Stigma and Social-Emotional Health in Youth with Learning Differences

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Stigma and Social-Emotional Health in Youth with Learning Differences

A Clinical Dissertation Presented to

The University of San Francisco
School of Nursing and Health Professions
Department of Health Professions
Clinical Psychology Psy.D. Program

In Partial Fulfillment of the Requirements for the Degree

Doctor of Psychology

By
Kelsey Maki

May 2021
PsyD Clinical Dissertation Signature Page

This Clinical Dissertation, written under the direction of the student’s Clinical Dissertation Chair and Committee and approved by Members of the Committee, has been presented to and accepted by the faculty of the Clinical Psychology PsyD Program in partial fulfillment of the requirements for the degree of Doctor of Psychology. The content and research methodologies presented in this work represent the work of the student alone.

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# STIGMA AND HEALTH IN SLD/ADHD

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Dedication and Acknowledgements

To all the people in my life who learn differently, thank you for sharing your experiences, struggles, and successes with me. Thank you to my chair, Dr. Dhara Meghani, and committee members, Dr. Fumiko Hoeft and Dr. Aline Hitti, for all of your continued guidance, and to Stephanie Haft and the rest of the team at UCSF BrainLENS for your support. Thank you to my husband, my family, and my fellow dissertation divas for encouraging me every step of the way.
Abstract

Youth diagnosed with specific learning disorder (SLD) and/or attention deficit hyperactivity disorder (ADHD), defined collectively for the purposes of this study as youth with learning differences, experience poorer social-emotional health outcomes in comparison to their typically developing peers. These youth additionally experience stigma from their peers, teachers, and broader community, which may impact social-emotional health. As a secondary data analysis of a larger study, the present study investigated the role of stigma consciousness alongside demographic variables, self-esteem, and peer relationships in social-emotional health outcomes. Due to the possible differences between youth diagnosed with SLD, ADHD, and comorbid SLD/ADHD, group differences among these variables were also explored. Ninety-six youth with learning differences participated in the study. Factor analysis was utilized to explore the structure of the Stigma Consciousness Questionnaire – Learning Disabilities (SCQ-LD; Daley & Rappolt-Schlichtmann, 2018) and yielded a two-factor model (negative stigma and lack of stigma impact) that was used in analyses. Analysis of variance (ANOVA) was used to determine differences between diagnostic groups, and hierarchical regression analyses were conducted to examine the impact of various predictors on anxiety, depression, and sense of relatedness. Results indicated that self-esteem was a significant predictor across all outcomes. Additionally, peer relationships were a significant predictor of depression, and the SCQ-LD negative stigma factor was a significant predictor of anxiety. Individual interventions that focus on bolstering self-esteem may be especially important in supporting social-emotional health of youth with learning differences, whereas population level interventions would lessen stigma in the community. Further research is recommended in order to validate the factor structure of the
SCQ-LD, examine differences between diagnostic groups, and explore other factors influencing social-emotional health in youth with learning differences.
Stigma and Social-Emotional Health in Youth with Learning Differences

Introduction

Identification of the Problem

Specific learning disorders (SLD) and attention deficit hyperactivity disorder (ADHD) are common neurodevelopmental disorders in childhood. Current prevalence rates estimate that approximately 9.4% of children are diagnosed with ADHD (Danielson et al., 2018), and 3-19% of school age children are diagnosed with SLD (Görker, 2020). Youth with SLD and/or ADHD, defined collectively for the purposes of this study as youth with learning differences, often experience social and emotional difficulties in addition to learning and attention deficits. For example, children and adolescents with learning differences experience higher rates of anxiety (Melegari et al., 2016; Nelson & Harwood, 2011b), depression (Bonifacci et al., 2016), and social rejection (Al-Yagon, 2016; Simoni, 2016) compared to children without these diagnoses.

Although social-emotional difficulties are not part of the diagnostic criteria for either SLD or ADHD, some researchers suggest that underlying, intrinsic mechanisms of these disorders—including difficulties in emotional regulation and social information processing—may contribute to poor social-emotional health outcomes (Bryan et al., 2004; Bunford et al., 2018; Sturm et al., 2021; Tehrani-Doost et al., 2017).

It is important to consider the role of environmental factors as well, such as stigmatization and social rejection. A common misconception of peers, teachers, and other adults is that learning differences represent insurmountable conditions. As a result, youth with learning differences are often treated with condescension and less respect by teachers and other students (Geiger & Brewster, 2018), and suffer social and emotional consequences of these stigmatized attitudes, which could play a role in negative mental health and social relatedness outcomes. It is
additionally possible that the internalization of this stigma, or self-stigma, could amplify anxious and depressive symptoms (Chan et al., 2017; McKeague et al., 2015). Stigmatized attitudes negatively impact others’ desire to interact with youth with learning differences, and therefore may also influence social relatedness in this population. Therefore, youth with these diagnoses are underserved, encountering challenges academically and also with their well being.

Even though literature has established the prevalence of stigmatized attitudes toward those with learning differences, the role of stigma and the self-awareness of stigma have not been considered as a factor in social-emotional health outcomes. Moreover, emergent literature suggests that there may be a differential impact on social-emotional health outcomes based on the specific clinical diagnoses one has (Al-Yagon, 2016; McNamara et al., 2005), although this finding needs to be further explored as it has implications for treatment planning. The goals of this study are twofold: 1) to explore differences in stigma consciousness and social-emotional health between youth diagnosed with SLD, youth diagnosed with ADHD, and youth diagnosed with comorbid SLD/ADHD; and 2) to examine the relative contributions of intrinsic and environmental factors in anxiety, depression, and sense of relatedness among youth with learning differences.

**Definition of Terms**

The following definitions are based on diagnostic classifications and validated measures used to assess social-emotional health.

**Specific Learning Disorder**

According to the Diagnostic and Statistical Manual (DSM-5) of the American Psychiatric Association (2013), a specific learning disorder (SLD) is a neurodevelopmental disorder characterized by the unexpected, persistent, and developmentally inappropriate difficulty in
learning academic skills. This difficulty must have persisted for at least six months and not be better explained by lack of access to learning/interventions, intellectual disabilities, global developmental delay, hearing or vision disorders, neurological disorders, or motor disorders. SLD is believed to have a biological origin, and are typically diagnosed when a child enters school as these deficits become more apparent (American Psychiatric Association, 2013). SLD is also commonly referred to as “learning disabilities” in educational and legal systems and colloquially in psychological and medical health (Penesetti, 2018).

SLD can be diagnosed within the context of three different learning or academic areas: reading, written expression, and/or mathematics. Impairments in reading, also known as dyslexia within this broader classification, can include inaccurate or slow and effortful word reading and difficulty with reading comprehension. Impairments in written expression include difficulties with spelling, lacking clarity in written work, and making many grammatical or punctuation errors. Impairments in mathematics, also known as dyscalculia, include difficulties mastering number sense, inaccurate or influent calculation, and inaccurate math reasoning. Persons with SLD may show deficits in one or more domains (American Psychiatric Association, 2013).

