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LIFE SATISFACTION IN ADOLESCENTS WITH HIGH-FUNCTIONING AUTISM SPECTRUM DISORDER

by

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ABSTRACT

The present study was informed by the Emerging Disability Paradigm, which emphasizes the importance of research regarding positive experiences, personality, and social relationships for individuals with disabilities (Schalock, 2004). The purpose of this study was to provide preliminary evidence regarding the reliability and validity of measures of self-reported psychosocial assets and life satisfaction (LS) for adolescents with high-functioning autism spectrum disorder (HFA). Additional purposes included identifying the overall levels of general and domain-specific LS within adolescents with HFA, comparing these levels to those of a sample of typically developing adolescents, and describing the relation between psychosocial assets and LS for this sample. Sixty-four adolescents with HFA and their caregivers completed a series of questionnaires assessing LS and psychosocial assets. The results of this study provide preliminary support for the internal consistency reliability and validity of some positive psychology measures in adolescents with HFA. Additionally, the results indicated that youth with HFA reported moderate to high levels of LS, although these levels were significantly lower than those reported by their typically developing peers. Finally, adolescent age significantly moderated the relation between self-reported LS and self-reported Self-Awareness, Persistence, Empathy, and Family Coherence. However, age did not moderate the relationship between self-reported LS and caregiver-reported assets for youth with HFA. Implications for research and clinical practice are discussed.

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CHAPTER 1

INTRODUCTION

The purpose of this study was to provide preliminary support for the validity and reliability of measures of life satisfaction (LS) and psychosocial assets (e.g., gratitude, self-efficacy, peer support) in adolescents with high-functioning autism spectrum disorder (HFA), as well as to assess levels of LS and examine the relations between assets and LS within this population. Research has consistently demonstrated that children and adolescents with autism spectrum disorder (ASD) experience increased risk for externalizing problems, including aggression and oppositional behavior, as well as internalizing problems, including anxiety and depressive symptoms, when compared to their typically developing (TD) peers without ASD (Boonen et al., 2014; Simonoff et al., 2008). However, research has failed to adequately examine positive outcomes, such as LS, and their predictors within this population. Such positive variables should also be examined in order to provide a more comprehensive view of the functioning of adolescents with HFA.

Autism Spectrum Disorder (ASD)

ASD is a neurodevelopmental disability that is observable in early childhood, and it is characterized by deficits in social communication and interaction, such as impaired eye contact or difficulty making friendships, as well as restricted, repetitive behaviors or interests, such as repetitively lining up items [American Psychiatric Association (APA), 2013]. The Centers for Disease Control and Prevention (CDC; 2014) estimate that 14.70 out of every 1,000 8-year-old children in the United States have been diagnosed with ASD. ASD affects males more than females, with a prevalence of 23.70 for every 1,000 8-year-old males compared to 5.30 for every 1,000 8-year-old females (CDC, 2014). While there is no single established definition for HFA, individuals with ASD who have full-scale intelligence quotients (FSIQ) of 70 or greater are generally classified as having HFA (Dykens & Lense, 2011). According to the CDC (2014), 69.00% of individuals with ASD satisfy this criterion for HFA.

The Emerging Disability Paradigm

The present study is informed by the Emerging Disability Paradigm, which suggests that psychological research and practice should emphasize positive experiences, positive personality, and people and experiences embedded within social contexts for individuals with disabilities, in addition to researching and intervening on areas of deficit (Schalock, 2004). The positive experiences domain refers to positive emotions and LS, which is one’s cognitive appraisal of satisfaction with overall life circumstances, as well as with various domains of life, including family, friends, school, and neighborhood (Huebner, 1994). The positive personality domain refers to positive characteristics such as self-efficacy, gratitude, and optimism. These psychosocial assets are strong predictors of LS within TD adolescents, and this relationship is hypothesized to strengthen as adolescents age due to the development of increasingly complex cognitive processes (Furlong, You, Renshaw, Smith, & O’Malley 2014). Psychosocial assets may be amenable to intervention to improve overall LS (Furlong et al., 2014; Proctor et al., 2011). Finally, the social context domain refers to positive relationships and social support from family, friends, and others; high levels of support are also strong predictors of LS within TD adolescents (Furlong et al., 2014). Research that emphasizes functioning across these three domains provides a more comprehensive perspective of adolescents with HFA than does a deficit-focused model, and it may provide practical information regarding the promotion of optimal outcomes within this population.

LS in Adolescents

The construct of LS falls within the positive experiences domain of The Emerging Disability Paradigm, as it addresses an individuals' subjective appraisal of their life (Schalock, 2004). For children and adolescents, LS may be measured as an individual's satisfaction with specific dimensions (e.g., family, friends, school, neighborhood, self) or as an overall appraisal of life circumstances (Huebner, 1994). Previous research suggests that LS is related to a variety of positive outcomes for adolescents. Suldo and Huebner (2004) found that LS moderated the relation between stressful life events and externalizing behavior problems for adolescents, such that high levels of LS buffered students from the negative effects of stressful events. In addition to being protective against externalizing behaviors, higher levels of LS may serve as a protective factor against internalizing problems for young adolescent boys (Lyons, Otis, Huebner, & Hills, 2014). In addition to being protective against negative outcomes, LS may also be an indicator of adolescent well-being and positive outcomes. In a longitudinal study of pre-adolescents' LS, Tolan and Larsen (2014) found that students who maintained high levels of LS for six months were rated by their teachers as having greater social skills, greater leadership skills, and lower levels of aggressive behavior than students whose LS decreased over time. Taken together, these findings indicate that LS is both an important protective factor and an indicator of positive functioning for TD adolescents.

While the research clearly demonstrates the benefits of high levels of LS for TD adolescents, previous studies also indicate that adolescents' self-reported LS and caregivers estimates of adolescents' LS may moderately agree. Within a sample of TD adolescents, for example, Dew and Huebner (1994) found a moderate correlation (r = 0.48) between caregiver estimates and adolescents' self-reported LS. Similarly, Gilman and Huebner (1997) detected a correlation of 0.54 for caregiver estimates and middle school students' self-reported LS. These effect sizes suggest that some caregivers and adolescents have different perspectives regarding youth's LS, and they also provide a value by which to compare adolescent-caregiver agreement when investigating the utility of LS measures with adolescents with HFA.

LS in Adolescents with ASD. While there is extensive research investigating LS in youth without disabilities, there is limited research examining this construct for those with disabilities, particularly HFA. One previous study conducted with youth with a variety of disabilities suggests that youth with chronic conditions, including ASD, report moderate to high levels of LS (McDougall, Wright, Nichols, & Miller, 2012). Four hundred children and adolescents (191 females), including 35 with ASD, and their parents completed the Students' Life Satisfaction Scale (SLSS), which assesses global LS, and the Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS), which assesses domain-specific LS. Self-reported LS of youth with ASD appeared to be high, with a mean score of 31.57 (*SD* = 6.26) of a possible 42 points on the SLSS and a mean score of 29.94 (*SD* = 3.59) of a possible 35 points on the BMSLSS. This indicates that youth with ASD endorsed a mean score of 4.51 on the SLSS, which corresponds with the response options indicating mild to moderate agreement with the items. They also obtained a mean score of 5.99 on the BMSLSS, which corresponds with the response options for “mostly satisfied” and “pleased” with the domains assessed within this measure (e.g., friends, family, school, neighborhood, self). Regardless of disability, youth reported significantly higher LS than their parents’ estimates of their LS, with parents reporting a mean score of 29.25 (*SD* = 6.62) on the SLSS and 27.24 (*SD* = 4.55) on the BMSLSS. Despite this difference, parent and child reports were highly correlated (r = 0.64, $p < .01$; McDougall et al., 2012). This correlation provides preliminary support for the concurrent validity of self-reported LS for children and adolescents with disabilities, including ASD, and it is consistent with the effect size for caregiver-adolescent agreement within TD populations (Dew & Huebner, 1994; Gilman & Huebner, 1997). Furthermore, it suggests that parents may underestimate the LS of youth with disabilities.

In a similar study assessing self and parent-reported well-being in Iceland, 96 children and adolescents with HFA (12 females) reported significantly lower levels of well-being compared to a TD control group on the KIDSCREEN-27 within the domains of physical well-being ($\eta^2 = 0.25$), psychological well-being ($\eta^2 = 0.13$), autonomy and parent relations ($\eta^2 = 0.15$), social support and peers ($\eta^2 = 0.24$), and school environment ($\eta^2 = 0.10$; Egilson, Olafsdóttir, Leósdóttir, & Saemundsen, 2017). Within this measure, psychological well-being was measured by seven items (e.g., “Has your life been enjoyable?”), and participants responded on a 5-point Likert scale (The KIDSCREEN Group Europe, 2006). Despite reporting significantly lower levels of well-being than their TD peers, those with HFA also reported higher levels of well-being than their parents estimated, particularly related to physical well-being ($\eta^2 = 0.28$), psychological well-being ($\eta^2 = 0.24$), social support and peers ($\eta^2 = 0.23$), and school environment ($\eta^2 = 0.18$; Egilson et al., 2017). This pattern of results is consistent with that found by McDougall and colleagues (2012).

