children with ADHD typically experience lower self-efficacy in their ability to support their children effectively compared to caregivers of neurotypical children (Rogers et al., 2009). This finding is consistent even when holding beliefs about parenting roles, parenting knowledge, and parenting skills constant (Rogers et al., 2009). Caregivers of children with ADHD commonly attribute their frequent experiences of parenting stress to managing challenging behaviors at home such as emotion dysregulation, absentmindedness, negative self-talk, as well as their perceived lack of support in seeking resources and managing the social stigma and isolation that can come from raising a child with ADHD (Leitch et al., 2019).

Peer Relationships. Children with ADHD commonly have trouble navigating their social relationships with peers (Hoza, 2007; Mastoras et al., 2018; McQuade & Hoza, 2015; Mikami et al., 2011; Mikami & Normand, 2015; Normand et al., 2013). It is unsurprising that children with ADHD struggle with their social interactions with others because of their difficulty acquiring social skills, challenges attending to social norms, and experiences of peer rejection related to hyperactive and impulsive behaviors (Hoza, 2007; McQuade & Hoza, 2015; Mikami & Normand, 2015). Peer rejection is particularly difficult for children with ADHD to overcome, and moreover, there is risk for ongoing diminished peer reputation even after behavioral improvement because of the stability of peer perceptions (Hoza, 2007; Mikami & Normand, 2015). Children with ADHD self-report that they tend to perceive less support from peer friendships than typically developing children, especially as they get older (Mastoras et al., 2018). Children with ADHD diagnoses also tend to demonstrate more negative friendship qualities, less positive friendship qualities, and less friendship satisfaction over time compared to peers without ADHD (Normand et al., 2013). Additionally, caregivers and teachers perceive that children diagnosed with ADHD have less developed social skills and more challenges with social relationships compared to neurotypical peers (Mikami et al., 2011). Specifically, caregivers and teachers rate children with ADHD as more likely to be disliked and rejected, less likely to be liked and accepted, and more likely to be ignored by peers (Mikami et al., 2011).

Internalizing Behaviors in Children with ADHD

Even though the core symptoms of ADHD (i.e., inattention, hyperactivity, impulsivity) are externalizing by nature, many children with ADHD experiences challenges with their internalizing behaviors as well (Barber et al., 2005; Danielson et al., 2018; Dellapiazza et al., 2021; Elia et al., 2008; Kita & Inoue, 2017; Lerdpaidsanskul et al., 2017; Mazzone et al., 2013;

Mikami et al., 2011). Specifically, children with ADHD are more likely to have a co-occurring anxiety disorder (Danielson et al., 2018; Elia et al., 2008), a co-occurring depressive disorder (Danielson et al., 2018; Elia et al., 2008), and poor self-esteem (Barber et al., 2005; Kita & Inoue, 2017; Lerdpaisanskul et al., 2017; Mazzone et al., 2013) compared to typically developing children. In fact, symptoms of anxiety (Nadeau et al., 2015), symptoms of depression (Nadeau et al., 2015), and internalizing behaviors more broadly (Dellapiazza et al., 2021) are more likely to increase as childhood ADHD symptom severity increases.

Anxiety. Research has shown that about one-third (32-33%) of children with ADHD have a co-occurring anxiety disorder (Danielson et al., 2018; Elia et al., 2008). These rates far exceed prevalence estimates that about 7% of children ages 3 to 17 in the United States have diagnosed anxiety (Ghandour et al., 2019). Generalized anxiety disorder (GAD) is the most common co-morbid disorder, and about 15% of children ages 6 to 18 with ADHD are estimated to have GAD too (Elia et al., 2008). In a study by Mikami et al. (2011), caregivers and teachers reported more symptoms related to anxiety for children with ADHD compared to children without ADHD. Regardless of ADHD diagnosis, these symptoms of anxiety were associated with less social skills, more social problems, less peer acceptance, and more rejection and ignoring by peers (Mikami et al., 2011).

Depression. While about 3% of children ages 3 to 17 in the United States have diagnosed depression (Ghandour et al., 2019), it is estimated that about 1 in 5 (17-22%) children with ADHD have depression (Danielson et al., 2018; Elia et al., 2008). In other words, children with ADHD are much more likely to be diagnosed with a depressive disorder compared to their typically developing peers (Danielson et al., 2018; Elia et al., 2008). It is hypothesized that common experiences of emotion dysregulation underlie the relationship between ADHD and

depression (Seymour & Miller, 2017). Specifically, having minimal frustration tolerance can result in greater irritability, which puts children with ADHD at further risk for developing symptoms of depression (Seymour & Miller, 2017). Childhood ADHD additionally presents increased risk of depression later in young adulthood, even after controlling for gender, experiences of early adversity, maternal education, and maternal depression (Riglin et al., 2021).

Self-Esteem. In addition to their risk for anxiety and depression, children with ADHD have lower levels of global self-esteem compared to their typically developing peers (Barber et al., 2005; Kita & Inoue, 2017; Lerdpaidsanskul et al., 2017; Mazzone et al., 2013). Studies have also found that children with ADHD have significantly lower self-esteem than neurotypical peers across specific domains, including behavioral conduct (Barber et al., 2005), family connectedness (Lerdpaidsanskul et al., 2017), body image (Lerdpaidsanskul et al., 2017; Mazzone et al., 2013), likability (Mazzone et al., 2013), self-control (Mazzone et al., 2013), and moral self-approval (Mazzone et al., 2013). Interestingly, distinct symptoms of ADHD are correlated with different types of self-esteem (Kita & Inoue, 2017). Symptoms of inattention in ADHD are correlated negatively with children's self-reported global self-worth, academic competence, and athletic competence, indicating that children with severe symptoms of inattention are at-risk for low levels of global self-esteem and specific self-esteem related school coursework and activities (Kita & Inoue, 2017). Conversely, symptoms of hyperactivity and impulsivity are negatively associated with two specific domains of self-esteem: self-reported athletic competence and behavioral conduct (Kita & Inoue, 2017). This information suggests that children with ADHD are vulnerable for experiencing low global and specific self-esteem, and the severity of their symptoms can have an effect on their self-esteem development.

Life Satisfaction in Children with ADHD

While there is substantial research on children with ADHD and their co-occurring internalizing symptoms, research has recently begun to study the life satisfaction of children with ADHD (Barfield, 2018; García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016; Peasgood et al., 2016). A study by Barfield (2018) found that children with ADHD were generally satisfied with their lives, and their total reported life satisfaction was consistent with typically developing peers. However, most studies have demonstrated that children diagnosed with ADHD report lower levels of global life satisfaction compared to their typically developing peers (García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016; Peasgood et al., 2016). Evidence also indicates that the life satisfaction of children with ADHD decreases after age 12 (García et al., 2021). Within specific domains of life satisfaction, García et al. (2021) found that both children and their caregivers reported that children with ADHD are most satisfied with their living environments and least satisfied with their school experiences.

Research has shown that children's overall ADHD symptom severity is associated with life satisfaction, in which greater broad symptom severity is related to lower life satisfaction (Nadeau et al., 2015; Ogg et al., 2016). Interestingly, studies have also found that symptoms of inattention are a more consistent predictor of life satisfaction as opposed to hyperactive or impulsive behavior or general ADHD symptoms (García et al., 2021; Ogg et al., 2016). While research by Nadeau et al. (2015) demonstrated a significant predictive relationship between children's symptoms of hyperactivity and impulsivity and life satisfaction, studies by García et al. (2021) and Ogg et al. (2016) found no significance between those specific symptoms and life satisfaction. The research literature indicates that symptoms of inattention (García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016) and ADHD symptoms more broadly (Nadeau et al., 2015;

Ogg et al., 2016) significantly predict the life satisfaction of children. Correlations between ADHD symptoms and life satisfaction have been found when ADHD symptoms are reported by caregivers (García et al., 2021; Nadeau et al., 2015), teachers (Ogg et al., 2016), and children with ADHD themselves (Nadeau et al., 2015; Ogg et al., 2016). These correlations also appear across gender (Ogg et al., 2016), grade level (Ogg et al., 2016), and cognitive abilities (García et al., 2021).

There is also evidence to suggest that the perceived life satisfaction of children with ADHD is related to co-occurring internalizing behaviors, which is reasonable given that life satisfaction is negatively correlated with internalizing behaviors and symptoms of psychological disorders (Huebner, 1991a; Huebner & Diener 2008; Park, 2004; Suldo et al., 2006). A study by Nadeau et al. (2015) found that the symptoms of anxiety and depression in children diagnosed with ADHD were significantly and negatively correlated with their reported life satisfaction. In fact, life satisfaction mediated the relationship between ADHD symptom severity and symptoms of depression (Nadeau et al., 2015). In other words, when children were navigating and managing more severe ADHD symptoms in their life, they tended to find their lives less satisfying, which in turn made them more susceptible to depression symptoms (Nadeau et al., 2015). These findings support the importance of fostering life satisfaction in children with ADHD as a protective factor for youth mental health (Huebner, 1991a; Lewinsohn et al., 1991; Park, 2004).

Characteristics of Autism Spectrum Disorder

Autism spectrum disorder (ASD) is another neurodevelopmental disorder specified by the DSM-5 (American Psychiatric Association, 2013) that presents with risk for low life satisfaction (Begeer et al., 2017; Franke et al., 2018). Essential features of ASD include persistent

impairments in social communication and interaction (e.g., difficulties reciprocating social interactions, using nonverbal communication, developing and maintaining social relationships) and patterns of restricted, repetitive behaviors, interests, or activities (e.g., highly restricted interests, repetitive motor movements, rigidity; American Psychiatric Association, 2013). In order to meet diagnostic criteria, symptoms of ASD must significantly interfere with current functioning, such as social or occupational functioning (American Psychiatric Association, 2013). ASD symptoms often emerge in early childhood and persist into adulthood (American Psychiatric Association, 2013). Prevalence estimates of youth with ASD have steadily increased over the last two decades (Maenner et al., 2021). It is currently estimated that 1 in 44 children in the United States are diagnosed with ASD by the age of 8 (Maenner et al., 2021). While the number of children with ASD in the United States has increased over the years, children with ASD continue to demonstrate challenges in regulating their behavior (Bauminger et al., 2010; Bos et al., 2018; Goldin et al., 2013; Henderson et al., 2011; Jang et al., 2010; McTiernan et al., 2011), navigating social relationships (Azad et al., 2017; Bauminger et al., 2010; Demopoulos et al., 2013; Grzadzinski et al., 2016; Kasari et al., 2011), and maintaining positive mental health and well-being (Bauminger et al., 2010; Bos et al., 2018; Mayes et al., 2011b; Mayes et al., 2011a; Mazurek & Kanne, 2010; van Steensel & Heeman, 2017; White et al., 2009).

Externalizing Behaviors in Children with ASD

School-age children with ASD demonstrate higher rates of externalizing behavior compared to typically developing children (Bauminger et al., 2010; Bos et al., 2018; Goldin et al., 2013; Henderson et al., 2011). In fact, the presence of challenging behavior was reported for over 90% of children with ASD in studies in both the United States (Jang et al., 2010) and Ireland (McTiernan et al., 2011). Evidence also indicates that problems with externalizing

behaviors for children with ASD at a given timepoint predict externalizing behavior problems across time and in the years to come (Rodriguez et al., 2019). Common externalizing behaviors that children with ASD present with more frequently compared to neurotypical peers include emotion dysregulation (Goldin et al., 2013), physical aggression toward others (Bauminger et al., 2010; McTiernan et al., 2011), inattention (Bauminger et al., 2010), rule-breaking behavior (Bauminger et al., 2010), stereotypy (Jang et al., 2010), and leaving a defined area without permission (Jang et al., 2010).

While behavioral challenges are persistent for children with ASD in general, there is evidence that individual factors are related to the frequency and severity of externalizing behaviors, including ASD symptom severity (Dellapiazza et al., 2021; Jang et al., 2010), parenting stress (Bauminger et al., 2010; Rodriguez et al., 2019), and cognitive functioning (McTiernan et al., 2011). First, studies have found that as severity of ASD symptoms increase, externalizing behaviors also increase (Dellapiazza et al., 2021; Jang et al., 2010). Jang et al. (2010) observed that this significant relationship was particularly notable for repeated or unusual vocalizations (i.e., vocal stereotypy), repeated or unusual body movements (i.e., stimming), physical aggression toward others, and property destruction. Second, parenting stress is a significant predictor of externalizing behavior in children with ASD, in which greater parenting stress is related to greater severity of externalizing problems (Bauminger et al., 2010; Rodriguez et al., 2019). Caregivers who are experiencing more stress may have less resources or energy to cope effectively with challenging behaviors occurring in the home (Bauminger et al., 2010). As such, negative family cycles persist because caregivers may inadvertently reinforce maladaptive behaviors, which likely continue to evoke additional stress (Bauminger et al., 2010). Third, the cognitive ability of children with ASD predicts their frequency of physical aggression and the

frequency and intensity of self-injurious behavior (McTiernan et al., 2011). In other words, the lower the cognitive functioning of children with ASD, the greater the frequency and/or intensity of specific challenging behaviors (McTiernan et al., 2011).