Because the impairment in SLD is based on academic performance, the method of identifying learning disabilities is greatly influenced by the educational system. The Individuals with Disabilities Education Improvement Act (2004) loosely defines the way SLD should be identified in schools, but the specific methodology is left up to each state. Many schools utilize the Response to Intervention (RTI) model for SLD identification, which was introduced in 2004 as an alternative to the ability-achievement discrepancy model (Maki et al., 2015).
Attention deficit hyperactivity disorder (ADHD) is a neurodevelopmental disorder in which persistent patterns of inattention and/or hyperactivity interfere with functioning. As defined by the DSM-5 (2013), signs of inattention include failing to give attention to detail, difficulty sustaining attention, being absent minded or easily distracted, not following through on tasks, difficulty with organization, reluctance to engage in tasks that require sustained attention, losing things, and being forgetful of everyday activities. Signs of hyperactivity and impulsivity include fidgeting, leaving one’s seat, inappropriate running or climbing, feeling restless, inability to engage in activities quietly, acting as if “driven by a motor,” talking excessively, blurring out or interrupting, and difficulty waiting one’s turn. Persons with ADHD can have a predominantly inattentive presentation, a predominantly hyperactive/impulsive presentation, or a combination of the two (known as a combined presentation). These symptoms must be present prior to the age of 12 in two or more settings, inconsistent with one’s developmental level, and experienced for at least 6 months in order to qualify for a diagnosis. Males are more likely to be diagnosed with ADHD than females overall, though females are more likely to have a predominately inattentive presentation (American Psychiatric Association, 2013).

**Learning Differences**

The term “learning differences” can be used to describe those with various conditions that may impact learning, including SLD, ADHD, medical conditions, developmental disorders, etc. (Reiff & Ofiesh, 2016). For the purposes of this study, “learning differences” will describe specifically those diagnosed with SLD and/or ADHD. This term was chosen because it is not deficit-based, and therefore may be experienced as less stigmatizing. The terms SLD and ADHD will be used when necessary in order to describe experiences unique to those diagnosed with either of these conditions.
**Stigma Consciousness**

In order to define stigma consciousness, it is important to first have a shared understanding of stigma. Link and Phelan (2001) define stigma as powerful entities allowing labeling, stereotyping, and separation that culminates in status loss and discrimination. Stigma consciousness, as defined by Pinel (1999), is the extent to which a person of a stigmatized group expects to be stereotyped by others. The original Stigma Consciousness Questionnaire developed to measure this construct focused on two content areas: 1) phenomenological experiences of stigma, and 2) beliefs about stigma. Accordingly, the items within the questionnaire focus on the knowledge and experience of stigmatized attitudes within the broader community, as well as one’s internal reaction to experiences of stigma (Daley & Rappolt-Schlichtmann, 2018; Pinel, 1999). As demonstrated in this questionnaire, stigma consciousness can be operationalized as both an external and internal construct.

**Sense of Relatedness**

Sense of relatedness refers to one’s sense of trust, access to social support, comfort with others, and tolerance of differences in others. Supportive relationships are believed to bolster resilience, particularly for youth with neurodevelopmental disorders (Ray et al., 2017). Each aspect of sense of relatedness impacts personal relationships and is suggestive of the supportive relationships in one’s life (Prince-Embry & Steer, 2010).

**Literature Review**

**Comorbidity of SLD/ADHD**

Youth with SLD and ADHD have historically been studied together due to the high rate of comorbidity between these diagnoses. It is estimated that on average, 38% of youth diagnosed with SLD also meet criteria for ADHD. Additionally, SLD is the most common comorbidity for
youth with ADHD, with approximately 35% of those diagnosed with ADHD also qualifying for an SLD diagnosis (DuPaul et al., 2013; Reale et al., 2017). Although it is possible that the comorbidity rates may be inflated because children with multiple deficits are more likely to be referred for evaluation and receive services compared with children who have fewer identified concerns, there is empirical evidence demonstrating the overlap of these distinct disorders.

Several hypotheses suggest the existence of shared mechanisms or connections between SLD and ADHD, with variation in how they consider the level of impairment based on having one or both of these diagnoses. For example, inattentive symptoms and hyperactive-impulsive symptoms are both correlated with academic achievement, with the former having a stronger correlation than the latter. There is also a possible genetic link between observable hyperactivity and academic difficulties. Specific alleles are thought to be associated with an increased risk for both ADHD and SLD with impairment in reading, which suggests that ADHD and reading disorders in particular might share some common neuropsychological functioning deficits (Willcutt et al., 2002). The cognitive subtype hypothesis suggests that comorbid ADHD and SLD is a distinct disorder, resulting in a pattern of impairment that differs from the sum of expected difficulties for SLD alone and ADHD alone (Wilcutt et al., 2005). However, there is currently greater support in the literature for the multiple cognitive deficit hypothesis, which suggests that youth with comorbid SLD/ADHD experience impairments that are equal to the sum of expected difficulties for SLD alone and ADHD alone (Fernandez-Andres et al., 2021; Moura et al., 2017). Due to the higher level of cognitive and functional difficulties documented in individuals with comorbid SLD and ADHD compared to individuals with only one of these diagnoses, the current study compared social-emotional health outcomes and stigma consciousness across all three diagnostic categories.
Existence of Stigma in Youth with Learning Differences

**Stigma**

Stigma as a social influence was first defined by Erving Goffman, who described it as an “attribute that is deeply discrediting” which reduces the stigmatized “from a whole and usual person to a tainted, discounted one” (Goffman, 1963, p. 3). Link and Phelan (2001) describe stigma as having five resulting components: labeling, stereotyping, separation, status loss, and discrimination. Link and Phelan also hold that stigma can only exist in the context of power—someone or some social group must be setting the “norms” that stigmatized groups fall outside of. Stigma is pervasive and embedded in the roots of ideas and media in society. The internalization of stigma occurs when a person cognitively or emotionally absorbs the stigmatizing attitudes, assumptions, and stereotypes about a group, whether it is their own or another group. When a person internalizes stigmatized attitudes about their own group, they may apply the negative labels and stereotypes to themselves. This process, also known as “self-stigma,” is associated with increased depression, avoidant coping, social avoidance, and a decrease in help-seeking behavior for mental health support (Drapalski et al., 2013).