Psychosocial Assets in Adolescents

Like the Emerging Disability Paradigm, research regarding psychosocial assets emerged from the field of positive psychology, which emphasizes the study of positive indicators of functioning in addition to mental health problems (Furlong et al., 2014). While LS is defined as a cognitive, subjective appraisal of one's satisfaction with life (Huebner, 1994), psychosocial assets are defined as either internal (e.g., gratitude, optimism, zest) or external strengths (e.g., parent, friend, school support; Furlong, 2014). While internal assets align with the positive personality domain of the Emerging Disability Paradigm, external assets align with the social contexts domain. Previous research suggests that, taken together, psychosocial assets are related to overall LS (e.g., Furlong et al., 2014).

Furlong and colleagues (2014) developed the Social-Emotional Health Survey (SEHS) as a brief measure of 12 psychosocial assets (e.g., self-efficacy, gratitude, zest, peer support, etc.) in adolescents. The 12 asset subscales are proposed to load onto four higher order factors (e.g., Belief-in-Self, Belief-in-Others, Engaged Living, Emotional Competence), as well as one second-order factor. Furlong and colleagues (2015) administered the SEHS with 4,189 students between 13 and 18 years of age in California, and the results of confirmatory factor analysis indicated that the data aligned with the 12 asset subscales. This finding indicated that each subscale functioned as a distinct latent variable. Further, the subscales loaded onto the four higher-order domains and second-order factor. Path models indicated that there was a strong, positive relation between SEHS scores and LS (Furlong et al., 2014). You and colleagues (2014) sought to replicate these findings with a new sample of adolescents; demographic data indicated that the majority of these students were economically disadvantaged, as defined by the state of California. Consistent with Furlong and colleagues' (2014) findings, confirmatory factor analysis supported the hypothesized factor structure of the SEHS (You et al., 2014). Further, the results of this study found that scores on the SEHS were strong, negative predictors of internalizing problems and school problems (You et al., 2014). In a further replication with adolescents from five distinct cultural groups (e.g., Asian, Black, Blended, Latino/a, Native American, White), You, Furlong, Felix, and O'Malley (2015) demonstrated that the SEHS factor structure was consistent with previous research, which the 12 subscales loading onto factors and four higher-order factors. Although the factor structure and concurrent validity of the SEHS was supported within these studies, research has not yet examined caregiver-adolescent reports on the SEHS.

Latent mean analyses led both Furlong and colleagues (2014) and You and colleagues (2014) to hypothesize that the relationship between psychosocial assets and LS may strengthen as TD adolescents age. This developmental change may occur as adolescents' cognitions and social relationships become more complex. Given the qualitatively different cognitive and social development of youth with HFA, the relation between psychosocial assets, age, and LS should be investigated to determine whether age moderates the relation between psychosocial assets and LS within this population.

Psychosocial assets and LS in adolescents with ASD. Although research has not yet used the SEHS or another measure to comprehensively assess psychosocial assets in adolescents with ASD/HFA, some limited research has examined the relations between individual assets (e.g., social support, self-efficacy) and LS for adolescents with ASD. Pham and Murray (2016) assessed LS and social support for 228 high school students with disabilities (80 females), 8.00% of whom had ASD. Within this sample, there was a positive relation between students' perceived social support and overall LS, as measured by the Multidimensional Students' Life Satisfaction Scale (MSLSS; $\Delta R^2 = 0.29$, $p < .05$). Furthermore, teacher-child support was a significant predictor of LS even after controlling for parent-child support (parent-child $\Delta R^2 = 0.20$, $p < .05$, teacher-child $\Delta R^2 = 0.07$, $p < .05$). This finding suggests that varied forms of social support may be important contributors to LS for adolescents with disabilities, including ASD. Similarly, McDougall and Wright (2017) assessed the predictors of LS over one year for youth with chronic conditions ($N = 498$, 193 females, ASD $n = 38$). Although all effect sizes were within the small to medium range, the results of this study indicated found self-reported family and teacher support at baseline significantly predicted later satisfaction with self, close friend support predicted friend satisfaction, family support predicted school and neighborhood satisfaction, school belongingness/safety predicted neighborhood satisfaction, and classmate support predicted overall LS. While the results of this study suggest that psychosocial assets relate to LS over time, the authors failed to control for baseline levels of LS.

Feldhaus, Koglin, Devermann, Logemann, and Lorenz (2015) examined the relation between the asset of self-efficacy, or an individual's belief in his or her own ability to carry out a task or achieve a goal, and LS for adolescent and young adult males with ASD and their TD peers. The results of this study indicated that self-efficacy was positively related to LS in both groups. However, the relation between self-efficacy and LS was significantly stronger for males with ASD ($r = 0.57$, $p < .05$) than for TD males ($r = 0.33$, $p < .05$). This result indicates that self-efficacy may have a more bolstering effect on LS for individuals with ASD than for their TD peers. These findings suggest that psychosocial assets predict LS in adolescents with ASD, just as they do for TD adolescents (Furlong et al., 2014). However, given the evidence that assets may differentially affect LS in adolescents with ASD and their TD peers (e.g., Feldhaus et al., 2015), a greater variety of assets should be examined in order to determine which assets are the strongest correlates of LS within adolescents with ASD.

The Ability to Accurately Self-Report in ASD

Research regarding LS for youth with ASD may be limited due to challenges with reliable and valid measurement of this construct. Due to difficulties with cognitive flexibility and perspective-taking, some youth with ASD may lack insight into their cognitive processes; such difficulties would adversely impact the reliability and validity of self-report measures. For this reason, individuals with HFA, whose cognitive abilities fall within the average range, may provide more reliable and valid reports of their emotional and cognitive experiences than do lower-functioning youth with ASD.

Some psychometric data support the reliability of self-reported information for adolescents with ASD. In a study of LS for adolescent and young adult males with ASD, Cronbach’s alpha for the LS measure developed for the study was .90 for the ASD group, which indicates that individuals with ASD provided internally consistent reports of LS on this measure (Feldhaus, et al., 2015). Capps, Sigman, and Yirmiya (1995) found a significant negative relation between self-reported social competence of youth with ASD and parent-reported social skills, as measured by the Vineland Adaptive Behavior Scales ($r = -0.48$, $p < .05$), as well as between self-reported social competence and overall intelligence test scores ($r = -0.51$, $p < .05$). These findings are consistent with research that suggests that youth with ASD and greater insight may be more aware of their social difficulties than those with less insight (e.g., Bellini, 2006). In a similar study of self-perceived social competence in children with HFA, the HFA group rated themselves as significantly lower than the TD group on social competence, indicating awareness of their social deficits ($d = 0.64$). However, children with HFA rated themselves as more socially competent than did their parents ($d = 1.87$) and teachers ($d = 0.81$), which suggests that children's awareness of their behavior was limited when compared to that of other informants (Vickerstaff et al., 2007). In another study of self-concept and social skills in youth with ASD, children's self-reported social skills were positively related to parental reports of the number of their children's friends, yielding evidence for the concurrent validity of self-reported social skills ($r = 0.34$, $p < .05$; Viecili, Weiss, Lunsky, & Shupak, 2010). Although the researchers did not conduct behavioral observations to confirm children's reports of their own social skills, it is logical that children with better social skills would have more friends than children with poorer social skills. Taken together, these findings suggest that some children and adolescents with ASD possess the ability to provide an accurate report of their behavior.

Qualitative research also suggests that adolescents with HFA may possess adequate insight into their thoughts, emotional experiences, and behavior in order to provide valid self-reports. Farmer, Robertson, Kenny, and Siitarinen (2007) examined the development of self-concept through interviews with adolescents with HFA, adolescents with speech-language impairments, and TD adolescents. Adolescents with HFA described themselves in terms of their social relationships and roles less frequently than their TD peers. However, they discussed their own emotional experiences, cognitions, beliefs, and wishes at a higher rate than both peer groups, which indicated adequate understanding of their own attitudes and emotional experiences. Similarly, Losh and Capps (2006) conducted interviews with TD youth and those with HFA who were between 7 and 13 years of age regarding their emotional experiences. Participants were presented with emotion words and asked to discuss a time that they had felt the specified emotion. Although those children with HFA provided appropriately detailed narratives of times that they experienced simple emotions (e.g., happy, sad), they experienced more difficulty describing times they had felt complex, social emotions (e.g., proud, embarrassed, guilty) compared to TD participants. Furthermore, although they were able to recognize the valence of complex emotions, such as describing pride as a positive emotion, they had difficulty providing sufficient elaboration to indicate that they understood the complexity of the emotion. This discrepancy was unrelated to their overall intelligence test scores and did not occur when participants were asked to discuss non-emotional words (e.g., sick, tired). This finding indicates that youth with HFA may be accurate reporters of some subjective experiences, but may have more difficulty with complex subjective experiences, particularly those that occur in a social context, such as feelings of embarrassment, guilt, or pride. For this reason, adolescents' self-reports should be compared with those of parents or caregivers in order to provide evidence for concurrent validity.

The Current Study

The purpose of the current study was to investigate the psychometric properties for measures of life satisfaction (LS) and psychosocial assets (e.g., gratitude, self-efficacy, peer support) in adolescents with HFA, to describe levels of LS within this population and compare them to a TD sample, and to observe the predictive relations between psychosocial assets and LS. In this study, a self-report questionnaire was used to measure LS and psychosocial assets in adolescents with HFA. Caregiver estimates of adolescents' psychosocial assets and LS were also obtained. The following eight research questions and corresponding hypotheses were addressed in this study. The first two research questions sought to provide preliminary evidence for the reliability and validity of measures of psychosocial assets and LS for adolescents with HFA, while the subsequent research questions assessed the levels of LS compared to TD peers and the correlates of LS within this population.