Social Relationships in Children with ASD

As outlined in the DSM-5, persistent difficulties with social communication and interactions with others are a core feature of an ASD diagnosis (American Psychiatric Association, 2013). These deficits can include challenges with engaging in imaginative or cooperative play, understanding and using nonverbal communication in conversation, reciprocating social interactions, and developing and maintaining social relationships (American Psychiatric Association, 2013). As such, it makes sense that children with ASD are reported by their caregivers to have greater difficulties with social relationships compared to their typically developing same-age peers (Bauminger et al., 2010; Demopoulos et al., 2013; Grzadzinski et al., 2016). These difficulties with social relationships can include social skills deficits (e.g., conversational skills, social responsiveness; Grzadzinski et al., 2016), negative caregiver-child interactions (Beurkens et al., 2013), and lack of friendships (Azad et al., 2017; Kasari et al., 2011). Children with ASD also underperform on tasks of facial and vocal affect recognition, judgment within social situations, and social problem-solving compared to children with ADHD and neurotypical children (Demopoulos et al., 2013).

Family Relationships. Families with a child who is diagnosed with ASD are significantly more likely to experience stress within daily family functioning (Sikora et al., 2013). In particular, parenting stress is reported as higher for children with ASD who also exhibit higher levels of externalizing behavior (Sikora et al., 2013). Caregiver-child relationships do not seem to be related to the severity of a child's ASD symptoms (Beurkens et al., 2013). However,

less satisfactory caregiver-child interactions are associated with increasing ASD symptom severity (Beurkens et al., 2013).

Peer Relationships. Given their difficulties with social communication and interactions, children with ASD in general are at greater risk of lacking peer relationships and experiencing social exclusion (Azad et al., 2017; Kasari et al., 2011). Children with greater severity of ASD symptoms are even less likely to have peer friendships (Mazurek & Kanne, 2010). Compared to children without ASD, children diagnosed ASD are less likely to report reciprocal friendships and more likely to experience poor social relationship quality, including diminished companionship, helpfulness, closeness, and security (Kasari et al., 2011). When asked to name their friends, children with ASD typically identify less friendships (i.e., outward friendship nominations) and are considered less often as friends by their peers (i.e., inward friendship nominations) compared to typically developing children (Kasari et al., 2011). The frequency of friendship nominations tends to decrease by age as well (Azad et al., 2017). As such, children with ASD are consistently found to be on the periphery of their social networks (Azad et al., 2017; Kasari et al., 2011).

Internalizing Behaviors in Children with ASD

In addition to challenges with externalizing behaviors and social relationships, it is well documented that children with ASD present with higher rates of internalizing behavior problems than children without ASD (Bauminger et al., 2010; Bos et al., 2018; Mazurek & Kanne, 2010). Internalizing behaviors can include but are not limited to symptoms of anxiety (American Psychiatric Association, 2013; Bauminger et al., 2010; Mayes et al., 2011b; Mazurek & Kanne, 2010; van Steensel et al., 2013; van Steensel & Heeman, 2017; White et al., 2009), symptoms of depression (American Psychiatric Association, 2013; Bauminger et al., 2010; Mayes et al.,

2011b; Mayes et al., 2011a; Mazurek & Kanne, 2010; van Steensel et al., 2013), irritability (Mayes et al., 2011a), withdrawal (Bauminger et al., 2010), and somatization (i.e., the tendency to be sensitive to and express concern about relatively minor physical problems or discomforts; Bauminger et al., 2010). Interestingly, research on the relationship between internalizing behaviors and factors like ASD symptom severity and gender are mixed (Dellapiazza et al., 2021; Mayes et al., 2011b; Mazurek & Kanne, 2010). One study found that as ASD symptom severity increased, symptoms of anxiety and depression decreased (Mazurek & Kanne, 2010). However, other studies have found that as severity of ASD symptoms increase, so do internalizing behaviors (Dellapiazza et al., 2021) and symptoms of anxiety and depression (Mayes et al., 2011b). A study by Solomon et al. (2012) found that female children with ASD were more likely to have more internalizing symptoms compared to male children with ASD and typically developing female children. However, Mayes et al. (2011b) reported that internalizing symptoms of children with ASD are unaffected by gender. Research does show that high levels of parenting stress predict greater likelihood of experiencing co-occurring internalizing behaviors for children with ASD (Rodriguez et al., 2019).

Anxiety. Compared to typically developing peers, children with ASD commonly experience co-occurring symptoms of anxiety (American Psychiatric Association, 2013; Bauminger et al., 2010; Mayes et al., 2011b; Mazurek & Kanne, 2010; van Steensel et al., 2013; van Steensel & Heeman, 2017; White et al., 2009). Children with ASD are most likely to have diagnosed GAD, separation anxiety disorder, obsessive compulsive disorder, social phobias, or simple phobias (White et al., 2009). Interestingly, children diagnosed with ASD and those without ASD have been found to have comparable levels of anxiety (Mayes et al., 2011a). A systematic review by White et al. (2009) found a wide span of co-occurring anxiety prevalence

for children with ASD, ranging from 11% to 84%. Despite the broad range of prevalence observed by White et al. (2009), rates are consistently greater than the 7% of children ages 3 to 17 in the United States that have diagnosed anxiety (Ghandour et al., 2019). Research has also shown that co-morbid anxiety is more likely to present in children with ASD who have an intelligence quotient (IQ) of 70 or above (Hallett et al., 2013). It is additionally important to note that the difficulties with internalizing behaviors that children with ASD experience have effects beyond their mental health and well-being (Bos et al., 2018; Factor et al., 2017). Symptoms of worry and rumination have been found to be a risk factor for later developing externalizing behavior problems for boys with ASD (Bos et al., 2018). There is also evidence to support that having co-morbid anxiety and ASD has enhanced effects on social impairments, including social cognition, communication, and motivation (Factor et al., 2017).

Depression. It is estimated that about half of children with ASD also present with symptoms of depression (Mayes et al., 2011b), which is much greater than the average prevalence of 3% of children in the United States (Ghandour et al., 2019). Additionally, about half of children with ASD are reported to engage in some degree of self-injurious behavior (McTiernan et al., 2011). Similar to children with ASD who also have anxiety, children with greater cognitive functioning (i.e., IQ over 80) are more likely to have symptoms of depression compared to those with less developed cognitive abilities (Mayes et al., 2011a). Co-occurring depressive symptoms of children with ASD are significantly correlated with social problems (Mayes et al., 2011a). However, symptoms of depression can be confounded with the existing social difficulties (e.g., lack of friendships, withdrawal) that children with ASD experience daily, which may create a barrier to diagnosis and treatment (DeFillippis, 2018).

Life Satisfaction in Children with ASD

Much of the research on life satisfaction and ASD is focused on the life satisfaction of the caregivers of children with ASD (Conti, 2015; Lu et al., 2015; Neff & Faso, 2015; Salas et al., 2017). Therefore, much less is known about the life satisfaction of children with ASD themselves (Begeer et al., 2017; Franke et al., 2018). However, there is initial evidence to indicate that children with ASD have less life satisfaction compared to typically developing children (Begeer et al., 2017; Franke et al., 2018). Research by Franke et al. (2019) found that adolescents diagnosed with ASD self-reported moderate to high levels of global life satisfaction, yet their life satisfaction was less than neurotypical children. This pattern persisted for ratings of global life satisfaction as well as specific domains of life satisfaction, such as family, friends, and self (Franke et al., 2019). A study by Begeer et al. (2017) found that caregivers reported that their children ages 8 to 14 with ASD had lower life satisfaction compared to caregivers of typically developing peers. These differences remained relatively stable across child age and gender (Begeer et al., 2017). Because of the significant correlation between social relationships and life satisfaction, it makes sense that children with ASD are more likely to experience minimal or less satisfactory social relationships (Azad et al., 2017; Kasari et al., 2011) as well as less likely to experience high levels of life satisfaction (Begeer et al., 2017; Franke et al., 2019). Given the correlation between childhood life satisfaction and decreased risk for psychological disorders (Huebner, 1991a; Lewinsohn et al., 1991; Park, 2004), children with ASD who have co-occurring internalizing behavior problems may be more vulnerable to decreased life satisfaction.

Characteristics of Co-Morbid ADHD and ASD

Despite the distinct symptom criteria of ADHD and ASD as specified in the DSM-5 (American Psychiatric Association, 2013), much research has pointed out the overlapping characteristics of the two neurodevelopmental disorders (Craig et al., 2015; Goldin et al., 2013; Gradzinski et al., 2016; Karalunas et al., 2018). Co-occurrence of ADHD and ASD is common in school-age children (Danielson et al., 2018; Lecavalier et al., 2019; Stevens et al., 2016; van Steensel et al., 2013; Zablotzky et al., 2020). It is estimated that 1 in 8 children (13-14%) with diagnosed ADHD have co-occurring ASD (Danielson et al., 2018; Zablotzky et al., 2020). Studies also estimate that between 22.5% and 81% of children with ASD also have ADHD (Lecavalier et al., 2019; Stevens et al., 2016; van Steensel et al., 2013). The combination of ADHD and ASD diagnoses has been shown to exacerbate the presentation of symptoms (Craig et al., 2015; Goldin et al., 2013). Therefore, children with co-morbid ADHD and ASD present with challenges across externalizing behaviors (Dellapiazza et al., 2021; Goldin et al., 2013), social behaviors (Armstrong et al., 2015; Dellapiazza et al., 2021; Harkins et al., 2021), and internalizing behaviors (Dellapiazza et al., 2021; Wilson et al., 2014), which is consistent with their peers who have ADHD or ASD alone.

Children with both ADHD and ASD are reported to have greater difficulties with externalizing behaviors and emotion dysregulation than children with ADHD or ASD by itself (Goldin et al., 2013). Unsurprisingly, as co-morbid ADHD and ASD symptom severity increases, externalizing behaviors increase as well (Dellapiazza et al., 2021). Additionally, there is evidence to suggest that children with co-occurring ADHD and ASD experience greater social impairments than typically developing peers (Armstrong et al., 2015; Dellapiazza et al., 2021; Harkins et al., 2021). However, it is debated whether children with co-morbid ADHD and ASD

demonstrate more difficulties with social relationships compared to children with ADHD or ASD alone. A study by Harkins et al. (2021) found that there were no differences in social impairments between children with both ADHD and ASD and children with ASD by itself. Meanwhile, research by Dellapiazza et al. (2021) showed that children with co-morbid ADHD and ASD diagnoses had significantly more social challenges, including difficulties with social communication and social awareness, than either children with ADHD alone or children with ASD alone.

Children with co-occurring ADHD and ASD tend to present with similar rates of internalizing behaviors and symptoms compared to children with ADHD or ASD (Dellapiazza et al., 2021). However, symptom severity tends to exacerbate internalizing challenges for youth with co-morbid ADHD and ASD (Dellapiazza et al., 2021; Wilson et al., 2014). One study found that as ASD symptom severity increased for children with both ADHD and ASD, so did their internalizing behaviors, including symptoms of depression, withdrawal, and somatization (Dellapiazza et al., 2021). By contrast, another study observed that ADHD symptom severity moderated depressive and somatic symptoms, in which children with co-morbid ADHD and ASD as well as high severity of ADHD symptoms reported greater symptoms of depression and somatization compared to typically developing children (Wilson et al., 2014). Compared to research on negative indicators of mental health (e.g., symptoms of depression, somatization), there is much less literature on positive indicators of mental health (e.g., subjective well-being, life satisfaction) for children with co-morbid ADHD and ASD. However, initial research did show that children with ADHD and co-occurring disorders, including ASD, had less caregiver-reported quality of life over a 12-month period compared to children with ADHD alone (Armstrong et al., 2015).