**Stigma: Developmental Perspective**

Children become socialized to individual differences—and with that, stigma and stereotypes—from a young age. For example, children begin to notice and label stereotypical gender groups between ages 18 to 24 months and can typically self-identify their gender by 3 years old (Mayo Clinic, 2017). By age 4, many children have begun developing attitudes about various groups in society and start to show a high in-group and out-group bias, partially due to the developmentally typical way of perceiving the world in a dualistic manner. Developmental group dynamics theory holds that by 8 or 9 years old, children are well aware of group norms
and can identify normative group behavior, as well as behavior that deviates from the identified norm (Abrams & Rutland, 2008). This process occurs alongside the growing awareness of stigmatized attitudes, which develop throughout middle childhood. Although they can recognize differences in gender and skin color, children at the age of 6 know relatively little about stereotypes—approximately 7-15% of children are aware of racial stigmas at this age, with marginalized racial groups having higher rates of awareness in comparison to white children. As they get older, youth become increasingly aware of broadly held stereotypes. By age 10, 63-80% of children are conscious of stigma (McKown & Weinstein, 2003).

Stigma consciousness depicts the extent to which a person is focused on, affected by, or believes they will be discriminated against based on stereotypes against their group (Pinel, 1999). Although stigma consciousness can be associated with less stigma validation and an attribution of failure to prejudice (Clark et al., 2017; Wang et al., 2012), it can also be associated with feelings of mistrust toward the non-stigmatized group (Pietri et al., 2018), sleep disturbances in response to discrimination (Ong et al., 2017), and vulnerability to stereotype threat (McKown & Weinstein, 2003). Stigma consciousness can also be increased when one holds marginalized or stigmatized identities (Gillen-O’Neel et al., 2011). McKown and Weinstein (2003) found that academically stigmatized groups (i.e., African American children and Latinx children, ages 6-10) were twice as likely to report awareness of a broadly held stereotype and demonstrated a greater awareness of stigma at an earlier age than non-stigmatized groups. Other stigmatized attitudes also emerge in childhood, including, for example, stigma toward obesity (Guardabassi et al., 2018), children with an incarcerated parent (Saunders, 2018), and youth with autism spectrum disorder (O’Connor, 2016). In their meta-analysis, Schmitt et al. (2014) found that the negative psychological impact of perceived discrimination is greater for
children than for adults, making childhood and adolescence a ripe time for intervention in this area. Given the pervasiveness of stigma and its impact during childhood and adolescence, it is important to consider the impact stigma may have in youth with learning differences.  

**Stigma Related to Learning Differences**

Stigmatized attitudes towards persons with learning differences are apparent in societal actions, beliefs, and preferences. Stereotypes about this population include perceived inferiority, and that they “cheat” the system through the use of accommodations. People with SLD may be assumed to have low intelligence, even though that is not a diagnostic criterion for the disorder. SLDs are believed to be insurmountable conditions—society tends to believe that those with SLD cannot be helped, are at a disadvantage, and will achieve very little. As a result, this population is often treated with less respect and talked down to by teachers and other students (Geiger & Brewster, 2018).

Teachers and other adults in the lives of youth with learning differences may hold stigmatized attitudes. Twenty-three percent of the adults surveyed in Martin et al. (2007) reported that they would probably or definitely be unwilling to have their child befriend a child with ADHD behaviors as described in a vignette. This number increased when the child in the vignette was described as a boy or an adolescent. Parents of children with ADHD also experience stigmatization and report feeling isolated, socially rejected, and worried about social rejection for their child (dosReis et al., 2010).

In comparison with non-labeled students with similar achievement and behavior profiles, teachers and parents consistently hold lower educational attainment expectations for children and adolescents with SLD (Shifrer, 2013). Interestingly, this belief does not seem to be held for youth with ADHD. However, teachers report that instructing students with ADHD is difficult
due to their behavior, and that children with ADHD have a negative effect on the classroom environment (Kos, 2008). When rating vignettes, teachers described the adolescents labeled with SLD as having less control over their performance and more likely to continue having difficulties than adolescents without that label showing identical patterns of performance and behavior (Shifrer, 2016). This finding is especially significant because of the impact a teacher’s expectations can have on the performance of students. Students are aware of their teacher’s expectations as early as first grade, and a teacher’s low expectations can contribute to a student’s own negative views about their educational attainment potential (McKown & Weinsten, 2003).

Peers of youth with learning differences also display stigmatized attitudes towards this group. Children show a desire for more social distance from and negative cognitive attitudes towards children with learning differences than typically developing children. They are less willing to engage in social activities with a child who demonstrates ADHD behaviors, and endorse more negative qualities about children with learning differences (Bellanca & Pote, 2013), including being “violent,” “stupid,” “careless,” “lonely,” “crazy” and “troublesome” (Law et al., 2007; Walker et al., 2008).

**Self-Stigma**

The process of being diagnosed and labeled is often complicated and may bring about feelings of low self-efficacy or difference from peers. Youth diagnosed with SLD report that they perceived themselves as distinct from their peers and knew that there was “something different” in their learning. This perception of being “different” is associated with feelings of unhappiness, frustration, and jealousy of other children who learn typically (Harðardóttir et al., 2015). Chan et al. (2017) highlight that the diagnostic label of SLD suggests that learning struggles are biological and permanent, which may deepen self-stigma. Youth with SLD have
higher rates of self-stigmatization than typically developing peers, and higher rates of self-stigma are associated with lower quality of life in the domains of self-esteem, friendships, and school functioning in this population (Chan et al., 2017). In a qualitative study of adolescents with ADHD, McKeague et al. (2015) noted that self-stigma is prevalent for youth with ADHD as well and is associated with negative self-evaluation.

**Summary: Stigma and Learning Differences**

Stigmatization against youth with learning differences is well established, and can result in discrimination by teachers, peers, and other adults in the affected child’s life. However, few studies have looked at the impact of stigma consciousness on mental health outcomes in youth with learning differences specifically. As youth with learning differences tend to experience poor mental health outcomes—including low self-esteem, anxiety, and depression—it is crucial to consider the role stigma may play.

**Social-Emotional Health in Youth with Learning Differences**

It is well established that youth with learning differences experience poor social and emotional health outcomes (Al-Yagon, 2016; Nelson & Harwood, 2011b; Simoni, 2016). Social-emotional health is crucial not only for well being, but also for relational and occupational success. For the purposes of this study, social-emotional health outcomes included anxiety, depression, and sense of relatedness. Due to the possible differences between youth diagnosed with SLD, ADHD and comorbid SLD/ADHD, extant research findings concerning each group are discussed for each social-emotional health outcome.