1. What are the internal consistency reliability coefficients for the LS and asset measures among adolescents with ASD? Given previous research demonstrating that youth with HFA have provided internally reliable reports of their thoughts and feelings (Feldhaus, et al., 2015), it was hypothesized that Cronbach's alphas for self-reported measures of LS and psychosocial assets would meet or exceed 0.80. This value indicates substantial internal consistency for use of a measure for research purposes (Ponterotto & Ruckdeschel, 2007; Shrout, 1998).

2. What are the relations between a) self-reported LS and caregiver estimates of adolescents' LS, and b) self-reported assets and caregiver estimates of adolescents' assets? Based on McDougall and colleagues' (2012) findings of a positive, moderate correlation between self-reported and caregiver-estimated LS in youth with ASD, it was expected that there would be a positive, moderate correlation between self and caregiver reports of adolescents' LS and psychosocial assets.
3. What are the absolute levels of LS reported by adolescents with HFA? Consistent with McDougall and colleagues' (2012) findings of moderate to high levels of LS in youth with ASD, it was hypothesized that adolescents with HFA would report moderate to high levels of LS.
4. Do the levels of LS reported by adolescents with HFA differ from that of a normative sample of TD adolescents from an extant data base? It was hypothesized that adolescents with HFA would report lower levels of LS than would their TD peers, as was found in Egilson and colleagues' (2017) comparison of self-reported well-being between a sample of TD youth and those with ASD.
5. What are the relations between self-reported assets and self-reported LS among adolescents with HFA? Given Feldhaus and colleagues' (2015) finding of a strong, positive relation between self-efficacy and LS in adolescents with ASD, as well as the well-supported positive relation between assets and LS in TD youth (Furlong et al., 2014), it was hypothesized that there would be a moderate, positive correlation between self-reported psychosocial assets and LS.

6. What are the relations between caregiver reports of adolescents’ assets and self-reported LS among adolescents with HFA? Based on previous findings which noted a significant relation between caregiver and self-reported LS in youth with ASD (McDougall et al., 2012), as well as the expected positive correlation between self-reported assets and LS, it was expected that there would be a moderate, positive correlation between caregiver estimates of adolescents’ assets and adolescents’ self-reported LS.
7. Does age moderate the relation among self-reported assets and self-reported LS among adolescents with HFA? Furlong and colleagues (2014) assert that the relation between assets and LS may become stronger as adolescents age due to developmental changes in cognitive styles. For this reason, it was hypothesized that age would significantly moderate the relation between self-reported assets and LS.
8. Does adolescent age moderate the relation among caregiver estimates of adolescents’ assets and self-reported LS among adolescents with ASD? Based on the expected differential relation between psychosocial assets and LS as adolescents age, it was expected that adolescent age would moderate the relation between caregivers’ estimates of assets and adolescents’ self-reported LS.

CHAPTER 2

METHOD

Participants and Procedures

A priori power analyses were conducted to estimate the sample size needed to detect the hypothesized difference in LS between adolescents with HFA and their TD peers, as well as the main effect of psychosocial assets on LS in adolescents with HFA. To detect a moderate effect size for the difference in LS in TD adolescents and those with HFA with 80% power and alpha of .05, such as that in psychological well-being found by Egilson and colleagues (2017; $\eta^2 = 0.24$), a sample size of 64 for the HFA group would be necessary. To determine a moderate prediction effect of psychosocial assets on LS, such as that found by Feldhaus and colleagues' (2015) study of the relation between self-efficacy and LS in adolescents and young adults with ASD, ($r = 0.57$, $p < .05$), a sample size of 19 was required. The larger sample size of 64 was established as the recruitment goal.

Two recruitment methods were employed to collect data for the present study. For the first method, caregiver-adolescent dyads ($n = 17$) were recruited from a summer camp for children with HFA in the Southeastern United States. During this round of data collection, dyads independently completed paper questionnaires. The questionnaire included all measures used in the second phase of data collection, except the Social Communication Questionnaire and caregiver demographic information (e.g., caregiver age, race).

For the second recruitment method, an invitation to participate was submitted to national ASD advocacy organizations, state-level ASD advocacy organizations from each of the 50 United States of America, ASD-related message boards, and ASD-related social media pages. Flyers including the primary investigator's contact information and a website for the electronic questionnaire were also posted at doctors' offices, psychology clinics, and other various community locations (e.g., libraries, churches, coffee shops) in the Southeastern United States. Participants who responded received the option to complete a secure on-line questionnaire or to complete a paper questionnaire at a mutually agreed-upon location; all dyads in this round of data collection (*n* = 63) chose to complete the electronic questionnaire. Prior research has presented both parents of youth with ASD and adolescents with the option to complete questionnaires in-person or on-line (e.g., Miller, Schreck, Mulick, & Butter, 2012; Raat et al., 2007). Raat and colleagues (2007) conducted a randomized trial comparing the reliability and validity of on-line and traditional paper assessments for self-reported quality of life in adolescents using the Child Health Questionnaire – Child Form. They found that participants obtained significantly different scores on paper questionnaires on only four of the 12 subscales, and the effect sizes for these differences were small.

The first part of the electronic questionnaire included a description of the study and an invitation to participate. The survey then prompted the caregiver to complete the first portion of the survey, which included demographic information and caregiver questionnaires. Once the caregiver portion was complete, a new screen prompted the caregiver to ask the adolescent to independently complete the next portion of the questionnaire. The adolescent questionnaire began on the next screen of the website.

After participants completed the questionnaire, they had the opportunity to provide their email address to enter a drawing for two of eight $25.00 Amazon.com gift cards (i.e., both members of four winning dyads received a $25 gift card). Email address was not associated with responses to the questionnaire items.

Participants were required to be between 13 and 18 years of age and have a prior diagnosis of ASD. To ensure that adolescents had the cognitive ability to read and respond to the questionnaire items, adolescent participants were required to receive the majority of their education in the general education setting or receive resource support, rather than receiving education in a self-contained setting. Sixteen caregivers indicated that adolescents primarily received education in a self-contained classroom setting on a screening item, and thus did not complete the remainder of the questionnaire. Additionally, the Social Communication Questionnaire (SCQ) was employed to confirm ASD symptoms in participants during the second round of data collection. The SCQ uses a cut-off score of 15 to indicate whether an individual possesses symptoms that are consistent with ASD (Rutter, Bailey, & Lord, 2003). Two additional participants received SCQ scores below the cut-off of 15, and their data were thus excluded from analyses.

After excluding 16 dyads in which adolescents were educated in self-contained settings and two dyads in which adolescents scored below the ASD cut-off on the SCQ, 62 caregivers participated in the survey across both recruitment methods. Based on the date of survey completion, it was estimated that 22.06% of respondents to the electronic survey were recruited locally, while 77.94% were recruited nationally. Of the final sample, which combined both recruitment methods, 87.20% of caregivers were biological parents of the target adolescent, 6.40% were adoptive parents, and 6.40% were legal guardians. Caregivers' mean age was 44.94 (*SD* = 8.50), and 95.70% of caregivers were female. Of the caregiver sample, 58.50% were Caucasian/White, 3.10% were Asian, 3.10% were African American/Black, 1.50% were American Indian/Alaskan, 1.50% were Hispanic/Latino, and 1.50% were Bi-racial. Additionally, 3.10% of caregivers identified as another race, and 27.70% did not report their race. The mean SCQ score of the final sample of adolescents was 22.42 (*SD* = 5.77), and the mean age of ASD diagnosis was 7.81 years (*SD* = 4.97), according to parent report. Caregivers reported that 52.70% of the sample was diagnosed with ASD by a pediatrician or other medical doctor, 41.80% was diagnosed by a psychologist, and 5.50% was diagnosed by another professional.

The final adolescent sample was 26.20% female and 73.80% male, which is consistent with the higher prevalence of ASD in males than in females (CDC, 2014). The mean adolescent age was 15.25 (*SD* = 1.93). The adolescent sample was identified as 72.30% Caucasian/White, 9.20% African-American/Black, 6.2% Bi-racial, 4.60% Asian, and 3.10% Hispanic/Latino. Additionally, 3.10% identified as another race, and one adolescent's race was not disclosed. Compared to youth with ASD in the United States (CDC, 2014), Caucasian/White youth appear to be overrepresented in the present study's sample. To estimate socioeconomic status, caregivers indicated whether students received free or reduced-cost lunch at school, and 62.90% of respondents indicated that they did not receive free or reduced-cost lunch. This indicates that the participants may be of higher socioeconomic status than the total population of the United States, as 52.00% of school-aged children in the United States received free or reduced-cost lunch during the most recent national assessment (National Center for Education Statistics, 2015, Table 204.01).

Comparison Sample

An extant data set served as the TD comparison sample. These data were collected as part of an epidemiological study of emotional and behavioral symptoms of students in kindergarten through twelfth grade in the Southeastern United States. Participants were recruited through a diverse school district. In the first phase of this study, teachers in the school district rated emotional and behavioral symptoms for 76.70% of the 10,500 students who were enrolled in the district. During the second phase, 241 students were selected using stratified randomization procedures, and they completed a two-hour assessment, in which they completed the BMSLSS and several additional measures. For the present study's comparison sample, only students between 13 and 18 years of age who did not receive special education services were included (*n* = 67). The mean age for the TD comparison sample in the present study was 14.96 (*SD* = 1.71). Of the sample, 53.73% was female. Additionally, the comparison sample was identified as 44.78% White, 35.82% African American/Black, 14.93% Bi-racial, 1.49% Hispanic/Latino, and 1.49% American Indian/Alaskan Native.