Social and Behavioral Intervention and the Effect on Life Satisfaction

Social and behavioral intervention, as suggested by its nomenclature, is intended to target improvements in social and behavioral functioning in school-age children. However, research shows that social and behavioral intervention can additionally have effects on a range of internalizing behaviors, including decreases in psychopathological symptoms (Cejudo et al., 2020; Hunter et al., 2014; Marchant et al., 2007) and increases in self-esteem (Chapman & Cope, 2004; Sharma & Agarwala, 2015). Notably, multiple studies have presented promising evidence that school-age children's subjective well-being improves after participation in social and/or behavior intervention (Cejudo et al., 2020; Shoshani & Slone, 2017; Suldo et al., 2015). These improvements in subjective well-being include increases in positive affective experiences (Cejudo et al., 2020; Shoshani & Slone, 2017; Suldo et al., 2015) and increases in life satisfaction as reported by caregivers (Shoshani & Slone, 2017) and children themselves (Shoshani & Slone, 2017; Suldo et al., 2015).

When examining social and behavioral interventions that have effects on the life satisfaction of school-age children, social support is a crucial feature (Bird & Markle, 2012; Shoshani & Slone, 2017; Suldo et al., 2015). School-based interventions by both Suldo et al. (2015) and Shoshani and Slone (2017) leveraged whole-class, explicit social skills training to target social relationships and eventually increase the life satisfaction of school-age children. Their findings are consistent with conclusions by Chen et al. (2020) that explicit instruction targeting social skills and other prosocial behaviors is valuable in empowering children with the tools they need to better connect with their peers. Given the significant and predictive relationship between life satisfaction and social relationships, supporting school-age children in their ability to connect and build relationships with peers is important for promoting children's

life satisfaction (Goswami, 2012; Huebner & Diener, 2008; Suldo et al., 2006; Zullig et al., 2011). Therefore, interventions to improve the life satisfaction of children should emphasize building positive social relationships in addition to teaching social and behavioral competency (Bird & Markle, 2012; Shoshani & Slone, 2017; Suldo et al., 2015).

The Summer Treatment Program

A social and behavioral intervention that effectively improves the externalizing behaviors (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000; Pelham et al., 2012a), social relationships (Chronis et al., 2004; Mikami et al., 2010; Mrug & Hodgens, 2008; Pelham et al., 2000), and internalizing behaviors (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012) of children with ADHD and ASD is the Summer Treatment Program (STP). The STP is a manualized and comprehensive intervention program for children ages 5 to 16, implemented within a naturalistic summer camp environment (Fabiano et al., 2014; Pelham et al., 2012a). Initially designed and implemented for children with ADHD, the STP has since been evidenced to positively support the development of children with ADHD, ASD, and more broadly defined, externalizing behavior problems (Graziano et al., 2014; Mitchell et al., 2015; Pelham et al., 2012a). The STP's primary goals include improving peer relationships (e.g., social skills, problem-solving skills), increasing positive interactions with adults (e.g., compliance), developing self-efficacy (e.g., sports skills and knowledge), and enhancing academic performance (Pelham et al., 2012a). In order to meet program goals, the STP has eight key intervention components, including a point system, social reinforcement and appropriate commands, peer interventions, daily report cards, sports skills training, timeout, academic classrooms, and weekly parent behavior management training (Pelham et al., 2012a).

Children participating in the STP gain between 150 to 300 hours of social and behavioral intervention, which is equivalent to 3 to 6 years of weekly, 1-hour intervention sessions (Mitchell et al., 2015). The STP typically operates Monday through Friday, 6 to 9 hours each day, for 5 to 8 weeks (Pelham et al., 2012a). However, there is preliminary evidence to suggest that even a 2 and 3-week STP implementation has positive, short-term effects on the behavior of children with ADHD (Yamashita et al., 2011). For the entire length of the program, participating children are placed in age-matched groups of 12 to 16 children as well as 4 to 5 counselors who are usually undergraduate or graduate student interns (Pelham et al., 2012a). A typical day involves a consistent rotation of group-based activities, including but not limited to recreational and sports activities, lunch, recess, and academic activities (O'Connor et al., 2014; Pelham et al., 2012a).

Theoretical Foundation of the STP

The STP is described as a comprehensive package of evidence-based interventions, influenced by components of applied behavioral analysis, principles of operant conditioning, social learning theory, and cognitive-behavioral therapy (Fabiano et al., 2014; Pelham et al., 2012a). Principles of applied behavioral analysis are a particularly critical facet of the STP intervention, which includes identifying and modifying environmental antecedents and consequences that contextualize behavior and affect behavior change (Fabiano et al., 2014). Specifically, the STP prioritizes the use of clear and consistent expectations and facilitation of highly structured activities as antecedents to increase the likelihood of socially appropriate behavior (Fabiano et al., 2014; Pelham et al., 2012a). The STP also utilizes consequence systems to shape child behavior, including but not limited to immediate behavioral feedback, rewards provided through a token economy system, and timeout from positive reinforcement (Fabiano et al., 2014; Pelham et al., 2012a). STP participants have consistent access to social learning

opportunities through access to social skills modeling by their counselors and peers and observation of consequences provided to their peers (Fabiano et al., 2014). By using evidence-based behavior change strategies grounded in principles of behaviorism, the STP aims to produce meaningful change in social and behavioral functioning for children with ADHD, ASD, and externalizing behavior problems (Graziano et al., 2014; Mitchell et al., 2015; Pelham et al., 2012a).

Efficacy of the STP

Research shows that the STP is an effective intervention to support the social and behavioral development of children with ADHD (Fabiano et al., 2014) and ASD (Mitchell et al., 2015; Mrug & Hodgens, 2008). Most evidence examining the efficacy of the STP has focused on behavior change (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000; Pelham et al., 2012a), skill acquisition (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; O'Connor et al., 2014; Pelham et al., 2000), and social relationships (Chronis et al., 2004; Mikami et al., 2010; Mrug & Hodgens, 2008; Pelham et al., 2000), all of which align with the primary goals of the program. Less research has been conducted to explore the effects of the STP on internalizing behaviors (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012).

Externalizing Behavior Change. Externalizing behavioral outcomes are a key component of the STP treatment response, in which the STP significantly increases the frequency in which children comply with adult instructions (Mitchell et al., 2015), sustain attention during group discussions and activities (Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000), and follow activity rules (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008). The STP has been shown to decrease rates of overall

negative behaviors (Pelham et al., 2012a), noncompliance (Chronis et al., 2004; Coles et al., 2005; Mrug & Hodgens, 2008; Pelham et al., 2000), conduct problems (e.g., aggression, destruction of property; Chronis et al., 2004; Coles et al., 2005; Pelham et al., 2000), and negative verbal behaviors, such as complaining/whining, interrupting, and name-calling/teasing (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000). Notably, children participating in the STP tend to significantly improve the behaviors that are most challenging for them at the beginning of the STP (Chronis et al., 2004; Pelham et al., 2000).

Skill Acquisition. Children who participate in the STP typically acquire skills across the intervention, including social skills (Mitchell et al., 2015; Mrug & Hodgens, 2008), sports-related skills (O'Connor et al., 2014), and executive functioning skills (Chronis et al., 2004; Coles et al., 2005; Pelham et al., 2000). By the end of the STP, participating children more frequently contribute to group discussion (Mitchell et al., 2015; Mrug & Hodgens, 2008), initiate conversation with peers (Mrug & Hodgens, 2008), and engage in positive peer behaviors like helping and sharing (Pelham et al., 2000). Children participating in the STP also have been found to demonstrate improved sports functioning, including game knowledge, live game performance, motor accuracy of a variety of sports skills, and parent-reported sports skills and good sportsmanship behavior (O'Connor et al., 2014). Improvements in academic work completion (Chronis et al., 2004; Coles et al., 2005; Pelham et al., 2000), productivity (Pelham et al., 2000), and accuracy (Chronis et al., 2004; Pelham et al., 2000) have been shown for children in the STP.

Social Relationships. In addition to demonstrating behavior change and skill acquisition in response to the STP, children have demonstrated improved social relationships with peers

(Mikami et al., 2010; Mrug & Hodgens, 2008; Pelham et al., 2000) and staff (Chronis et al., 2004). Children participating in the STP report significantly more peer friendships by the end of the program (Mikami et al., 2010) and demonstrate steady improvements in their ability to initiate conversation with peers or initiate other social interactions like play (Mrug & Hodgens, 2008). Notably, children's observed prosocial behavior while participating in the STP significantly predicts how many peers will identify a child as their friend by the end of the program (Lopez-Williams et al., 2005). However, high rates of disruptive behavior predict less peer group acceptance and less peer friendship nominations (Lopez-Williams et al., 2005). In sum, children across the STP typically improve relationships with peers and adults over time and build their skill competencies across a wide range of skills (e.g., prosocial, sports, academic; Chronis et al., 2004; Mikami et al., 2010; Mrug & Hodgens, 2008; Pelham et al., 2000).

Internalizing Behavior Change. Although the STP is well-documented as an efficacious intervention for children with ADHD and ASD, minimal research has explored outcomes related to internalizing behaviors (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012). Studies have examined changes across measures of self-esteem (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2012), happiness (Sibley et al., 2012), frustration tolerance (Sibley et al., 2012), symptoms of depression (Mikami et al., 2010), and broader mood/well-being (Sibley et al., 2011). A study by Sibley et al. (2011) specifically found that after participating in the STP, both adolescents themselves and their caregivers reported moderate improvements in their overall mood and well-being, which included self-esteem, happiness, self-awareness, and ability to accept disappointment and manage anger and frustration. More specific research has supported that children participating in the STP demonstrate improvements in their global self-esteem (Pelham et al., 2000; Sibley et al. 2012). For example, Sibley et al. (2012)

found that 85% of caregivers of adolescents with ADHD reported improvements in global self-esteem in response to STP treatment. Sibley et al. (2012) additionally reported that 75% of adolescents demonstrated improved frustration tolerance across their participation in the program. However, research by Mikami et al. (2010) found no changes for children ages 6 to 11 across specific domains of self-esteem (e.g., social, behavioral conduct) as well as depressive symptoms after the STP intervention.

While Sibley et al. (2011) reported broader improvements in overall mood and well-being after STP participation, only one study to date has specifically explored changes in happiness after participating in the STP intervention (Sibley et al., 2012). Sibley et al. (2012) found that 69% of caregivers reported improvements to some extent in their adolescents' happiness levels after the STP. Research has yet to focus on change in subjective well-being after STP participation for pre-adolescent children as well as from the perspective of children themselves. No published studies to date have explored changes specifically in life satisfaction across time for children participating in the STP.

Purpose of the Current Study

As previously described, life satisfaction in school-age children is a critical dimension of child development, as it contributes to a more comprehensive understanding of youth mental health (Huebner & Diener, 2008; Park, 2004; Suldo & Shaffer, 2008), predicts positive youth development (Bird & Markle, 2012; Park, 2004), and serves as a protective factor against negative life experiences (Park, 2004; Suldo & Huebner, 2004). Unfortunately, research also shows that children with ADHD (García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016; Peasgood et al., 2016) and ASD (Begeer et al., 2017; Franke et al., 2018) are more vulnerable to experiencing lower levels of life satisfaction compared to their typically developing peers.

However, there is promising evidence to suggest that participation in social or behavioral intervention, particularly those aiming to increase social relationships and perceptions of social support, can improve the life satisfaction of school-age children (Shoshani & Slone, 2017; Suldo et al., 2015).

Decades of research has demonstrated that the STP is an efficacious social and behavioral intervention for both children with ADHD (Fabiano et al., 2014) and ASD (Mitchell et al., 2015; Mrug & Hodgens, 2008). Specifically, the STP produces improvements in externalizing behavior (e.g., increased rule following, decreased noncompliance; Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000; Pelham et al., 2012a), skill acquisition (e.g., social skills, sports functioning, executive functioning; Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; O'Connor et al., 2014; Pelham et al., 2000), and social relationships (Chronis et al., 2004; Mikami et al., 2010; Mrug & Hodgens, 2008; Pelham et al., 2000). Little research has explored changes in internalizing behaviors (e.g., self-esteem, happiness, symptoms of depression) after participating in the STP (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012), and much of the research on these internalizing changes has focused on caregiver report over self-report (Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012). Despite the importance of life satisfaction, no studies to date have examined changes in life satisfaction across STP participation. While Sibley et al. (2011) found that participants showed improvements in their happiness after the STP, limitations of this study include the focus on an adolescent population specifically and the exclusive use of caregiver perceptions of changes in happiness as opposed to the perceptions of STP participants themselves.