**Anxiety**

Youth with learning differences are at a higher risk for anxiety disorders and subclinical anxiety symptoms. A review of anxiety prevalence in school-age children with SLD reported that
approximately 70% of students with SLD experienced a higher number of sub-clinical anxiety symptoms than students without SLD (Nelson & Harwood, 2011b). The rates of clinical anxiety disorders in youth with SLD are also higher than typically developing youth (Mammarella et al., 2016). In a study that included children and adolescents ages 7-17 with SLD, Panicker and Chelliah (2016) found that 23.8% of the participants suffered from physical anxiety symptoms (i.e., autonomic arousal and skeletal muscle effects), situational anxiety, and anxious affect, all of which increased with age. The increase could be partially due to the fact that as school increases in difficulty, learning difficulties may feel more salient or apparent, or it could also be due to the increasing importance of fitting in with peer groups and the growing awareness of their differences.

Parents of school age children with SLD tend to rate their child’s anxiety higher than the child’s own self rating, and significantly higher than parents of typically developing children (Bonifacci et al., 2016). It is also possible that anxiety may spike for this population in specific situations. Haft et al. (2018) found that youth with SLD reported a higher level of anxiety than non-SLD youth during academic tasks such as reading. It is clear that anxiety is a relevant issue for youth with SLD. However, the mechanisms behind the connection between SLD and anxiety are unclear. It is possible that anxiety and SLD share a common neurological etiology, and therefore frequently co-occur, or that high anxiety may produce learning problems. However, the most commonly accepted theory regarding the connection between SLD and anxiety is the secondary reaction hypothesis—this posits that anxiety is a secondary reaction to having SLD in a society where academic achievement and success is an expectation (Nelson & Harwood, 2011b). Regardless of which diagnosis precedes the other, it is likely that anxiety exacerbates learning problems—if youth feel anxious about their academic performance, they may engage in
avoidance of academic tasks, which inhibits their ability to learn and improve their academic skills.

Youth with ADHD also demonstrate elevated rates of anxiety. The rate of generalized anxiety disorder in youth with ADHD is approximately 16% (Melegari et al., 2016), which is much higher than in the general population of youth (7-8%; Ghandour et al., 2018). While ADHD and anxiety may seem in opposition to each other due to the largely externalizing nature of ADHD and internalizing nature of anxiety, these diagnoses share some common overlapping symptoms including difficulty concentrating, restlessness, and irritability (Bloemsma et al., 2013). However, in research studies that include youth with comorbid ADHD and anxiety, anxiety does not seem to impact the level of attention deficit—youth with ADHD and youth with comorbid ADHD/anxiety have similar levels of impairment, and both groups have greater attention impairment than youth with solely anxiety (Rodríguez et al., 2014; Vloet et al., 2010). This supports the hypothesis that anxiety may also be a secondary reaction to the difficulties in school and with peers in youth with ADHD, rather than inherently tied to the symptomatology of ADHD.

Few studies have directly compared anxiety in youth with SLD or ADHD to youth with comorbid SLD/ADHD. A study comparing individuals with dyslexia, individuals with ADHD, individuals with comorbid dyslexia/ADHD, and typically developing individuals found no significant difference in anxiety based on diagnosis (Nelson & Gregg, 2012). However, this study was conducted with new college students who are navigating a life transition from high school to college, which may have contributed to similar rates of anxiety. Other studies that have considered the differences in anxiety between youth with SLD, youth with ADHD, and youth with comorbid SLD/ADHD have examined levels of anxious-shy temperament (Miranda et al.,
2008) and social anxiety across these diagnostic groups (McNamara et al., 2005), and have found no significant differences.

**Depression**

Youth with learning differences are also vulnerable to experiencing depressive symptoms. Children and adolescents with SLD have a higher rate of depression related symptoms than non-SLD youth (Bonifacci et al., 2016; Maag & Reid, 2006). These symptoms include dysphoria, hopelessness, devaluation of life, self-deprecation, anhedonia, and difficulty getting started on tasks, all of which seem to increase throughout adolescence for youth with SLD (Panicker & Chelliah, 2016). According to guidance counselor reports, the classroom placement and level of inclusion in general education could be a factor in depressive symptoms in this population—guidance counselors rated youth with SLD in the general classroom as more depressed than those in a self-contained classroom (Howard & Tryon, 2002). Although the severity of impairment and other potential cognitive issues could play a role in this difference, being in an environment with typically developing peers could increase depression because of the readily available upward comparison of academic ability. However, within the Howard and Tryon (2002) study, the students in general education and self-contained classrooms did not rate their depression levels differently. Depression self-reports in youth with SLD often differ from adult reports of child or adolescent depression (i.e., parents and teachers), with adults generally reporting higher rates of depressive symptoms in youth (Nelson & Harwood, 2011a). Nelson and Hardwood (2011a) reported that this difference was likely due to lower levels of self-awareness in childhood and suggested that adult report may in fact be more accurate.

Individuals with ADHD experience higher rates of depressive symptoms than the general population (Simoni, 2016). Accordingly, youth with ADHD also experience higher rates of
clinical depression—they are 5.5 times more likely to be diagnosed with major depressive disorder than their typically developing peers (Daviss, 2008). Youth with comorbid ADHD and clinical depression tend to have more severe symptoms and are at an elevated risk for long-term impairment and suicide in comparison to youth with only ADHD or only depression (Biederman et al., 2008).

Youth with comorbid SLD/ADHD also seem to have higher rates of depression than typically developing youth, with mixed findings regarding the differences between youth with SLD or ADHD only and comorbid SLD/ADHD. McNamara et al. (2005) compared depressive symptoms in adolescents with SLD and adolescents with comorbid SLD/ADHD, and found that adolescents with comorbid SLD/ADHD endorsed slightly more depressive symptoms than those with only SLD, but this difference was not statistically significant. However, another study found that youth with comorbid SLD/ADHD had significantly higher levels of negative affect than youth with only SLD (Al-Yagon, 2016). It is important to consider how heightened depressive symptoms may impact existing difficulties with academic learning and attention in youth with learning differences. Research shows that negative affect can depress memory, produce inefficient information processing, and decrease the flexibility, integration, and utilization of cognitive materials. Therefore, negative affect may also be a precursor of poor academic achievement rather than a downstream effect (Bryan et al., 2004).

**Sense of Relatedness**

Sense of relatedness involves the level of trust and comfort individuals feel in social relationships, how tolerant they are of differences in others, and how accessible they perceive social support to be. One’s sense of relatedness may be negatively impacted by their level of social processing and awareness, which research has generally demonstrated to be an area of
difficulty in children with learning differences. According to Bryan et al. (2004), children with SLD perform worse than typically developing peers on tasks involving perception of nonverbal social cues. They also tend to have consistent and pervasive pragmatic deficits, such as conversation topic selection, initiation and maintenance of a conversation, tactful delivery, requesting clarification, narrative production, gaze and eye contact, and comprehension of humor. While it is possible that these difficulties could be due to underlying language deficits, the true underlying mechanism is not clear (Bryan et al., 2004). However, research has also demonstrated that greater emotional reactivity in SLD, particularly in reaction to others’ emotional facial expressions, may lead to heightened social skills and sensitivity (Sturm et al., 2021). Children and adolescents with ADHD show deficits in social skills and performance, specifically difficulty handling interpersonal conflict, maintaining relationships, engaging in social reciprocity, and identifying emotional facial expressions in others (Aduen et al., 2018; Tehrani-Doost et al., 2017). Youth with ADHD additionally struggle with executive functioning, which is necessary for social skills such as problem solving and inhibition (Da Fonseca et al., 2009).