Measures

All measures, except for the demographic information, were presented to both caregivers and adolescents. Adolescents were asked to report on their own subjective experiences, while caregivers were asked to report about their perceptions of the target adolescents' experiences. All measures are presented in Appendix A.

Demographic Information. Caregivers were asked to provide demographic information regarding their relation to the adolescent (e.g., biological parent, adoptive parent, stepparent, other). In the second phase of data collection, caregivers also provided their own age, gender, and race. Caregivers also reported adolescents' age, gender, race/ethnicity, free/reduced lunch status, and whether the adolescent received the majority of his/her education in the general education setting, general education setting with resource support, or within a self-contained classroom. Finally, parents were asked to report the age at which the adolescent was first diagnosed with ASD and whether a medical doctor, psychologist, or other professional provided this diagnosis.

Social Communication Questionnaire – Lifetime Form (SCQ; Rutter, Bailey, & Lord, 2003). When the second recruitment method was conducted, caregivers completed the SCQ to assess adolescents' behaviors associated with ASD. The SCQ is a 40-item screening tool for caregivers to complete that assesses lifetime symptoms of ASD in individuals who are 4 years of age and older. The SCQ is based on the questions that comprise the Autism Diagnostic Interview – Revised (ADI-R), which is the "gold standard" interview for the diagnosis of ASD. If an individual's score on the SCQ exceeds the cut-off value of 15, it suggests that ASD is an area of concern for this individual (Rutter et al., 2003). According to the standardization sample, Cronbach's alpha for the whole scale is 0.90, and it loads onto four factors: social interaction, communication, abnormal language, and stereotyped behavior (Rutter et al., 2003). Scores on the SCQ are strongly correlated with those on the ADI-R, and the SCQ discriminates between ASD and intellectual disabilities in youth (Berument, Rutter, Lord, Pickles, & Bailey, 1999). Within the present study, Cronbach's alpha for the SCQ was 0.78, which is lower than that found in the standardization sample.

Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS; Seligson, Huebner, & Valois, 2003). The BMSLSS is a 6-item scale that assesses middle and high school students' satisfaction with various domains of life, such as family, friends, school, neighborhood, and self. Sample items include, "I would describe my satisfaction with my friendships as…" Responses are indicated on a 7-point Likert scale, with response options ranges from "Terrible" to "Delighted;" higher scores indicate greater levels of LS (Seligson et al., 2003). Prior research has demonstrated a Cronbach's alpha value of 0.75 for this scale, and it also suggests a strong relationship between the BMSLSS and both the Multidimensional Students' Life Satisfaction Scale and the Students' Life Satisfaction Scale (Seligson et al., 2003).

Social-Emotional Health Survey for Secondary School Students (SEHS; Furlong et al., 2014). The SEHS is a 36-item measure that assesses social skills, emotional skills, and positive psychological traits, which are termed psychosocial assets, in adolescents between 13 and 18 years of age. According to Furlong and colleagues (2014), the SEHS may be useful as a screening tool to identify levels of psychosocial assets within adolescents, as well as to monitor progress within group or individual treatment to enhance psychosocial assets. The scale contains four asset domains, which are each made up of three subscales. The Belief-in-Self domain consists of the Self-Efficacy, Self-Awareness, and Persistence subscales. The Belief-in-Others domain is comprised of School Support, Peer Support, and Family Coherence. The Emotional Competence domain is comprised of Emotion Regulation, Empathy, and Self-Control. The Engaged Living domain is comprised of Gratitude, Zest, and Optimism. A sample Belief-in-Others item is, "I have a friend my age who talks with me about my problems," and response options fall on a 4-point Likert scale ranging from "not at all true of me" to "very much true of me." Greater scores indicate greater levels of assets. While the majority of the subscales ask adolescents to report on their general thoughts, feelings, and behavior, the Zest and Gratitude subscales ask adolescents to report how they feel at the moment “right now” (Furlong et al., 2014). Confirmatory factor analysis indicates that the 12 asset subscales load onto the four domains, and these four domains also load onto a second-order factor, termed covitality (Furlong et al., 2014). In previous research with racially diverse groups of adolescents, Cronbach’s alpha for all items of the SEHS ranges from 0.95 to 0.96 (You et al., 2015). With regard to predictive validity, students’ scores on the SEHS are strong predictors of LS (Furlong et al., 2014). Furthermore, scores on the SEHS are negatively related to self-reported psychological distress (You et al., 2014).

Plan for Data Analysis

Prior to combining data collected from both recruitment methods for analyses, simple regressions were conducted to determine whether recruitment method significantly predicted the primary study variables (e.g., caregiver and adolescent reports of LS and psychosocial assets). Recruitment method did not predict adolescents’ self-reported assets [$F(1, 46) = 0.10$, $p > .05$)] or LS [$F(1, 45) = 0.92$, $p > .05$)], nor did it predict caregivers’ estimate of adolescents’ LS [$F(1, 48) = 0.01$, $p > .05$)] or assets [$F(1, 48) = 2.08$, $p > .05$)]. As a result, data from both recruitment methods were combined for all subsequent analyses.

Before quantitative analyses were conducted, scatter plots of the primary study variables were visually examined for normality and outliers. For caregiver and adolescent reports of LS and psychosocial assets, data appeared to follow a normal curve, and no outliers were observed. For both caregiver estimates and adolescent reports of psychosocial assets and LS, the curves appeared to be negatively skewed. Missingness was also assessed. Sixteen adolescents failed to respond to the adolescent portion of the survey, despite their caregiver responding to at least a portion of the caregiver survey. Additionally, 13 caregivers failed to respond to items on the SEHS. Given this pattern of missing data (i.e., entire scales were missing for participants), multiple imputation was not employed. For analyses that required both caregiver and adolescent reports (e.g., eighth research question), listwise deletion was employed when either caregiver or adolescent data were missing. However, all available data were employed in analyses that required only adolescent reports (e.g., first research question).

To determine whether demographic information should be controlled for within regression analyses, adolescent-reported LS and psychosocial assets were regressed on caregiver relation (i.e., biological parent, adoptive parent, legal guardian), caregiver race, adolescent gender, adolescent race, and socioeconomic status. Together, demographic variables did not significantly predict adolescent-reported LS [$F(5, 22) = 1.19$, $p > .05$)] or psychosocial assets [$F(5, 22) = 2.40$, $p > .05$)]. For this reason, demographic data were not controlled for in subsequent analyses.

To answer the first research question, Cronbach's alpha values were calculated for the self-reported BMSLSS and 12 subscales of the SEHS. To answer the second research question, the Pearson product moment correlations were calculated for the relations between self and parent-reported LS, as well as between the 12 self and parent-reported psychosocial asset subscales. The mean total and domain scores for self-reported LS answered the third research question. Self-reported LS total and domain scores were compared to those of a sample of TD adolescents to answer the fourth research question. Independent-samples t-tests were conducted, and the mean total and domain LS scores of youth with ASD were compared to the respective mean values for the normative sample. Bonferonni corrections for multiple comparisons were employed to guard against Type I error.

To answer the fifth research question assessing the correlations between self-reported LS and assets, the Pearson product moment correlations were calculated for the relationship between each of the 12 self-reported asset subscales and LS. Similarly, the Pearson product moment correlations between each of the 12 parent-reported asset subscales and self-reported LS answered the sixth research question. Bonferroni corrections were employed in order to reduce the chance of Type I error.

To answer the seventh and eighth research questions related to age as a moderator of the relation between self and parent-reported assets and self-reported LS, a series of hierarchical multiple regressions were conducted. For both moderation analyses, Bonferroni corrections for multiple comparisons were employed in order to guard against Type I error. For the seventh research question, a hierarchical multiple regression assessing the relationship between self-reported assets, age, and self-reported LS was conducted. In the first step, self-reported LS was regressed on all 12 self-reported asset subscales to calculate the main effect of self-reported assets on LS. Each subscale was included in the model in order to assess the unique relation between the assets and LS. In the second step, age was added to the model to assess the main effect of age on LS. In the final step, the interaction terms for each self-reported asset by age was added (i.e., 12 total interaction terms) to assess moderation.

The eighth research question was assessed in a similar manner. In the first step of a hierarchical multiple regression, self-reported LS was regressed on all 12 parent-reported asset subscales. In the second step, age was added to the model. Finally, the third step included the 12 interaction terms of parent-reported assets by age. If the effect of an interaction term were significant, it would be concluded that age moderates the relation between the parent-reported asset and self-reported LS in adolescents with HFA.

CHAPTER 3

RESULTS

Research Question 1

Cronbach's alpha values were calculated for the self-reported BMSLSS, SEHS, and each of the three-item psychosocial asset subscales of the SEHS. The results for these analyses are presented in Table 3.1. Overall, Cronbach's alpha reached or exceeded the value of 0.80 for the BMSLSS and SEHS, as well as the SEHS subscales measuring School Support, Peer Support, Empathy, Optimism, and Gratitude. Conversely, Cronbach's alpha values ranged from 0.62 to 0.78 for the subscales assessing Self-Efficacy, Self-Awareness, Persistence, Family Coherence, Emotion Regulation, Self-Control, and Zest.