While changes in life satisfaction across the STP have yet to be studied, there is promising theoretical evidence to suggest that children with ADHD and ASD may self-report positive changes in their life satisfaction while participating in the STP. First, the STP actively promotes several malleable factors that are positively correlated with life satisfaction, including access to daily positive life experiences through peer access and recreational activities in a naturalistic summer camp setting (Diener et al., 2009; Huebner & Diener, 2008; Park, 2004), opportunities for goal setting through daily report cards (Diener & McGavran, 2008), and promotion of a positive and supportive community environment (Huebner et al., 2014; Suldo et al., 2006; Zullig et al., 2011). Second, positive social relationships in childhood are significantly predictive of greater life satisfaction (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a). Third, children with ADHD and ASD are more likely to experience challenges building and maintaining positive social relationships (Azad et al., 2017; Hoza, 2007; Johnston & Mash, 2001; Kasari et al., 2011; McQuade & Hoza, 2015; Mikami & Normand, 2015; Rogers et al., 2009) and have lower life satisfaction compared to neurotypical children (Begeer et al., 2017; Franke et al., 2018; García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016; Peasgood et al., 2016). Finally, as a social and behavioral intervention designed to improve social relationships (Pelham et al., 2012a), the STP has strong evidence of improving positive peer and adult relationships for children with ADHD and ASD (Chronis et al., 2004; Mikami et al., 2010; Mrug & Hodgins, 2008; Pelham et al., 2000). Therefore, it is expected that children with ADHD and ASD participating in the STP also would report improvements in their life satisfaction. As such, the current study aims to address the following research questions:

1. What is the change over time, if any, in children's life satisfaction during their time in the Summer Treatment Program (STP)?

2. What are the differences in life satisfaction trajectories among children based on their reciprocal peer relationships developed by the end of the STP?
3. What are the differences in life satisfaction trajectories during the STP among children with ADHD and ASD alone compared to co-morbid ADHD and ASD?

Chapter 3: Method

Participants

During the summer of 2021, 139 children ranging from ages 6 to 12 ($M_{\text{age}} = 9$ years, 2 months) participated in a university-based STP in the Pacific Northwest for five weeks. Children were referred most often to the program by community providers because of concerns about their social and behavioral functioning. Participants in the present study were selected based on their age. Because the measure of life satisfaction used in the current study was designed for children ages 8 to 18 (Huebner & Furlong, 2016), participating children ages 8 and older were included in the study, while children ages 7 and younger were excluded from the study. Hence, participants included a subset of 87 children ages 8 to 12 ($M_{\text{age}} = 10$ years, 1 month) with diagnosed ADHD, ASD, or co-morbid ADHD and ASD. Children without a diagnosis of ADHD or ASD were excluded from the current study.

Of the 87 participants, 26% had diagnosed ASD ($n = 23$), 33% had diagnosed ADHD ($n = 29$), and 40% had diagnoses of both ADHD and ASD ($n = 35$). Many participants had additional co-morbid disorders, including anxiety (34%; $n = 30$), sensory processing disorder (14%; $n = 12$), oppositional defiant disorder (14%; $n = 12$), depression (3%; $n = 3$), learning disorders (3%; $n = 3$), language disorders (2%; $n = 2$), post-traumatic stress disorder (2%; $n = 2$), obsessive compulsive disorder (1%; $n = 1$), or other unspecified disorders (5%; $n = 4$). The majority of participants in the current study were male (79%; $n = 69$). Reported race/ethnicity for participants included White (63%; $n = 55$), biracial or multiracial (14%; $n = 12$), Asian American (6%; $n = 5$), Hispanic or Latino (5%; $n = 4$), Black or African American (2%; $n = 2$), American Indian or Alaska Native (1%; $n = 1$), and other (3%; $n = 3$). The race/ethnicity of 6% of participants was unreported ($n = 5$).

Measures

One outcome was measured for the current study: global life satisfaction. During each of the five weeks of the STP, participants completed self-report measures of life satisfaction and social network questions one-on-one with the same trained researcher in a quiet space away from their bunk during the board games activity period. Researchers used scripted language (e.g., “Hi, my name is ____, and I am here to ask you some questions to get to know you better.”) to introduce the measures, and they were prepared to use scripted language (e.g., “Answering these questions helps us better understand your experience at camp.”) in response to anticipated participant questions or comments (e.g., “Why do we need to do this?”). Participants were given the option to point to or verbalize their responses, and researchers recorded a participant response for each item. The assessments took less than five minutes per respondent. If a participant was unavailable to complete the tasks (e.g., due to absence), data were collected the following day. If a participant was unavailable two consecutive days, data collection was missed for that week. Approximately 11% of life satisfaction measure responses across the five weeks were missing, while 9% of social network responses during the final week were missing. Demographic information was reported by caregivers prior to the STP. Measure descriptions are as follows.

Life satisfaction was assessed using the Students’ Life Satisfaction Scale (SLSS; Huebner, 1991b). The SLSS is a 7-item, unidimensional scale that measures self-reported global life satisfaction, intended for children ages 8 to 18 (Huebner & Furlong, 2016). Most items include positively worded statements, such as “My life is going well,” or “I have what I want in life” (Huebner, 1991b). Two out of the seven items are worded negatively (e.g., “I would like to change many things in my life;” Huebner, 1991b). Response options ranged from “strongly

disagree” to “strongly agree,” using a 6-point Likert scale (Huebner & Furlong, 2016). Each SLSS item response was worth one to six points, and reverse scoring was applied to negatively worded items (Huebner & Furlong, 2016). Scores for a given respondent for each timepoint ranged from 7 to 42 points total, with higher points reflecting higher reported life satisfaction (Huebner & Furlong, 2016).

Evidence of the technical adequacy of the SLSS indicates acceptable internal consistency ($\alpha = .82$) and test-retest reliability ($\alpha = .74$; Huebner, 1991b) that has since been replicated across additional samples (Huebner 1991a; Huebner, 1991c; Huebner, 1995). Factor analysis by Huebner (1991b) also evidenced a unidimensional factor structure that was replicated among multiple samples of children. Concurrent validity has been established through statistically significant correlations between the SLSS and the Piers-Harris Children’s Self-Concept Scale total score ($r = .53$; Piers, 1984), Piers-Harris Children’s Self-Concept happiness subscale score ($r = .53$; Piers, 1984), and a single item measuring life satisfaction ($r = .62$) developed by Andrews and Withey (1976). Further support for criterion-related validity demonstrates that SLSS scores are positively correlated with self-esteem (Huebner, 1991a; Huebner & Alderman, 1993) and negatively correlated with anxiety (Huebner, 1991a), depression (Huebner & Alderman, 1993), loneliness (Huebner & Alderman, 1993), and neuroticism (i.e., being more likely to experience negative emotional states; Huebner 1991a).

While there is limited validity evidence of using the SLSS with samples of children with ADHD and ASD specifically, several studies have examined the validity evidence of the SLSS with children of varying abilities and disabilities (Ash & Huebner, 1998; Huebner & Alderman, 2003). Specifically, there is evidence of adequate reliability and validity of the SLSS for children identified as gifted (Ash & Huebner, 1998) and those considered at-risk for academic difficulties

due to learning or behavior problems in classrooms (Huebner & Alderman, 2003). The SLSS has additionally been validated for children with learning disabilities, social-emotional disorders, and intellectual disabilities (Huebner & Alderman, 2003). The SLSS has been used in multiple studies with children and adolescents with ADHD specifically (Nadeau et al., 2015; Ogg et al., 2016), and Nadeau et al. (2015) reported strong internal consistency with an ADHD youth population ($\alpha = .86$). Internal consistency for the current sample was adequate across all participants ($\alpha = .76$) and within ADHD ($\alpha = .73$), ASD ($\alpha = .76$), and co-morbid ADHD and ASD ($\alpha = .78$) sub-groups.

Social relationships were defined as the number of mutual friendship nominations identified by each participant in the final week of the STP. Mutual friendship nominations, as opposed to outward or inward friendship nominations, were included in the current study in order to capture reciprocal social relationships formed by the end of the intervention. Social network mapping is a well-established method to understanding perceptions and reciprocity of social relationships and social rejection between school-age children (Anderson et al., 2016; Blachman & Hinshaw, 2002; Chamberlain et al., 2007; Kasari et al., 2012; Locke et al., 2010; Locke et al., 2013; Locke et al., 2017; Marton et al., 2015). Specifically, social network mapping has been previously used to understand the social relationships of children with ASD (Anderson et al., 2016; Chamberlain et al., 2007; Kasari et al., 2012; Locke et al., 2010; Locke et al., 2013; Locke et al., 2017) and ADHD (Blachman & Hinshaw, 2002; Marton et al., 2015). Social network mapping has also been used to understand changes in social relationships for children participating in the STP (Mikami et al., 2010; Pelham et al., 2000). Consistent with the social network mapping procedures of previous studies (Chamberlain et al., 2007; Kasari et al., 2012; Locke et al., 2010; Locke et al., 2013; Locke et al., 2017), participants in the present study were

asked to share whom within the bunk they “like to hang out with” using free recall (i.e., outward friendship nominations). Participants were allowed to nominate as many or as few campers within their bunk as they preferred. To capture mutual friendship nominations, the number of outward friendship nominations of each camper that were also reciprocated by the nominated peers within the bunk (i.e., inward friendship nominations) was totaled as a frequency count. Nominations of children outside of the bunk or adults were excluded from the frequency count.

ADHD status was defined as caregiver-reported ADHD diagnosis prior to the STP. Participants were excluded from this group if they additionally had an ASD diagnosis. Diagnostic status (i.e., ADHD status, ASD status) will be transformed into two effect-coded predictors (i.e., +1, 0, or -1), with participants diagnosed with co-morbid ADHD and ASD identified as the reference group (i.e., -1) because of their majority status among the current sample.

ASD status was defined as caregiver-reported ASD diagnosis prior to the STP. Participants with reported diagnoses of Asperger syndrome and pervasive developmental disorder were also included within this group. Participants were excluded from this group if they additionally had an ADHD diagnosis; children with diagnosed co-morbid ASD and ADHD were instead identified as the reference group (i.e., -1).

Bunk membership was defined as the age-matched groups that each participant was placed in for the entirety of the STP. Each bunk was assigned a corresponding number (e.g., Bunk 5, Bunk 10). Bunk membership for the current study will be transformed from a seven-category predictor into six effect-coded predictors (i.e., +1, 0, or -1). Bunk 4 was selected as the reference group (i.e., -1) because participants in Bunk 4 belonged to the youngest age-matched group included in the present study.

Procedures

Recruitment

The present study was situated within ongoing intervention research at a university-based STP, which included the evaluation of changes in prosocial behavior (e.g., contributing to group discussion, helping/sharing with peers), challenging behavior (e.g., aggression toward staff/peers, name-calling/teasing), perceptions of social relationships (e.g., social network), and subjective well-being (e.g., life satisfaction, positive and negative affect) within the context of STP participation. Children in the current study were first enrolled in the STP intervention to support their social and behavioral functioning after referrals from community providers and then were given the opportunity to participate in research as part of the intervention. Data were continuously collected throughout the program, including consistent and ongoing collection of observed behavioral data of positive and negative behaviors. Caregivers were also prompted to complete a caregiver-report measure of demographic information and their children's externalizing and internalizing behaviors prior to beginning of the STP. Additionally, campers were requested to complete various self-report measures each week of the STP, including the life satisfaction and social network measures utilized in the current study.

The present and larger studies were approved separately by the Institutional Review Board at the University of Washington. All caregivers of participating children were provided with information about the studies over multiple instances during the application and orientation process. Caregivers were given the option to provide consent prior to the start of the program or opt-out from studies if preferred.

Setting

The STP intervention was provided in largely outdoor spaces at a kindergarten through eighth grade school near the university. Participants attended the STP for five consecutive weeks, from approximately 9am to 3pm every weekday. Participants were placed in one of seven age-matched groups (i.e., “bunks”), which included 10 to 14 peers of similar age, that remained consistent for the entirety of the program. Each group was supervised by 6 to 8 counselors, all undergraduate, graduate, or professional clinical interns. Counselors were supervised by a leadership team of clinicians, including school and clinical psychologists.