Youth with SLD experience difficulties in their close relationships and social networks. In comparison to typically developing children and adolescents, youth with SLD have less secure attachments to their caregivers (Al-Yagon, 2016) and lower perceived quality of relations with teachers and parents (Majorano et al., 2017). Parents of children with ADHD report poorer relationship quality with their child than parents of typically developing children, which holds true even when accounting for comorbidity of behavioral problems (Weyers et al., 2019). This population also experiences difficulties with peers—they have fewer dyadic friendships and higher rates of loneliness (Al-Yagon, 2009). In comparison to play between typically developing
dyads, play between a child with ADHD and their typically developing friend is more likely to contain conflict and negative affect. During play, children with ADHD engage in less cooperative play, and tend to show less sensitivity to their friends (Normand et al., 2019).

Youth with SLD hold some awareness of their social difficulties, and often have a low social self-concept (In-Albon et al., 2017). However, other research has demonstrated that this population reports having a high social self-concept (Bryan et al., 2004). If youth with SLD have an accurate negative perception of social rejection, that may lead to more negative emotions and a lower social self-concept. A high social self-concept could be accurate, or it may demonstrate a difference in social perception and defense that helps preserve self-esteem.

Sense of relatedness is an important outcome to study for youth with learning differences because of the role social comfort, trust, and support play in resilience in this population. In their qualitative study, Harðardóttir et al. (2015) found that youth with SLD valued support from parents, teachers, and friends, and felt that the support of a caring person helped them develop self-worth and resilience. Participants reported that supportive parents gave them encouragement, helped with homework, and advocated for the child at school. While many parents are aware of their child’s diagnosis, parents may vary in their response. Youth with SLD felt their parents were unsupportive when they did not consider education important, did not ask about homework, or did not recognize their diagnosis. Panicker and Chelliah (2016) found that 90% of parents are aware that their child has a SLD diagnosis, and only 39% of parents gave individual attention in assisting with their studies. Lack of parental involvement is predictive of lower levels of resilience in this population (Ray et al., 2017).

The support of teachers and friends can also strengthen resilience in youth with SLD. Youth with SLD felt that showing interest in and an understanding of their SLD was supportive,
and reported receiving this support from teachers and friends. However, youth with SLD also felt that some teachers favored students who performed well, or seemed annoyed with students with SLD when they requested additional help. Some children and adolescents reported feeling invisible in the classroom, separated from the typically developing children (Harðardóttir et al., 2015).

Social relationships are important for the well being of youth with ADHD as well. Social activity participation—in both breadth and depth—as well as parental involvement seem to buffer against the negative effects of risk factors, therefore increasing resilience (Ray et al., 2017). Social acceptance, positive parent relationships, and positive peer relationships also have a buffering effect for youth with ADHD, preventing and lessening depressive symptoms (Dvorsky & Langberg, 2016). The experience of peer rejection is predictive of higher externalizing behavior in youth with ADHD (Sturaro et al., 2011). Knowing what factors may impact sense of relatedness may help health professionals and teachers know how to intervene or what to target in order to increase resilience in youth with learning differences.

**Summary: Social-Emotional Health in Youth with Learning Differences**

Youth with learning differences experience worse social-emotional health outcomes than their typically developing peers. This population also seems to have underlying, intrinsic emotional regulation difficulties (Bunford et al., 2018; Bauminger & Kimhi-Kind, 2008) and social processing difficulties (Bryan et al., 2004; Tehrani-Doost et al., 2017). These factors may contribute to increased levels of anxiety (Nelson & Gregg, 2012) and depression (McNamara et al., 2005). However, because the most prominent hypothesis regarding the connection between learning differences and anxiety/depression is that the latter is a secondary reaction to the former,
it is important to consider what other factors may additionally contribute to anxiety and depression levels, including stigmatization, social rejection, and self-esteem.

**Potential Predictors of Social-Emotional Health in Youth with Learning Differences**

As youth with learning differences generally experience worse social-emotional health outcomes, it is crucial to understand what factors may be contributing to this health discrepancy in order to know what kind of interventions may be effective. This study specifically considered the role of stigma as a predictor for each social-emotional health outcome (i.e., anxiety, depression, and sense of relatedness) alongside other known predictors, namely self-esteem and peer relationships. These predictors are appropriate because research has demonstrated their connection with social-emotional health outcomes, and youth with learning differences tend to experience worse self-esteem (Ginieri-Coccossis et al., 2012; Wiener et al., 2012), as well as more trouble with peer relationships and peer victimization (Baumeister et al., 2008; Becker et al., 2017).

The experience and perception of stigma can have negative effects on health. Stigmatized groups, such as youth with learning differences, can experience rejection from their typically developing peers. This is particularly true for children and adolescents with externalizing behavioral issues, which are associated with ADHD—in this population, the level of externalizing behaviors is predictive of peer rejection (Sturaro et al., 2011). Stigma associated with the SLD and ADHD diagnoses can negatively impact treatment adherence and utilization. Singh et al. (2010) found that students with ADHD feel “exposed” or “different” when taking their medications at school due to stigma about mental health and psychopharmacology. In adolescents with ADHD, the perception of stigma is inversely related to treatment utilization for a similar reason (Bussing et al., 2011). Because self-stigma is associated with increased negative
emotion, social difficulties, and a decrease in help-seeking behavior for mental health support in other mental illnesses (Drapalski et al., 2013), it is possible that internalized stigma or awareness of discrimination (i.e., stigma consciousness) would have a similar impact in youth with learning differences.

**Role of Stigma, Self-Esteem, and Peer Relationships in Anxiety for Youth with Learning Differences**

In youth with SLD, anxiety symptoms tend to increase throughout late childhood and adolescence. Panicker and Chelliah (2016) posit that due to the increasing importance of peer acceptance throughout this developmental period, the rise in anxiety could be tied to youth’s increased awareness and experience of being different from their peers. Panicker and Chelliah also highlight that society tends to judge youth at this age based on their academic performance and disproportionately favor academic abilities over non-academic abilities, putting those with learning differences at a disadvantage.

Although the role of stigma specifically related to learning differences in anxiety has not been adequately researched, stigma in other contexts is associated with higher anxiety. The perception of discrimination, one of the five consequences of stigma as described by Link and Phelan (2001), can be harmful to psychological well being. Perceived discrimination can occur as early as during middle childhood and is associated with increases in anxiety and negative affect (Schmitt, et al., 2014). In other populations, such as those with intellectual disability, self-reported stigma is associated with higher rates of anxiety and depression (Ali et al., 2015).