Research Question 2

The Pearson product moment correlations were calculated for the relations between caregiver-estimated and adolescent-reported LS, as well as between the caregiver estimates and adolescent reports for the 12 psychosocial asset subscales ($n = 41$ dyads). Correlations for caregiver and adolescent reports of LS and assets are presented in Table 3.2. Caregiver and adolescent agreement differed greatly between subscales. There was a significant, moderate correlation between caregiver-estimated and adolescent-reported general LS. Regarding psychosocial assets, poor agreement was observed on measures of Self-Efficacy, Self-Awareness, Emotion Regulation, Self-Control, Gratitude, and Zest. Small to moderate effect sizes were found for caregiver-adolescent agreement on measures of Persistence, School Support, Family Coherence, Peer Support, Empathy, and Optimism.

Research Questions 3 and 4

The means for the total and domain scores for adolescent-reported LS were calculated ($n = 46$) to answer the third research question. Table 3.3 presents the mean values for LS scores, as well as the corresponding response options. Overall, adolescents with HFA endorsed LS levels ranging from "mixed" to "pleased" across domains.

Self-reported LS total and domain scores were compared to those of the TD sample of TD adolescents using independent samples t-tests to answer the fourth research question; the criterion for significance was adjusted to 0.01 to control for multiple comparisons. Cronbach's alpha for the TD comparison sample's BMSLSS was 0.85. Significant group differences emerged for most LS domains, including Family Satisfaction [$t(112) = 3.16$, $p < .01$)], Friend Satisfaction [$t(111) = 3.12$, $p < .01$)], Self Satisfaction [$t(110) = 3.12$, $p < .01$)], Life Satisfaction [$t(111) = 3.98$, $p < .01$)], and Total BMSLSS scores [$t(112) = 4.12$, $p < .01$)]. The TD sample reported higher satisfaction levels than the ASD sample in each of these domains. There was not a significant group difference in School Satisfaction [$t(110) = 2.06$, $p > .01$)] or Neighborhood Satisfaction [$t(111) = 1.62$, $p > .01$)]. Cohen's *d* values were calculated for each significant difference to assess the magnitude of these differences, and moderate effect sizes emerged for each difference (Cohen, 1988). See Table 3.4 for the mean scores and standard deviations for both groups, as well as Cohen's *d* for each significant difference.

Research Question 5

The Pearson product moment correlations were then calculated for the relation between each of the 12 adolescent-reported asset subscales and adolescent-reported LS ($n = 42$). These values are presented in Table 3.5. There were significant correlations between adolescent-reported LS and Self-Efficacy, Self-Awareness, Persistence, School Support, Family Coherence, Peer Support, Emotion Regulation, Empathy, Optimism, and Gratitude, with the strongest correlation emerging between Optimism and LS. Conversely, Self-Control and Zest were not significantly related to adolescent-reported LS.

Research Question 6

Similarly, the Pearson product moment correlations between each of the 12 caregiver-reported asset subscales and adolescent-reported LS were calculated ($n = 41$ dyads). See Table 3.6 for the values for each correlation. Contrary to the hypothesis, most caregiver-estimated psychosocial assets were unrelated to adolescent-reported LS. However, there was a moderate correlation between caregiver-reported Optimism and adolescent-reported LS, as well as a small correlation between caregiver-reported Zest and adolescent-reported LS.

Research Question 7

A hierarchical multiple regression was conducted to assess the relations between adolescent-reported assets, age, and adolescent-reported LS, as well as the potential interaction between assets and age ($n = 42$). In the first step, self-reported LS was regressed on all 12 self-reported asset subscales to calculate the main effect of self-reported assets on LS. Together, psychosocial assets accounted for a significant portion of variance in adolescent-reported LS [$R^2 = 0.67$, $F(12, 30) = 4.95$, $p < .01$]. Specifically, Self-Awareness ($B = -1.30$, $SE\ B = 0.60$), School Support ($B = -1.67$, $SE\ B = 0.58$), and Optimism ($B = 1.84$, $SE\ B = 0.58$) were significant predictors of LS. In the second step, adolescent age did not account for significant variance beyond that accounted for by psychosocial assets [$\Delta R^2 = 0.00$, $F(13, 29) = 4.42$, $p < .01$]. In the final step, the interaction terms for each self-reported asset by age was added to the model to assess the interactions between age and assets. When the interaction terms were added to the model, the interaction between age and psychosocial assets accounted for a significant portion of variance in LS, above and beyond the contribution of psychosocial assets [$\Delta R^2 = 0.25$, $F(25, 17) = 10.37$, $p < .01$]. There was a significant interaction between age and Self-Awareness ($B = -1.28$, $SE\ B = 0.54$), Persistence ($B = 1.04$, $SE\ B = 0.39$), Family Coherence ($B = -1.61$, $SE\ B = 0.51$), and Empathy ($B = 0.62$, $SE\ B = 0.28$), such that the relationship between these assets and LS depended on adolescents' ages. See Table 3.7 for a summary of each step of the moderation analysis. Figures 3.1, 3.2, and 3.3 present scatterplots showing the relation between assets and LS for adolescents whose ages fall one standard deviation or greater below the mean, within one standard deviation of the mean, and one standard deviation or greater than the mean.

Research Question 8

In order to assess the relation between caregiver-reports of psychosocial assets, adolescent age, and adolescent-reported LS, a subsequent moderation analysis was conducted ($n = 39$ dyads). In the first step of a hierarchical multiple regression, self-reported LS was regressed on all 12 caregiver-reported psychosocial asset subscales. Within this model, caregiver-reported assets accounted for significant variance in adolescent-reported LS [$R^2 = 0.56$, $F(12, 27) = 2.91$, $p < .01$]. Specifically, caregiver-reported Optimism ($B = 1.78$, $SE\ B = 0.57$) significantly predicted adolescent-reported LS. In the second step, age was added to the model [$\Delta R^2 = 0.02$, $F(13, 26) = 2.78$, $p < .01$]. In the third step, the 12 interaction terms of caregiver-reported assets by age were added to the model [$\Delta R^2 = 0.16$, $F(25, 14) = 1.59$, $p > .01$]. However, no interaction terms emerged as significant individual predictors of adolescent-reported LS. It was concluded that age did not interact with any caregiver-reported assets to moderate the relation between caregiver-reported assets and adolescent-reported LS. See Table 3.8 for a summary of each step of the moderation analysis.

Table 3.1

Cronbach's Alpha Values for the BMSLSS, SEHS, and SEHS Subscales

Measure	Cronbach's Alpha
BMSLSS	0.87
SEHS	0.94
Self-Efficacy	0.64
Self-Awareness	0.62
Persistence	0.67
School Support	0.86
Family Coherence	0.76
Peer Support	0.82
Emotion Regulation	0.78
Empathy	0.84
Self-Control	0.64
Optimism	0.84
Gratitude	0.91
Zest	0.70

Table 3.2

Correlations between Caregiver and Adolescent Reports of LS and Psychosocial Assets (n = 41 dyads)

Measure	Caregiver-Adolescent Correlation
BMSLSS	0.64*
Self-Efficacy	0.10
Self-Awareness	0.16
Persistence	0.35*
School Support	0.60*
Family Coherence	0.39*
Peer Support	0.39*
Emotion Regulation	0.09
Empathy	0.34*
Self-Control	0.10
Optimism	0.57*
Gratitude	0.17
Zest	0.01

*$p < .05$

Table 3.3

Levels of General and Domain-Specific LS for Adolescents with HFA (n = 46)

LS Domain	Mean Score (*SD*)	Corresponding Responses
Family Satisfaction	5.04 (1.44)	Mostly Satisfied – Pleased
Friend Satisfaction	4.98 (1.61)	Mixed – Mostly Satisfied
School Satisfaction	4.56 (1.75)	Mixed – Mostly Satisfied
Self Satisfaction	5.07 (1.51)	Mostly Satisfied - Pleased
Neighborhood Satisfaction	5.41 (1.39)	Mostly Satisfied - Pleased
Life Satisfaction	4.91 (1.38)	Mixed - Mostly Satisfied

Table 3.4

Means and Standard Deviations for BMSLSS Domains and Total Scores for TD Adolescents (n = 67) and Those with HFA (n = 46)

LS Domain	HFA Mean (*SD*)	TD Mean (*SD*)	*t* (Cohen's *d*)
Family Satisfaction	5.04 (1.44)	5.82 (1.18)	3.16* (0.59)
Friend Satisfaction	4.98 (1.61)	5.84 (1.24)	3.12* (0.60)
School Satisfaction	4.56 (1.75)	5.16 (1.37)	2.06
Self Satisfaction	5.07 (1.51)	5.97 (1.44)	3.12* (0.61)
Neighborhood Satisfaction	5.41 (1.39)	5.84 (1.33)	1.62
Life Satisfaction	4.91 (1.38)	5.93 (1.30)	3.98* (0.76)
Total BMSLSS	29.23 (7.82)	34.55 (5.95)	4.12* (0.77)

*$p < .01$

Table 3.5

Correlations between Adolescent-Reported LS and Psychosocial Assets (n = 42)

Adolescent-Reported Psychosocial Asset	Correlation with LS
Self-Efficacy	0.48*
Self-Awareness	0.37*
Persistence	0.31*
School Support	0.36*
Family Coherence	0.46*
Peer Support	0.40*
Emotion Regulation	0.35*
Empathy	0.31*
Self-Control	0.28
Optimism	0.63*
Gratitude	0.38*
Zest	0.20

*$p < .05$

Table 3.6

Correlations between Adolescent-Reported LS and Caregiver-Reported Psychosocial Assets (n = 41 dyads)

Caregiver-Reported Psychosocial Asset	Correlation with Adolescent-Reported LS
Self-Efficacy	0.02
Self-Awareness	0.18
Persistence	-0.25
School Support	0.28
Family Coherence	0.14
Peer Support	0.13
Emotion Regulation	0.20
Empathy	0.05
Self-Control	0.03
Optimism	0.59*
Gratitude	0.28
Zest	0.38*