Intervention Procedures

Each group of participants (i.e., bunk) followed a consistent schedule of daily activities (see Table 1). All groups began and ended their day with whole-group discussions, which included a review of group discussion rules, explicit social skills instruction and practice, and an overview of the camp day. Groups additionally rotated through several recreational activity periods each day, including board games, sports skills practice, a sports game, and a counselor-selected activity. Board games included a variety of rotating competitive and cooperative board games. Sports skills practice consisted of rotations of drills targeting specific sports skills (e.g., kicking a ball, running bases, catching a ball) related to the designated sport of the week (e.g., kickball). The sports game was a complete game of the designated sport. Counselor-selected activities (i.e., “counselor’s choice”) varied day-to-day, ranging from recess games (e.g., freeze tag), circle games (e.g., charades), craft projects (e.g., coloring), or quieter activities like story time. All groups participated in the same four recreational activity periods daily, although the order of which they engaged in recreational activities was dependent on their individualized bunk schedule. Each activity period included a pre-activity group discussion, time for

game/activity play, and a post-activity discussion. The current STP included eight key intervention components implemented by staff: (1) a point system, (2) social reinforcement, (3) appropriate commands, (4) peer intervention, (5) daily report cards (DRCs), (6) sports skills training (7) timeout, and (8) weekly parent behavior management training (Pelham et al., 2012a).

Point System. A key feature of the STP is the utilization of a response-reward cost system (i.e., “point system”), in which children can earn points for engaging in positive behaviors and lose points for engaging in negative behaviors (Pelham et al., 2012a). Children earned a specified number of points, ranging from +10 to +25, for every instance of the following positive behaviors: complying with a command, helping a peer, sharing with a peer, contributing to a group discussion, ignoring a negative stimulus, and correctly answering attention questions (e.g., “What was the last idea contributed and who contributed it?”). Additionally, children earned positive points for intervals of time (i.e., typically 10 to 15 minutes per interval) in which they did not engage in negative behavior. Specifically, children earned 50 points for following activity rules (i.e., no activity rule violations), 25 points for good sportsmanship (i.e., no instances of poor sportsmanship), and 25 points for a “behavior bonus” (i.e., no other negative behaviors) per interval (i.e., every 10 to 15 minutes). Children participating in the STP lost points, ranging from -20 to -50, for engaging in the following negative behaviors: physical aggression, destruction of property, noncompliance/repeated noncompliance, stealing, leaving the activity area, lying, verbal abuse toward staff, name calling/teasing, cursing/swearing, interrupting, and complaining/whining. Children also lost points for violating activity rules or demonstrating poor sportsmanship. Point categories and values are provided in Table 2. A designated counselor recorded ongoing point gains and losses across the day on a “point sheet.” At the end of the camp day, point totals were calculated for

every child, and earned points were exchanged for a daily prize of their choice at the “point store.”

Social Reinforcement. Liberal, positive social reinforcement is another important component of the STP intervention. Counselors used behavior-specific praise to systematically reinforce children’s positive behaviors, which was often, though not always, paired with point system feedback (e.g., “Great job, Johnny! You earn 10 points for helping a peer for offering to help Sam clean up;” Pelham et al., 2012a). By contrast, counselors informed children about point losses with a neutral, non-judgmental tone (Pelham et al., 2012a).

Appropriate Commands. Staff were trained to deliberately decide when to use a command due to its subsequent point gain for compliance or point loss for noncompliance. As such, counselors were encouraged to use prompts more liberally than commands. When counselors issued commands, they intentionally used commands that were specific, brief, and positively worded to maximize compliance and minimize confusion (e.g., “Line up!” or “Circle up for group discussion;” Pelham et al., 2012a). Counselors additionally obtained camper attention prior to issuing a command and used a firm, neutral tone of voice to give the command (Pelham et al., 2012b).

Peer Intervention. Social skills training was provided during every morning discussion, which covered four social skills domains: communication, cooperation, validation, and participation (Fabiano et al., 2014; Pelham et al., 2012b). Each week of the STP was dedicated to one of the four social skills domains, and each day covered a distinct social skill within that domain. During the final week of the STP, all four social skills domains were reviewed. Social skills were taught initially with explicit instruction, modeling, role play, discussion, and/or visual supports (Pelham et al., 2012a). For example, if the social skill of the week was validation,

counselors taught what validation means and gave an example of what validation looks and sounds like (e.g., giving compliments) during morning discussion. Campers might then have an opportunity to practice giving compliments one at a time to each other within the group to practice showing validation to one another. The social skill of the week was subsequently reviewed and referenced within every pre- and post-activity discussion as well as prompted throughout all remaining daily activities (e.g., “How might we use validation during our kickball game today?”; Pelham et al., 2012a). Children’s use of social skills was reinforced through various programmatic elements, including the point system, social reinforcement, and DRCs (e.g., “I love how you gave your friend a compliment during recess!”; Fabiano et al., 2014).

Daily Report Cards. The use of DRCs provided an opportunity for ongoing collaboration between the STP and home setting. Based on behavioral data and rating of social importance by families, target behaviors for the DRCs were identified by STP staff (Pelham et al., 2012a). Identified target behaviors were then transformed into specific and reasonable goals by accessing recent behavioral data from the previous week as well as comparison of behavior frequency norms of typically developing children established by Pelham et al. (2012b). Participating children were assigned three individualized goals each based on their unique needs. Goals were revised weekly based on each child’s weekly progress toward their goals. At the end of each camp day, caregivers received a summary of their child’s progress toward goals. Children earned home rewards (e.g., special dessert, extra screen time) for meeting the majority of their goals each day. Additionally, children earned camp privileges every Friday based on the percentage of goals met throughout the week.

Sports Skills Training. The STP facilitated daily sports skill instruction and game play to increase sports skill and knowledge and enhance self-efficacy (Pelham et al., 2012a). The

“skills drills” period included explicit instruction and practice to target isolated sports skills (e.g., kicking a ball, catching a ball, running the bases) of age-appropriate sports (e.g., kickball). The sports game period consisted of a complete game of the sport practiced earlier that day. Every week of the program emphasized a specific sport (e.g., kickball, tee-ball, dodgeball), and during the final week of the STP, each group practiced their favorite sport from the summer.

Timeout. Children were assigned timeouts from positive reinforcement as an additional consequence for engaging in specific negative behaviors, including intentional aggression toward peers or staff, intentional destruction of property, and repeated noncompliance (Fabiano et al., 2014; Pelham et al., 2012a). Timeouts were brief in duration in order to facilitate opportunity for the child to re-engage in group activities as soon as possible (Fabiano et al., 2014). However, the length of assigned timeouts increased for the child if they continued to engage in negative behaviors and not serve the timeout appropriately (Fabiano et al., 2014). Specifically, if a child engaged in any single negative behavior after a timeout was assigned, their timeout automatically increased by two minutes.

Weekly Parent Behavior Management Training. All caregivers of participating children had the opportunity to participate in weekly, one-hour-long, group-based parent training sessions via telehealth. Between 80-90% of families participated in weekly parent sessions, all of which were facilitated by a school psychologist. Sessions covered evidence-based behavioral management strategies aligned with the program components of the STP for implementation within the home setting (Pelham et al., 2012a).

STP Modifications. The current study modified the standardized STP by Pelham et al. (2012b) in the following ways. First, academic learning centers were not implemented, and therefore, children did not participate in academic enrichment activities as part of the STP. This

modification was made given limited time (e.g., six hours instead of nine) and resources (e.g., access to teachers, available physical space) to provide an effective academic learning center. As such, STP programming was focused solely on social and behavioral functioning rather than additionally including academic functioning. Second, the current STP utilized a modified timeout procedure to decrease potential reinforcement of behavior motivated by escape and increase the likelihood of re-engagement and participation with the group. As such, timeouts from positive reinforcement were shorter in length than the standard STP model. Timeouts were initially assigned at two minutes, and then escalated to four, six, eight, and then ten minutes maximum as result of further negative behavior. Third, a comprehensive array of health practices was implemented in addition to typical STP intervention components given the COVID-19 pandemic. The current STP was provided largely in outdoor spaces, and counselors enforced 3-foot social distancing with optional masking for campers and staff. Indoor spaces were exclusively used for bathroom access, and 3-foot social distancing and masking were required indoors. Routine sanitizing was additionally employed.

Training Procedures

All STP staff participated in two weeks (i.e., 70 hours) of intensive training prior to the start of the STP, which included preparatory reading of the 425-page STP manual by Pelham et al. (2012b), explicit instruction, discussion and consultation, guest lectures, written assignments, quizzes, and role play. Seventy-one staff were supervised by a leadership team of nine clinicians, including school and clinical psychologists and graduate students. Implementation of the STP was monitored through daily observation, consultation, and feedback provided by peers and supervisors, from training through the end of implementation.

To document the fidelity of intervention procedures, one of five independent observers evaluated each age-matched group, about once per week during an activity period (e.g., sports game, skills drills). Observers evaluated one group at a time, and groups were not necessarily evaluated by the same observer week to week. Observers used a manualized treatment fidelity checklist by Pelham et al. (2012b) that also included ratings of staff adequacy, including style of discussion leading and frequency and quality of positive reinforcement and skill instruction/feedback (Pelham et al., 2012b). All fidelity checks were followed by structured feedback for the group of staff observed. To determine procedural fidelity, the percentage of steps completed correctly was calculated by dividing the number of actual procedural occurrences by the number of planned procedural occurrences, multiplying by 100. Average procedural fidelity equaled 91%. To determine staff adequacy, the percentage of quality criteria observed was calculated by dividing the number of quality observations rated as adequate or above adequate out of the total number of quality observations, multiplying by 100. Average staff adequacy totaled 93%.

A team of ten undergraduate researchers were trained by a researcher prior to and during STP implementation. Researchers were trained on how to administer the SLSS and social network mapping, including review and practice of scripted language to administer the measures. Researchers reviewed videos modeling the scripted language to introduce the tasks and then role-played the scripted language with one another to receive peer feedback. Researcher skills were evaluated by way of supervisor observation and direct feedback prior to initial administration of the SLSS and social network mapping and again during the third week of the STP. Researchers were additionally trained in scoring and entering data.

Data Analysis

A linear multilevel model was used to test the research questions and control for non-independence in the data due to a repeated measures design of five measurements of life satisfaction (L1) within 87 campers (L2). Specifically, a series of models were specified to determine the functional form of change over time, with time coded in weeks since baseline (0 = first week of STP, 1 = second week of STP, 2 = third week of STP, 3 = fourth week of STP; 4 = fifth week of STP), and then predictors of the growth terms were added. After comparing eight traditional growth models including terms of linear and/or quadratic growth, the final model was selected based on comparison of Bayesian information criterion (BIC) values and likelihood-ratio tests. Piece-wise models were not considered because there were no significant quadratic effects or apparent, natural breaking points (i.e., change points) in the data observed during visual inspection of plotted data points. Bunk membership was also included as an L2 predictor to further control for non-independence at baseline (i.e., first week of STP). For ease of model results interpretation, bunk membership and diagnostic status predictors were effect-coded, and the social relationships predictor was grand-mean centered and standardized as z-scores. The final model was as follows.

$$\begin{aligned}
 \text{LifeSatisfaction}_{ij} &= \gamma_{00} + \gamma_{10} * \text{TimeLin}_{ij} + \\
 &+ \gamma_{01} * \text{L2Bunk5Eff}_j + \gamma_{02} * \text{L2Bunk6Eff}_j + \gamma_{03} * \text{L2Bunk7Eff}_j \\
 &+ \gamma_{04} * \text{L2Bunk8Eff}_j + \gamma_{05} * \text{L2Bunk9Eff}_j + \gamma_{06} * \text{L2Bunk10Eff}_j \\
 &+ \gamma_{07} * \text{L2ASDStatusEff}_j + \gamma_{08} * \text{L2ADHDStatusEff}_j \\
 &+ \gamma_{09} * \text{L2SocialRelationships}_j \\
 &+ \gamma_{17} * \text{TimeLin}_{ij} * \text{L2ASDStatusEff}_j \\
 &+ \gamma_{18} * \text{TimeLin}_{ij} * \text{L2ADHDStatusEff}_j
 \end{aligned}$$

$$\begin{aligned}
 &+ \gamma_{19} * \text{TimeLin}_{ij} * \text{L2SocialRelationships}_j \\
 &+ U_{0j} + U_{1j} * \text{TimeLin}_{ij} + r_{ij}
 \end{aligned}$$

In the model above, the i^{th} measurement of life satisfaction of the j^{th} camper is equal to the sum of mean life satisfaction at baseline (i.e., first week of the STP; γ_{00}); the linear rate of change since baseline (γ_{10}); the unique effects of bunk membership (e.g., Bunks 5-10), diagnostic status (e.g., ASDStatus, ADHDStatus), and social relationships in the final week of the STP (e.g., SocialRelationships) on the baseline measurement ($\gamma_{01} - \gamma_{09}$) as well as their effects on linear rates of change since baseline ($\gamma_{17} - \gamma_{19}$); and the residual error between subjects on the intercept (U_{0j}), linear rate of change (U_{1j}), and within-subject error (r_{ij}). Statistical significance within the final model was calculated with t -tests using Satterthwaite's method as specified in the lmerTest package in *R* (Kuznetsova et al., 2017). Model R^2 values for fixed and random effects (Rights & Sterba, 2019) were computed using r2mlm in *R* (Shaw et al., 2022). The model was estimated with full information maximum likelihood using *R* lme4 and lmerTest packages to estimate and account for missing data.