In young people, self-esteem is predictive of internalizing symptoms such as anxiety and depression, even when accounting for coping behavior, social networks, and stressful life events (In-Albon et al., 2017). Youth with SLD and lower self-esteem tend to have higher test anxiety
in particular. These two concepts are negatively correlated—the lower the rates of self-esteem, the more test anxiety youth with SLD experience (Peleg, 2009). Youth with ADHD also demonstrate an association between higher anxiety and lower self-esteem (Castagna et al., 2017).

In general, poor peer relationships are associated with anxiety (Sentse et al., 2017). In youth with SLD, experiences of peer victimization are correlated with anxiety (Baumeister et al., 2008). In children and adolescents with ADHD, the presence of anxiety symptoms was associated with direct, in-person experiences of peer victimization, but not cyber-bullying. There may also be a developmental component to the connection between peer relationships and anxiety in youth with ADHD—at age 10, there seemed to be no connection, but by age 16, there is a clear association between high levels of peer rejection and high levels of anxiety (Bishop et al., 2019).

**Role of Stigma, Self-Esteem, and Peer Relationships in Depression for Youth with Learning Differences**

Depression is theorized to connect to stigma similar to the way anxiety is associated with experiences of stigma. In general, perceived discrimination is also associated with higher levels of depression (Schmitt, et al., 2014). The role of stigma in depression specifically for youth with learning differences has not been well studied beyond a theoretically based interpretation of results. For example, Panicker and Chelliah (2016) found that depression in youth with SLD seems to increase throughout childhood and adolescence, in accordance with the increasing importance of peers. As with anxiety, the researchers posited this increase in depression could be due to an increased, negatively charged awareness of one’s difference from peers in addition to increasing academic difficulty.
However, the role of stigma in depression has been studied in other populations, which can shed some light on the connection between the two experiences. For example, in children with epilepsy—who experience stigma related to the psychosocial consequences of seizures—stigma was the most significantly contributing factor to depressive symptoms, even beyond demographic and clinical factors (Yildirim et al., 2018).

Depression is also a stigmatized condition in and of itself in children and adolescents. Additionally, because of the comorbidity, depression stigma is often studied alongside ADHD and SLD stigma. In a study investigating stigmatized attitudes toward vignettes describing children with ADHD symptoms and depression symptoms, Ohan et al. (2013) found that adults negatively stigmatized both conditions. Children display similarly negative attitudes towards vignettes describing other children with depression symptoms, ADHD symptoms, and SLD symptoms (Bellanca & Pote, 2013). For adolescents, both the experience of ADHD and depression are similarly associated with “feeling different” and hiding mental health struggles (McKeague et al., 2015). Therefore, the experience of depression as a secondary reaction to having an SLD and/or ADHD diagnosis may compound the stigma that is already experienced by this population.

In general, low self-esteem is predictive of depressive symptoms (Hilbert et al., 2019; In-Albon et al., 2017). In youth with SLD, parents’ report of their child’s depression symptoms is correlated with the child’s report of self-esteem (Bonifacci et al., 2016). Because these concepts come from two different sources, it can be difficult to say if this is a clear connection between self-esteem and depression in this population. However, a study by Kiuru et al. (2011) found that the relationship between learning difficulties and depression was mediated by a sense of inadequacy as a student, which is related to self-esteem. In a study with youth with ADHD, the
relationship between ADHD symptomatology and depression was mediated through low self-esteem (Kita & Inoue, 2017).

Research has demonstrated an association between poor peer relations and depression in youth with learning differences. Youth with SLD are both less accepted by peers and endorse more depressive symptoms than typically developing children (Baumeister et al., 2008). In Baumeister et al.’s (2008) study, the experience of being frequently teased and not being liked by other children was positively correlated with depression. It is possible that poor social functioning and peer relations may also play a role in the development of depressive symptoms in youth with ADHD (Becker et al., 2015). Simoni (2016) found that youth with ADHD generally have worse social skills, and that social ability—such as getting along with peers—accounted for some of the association between ADHD and depression (Dvorsky & Langberg, 2016; McQuade et al., 2014; Simoni, 2016).

Role of Stigma, Self-Esteem, and Peer Relationships in Sense of Relatedness for Youth with Learning Differences

Research has established that youth with learning differences may have intrinsic difficulties in social processing, which would impact their sense of relatedness. However, relationships are inherently at least a two-way dynamic, so it is important to consider the way that other people are interacting with this population in a relational context as well. Other adults, teachers, and peers may all hold stigmatized attitudes toward youth with learning differences. For example, parents of other children and peers engage in social distancing from these youth (Law et al., 2007; Martin et al., 2007). Simoni (2016) highlighted that labeling and stigmatization are important sociological components to consider in social and emotional outcomes for youth with ADHD. The negative, stigma-informed attitudes youth with ADHD
receive from others may lead youth to decrease social ties and spend less time in social relationships (Simoni, 2016). Although little research has been done on the impact of stigma on social trust or comfort specifically with youth with learning differences, research on mental health stigma in general has demonstrated a connection between stigma and lack of trust. For example, those with stigma experiences (e.g., expectations of stigma or self-stigma) related to their mental health condition had less trust in mental health care staff (Verhaeghe & Bracke, 2011).

Research on the link between self-esteem and sense of relatedness is largely correlational. Youth with SLD have more social difficulties and lower self-esteem than typically developing youth, and the experience of social difficulties and self-esteem are inversely correlated (Ginieri-Coccossis et al., 2012). Youth with SLD who experience less peer acceptance are lonelier, and tend to also have worse self-esteem (Valås, 1999) and a poor social self-concept (Majorano, 2017). A meta-analysis of young people with ADHD also found links between self-esteem and social relatedness. The meta-analysis in question by Harpin et al. (2016) reported that untreated ADHD was associated with both poorer self-esteem and worse social functioning in children and adolescents, but not in young adults. This finding demonstrates the importance of studying this relationship during youth, as it is more impactful during this developmental period.

Peer relationships and sense of relatedness are highly related, but are different concepts. Peer relationships focus on the perception of social acceptance/rejection and victimization specifically by peers, whereas sense of relatedness captures one’s internal level of comfort and social trust with others in general, as well as accessibility of social support. In the general population, adolescents who experience peer victimization often have lasting difficulty with trust and maintaining friendships—bullied adolescents often engage in social withdrawal and perceive
others as threatening (Ladd et al., 2014; Leadbeater et al., 2014). Youth with SLD and comorbid SLD/ADHD report more loneliness than their typically developing peers, which is theorized to be a response to experiences of peer rejection, disruptions in social networks, and a lack of intimate close relationships and interpersonal bonding (Al-Yagon, 2016). Youth with ADHD show a heightened response to peer rejection on a neurological level (Babinski et al., 2019), similar to the way adolescents who have a history of chronic peer rejection in childhood have a heightened neural response to social exclusion (Barchia & Bussey, 2010).