**p* < .05

Table 3.7

Hierarchical Multiple Regression Assessing the Relations Between Adolescent-Reported Psychosocial Assets, Age, and Adolescent-Reported LS (n = 42)

Step	ΔR^2	*B*	*SE B*	*t*
Step 1	0.67			
Intercept		6.65	5.92	1.12
Self-Efficacy		-0.34	0.60	-0.56
Self-Awareness		-1.30	0.60	-2.16*
Persistence		-0.63	0.48	-1.31
School Support		1.67	0.58	2.87*
Family Coherence		0.11	0.68	0.16
Peer Support		0.64	0.34	1.90
Emotion Regulation		0.96	0.52	1.87
Empathy		-0.35	0.39	-0.90
Self-Control		0.40	0.50	0.79
Optimism		1.84	0.58	3.17*
Gratitude		-0.46	0.38	-1.21
Zest		0.03	0.28	0.10
Step 2	0.00			
Adolescent age		0.00	0.57	0.00
Step 3	0.24			
Self-Efficacy*Age		0.45	0.50	0.90
Self-Awareness*Age		-1.28	0.54	-2.35*
Persistence*Age		1.04	0.39	2.63*
School Support*Age		-0.55	0.42	-1.32
Family Coherence*Age		-1.61	0.51	-3.17*
Peer Support*Age		0.15	0.19	0.80
Emotion Regulation*Age		-0.53	0.44	-1.21
Empathy*Age		0.62	0.28	2.19*
Self-Control*Age		0.50	0.29	1.69
Optimism*Age		0.11	0.48	0.24
Gratitude*Age		0.51	0.33	1.58
Zest*Age		0.04	0.12	0.34

Note. For Step 1, $R^2 = 0.67$, $F(12, 30) = 4.95$, $p < .01$. For Step 2, $R^2 = 0.67$, $F(13, 29) = 4.42$, $p < .01$. For Step 3, $R^2 = 0.91$, $F(25, 17) = 10.37$, $p < .01$.

*$p < .01$

Table 3.8

Hierarchical Multiple Regression Assessing the Relations Between Caregiver-Reported Psychosocial Assets, Age, and Adolescent-Reported LS (n = 39 dyads)

Step	ΔR^2	*B*	*SE B*	*t*
Step 1	0.56			
Intercept		18.79	6.54	2.87*
Self-Efficacy		-0.63	0.74	-0.85
Self-Awareness		0.86	0.98	0.89
Persistence		-1.01	0.46	-2.18
School Support		0.97	0.53	1.84
Family Coherence		-0.67	0.51	-1.32
Peer Support		0.04	0.49	0.09
Emotion Regulation		0.31	0.53	0.59
Empathy		0.06	0.42	0.15
Self-Control		-0.51	0.67	-0.77
Optimism		1.78	0.57	3.16*
Gratitude		0.34	0.39	0.86
Zest		-0.35	0.51	-0.70
Step 2	0.02			
Adolescent age		0.65	0.62	1.04
Step 3	0.16			
Self-Efficacy*Age		-0.26	0.79	-0.33
Self-Awareness*Age		-0.58	1.08	-0.53
Persistence*Age		0.48	0.50	0.36
School Support*Age		-0.14	0.68	-0.21
Family Coherence*Age		-0.23	0.53	-0.43
Peer Support*Age		-0.07	0.64	-0.11
Emotion Regulation*Age		0.21	0.65	0.32
Empathy*Age		0.31	0.62	0.50
Self-Control*Age		0.38	0.75	-0.23
Optimism*Age		-0.17	0.74	-0.23
Gratitude*Age		-0.47	0.49	-0.95
Zest*Age		0.63	0.58	1.01

Note. For Step 1, $R^2 = 0.56$, $F(12, 27) = 2.91$, $p < .01$. For Step 2, $R^2 = 0.58$, $F(13, 26) = 2.78$, $p < .01$. For Step 3, $R^2 = 0.74$, $F(25, 14) = 1.59$, $p > .01$.

*$p < .01$

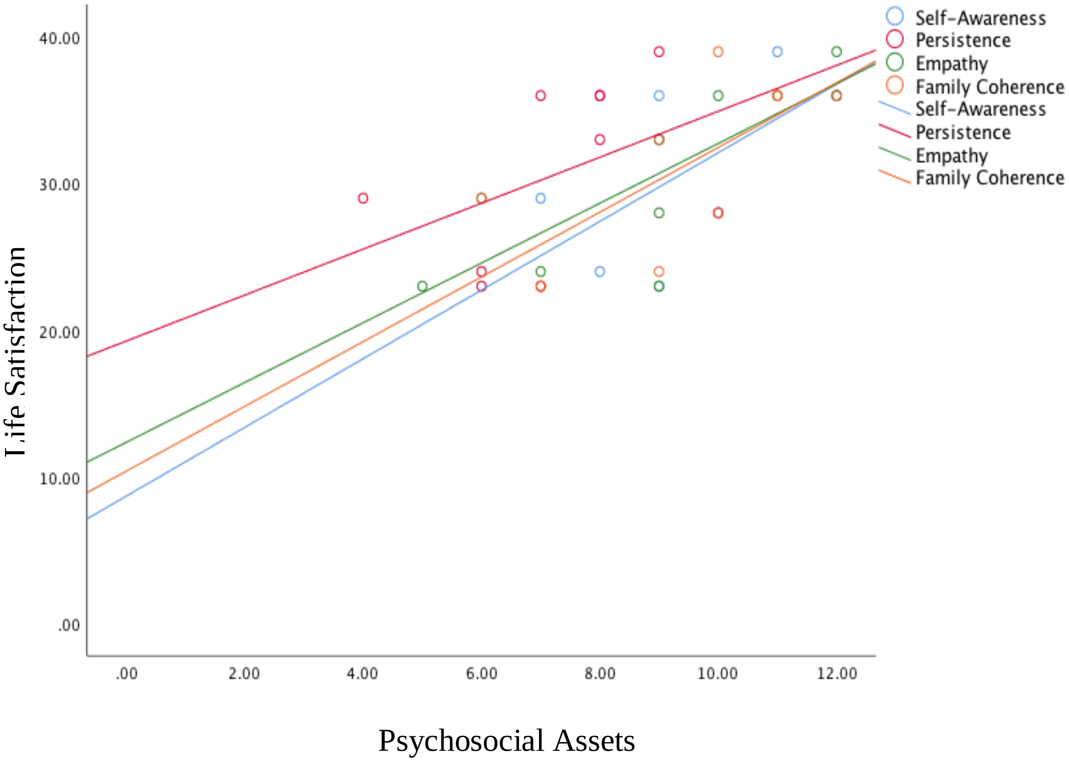

Figure 3.1. Scatter plot and regression line for the relation between psychosocial assets and LS for adolescents whose ages are one standard deviation or greater below the mean.

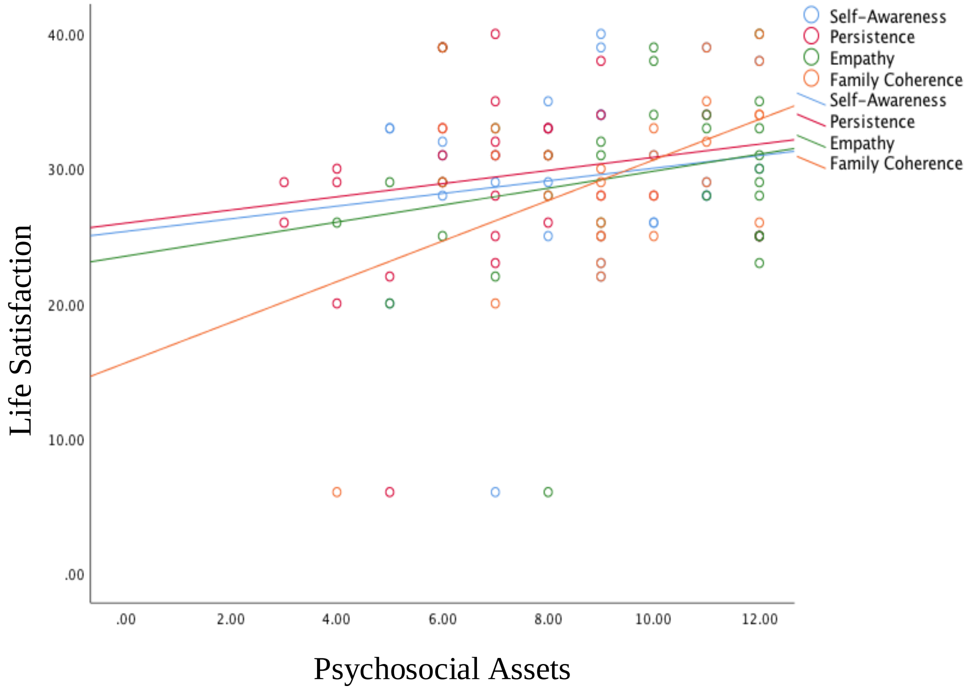

Figure 3.2. Scatter plot and regression line for the relation between psychosocial assets and LS for adolescents whose ages are within one standard deviation of the mean.