Chapter 4: Results

Correlations

Each bunk within the current STP included a combination of children with ADHD, ASD, and co-morbid ADHD and ASD diagnoses. Within Bunk 4, 40% of children had a diagnosis of ADHD ($r = .05$), 40% had diagnoses of ADHD and ASD ($r = -.05$), and 20% had a diagnosis of ASD ($r = .00$; $p > .05$). Bunk 5 included 38% children with ADHD ($r = .05$), 38% with co-morbid ADHD and ASD ($r = -.02$), and 23% with ASD ($r = -.03$; $p > .05$). In Bunk 6, 50% of children had ADHD and ASD ($r = .08$), 42% had ADHD alone ($r = .07$), and 8% had ASD alone ($r = -.16$; $p > .05$). The majority of Bunk 7 was children with ADHD (54%; $r = .18$), followed by children with ADHD and ASD (38%; $r = -.02$) and ASD alone (8%; $r = -.18$; $p > .05$). Within Bunk 8, 58% of children had co-morbid ADHD and ASD ($r = .12$), 23% had ADHD ($r = -.09$), and 23% had ASD ($r = -.03$; $p > .05$). Bunk 9 included 43% children with ASD ($r = .16$), 36% with both ADHD and ASD ($r = -.04$), and 21% with ADHD ($r = -.11$; $p > .05$). Finally, most campers in Bunk 10 had an ASD diagnosis ($r = .29$), followed by ADHD and ASD ($r = -.12$) and ADHD alone ($r = -.14$). Only the positive relationship between Bunk 10 membership and ASD status was statistically significant ($r = .29$; $p < .05$), indicating that Bunk 10 had significantly more children with ASD participating within the bunk.

Social relationships ($r = .23$) and Bunk 10 ($r = -.22$) membership predictors were significantly correlated with life satisfaction during Week 1 ($p < .05$). ASD status, ADHD status, and co-morbid ADHD and ASD status were significantly and negatively correlated with one another ($r = -.42$ to $-.58$; $p < .001$). Interestingly, social relationships during Week 5 were negatively correlated with Bunks 5 ($r = -.29$; $p < .05$) and 8 ($r = -.23$; $p < .05$) and positively correlated with Bunk 10 ($r = .43$; $p < .001$). In other words, campers in Bunks 5 and 8 were

significantly less likely to report social relationships during the final week of the STP, while campers in Bunk 10 were significantly more likely to report social relationships within their bunk. Means, standard deviations, and zero-order correlations among all variables are presented in Table 3.

Model Results

The intercept-only (or “empty”) model was specified to evaluate the effects of time without the effects of additional predictors. As can be seen in Table 4 (Model 1 columns), mean life satisfaction during Week 1 was 28.95 points, which was significantly different from zero ($p < .001$). Linear growth was also included in the intercept-only model to predict life satisfaction. As shown in Table 4 (Model 1 columns), linear growth was statistically significant ($p < .05$). The approximate variance explained by Model 1 was 0.01, indicating that the model accounted for 1% of the variation in life satisfaction.

Next, predictors of the intercept related to bunk membership were added to the model. As shown in Table 4 (Model 2 columns), Bunk 9 membership and linear growth were statistically significant ($p < .05$). Specifically, Bunk 9 membership uniquely predicted baseline life satisfaction at the beginning of the STP. Campers in Bunk 9 were predicted to be 3.18 points higher than average on life satisfaction during Week 1, holding all else constant. No other statistically significant bunk differences were found at baseline. The approximate variance explained by Model 2 was 8%, which was more than the intercept-only model. However, the likelihood ratio test (LRT) comparing this model to the previous was non-significant ($p > .05$), and the BIC value increased by 26 points, indicating that the model including bunk membership predictors decreased model-data fit.

Finally, predictors of interest (i.e., diagnostic status, social relationships) related to intercept and growth were added to the model. As shown in Table 4 (Model 3 columns), the approximate variance explained with this set of predictors was 19%, which was 8% greater than Model 2 and 18% greater than Model 1. The LRT comparing the final model to the previous model was statistically significant ($p < .01$), and the BIC value decreased by 78 points. These results indicate that the added predictors of interest improved model-data fit. As such, Model 3 is the best-fitting model for the available data.

In examining the coefficients for this final model in Table 4 (Model 3 columns), Bunk 9 and 10 membership predictors were statistically significant in uniquely predicting Week 1 life satisfaction. For campers in Bunk 9, baseline life satisfaction was predicted to be 3.36 points greater compared to average baseline life satisfaction, holding all else constant ($p < .05$). For campers in Bunk 10, baseline life satisfaction was predicted to be 4.64 points less than average baseline life satisfaction, holding all other predictors constant ($p < .01$). The social relationships predictor also uniquely predicted baseline life satisfaction ($p < .001$). Specifically, for every standard deviation increase in social relationships reported during the final week of the STP, there was a predicted 2.88-point increase in baseline life satisfaction, holding all else constant. Simply, greater life satisfaction at the beginning of the STP was associated with more social relationships by the end of the STP for participating children. Neither of the diagnostic status variables (i.e., ASD status, ADHD status) uniquely predicted life satisfaction at baseline at a statistically significant level.

Within Model 3, there was statistically significant and unique linear growth in life satisfaction across the STP ($p < .05$). The predicted mean life satisfaction growth was 0.43 points per week, holding all else constant. In sum, campers across the STP, regardless of bunk

membership, diagnostic status, or social relationships, steadily reported statistically significant increases in their life satisfaction over time. Interestingly, there were no statistically significant differences among Week 5 social relationships or diagnosis (i.e., ASD status, ADHD status) in their interaction with change in life satisfaction over time ($p > .05$). While growth rate differences between the examined camper sub-groups were non-significant ($p > .05$), figures are included in order to provide a visual of the week-to-week life satisfaction trajectories among camper sub-groups. A plot of camper mean growth trajectory in life satisfaction compared with predicted trajectories for campers with high and low social relationships during the final week of the STP is illustrated in Figure 1. Additionally, a plot of mean growth trajectory compared with predicted trajectories based on diagnostic status (i.e., ADHD status, ASD status, and co-morbid ADHD and ASD status) is presented in Figure 2.

Chapter 5: Discussion

The purpose of the current study was to explore whether children ages 8 to 12 with ADHD and ASD self-report changes in life satisfaction as they participate in the STP intervention. This research was intended to address the literature gap of the STP's effects on internalizing behaviors. Specifically, this study addressed the following research questions:

1. What was the change over time, if any, in children's life satisfaction during their time in the STP?
2. What were the differences in life satisfaction trajectories among children based on their reciprocal peer relationships developed by the end of the STP?
3. What were the differences in life satisfaction trajectories during the STP among children with ADHD and ASD alone compared to co-morbid ADHD and ASD?

Overview of Study Findings

Results from this study revealed that time significantly predicted change in life satisfaction within the context of the STP intervention. In other words, children ages 8 to 12 across diagnoses of ADHD, ASD, and co-morbid ADHD and ASD self-reported statistically significant increases in life satisfaction across the five weeks of the STP. Improvements were reported regardless of bunk membership, diagnostic status, or social relationships formed during the intervention. As such, these findings support previous research that children participating in the STP can demonstrate improvement in their internalizing behaviors (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012) in addition to their externalizing behaviors (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000; Pelham et al., 2012a) and social behaviors (Mitchell et al., 2015; Mrug & Hodgens, 2008). While the current study is among the first of its kind to examine changes in

life satisfaction related to the STP intervention specifically, the results are consistent with research by Sibley et al. (2011; 2012), in which adolescents were reported by themselves and their caregivers to improve mood/well-being and happiness after STP participation.

Interestingly, children participating in the STP with more reciprocal peer relationships during the last week of the intervention were predicted to report significantly greater life satisfaction during the first week of the intervention, compared to children with fewer reciprocal peer relationships during the last week. This finding makes sense given that life satisfaction and positive peer relationships are demonstrated to be highly correlated with one another (Goswami, 2012). In addition, the current study showed that children with more reciprocal peer relationships by the end of the STP were predicted to report greater life satisfaction week to week compared to those with fewer reciprocal peer relationships during the STP (Figure 1). However, these differences in life satisfaction trajectories based on number of reciprocal peer relationships were statistically non-significant. This result can be explained by the literature indicating that the quality of peer relationships matters more than the quantity (Goswami, 2012; Park, 2004). In other words, having one or two high-quality friendships with minimal conflict can be just as meaningful in fostering life satisfaction as having many friendships (Demir et al., 2007). As such, examining quantity of reciprocal peer relationships without consideration of quality was a limitation of the current study.

While children with differential diagnoses of ADHD, ASD, and co-morbid ADHD and ASD tended to have variable trajectories in life satisfaction across the STP from one another (Figure 2), there were no statistically significant differences between these groups' reported baseline life satisfaction or rates of change in life satisfaction over time. While previous research has indicated that life satisfaction in children is minimally influenced by socio-demographic

factors like age, grade, and gender (Dinisman & Ben-Arieh, 2015; Huebner, 1991a; Huebner & Diener, 2008), results of the current study highlight that children participating in the STP overall reported improvements in life satisfaction regardless of diagnosis, which is consistent with previous findings of improved well-being and happiness after STP participation (Sibley et al., 2011; Sibley et al., 2012).

These overall improvements in life satisfaction reported during the STP make sense given that the STP actively incorporates several malleable factors that are positively correlated with life satisfaction. These factors include access to daily positive life experiences through peer opportunities and recreational activities in a naturalistic summer camp setting (Diener et al., 2009; Huebner & Diener, 2008; Park, 2004), opportunities for goal setting through daily report cards (Diener & McGavran, 2008), and cultivation of a positive and supportive community environment (Huebner et al., 2014; Suldo et al., 2006; Zullig et al., 2011). Additionally, the STP has strong evidence of improving positive peer and adult relationships for children with ADHD and ASD (Chronis et al., 2004; Mikami et al., 2010; Mrug & Hodgens, 2008; Pelham et al., 2000), and research further supports that positive social relationships in childhood are significantly predictive of greater life satisfaction (Diener & McGavran, 2008; Goswami, 2012; Huebner, 1991a). Therefore, it is unsurprising that children with ADHD and ASD participating in the STP reported improvements in their life satisfaction in the context of an intervention aimed to improve social relationships.

Implications for Clinical and School-Based Practice

The findings of the current study suggest important implications for professionals supporting the well-being of children ages 8 to 12 in clinical and school settings. Previous research shows that life satisfaction in school-age children predicts positive development such as

quality social relationships (Diener et al., 2018; Diener & McGavran, 2008; Huebner, 1991a; Huebner et al., 2014; Park, 2004; Suldo & Shaffer, 2008; Zullig et al., 2011), decreased risk for psychological disorders (Park, 2004), good physical health (Diener et al., 2018; Park, 2004; Suldo & Shaffer, 2008), and healthy individual qualities like self-efficacy (Greenspoon & Saklofske, 2001). While previous research shows that most of the variance in individual life satisfaction is accounted for by malleable, environmental, and situational factors (Diener et al., 2018), predictors in the current study, including time as well as social relationships and diagnostic status and their interactions with time, accounted for 19% of the variance in life satisfaction. As such, intervention plays a promising role in promoting life satisfaction in youth (Diener et al., 2009; Shoshani & Slone, 2017; Suldo et al., 2015). The current study expands upon this literature by highlighting further evidence that changes in life satisfaction can occur within the context of a social and behavioral intervention, specifically for children ages 8 to 12 with ADHD, ASD, and co-morbid ADHD and ASD participating in the STP. Consistent with previous research, the STP incorporates explicit social skills instruction and emphasizes positive relationship building, which are critical to interventions promoting the development of life satisfaction (Bird & Markle, 2012; Shoshani & Slone, 2017; Suldo et al., 2015).