The Present Study: Significance and Proposed Impact

Youth with SLD and/or ADHD, defined for the purposes of this study as youth with learning differences, face disproportionately high rates of poor social-emotional outcomes in comparison to their typically developing peers, including increased anxiety and depression (Al-Yagon, 2009) as well as difficulties trusting and connecting with others in social relationships (Majorano et al., 2017). It is important to consider the role that stigma and the awareness of stigma may play in social-emotional health outcomes rather than viewing these outcomes as solely intrinsic deficits. Stigma is a discrediting attitude against a specific group that results in stereotyping and discrimination. Although the existence of stigma against youth with learning differences is well established (Geiger & Brewster, 2018), previous research has not considered the way stigma and the awareness of stigma may impact this population. This study helps to clarify the role that stigma consciousness plays alongside other variables (i.e., self-esteem and peer relationships) in predicting poor social-emotional health outcomes in youth with learning differences in order to inform future treatment targets.

Research Questions and Conceptual Hypotheses
The first question within the present study focuses on potential differences across diagnostic groups:

Question 1: How do youth diagnosed with SLD, ADHD, and comorbid SLD/ADHD compare on measures of stigma consciousness and social emotional health?

**Hypothesis 1a:** Of the three groups, youth with comorbid SLD/ADHD will have the highest levels of stigma consciousness due to multiple diagnostic labels.

**Hypothesis 1b:** Of the three groups, youth with comorbid SLD/ADHD will have the poorest social-emotional health outcomes due to multiple deficits and diagnostic labels.

**Null hypothesis 1:** The three groups will not differ in measures of social-emotional health and/or stigma consciousness.

Questions 2-4 focus on the impact of various factors in predicting outcomes related to social-emotional health in youth with learning differences. In addition to examining main effects, an interaction term of diagnosis (SLD, ADHD, or comorbid SLD/ADHD) by predictor was included in the final step of the model to understand whether the relationship between predictor variables and socioemotional outcomes differed based on diagnostic group.

Question 2: What percentage of variance is accounted for by stigma consciousness, peer relationships, self-esteem, and an interaction term of diagnosis by predictor in predicting anxiety in youth with learning differences after accounting for demographic factors and diagnosis?

**Hypothesis 2:** Stigma consciousness will be a unique predictor of anxiety in this population, even when accounting for other known predictors (i.e., peer relationships and self-esteem).

**Null hypothesis 2:** Stigma consciousness will not be a significant predictor of anxiety in this population.
Question 3: What percentage of variance is accounted for by stigma consciousness, peer relationships, self-esteem, and an interaction term of diagnosis by predictor in predicting *depression* in youth with learning differences after accounting for demographic factors and diagnosis?

*Hypothesis 3:* Stigma consciousness will be a unique predictor of depression in this population, even when accounting for other known predictors (i.e., peer relationships and self-esteem).

*Null hypothesis 3:* Stigma consciousness will not be a significant predictor of depression in this population.

Question 4: What percentage of variance is accounted for by stigma consciousness, peer relationships, self-esteem, and an interaction term of diagnosis by predictor in predicting *sense of relatedness* in youth with learning differences after accounting for demographic factors and diagnosis?

*Hypothesis 4:* Stigma consciousness will be a unique predictor of sense of relatedness in this population, even when accounting for other known predictors (i.e., peer relationships and self-esteem).

*Null hypothesis 4:* Stigma consciousness will not be a significant predictor of sense of relatedness in this population.

**Method**

**Study Design**

This study utilized quantitative methodology and employed secondary data analysis by drawing data from a larger, primary study conducted by Haft et al. (2019) at the University of California San Francisco (UCSF) BrainLENS in conjunction with Eye to Eye, a nationwide near-
peer mentoring program for elementary and middle school students with learning differences. The primary longitudinal study sought to examine the impact of the Eye to Eye mentoring program on social-emotional health. Data were collected during the Fall (Time 1) and Spring (Time 2) of one academic year. The University of California San Francisco Institutional Review Board approved the larger study.

The present study used a cross-sectional design with a subset of data from Time 1 in order to examine connections between variables at a single time point in one population (i.e., youth with learning differences).

**Participants**

*Inclusion and Exclusion Criteria*

**Primary Study.** In order to qualify for the Haft et al. (2019) study, participants needed to be 1) between 8 and 16 years old and 2) able to read and understand English. The study recruited participants for three groups: youth with SLD and/or ADHD in the Eye to Eye mentoring program (Group 1), youth with SLD an/or ADHD not in the mentoring program (Group 2), and typically developing youth without SLD or ADHD (Group 3). Each group had additional eligibility criteria. Participants in Group 1 additionally needed to 1) have no formal diagnosis of a neurodevelopmental or major psychiatric disorder besides SLD/ADHD and 2) be enrolled in the Eye to Eye program for the upcoming school year as a first-time participant. Participants in Group 2 additionally needed to have 1) no formal diagnosis of a neurodevelopmental or major psychiatric disorder besides SLD/ADHD and 2) no current or past involvement in the Eye to Eye program. Participants in Group 3, the typically developing control group, additionally could not have a formal diagnosis of a neurodevelopmental or major psychiatric disorder.
**Current Study.** Participants for the current study were selected from the primary study using the following criteria: a) completion of the Time 1 assessment and b) reporting a SLD and/or ADHD diagnosis.

**Sample**

The primary study (Haft et al., 2019) collected data from 251 participants at Time 1. Of those 251 participants, 152 participants reported a diagnosis of SLD, ADHD, or comorbid SLD/ADHD. Of the 152 participants, 56 participants were missing data points and were excluded using listwise deletion, which left 96 participants. Of note, 36 of the 56 participants were missing data specifically from the Stigma Consciousness Questionnaire – Learning Disabilities (SCQ-LD); per Haft et al. (2019), the SCQ-LD was added during data collection and thus some students in the larger study who completed the survey prior to the addition of the SCQ-LD were not administered this questionnaire. Differences between the final sample and those excluded due to missing data are further explored in the Data Cleaning section below.

The mean age of the final sample (N = 96) was 11.85 years old (SD = 1.6) with a range of 9 to 15 years old. Fifty-five percent (n = 63) of the sample identified as male, and the remaining participants identified as female. In terms of racial/ethnic background, 52.1% (n = 50) identified as white, 22.9% (n = 22) as Black, 4.1% (n = 4) as Hispanic, 4.1% (n = 4) as Asian, and 15.6% (n = 15) as multiracial. Seventy-seven percent (n = 74) of the participants were classified as high affluence, whereas 20.8% (n = 20) were classified as middle affluence and 2% (n = 2) were classified as low affluence. In terms of diagnosis, 41.67% (n = 40) of participants reported a diagnosis of SLD, 25% (n = 24) reported a diagnosis of ADHD, and 33.33% (n = 32) reported a diagnosis of comorbid SLD/ADHD.