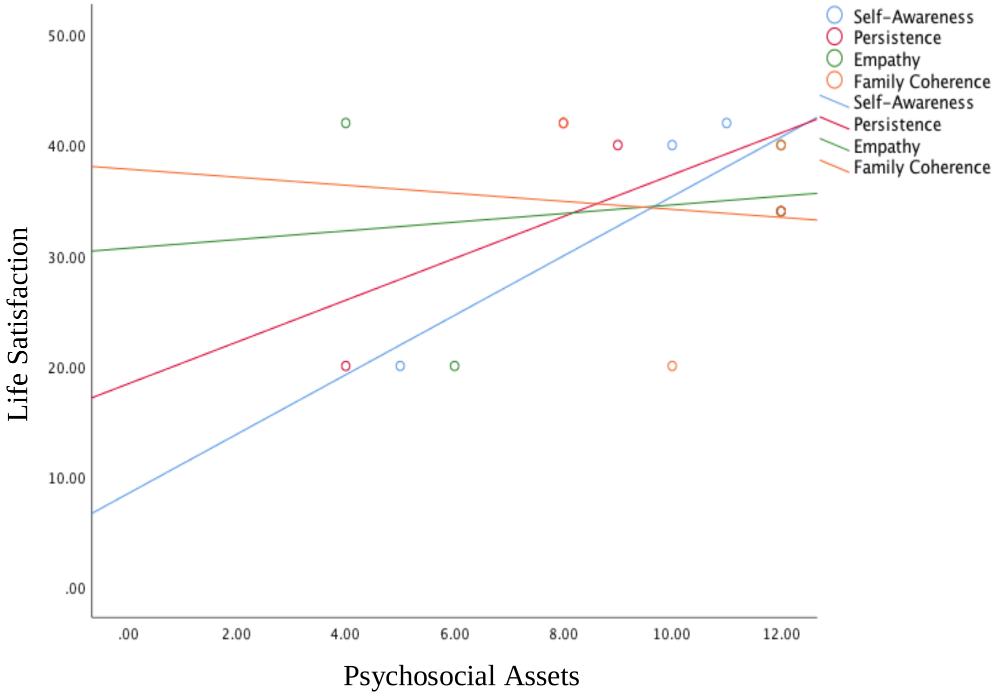

Figure 3.3. Scatter plot and regression line for the relation between psychosocial assets and LS for adolescents whose ages are one standard deviation or greater above the mean.

CHAPTER 4

DISCUSSION

The present study was informed by the Emerging Disability Paradigm, which emphasizes the importance of research regarding positive experiences, personality, and social relationships for individuals with disabilities. In keeping with this paradigm, the purpose of the present study was to provide preliminary evidence regarding the reliability and validity of measures of self-reported psychosocial assets and LS for adolescents with HFA. Additional purposes included identifying the overall levels of general and domain-specific LS within adolescents with HFA, comparing these levels to those of a TD comparison sample, and describing the relation between psychosocial assets and LS for this sample.

The results of this study provide preliminary support for the reliability and validity of the BMSLSS and SEHS in adolescents with HFA. Regarding internal consistency reliability, Cronbach's alpha approached or surpassed the criterion of 0.80 for the BMSLSS and several of the three-item subscales of the SEHS (e.g., School Support, Peer Support, Empathy, Optimism, and Gratitude). Despite this finding, the subscales for Self-Efficacy, Self-Awareness, Self-Control, Zest, and Family Coherence, and Emotion Regulation yielded Cronbach's alpha values ranging from 0.62 to 0.78. Because scales with many items tend to provide greater internal consistency reliability estimates, Cronbach's alpha may have been negatively affected by the fact that these subscales consist of three items (Ponterotto & Ruckdeschel, 2007). Shrout (1998) asserted that alpha values between 0.60 and 0.80 indicate fair to moderate internal reliability, and thus may be acceptable for use in research. However, higher Cronbach's alpha values (e.g., 0.90) should be employed for clinical purposes, particularly when measures will be used to inform clinical decisions (Ponterotto & Ruckdeschel, 2007). For this reason, these subscales may be suitable for use in future research, but they should be more rigorously evaluated prior to informing clinical decision-making.

Regarding validity, there was a moderate correlation between caregiver-estimated and adolescent-reported LS, as well as for caregiver-estimated and adolescent-reported Persistence, School Support, Family Coherence, Peer Support, Empathy, and Optimism. There were non-significant correlations between caregiver and adolescent reports on the Self-Efficacy, Self-Awareness, Emotion Regulation, Self-Control, Gratitude, and Zest subscales of the SEHS. Within the present study, dyads appeared to show particularly consistent agreement on measures of Belief-in-Others (e.g., school support, family coherence, peer support). Caregivers and adolescents' agreement on the scales that comprise this domain may be due to the observable nature of these items, while the subscales that comprise the Belief-in-Self, Emotional Competence, and Engaged Living domains reflect more covert perceptions, which may contribute to lower correlations between raters. Adolescents, both TD and those with HFA, may be unlikely to share information regarding internal experiences with caregivers, and caregivers may have difficulty estimating their internal states. Some of these values are also consistent with moderate caregiver-adolescent correlations found for reports of LS within TD adolescents (Dew & Huebner, 1994; Gilman & Huebner, 1997). Also, Achenbach and colleagues (1987) conducted a meta-analysis of informant agreement in the clinical assessment of children and adolescents, and they found a mean correlation of 0.22 for informant and self-reported data. They concluded that discrepancies between caregiver and self-reported data are important sources of information, and they may reflect different behavior across settings and useful distinctions in informants' perceptions (Achenbach, McConaughy, & Howell, 1987). Such distinctions strengthen the argument for collecting information from multiple informants during assessment for both clinical and research purposes. Alternatively, the present study's results may suggest that the SEHS is not sensitive to such covert assets in youth with HFA. For example, the inclusion of phrase "right now" in questions assessing zest and gratitude may result in poor agreement between caregivers and adolescents. Caregivers may observe their adolescent engaged with items while completing the survey and thus report higher levels of zest, while adolescents with HFA may then report low levels of zest while completing a survey. Taken together, results regarding the psychometric properties of the SEHS and BMSLSS suggest that adolescents with HFA may be able to provide internally reliable reports of some internal states, while there are mixed findings regarding caregiver-adolescent agreement on these reports.

Regarding levels of LS, adolescents with HFA endorsed moderate to high levels of satisfaction for the domains that comprise the BMSLSS, particularly related to satisfaction with their families, neighborhoods, and selves. This report is consistent with the previous findings of McDougall and colleagues (2012). However, adolescents with HFA endorsed lower levels of satisfaction with families, friends, selves, and overall life compared to the TD comparison sample. To the author's knowledge, this is the first study to directly compare levels of LS between TD adolescents and those with HFA. This finding reveals a possible inequity between TD youth and those with HFA. According to the Emerging Disability Paradigm, LS itself is an important outcome for individuals with disabilities (Schalock, 2004). Further, LS is an important indicator of well-being and may buffer students from the negative effects of stressful life events (Suldo & Huebner, 2004). Finally, low levels of life satisfaction may increase adolescents’ risk for peer victimization and school disengagement (Huebner, Hills, Siddall, & Gilman, 2014). For this reason, future research should assess this inequity and identify strategies to increase LS in adolescents with HFA. Despite the importance of this finding, the TD comparison sample was not matched to the demographic profile of the HFA group (e.g., the HFA sample had a higher proportion of Caucasian/White adolescents than the TD comparison sample), which limits the strength of the conclusions that can be drawn from this comparison.

With regard to the relation between adolescents’ psychosocial assets and LS, the results were variable. The Pearson product-moment correlations between adolescent-reported assets and LS indicated that there were moderate relations between LS and Self-Efficacy, Self-Awareness, Persistence, School Support, Family Coherence, Peer Support, Emotion Regulation, Empathy, Optimism, and Gratitude. There were non-significant correlations between LS and Self-Control or Zest. Given the effect sizes of these correlations (r = 0.28 and 0.20, respectively), however, the present study may have lacked the power to detect statistically significant effects. For self-reported assets, the strongest correlations emerged between Optimism, School Support, Family Coherence, Self-Efficacy and LS. The relation between Self-Efficacy and LS is consistent with previous research that detected a strong relationship between Self-Efficacy and LS for adolescents and young adults with ASD (Egilson et al., 2017). Further, Pham and Murray (2016) noted that parent and teacher support were strongly associated with LS for adolescents with disabilities. Because adolescents with HFA may experience difficulty establishing friendships with peers due to social skills deficits, support from family and school may be particularly important for their LS. The unique relation between Optimism and LS in youth with HFA should be investigated in future research.

Despite several significant correlations between adolescent-reported assets and LS, only caregiver-estimated Zest and Optimism significantly related to adolescent-reported LS. The items that assess Zest and Optimism measure adolescents' levels of energy and activity, as well as whether they expect to have good days, expect more good than bad things to happen to them, and look forward to having fun (Furlong et al., 2014). These behaviors may be stronger indicators of LS to caregivers of adolescents with HFA when compared to the other subscales of the SEHS. Because adolescents with HFA may be unlikely to communicate their internal states to caregivers due to their social communication deficits, caregivers may observe their level of engagement and optimism as indicators of overall LS. With regard to the non-significant correlations, the present study's results suggest that caregivers' perceptions of assets are unrelated to adolescents' self-reported LS. In order to contextualize these findings, future research should assess the relations between caregiver-reported assets and adolescent-reported LS within TD samples.