The present study continues to demonstrate the utility of the STP as an intervention to be implemented within clinical settings for children with ADHD and ASD. The STP is well-documented in its efficacy supporting behavior change (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000; Pelham et al., 2012a), skill acquisition (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; O'Connor et al., 2014; Pelham et al., 2000), and social relationships (Chronis et al., 2004; Mikami et al., 2010; Mrug & Hodgens, 2008; Pelham et al., 2000) for children with ADHD,

ASD, and broader externalizing behavior problems. Fewer studies have focused on changes in internalizing behaviors (Mikami et al., 2010; Pelham et al., 2000; Sibley et al., 2011; Sibley et al., 2012). However, the current study demonstrates that time significantly predicted positive changes in life satisfaction during the STP for children across all groups, ADHD and/or ASD diagnoses, and social relationships formed. These findings imply that the STP, as a social and behavioral intervention, shows promise beyond just supporting social and behavioral outcomes for children with ADHD and ASD. Specifically, this study shows that children with ADHD and ASD are reporting changes within themselves internally as they participate, in which they continue to feel increasingly satisfied with their lives during the program. These results are especially significant given that children with ADHD (García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016; Peasgood et al., 2016) and ASD (Begeer et al., 2017; Franke et al., 2018) tend to report less life satisfaction compared to their typically developing peers. Therefore, the STP, which is a comprehensive intervention by design, may also be comprehensive in the ways it can positively support children with ADHD and/or ASD who struggle with behavioral and social functioning.

While the STP is an intervention designed to be implemented within a summer camp setting, social and behavioral interventions are implemented in schools daily to support students, including those with ADHD and ASD, and their needs. Understanding the features of social and behavioral interventions that have effects on life satisfaction in school-age children is important to fully understanding the support that social and behavioral intervention can provide for students in schools. Researchers agree that in order to increase life satisfaction through intervention, social support is an important component (Bird & Markle, 2012; Shoshani & Slone, 2017; Suldo et al., 2015). As such, it is critical that interventions in schools intended to improve

children's life satisfaction create opportunity for positive relationship building and provide explicit social skills instruction (Bird & Markle, 2012; Shoshani & Slone, 2017; Suldo et al., 2015). The present study provides further evidence that time can predict positive changes in life satisfaction in the context of a social and behavioral intervention when social relationships and social skills are a focal point. When implementing social and behavioral intervention that targets social relationships in schools, life satisfaction should be evaluated and considered as a positive indicator of child mental health for progress monitoring. Doing so is important for monitoring children's well-being in the moment and also setting them up for success in the future.

Limitations and Future Research

There are a number of limitations to the current study. Methodological limitations include the timing of baseline data collection, selection bias, and lack of power analysis and a control condition. Measurement limitations include the percentage of missing responses, shortcomings of social network mapping, and previous reliability and validity evidence of the SLSS.

Methodological Limitations

The first notable methodological limitation is that baseline life satisfaction data were collected during the first week of the STP, rather than prior to the start of the intervention. As such, baseline life satisfaction was reported by participants after several days of intervention implementation, which could have influenced participants' self-reported life satisfaction. STP participants frequently experience a "honeymoon period," in which children demonstrate more positive and less negative behaviors during the first week of the program (Garcia et al., 2018); this phenomenon may have inflated perceptions of life satisfaction at baseline. Therefore, there is no "pre-intervention" life satisfaction data that can be compared to how life satisfaction changed over time during the STP. It is recommended that future research include a pre-intervention

timepoint measuring life satisfaction in addition to the weekly timepoints during the STP in order to obtain a more comprehensive and accurate picture of how life satisfaction changes during the STP intervention.

Another limitation of the present study is selection bias related to participant recruitment. First, children were initially referred to the STP by community providers because of concerns related to social and behavioral functioning. Children were then further screened to determine appropriate fit for the program, during which those with significant language delays and/or cognitive impairments were often excluded. Therefore, the current sample is unrepresentative of the broader ADHD and ASD youth populations. Second, populations that have been evidenced to benefit from the STP, such as children with conduct disorder, ODD, or broader externalizing behavior problems were also not represented within the sample. Third, the STP is a notable financial commitment, which limits intervention access for families with fewer financial resources. While the program offers scholarships, families with less financial resources may be unaware of these opportunities and therefore seek intervention services elsewhere. In consideration of all these factors, results of the current study only generalize to populations of children with ADHD, ASD, and co-morbid ADHD and ASD like those used in the present study. Future research should incorporate a more diverse sample of children with varying diagnoses and a broader range of financial resources to address these limitations.

Lack of power analysis in the current study is another noteworthy limitation. Without knowledge of statistical power based on sample size, frequency of repeated measures, and number of model predictors, it is difficult to decipher whether the predictors of interest (i.e., social relationships, diagnostic status) truly had no statistically significant effect on life satisfaction at baseline and over time or if the effect was undetected because of insufficient

statistical power. Therefore, future research is recommended to explore and establish adequate statistical power prior to data collection and analysis exploring changes in life satisfaction during the STP.

Lastly, the current study lacked a control group (i.e., absence of intervention, alternative intervention), which is a major limitation. Because the changes in life satisfaction occurring across the five weeks of the STP could not be compared with children participating in an alternative intervention or children without access to intervention, any evaluation of causality between STP participation and improvements in life satisfaction is unwarranted. Additionally, the Hawthorne effect (i.e., individuals' change in behavior in response to observation and assessment) on changes in self-reported life satisfaction cannot be ruled out without a control group comparison (Merrett, 2006). Interpretation of available data in consideration of this limitation is critical. Future research comparing treatment and control conditions can provide a clearer picture of the STP's role in contributing to intervention outcomes related to life satisfaction.

Measurement Limitations

An important measurement limitation of the current study is the percentage of missing data. Given that the present study occurred during the COVID-19 pandemic, the STP program implemented a conservative sick policy in which any camper with any symptoms of illness (e.g., fever, runny nose, cough) was required to stay home 24 hours until symptoms were resolved. Because of this policy, camper absences contributed substantially to the approximately 10% of the missing responses across the measurements of life satisfaction and social relationships. To account for missing data, the data were modeled with full information maximum likelihood.

Another notable limitation related to measurement is how social relationships were measured. Social relationships in the current study reflected mutual friendship nominations as identified through social network mapping procedures during the final week of the STP (Chamberlain et al., 2007; Kasari et al., 2012; Locke et al., 2010; Locke et al., 2013; Locke et al., 2017). Even though this measure of social relationships accounted for reciprocity of peer relationships, using a frequency count to capture social relationships places undue emphasis on quantity over quality of friendships, when research clearly indicates that quality of friendships is more important than quantity (Goswami, 2012; Park, 2004). Future research should account for friendship quality in addition to friendship quantity in understanding the relationship between changes in life satisfaction and social relationships within the context of the STP. Furthermore, the present study's measure of social relationships may have underestimated social relationships because of the reciprocal nature of mutual friendship nominations. Whether due to lack of consent to participate in research, absence related to illness, or an alternative reason, any children unable to participate in the final week of data collection limited the number of reciprocal friendships accounted for in the data because they could not be included in the mutual nomination count. In other words, not all reciprocal peer relationships occurring during the final week of the STP were captured by the measure.

While several studies have examined the validity evidence of the SLSS with children of varying abilities and disabilities (Ash & Huebner, 1998; Huebner & Alderman, 2003), a limitation of the present study is that there is limited validity evidence of using the SLSS with samples of children with ADHD and ASD specifically. The internal consistency of the current sample was evidenced as adequate across all participating children and within diagnostic sub-

groups. However, future research is needed to continue building validity and reliability evidence of the SLSS with neurodiverse populations of children.

Future Research

The current study is among the first to evaluate changes in life satisfaction during the STP intervention and explore various factors that predict these changes in life satisfaction. In addition to future research addressing the limitations of the present study, additional research is recommended to clarify and expand upon the findings. Specifically, the findings of this study bring up an important question: If diagnostic status and social relationships at the end of the STP do not significantly predict rates of changes in life satisfaction from week to week, then what predictors do predict rates of change in life satisfaction from week to week?

First, future research should examine additional demographics of children with ADHD and ASD to determine who experiences significantly more or less changes in life satisfaction during the STP. Research on a more diverse and representative sample with exploration of gender, race, and additional co-morbid disorders would be worthwhile in order to expand upon the present study, which focused on children exclusively with ADHD and/or ASD diagnoses who were majority white and male. It is important to examine whether these same patterns of change in life satisfaction exist across different and more diverse samples of children.

Second, future research is recommended to further explore the relationship between changes in life satisfaction and social relationships during the STP. Specifically, research should compare how baseline life satisfaction and changes in life satisfaction are related to outward friendship nominations (i.e., one-sided perceptions of peer relationships), inward friendship nominations (i.e., social status or popularity), and mutual friendship nominations (i.e., reciprocal peer relationships), along with considerations of friendship quality. Future research should

consider treating social relationships from week to week as a time-varying co-variant within the multilevel growth modeling of life satisfaction in order to capture how changes in social relationships evolve alongside and predict changes in life satisfaction.

Third, future research should consider examining whether changes in life satisfaction are significantly predicted by the behavioral changes occurring during the STP. While previous STP research has documented improvements in externalizing behaviors (Chronis et al., 2004; Coles et al., 2005; Mitchell et al., 2015; Mrug & Hodgens, 2008; Pelham et al., 2000; Pelham et al., 2012a) and prosocial behaviors (Mitchell et al., 2015; Mrug & Hodgens, 2008), changes in life satisfaction were not examined in conjunction with behavioral progress during the STP. Examining frequency of externalizing and prosocial behaviors as time-varying co-variants within life satisfaction growth models would further illuminate whether and how changes in behavior are related to changes in life satisfaction within the context of the STP.

Conclusion

This study was conducted to develop a better understanding of whether and how life satisfaction changes over time as children ages 8 to 12 with ADHD, ASD, and co-morbid ADHD and ASD participate in the STP intervention. Participating children, regardless of bunk membership, diagnostic status, and social relationships formed during the intervention, self-reported significant improvements in their life satisfaction from week to week. The evidence of these changes in life satisfaction is important given that children with ADHD and ASD tend to report less life satisfaction compared to their typically developing peers (Franke et al., 2019; García et al., 2021; Nadeau et al., 2015; Ogg et al., 2016). Therefore, it is valuable to know that the STP, with its emphasis on fostering social relationships, holds promise as a social and behavioral intervention in which life satisfaction can be developed.

This study also sought to better understand what variables, if any, significantly predicted these changes in life satisfaction reported by children ages 8 to 12 with ADHD and ASD participating in the STP. However, the results demonstrated that diagnostic status and social relationships were not statistically significant predictors of these changes in life satisfaction. Given these findings, an important question remains: What does significantly predict these changes in life satisfaction? Future research is needed to explore this question further.

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Table 1
Sample STP Daily Schedule

8:50am to 9:10am	Arrivals
9:10am to 9:30am	Morning Discussion
9:30am to 9:40am	Transition/Bathroom
9:40am to 10:30am	Board Games
10:30am to 10:45am	Snack/Transition/Bathroom
10:45am to 11:40am	Skills Drills
11:40am to 11:50am	Transition/Bathroom
11:50am to 12:10pm	Lunch
12:10am to 12:30pm	Recess
12:30pm to 12:40pm	Transition/Bathroom
12:40pm to 1:30pm	Sports Game
1:30pm to 1:45pm	Snack/Transition/Bathroom
1:45pm to 2:30pm	Counselor's Choice/Point Store
2:30pm to 2:40pm	Transition/Bathroom
2:40pm to 2:50pm	End of Day Discussion
2:50pm to 3:10pm	Departure

Table 2
Point System Categories and Point Values Awarded/Deducted

Positive Categories	Points Awarded
<i>Interval Categories</i>	
Following Activity Rules	50 points
Good Sportsmanship	25 points
Behavior Bonus	25 points
<i>Frequency Categories</i>	
Attention	10 points
Compliance	10 points
Helping a Peer	10 points
Sharing with a Peer	10 points
Contributing to a Group Discussion	10 points
Ignoring a Negative Stimulus	25 points
Negative Categories	Points Deducted
Violating Activity Rules	10 points
Poor Sportsmanship	10 points
<i>Negative Physical Categories</i>	
Intentional Aggression Toward a Peer or Toward a Staff Member	50 points
Unintentional Aggression Toward a Peer or Toward a Staff Member	50 points
Intentional Destruction of Property	50 points
Unintentional Destruction of Property	50 points
Noncompliance	20 points
Repeated Noncompliance	20 points
Stealing	50 points
Leaving the Activity Area Without Permission	50 points
<i>Negative Verbal Categories</i>	
Lying	20 points
Verbal Abuse to Staff	20 points
Name Calling/Teasing	20 points
Cursing/Swearing	20 points
Interruption	20 points
Complaining/Whining	20 points