To further assess the relation between psychosocial assets and LS within this population, two moderation analyses were conducted, in which adolescent-reported LS was regressed on both adolescent and caregiver-reported assets and adolescent age. A main effect of psychosocial assets on LS emerged for both caregiver-estimated and adolescent-reported assets. There was not a main effect of age on LS in either moderation analysis. Further, no caregiver-estimated assets interacted with age to predict LS. Conversely, age interacted with self-reported Self-Awareness, Persistence, Family Coherence, and Empathy to predict LS, suggesting that the nature of the relation between these assets and LS differed across age groups. Simple slopes demonstrated there may be a stronger positive relationship between these assets and LS for younger adolescents than for older adolescents. Younger adolescents who perceive themselves as possessing higher levels of Self-Awareness, Persistence, Empathy, and Family Coherence may experience an advantage compared to their peers with HFA who perceive lower levels of these skills. Specifically, adolescents who possess or perceive themselves as having greater levels of such assets may concurrently experience higher levels of LS. Conversely, those who possess or perceive themselves as possessing fewer skills may also experience lower levels of LS. As adolescents age and continue to develop social-cognitive skills, this differential relation may attenuate. Such an interaction may not emerge for caregiver reports, as caregivers base their ratings from their observation of adolescents' behavior, rather than knowledge of adolescents' internal thoughts and feelings.

Limitations and Implications for Research and Practice

The present study has several limitations, which should be considered alongside these promising findings. First, the study included a small sample of caregiver-adolescent dyads, and Caucasian/White families may have been overrepresented in the study sample. The participants in this study also had access to resources to attend a summer camp or complete a questionnaire via email. For this reason, the results may not generalize to adolescents who possess fewer resources. Additionally, the present study had a relatively large portion of missing data. Specifically, 16 adolescents did not complete any questionnaire items, and 13 caregivers did not complete the SEHS. These participants may have failed to complete the full questionnaire due to a confounding variable that was not assessed in the present study, resulting in a biased sample. Future research should work to minimize missing data to provide a comprehensive description of the relations between assets and LS within this population.

Despite these limitations, the present study yields important implications for research. First, the results demonstrated promising evidence for the psychometric properties of the BMSLSS and SEHS with students with HFA. Thus, future researchers may employ these measures of psychosocial assets and LS in studies of adolescents with HFA, albeit with some cautions for the Self-Efficacy, Self-Awareness, Self-Control, Zest, and Family Coherence, and Emotion Regulation subscales of the SEHS. Future research should further evaluate the psychometric properties of these measures. For example, studies of test-retest reliability and predictive validity would be beneficial.

Additionally, future research should include larger sample sizes that permit for more rigorous statistical testing, including factor analysis to support the utility of the measures and structural equation modeling to evaluate the relations between variables. Specific research questions may address the nature of the relation between assets and LS in this population across development, as well as to further investigate the mechanism of the interaction between assets, age, and LS in adolescents with HFA. For example, the results of the present study indicated that the assets of Self-Awareness, Persistence, Family Coherence, and Empathy may be more strongly related to LS in younger adolescents compared to older adolescents; this interaction should be investigated in future search. Future research should also assess discrepancies between caregiver and adolescent reports of psychosocial assets. For example, adjusting measures to behaviorally define assets may increase consistency between caregiver and adolescent reports. Caregiver-adolescent communication may also be investigated as a predictor of caregiver-adolescent agreement on assets. Research may also investigate interventions to develop psychosocial assets in adolescents with HFA, as well as assess the effects of positive interventions on LS within this population. While interventions to develop assets and promote LS have been implemented with TD youth (e.g., Proctor et al., 2011), they should be evaluated with this unique population.

The results of this study also provide important implications for practitioners who provide services to adolescents with HFA. First, these results suggest that adolescents with HFA may provide valuable information regarding their thoughts and feelings. Self-reports of assets and LS may provide incremental validity relative to the traditional symptom-based information in mental health assessments. Adolescent reports may also be used to inform potential interventions, including strength-based interventions that are designed to foster psychosocial assets and LS in children and adolescents (e.g., Proctor et al., 2011). Further, the pattern of differences in LS between TD adolescents and those with HFA suggest that interventions that specifically target social relationships (e.g., family, peers) may be of benefit for this population. The Program for the Education and Enrichment of Relation Skills (PEERS) is one example of such an intervention. PEERS is an evidence-based social skills intervention that has been shown to decrease social anxiety and problem behavior, as well as to increase social and friendship skills in adolescents with HFA (Schohl et al., 2014). Future research may measure adolescents' reports of Peer Support, Peer Satisfaction, and LS to assess whether this intervention is also related to improvements in these domains.

Taken together, the results of this study provide important research and clinical implications for each domain of Schalock's (2004) Emerging Disability Paradigm. Within the positive experiences domain, the present study provided preliminary support for the internal consistency reliability and validity of the BMSLSS, which measures LS in adolescents with HFA. It also demonstrated that adolescents with HFA report generally moderate to high levels of LS, but they also experience lower levels of LS than their TD peers, particularly related to their families, friends, selves, and overall lives. Within the positive personality domain, the present study supported the internal consistency reliability and concurrent validity of some subscales of the SEHS with youth with HFA. The study also detected a particularly strong relationship between optimism and LS, as well as self-efficacy and LS. Finally, within the domain for people and experiences embedded within social contexts, the present study provided support for the use of measures of family, peer, and school support with adolescents with HFA, and it revealed a significant association between these variables, especially school and family support, and LS in youth with HFA.

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APPENDIX A

MEASURES

Social Communication Questionnaire (Rutter et al., 2003)

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Brief Multidimensional Students' Life Satisfaction Scale (BMSLSS; Seligson, Huebner, & Valois, 2003)

Below are six sentences that describe your satisfaction with different areas of your life. Circle the best answer for each.

Circle 1 if you feel TERRIBLE.

Circle 2 if you feel UNHAPPY.

Circle 3 if you feel MOSTLY DISSATISFIED.

Circle 4 if you feel MIXED (ABOUT EQUALLY SATISFIED AND DISSATISFIED).

Circle 5 if you feel MOSTLY SATISFIED.

Circle 6 if you feel PLEASED.

Circle 7 if you feel DELIGHTED.

1. I would describe my satisfaction with family life as:

   1 2 3 4 5 6 7
2. I would describe my satisfaction with friendships as:

   1 2 3 4 5 6 7
3. I would describe my satisfaction with school as:

   1 2 3 4 5 6 7
4. I would describe my satisfaction with myself as:

   1 2 3 4 5 6 7
5. I would describe my satisfaction with where I live as:

   1 2 3 4 5 6 7
6. I would describe my satisfaction with my overall life as:

   1 2 3 4 5 6 7

Social-Emotional Health Survey for Secondary School Students (SEHS; Furlong et al., 2014)

Please CIRCLE the response that shows how true each of these statements is about you.
1 = not at all true of me
2 = a little true of me
3 = pretty much true of me
4 = very much true of me

Example: I enjoy reading a good book.
1 2 3 4

---

1. I can work out my problems.

1 2 3 4

2. I can do most things if I try.

1 2 3 4

3. There are many things that I do well.

1 2 3 4

4. There is a purpose to my life.

1 2 3 4

5. I understand my moods and feelings.

1 2 3 4

6. I understand why I do what I do.

1 2 3 4

7. When I do not understand something, I ask the teacher again and again until I understand.

1 2 3 4

8. I try to answer all the questions asked in class.

1 2 3 4

9. When I try to solve a math problem, I will not stop until I find a final solution.

1 2 3 4

10. At my school, there is a teacher or some other adult who always wants me to do my best.

1 2 3 4

11. At my school, there is a teacher or some other adult who listens to me when I have something to say.

1 2 3 4

12. At my school, there is a teacher or some other adult who believes that I will be a success.

1 2 3 4

13. My family members really help and support one another.

1 2 3 4

14. There is a feeling of togetherness in my family.

1 2 3 4

15. My family really gets along well with each other.

1 2 3 4

16. I have a friend my age who really cares about me.

1 2 3 4

17. I have a friend my age who talks with me about my problems.

1 2 3 4

18. I have a friend my age who helps me when I'm having a hard time.

1 2 3 4

19. I accept responsibility for my actions.

1 2 3 4

20. When I make a mistake I admit it.

1 2 3 4

21. I can deal with being told no.

1 2 3 4

22. I feel bad when someone gets his or her feelings hurt.

1 2 3 4

23. I try to understand what other people go through.

1 2 3 4

24. I try to understand how other people feel and think.

1 2 3 4

25. I can wait for what I want.

1 2 3 4

26. I don’t bother others when they are busy.

1 2 3 4

27. I think before I act.

1 2 3 4

28. Each day I look forward to having a lot of fun.

1 2 3 4

29. I usually expect to have a good day.

1 2 3 4

30. Overall, I expect more good things to happen to me than bad things.

1 2 3 4

31. How much do you feel ENERGETIC right now?

1 = not at all 2 = very little 3 = somewhat 4 = quite a lot 5 = extremely

32. How much do you feel ACTIVE right now?

1 = not at all 2 = very little 3 = somewhat 4 = quite a lot 5 = extremely

33. How much do you feel LIVELY right now?

1 = not at all 2 = very little 3 = somewhat 4 = quite a lot 5 = extremely

34. Since yesterday how much have you felt GRATEFUL?

1 = not at all 2 = very little 3 = somewhat 4 = quite a lot 5 = extremely

35. Since yesterday how much have you felt THANKFUL?

1 = not at all 2 = very little 3 = somewhat 4 = quite a lot 5 = extremely

36. Since yesterday how much have you felt APPRECIATIVE?

1 = not at all 2 = very little 3 = somewhat 4 = quite a lot 5 = extremely