Table 3
Zero-Order Disaggregated Correlations for Variables used in Analysis

Measure	<i>M</i>	<i>(SD)</i>	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
<i>Outcome</i>																	
1. LifeSat Week1	28.47	(6.95)	--														
2. LifeSat Week2	29.92	(6.53)	.71 ***	--													
3. LifeSat Week3	29.31	(6.73)	.68 ***	.74 ***	--												
4. LifeSat Week4	30.75	(6.38)	.50 ***	.63 ***	.66 ***	--											
5. LifeSat Week5	30.12	(6.86)	.45 ***	.63 ***	.68 ***	.75 ***	--										
<i>Predictors</i>																	
6. Bunk4	0.11	(0.32)	.09	.10	.05	-.02	-.01	--									
7. Bunk5	0.15	(0.36)	-.09	-.05	-.06	-.04	-.02	-.15	--								
8. Bunk6	0.14	(0.35)	-.05	-.14	-.04	.10	-.03	-.14	-.17	--							
9. Bunk7	0.15	(0.36)	.17	.15	.16	.17	.10	-.15	-.18	-.17	--						
10. Bunk8	0.15	(0.36)	-.10	-.08	-.10	-.23 *	-.13	-.15	-.18	-.17	-.18	--					
11. Bunk9	0.16	(0.37)	.21	.16	.08	.15	.22	-.16	-.18	-.18	-.18	-.18	--				
12. Bunk10	0.14	(0.35)	-.22 *	-.14	.24	-.11	-.10	-.14	-.17	-.16	-.17	-.17	-.18	--			
13. SocialRelationships	2.37	(1.73)	.23 *	.23	.24	.23	.15	-.20	-.29 *	.14	.14	-.23 *	.01	.43 ***	--		
14. ASDStatus	0.26	(0.44)	-.20	-.17	-.08	-.16	-.10	-.05	-.03	-.16	-.18	-.03	.16	.29 *	.07	--	
15. ADHDStatus	0.33	(0.47)	.05	.12	-.05	-.02	-.09	.05	.05	.07	.18	-.09	-.11	-.14	.13	-.42 ***	--
16. CoMorbidityStatus	0.40	(0.49)	.13	.03	.11	.17	.17	.00	-.02	.08	-.02	.12	-.04	-.12	-.19	-.49 ***	-.58 ***

Note. *N* = 87 campers measured at five timepoints: Week1, Week2, Week3, Week4, and Week5; LifeSat = life satisfaction, TimeLin = time linear (linear growth); SocialRelationships = mutual friendship nominations during Week5; categorical variables are dummy coded. Pearson's *r* reported.

* *p* < .05, ** *p* < .01, *** *p* < .001.

Table 4
Linear Growth Model Results for Life Satisfaction

Fixed Effects	Model 1					Model 2					Model 3				
	Coeff	SE	t	df	ES	Coeff	SE	t	df	ES	Coeff	SE	t	df	ES
Intercept (Baseline)	28.95	0.71	40.80	87	4.59 ***	28.92	0.68	42.84	86	4.82 ***	28.59	0.70	40.72	79	4.60 ***
Bunk5						-0.81	1.38	-0.59	85	-0.07	1.08	1.37	0.79	78	0.09
Bunk6						-0.61	1.43	-0.43	85	-0.05	-1.70	1.37	-1.24	79	-0.14
Bunk7						1.82	1.38	1.32	85	0.15	1.11	1.33	0.84	78	0.09
Bunk8						-2.10	1.39	-1.52	87	-0.17	-0.88	1.35	-0.65	80	-0.07
Bunk9						3.18	1.37	2.32	92	0.26 *	3.36	1.46	2.30	81	0.26 *
Bunk10						-2.14	1.43	-1.50	85	-0.17	-4.64	1.67	-2.79	78	-0.31 **
SocialRelationships											2.88	0.78	3.68	88	0.41 ***
ASDStatus											-1.52	1.15	-1.32	83	-0.15
ADHDStatus											0.14	0.98	0.14	81	0.02
Linear Growth	0.42	0.19	2.26	85	0.25 *	0.43	0.19	2.31	86	0.26 *	0.43	0.20	2.13	79	0.24 *
SocialRelationships											-0.14	0.20	-0.70	79	-0.08
ASDStatus											0.21	0.32	0.67	80	0.08
ADHDStatus											-0.38	0.27	-1.38	79	-0.16
Random Effects	Var					Var					Var				
Intercept (Baseline)	35.51					31.11					25.57				
Linear Growth	1.67					1.66					1.61				
Residual	11.62					11.62					11.92				
Model Fit															
Fixed Effects R ²	0.01					0.08					0.19				
Random Effects R ²	0.65					0.58					0.47				
BIC	2346.00					2372.00					2294.00				
Deviance (-2LL)	2310.00					2300.00					2188.00				
Residual df	377					371					348				
LRT Chi-square test	--					8.80					18.20 **				

Note. *N* = 87 campers measured at five timepoints (Week1, Week2, Week3, Week4, Week5); time coded in weeks from baseline (baseline = 0); LifeSat = life satisfaction; SocialRelationships = mutual friendship nominations in Week5; metrical predictors are standardized in z-scores and categorical predictors are effect coded. *ES* = effect size, calculated as the coefficient divided by the product of the standard error and square root of *N*. *R*² computed using r2mlm package in R. Model estimated with full information maximum likelihood using R lme4 and lmerTest packages.

* *p* < .05, ** *p* < .01, *** *p* < .001.

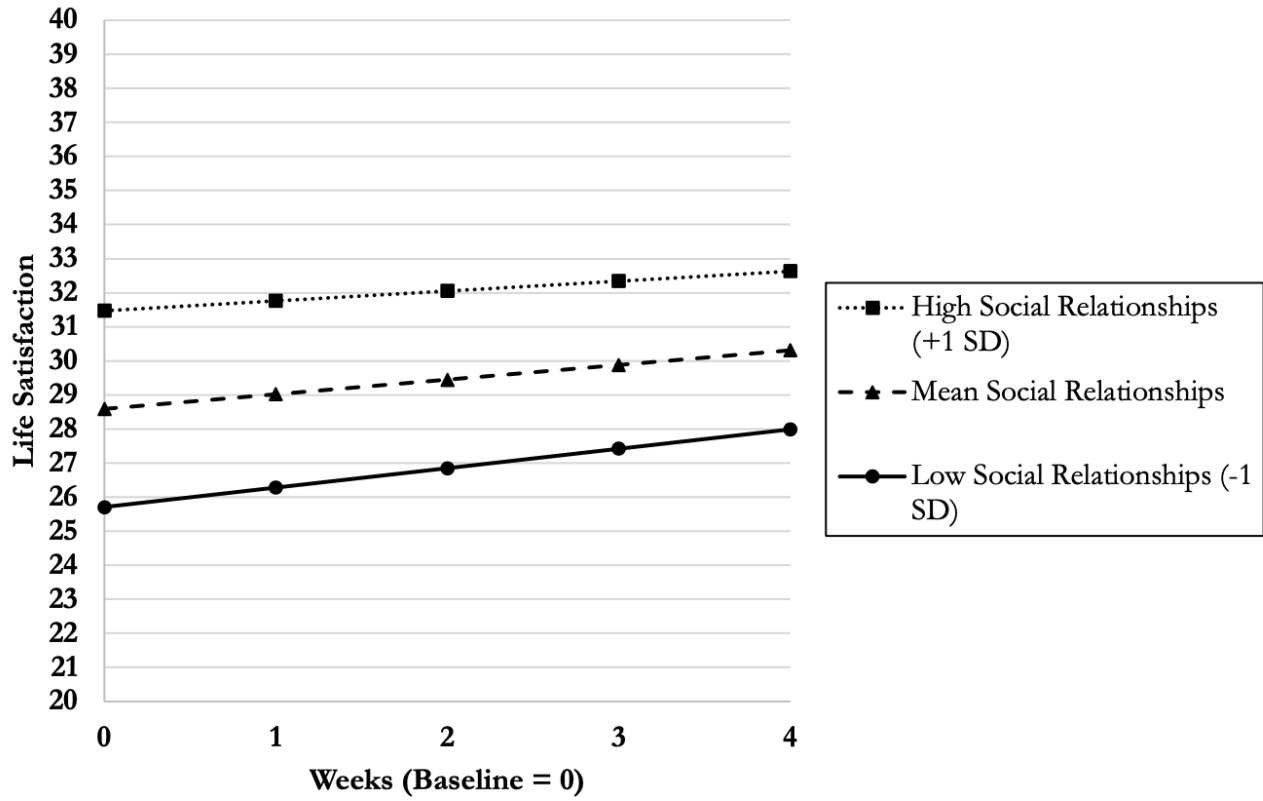


Figure 1. Predicted Change in Life Satisfaction Across Time, by Reciprocal Social Relationships by end of STP ($p > .05$)

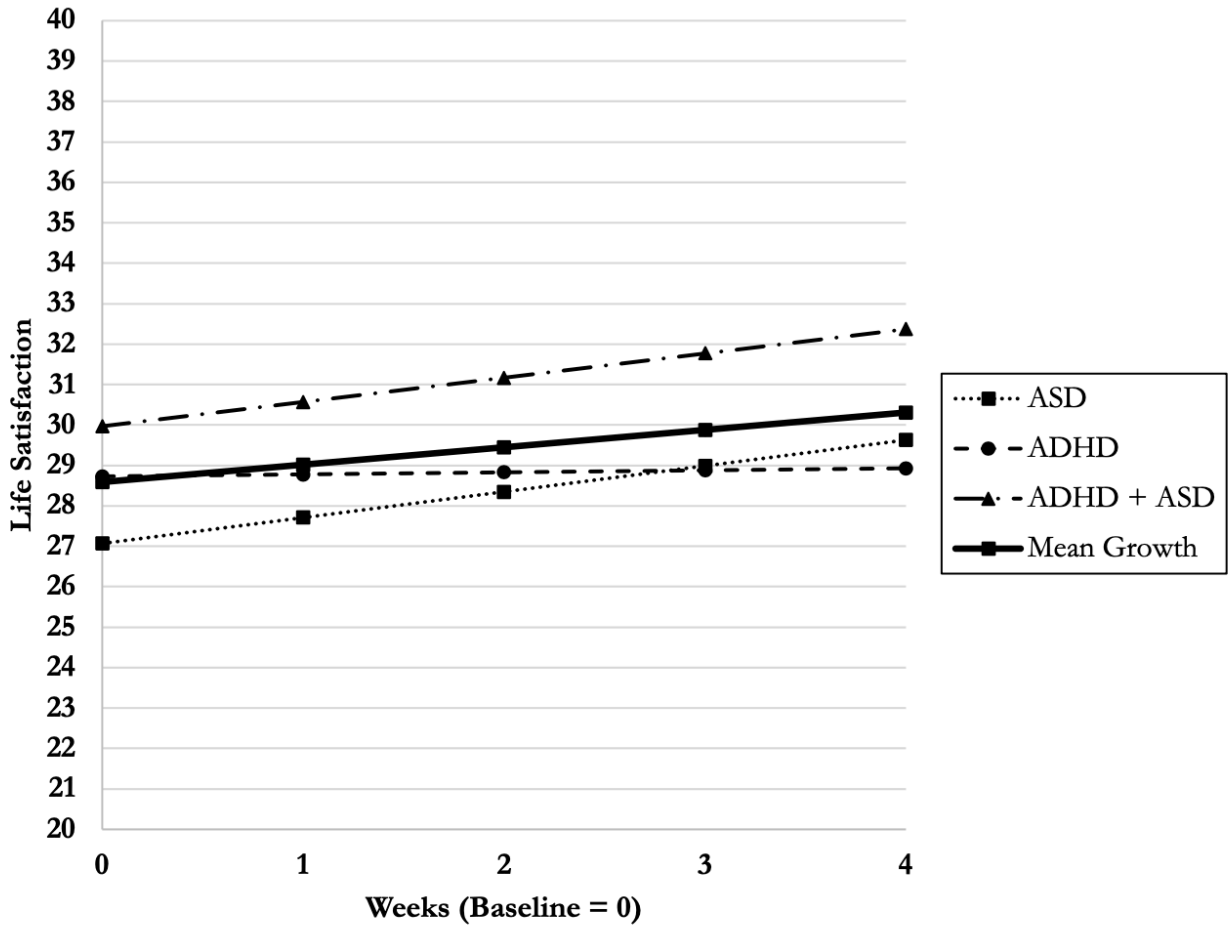


Figure 2. Predicted Change in Life Satisfaction Across Time, by Diagnostic Status ($p > .05$)