**Procedure**
Participants in Group 1 were recruited using convenience sampling through the Eye to Eye chapters in 12 different private, public, and charter schools all over the United States. Eye to Eye participants were recruited from four chapters in Colorado, three in Wisconsin, two in New York, three in Pennsylvania, one in Virginia, one in Indiana, two in California and two in Illinois. These Eye to Eye chapters were chosen based on the program’s level of establishment within the school community as well as program or school access to computers. The participants in Group 2 and 3 were recruited using purposive sampling. Advertisements were emailed to principals and special education coordinators at schools geographically and demographically similar to those in Group 1, requesting that they forward the information to families at their schools. After obtaining parental consent, self-report questionnaires containing various measures (described in greater detail below) were administered electronically to participants at their schools. The order of the questionnaires was randomized for each participant, and participants had the option to hear all questions from a recording. Parents of participants provided collateral information in order to verify the demographic and diagnostic information reported by the participants. No further screening actions were taken. Participants received a gift of $10 in value (a backpack) after completing both the time 1 and time 2 survey. Teachers who facilitated the electronic administration of the surveys at school received $50 worth of gift cards after the completion of both time 1 and time 2 data collection.

Measures

Demographics

In addition to basic demographic information (i.e., age, gender, race, and diagnoses; see Appendix A), information about family affluence was measured using the Family Affluence Scale II (FAS-II; see Appendix B; Boudreau & Poulin, 2009). This questionnaire measures the
degree of material resources available to the family, and includes questions about vacations, number of bedrooms, and car and computer ownership. Because the item regarding number of bedrooms is not as indicative of family affluence (Kehoe & O’Hare, 2010), it was removed for the purpose of the primary study. Without the bedroom item, the scale had a reported Cronbach alpha coefficient of .36. The FAS-II scale was selected over another measure of socioeconomic status, which asks about parental education and income, because the items of the FAS-II are more likely to be understood and answered accurately by youth. In addition to providing a numerical score, the FAS-II also provides cut-off recommendations to classify participants as low (score of 0-2), middle (score of 3-5), and high (score of 7+) affluence. This scale had Cronbach’s alpha coefficient of .55 for participants in the current study.

**Stigma Consciousness**

Stigma consciousness was measured using the Stigma Consciousness Questionnaire – Learning Disabilities (SCQ-LD; Daley & Rappolt-Schlichtmann, 2018; see Appendix C), an adaptation of Pinel’s (1999) Stigma Consciousness Questionnaire (SCQ), which assessed stigma consciousness in adult women, sexual minorities, and racial minorities ($\alpha = .64-.84$). The original SCQ included 10 items regarding stigma-consciousness in women (e.g., *Most men have a problem viewing women as equals*) each rated on a 7-point Likert scale, where $1 = strongly disagree$ and $7 = strongly agree$. The SCQ-LD was adapted for adolescents with SLD by Daley and Rappolt-Schlichtmann (2018) in conjunction with an expert advisory board with experience with youth with SLD, research methodology, and adolescent development and stigma. Daley and Rappolt-Schlichtmann first replaced key phrases (i.e., exchanging “women” or “female” with “people with learning disabilities”) as applicable, and then investigated the readability, understanding, and accessibility of the items with two pilot groups of adolescents diagnosed with
SLD \((N = 6, 10)\). Based on qualitative results and feedback from the advisory board, researchers shortened the 7-point Likert scale response to a 4-point Likert scale, altered the wording of items to be more developmentally appropriate, and added additional items for a total of 15 items. Three items were subsequently dropped due to low factor loading (i.e., < .33) in the validation study with a group of 44 adolescents diagnosed with SLD. The final SCQ-LD was comprised of 12 statements regarding stigma-consciousness for youth with LD that focused on external stigma experiences, stigmatized attitudes and beliefs, and internal reactions to those experiences and beliefs (see Appendix C). Participants rate their agreement with each statement on a 4-point Likert scale, where 1 = *strongly disagree* and 4 = *strongly agree*. The remaining 12 items loaded onto a single factor \((\alpha = .82)\). The SCQ-LD was significantly correlated with the Self-Perception Profile for Learning Disabled Students and the Self-Consciousness Scale for Children, which reinforced the validity of the SCQ-LD 12-item scale. The SCQ-LD created by Daley and Rappolt-Schlichtmann yields one stigma consciousness score by averaging scores across the 12-item scale, with items 2, 5, 7, 9, 10, 11, and 12 reverse scored. No other validation studies for the SCQ-LD have been published to date. For the purposes of the primary study, ADHD was added to the language of the questions as well (i.e., *some people treat me differently because of my learning disability or ADHD*).

**SCQ-LD Factor Structure.** As the present study had a larger sample size \((N = 96)\) than the original SCQ-LD validation study (Daley & Rappolt-Schlichtmann, 2018, \(N = 44\)) and included a younger age range of youth diagnosed with SLD and/or ADHD, both exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) were conducted in order to determine the best factor structure for this scale. Based on the results as described below, a two-factor model for the SCQ-LD was determined to be the best fit within the present study.
A combination of eigenvalues, parallel analysis, and Velicer’s minimum average partial (MAP) test were used to determine the number of potential factors for extraction as outlined in Watkins (2018). Initial principal components analysis with varimax rotation and parallel analysis both indicated evidence for a three factors. However, Velicer’s MAP test indicated that two factors would be sufficient. Initial EFA results indicated that the three-factor model accounted for the most variance (three-factor model cumulative variance = .46; two-factor model cumulative variance = .39; one-factor cumulative variance = .23). However, not all items met the threshold factor loading of .4 (Costello & Osborne, 2005); item 5 (People assume I’m just like all the other kids with learning disabilities or ADHD) did not have a sufficient loading on any factor in the three-factor model, and both item 5 and item 12 (Most people know that people with learning disabilities or ADHD can be smarter or even more creative than other people) did not sufficiently load onto any factor in the two-factor model. Both items also appeared qualitatively different from other items within the measure. When item 5 was removed from the data, both parallel analysis and Velicer’s MAP test indicated the existence of two factors, whereas the eigenvalues continued to indicate evidence for three factors. When items 5 and 12 were removed, all three tests indicated the presence of two factors. Upon item removal, the two-factor model appeared to be a better fit than the three-factor model based on the results of the Vuong test \( p < .001 \), a likelihood ratio test for non-nested models (Vuong, 1989), as well as the comparison of Cronbach’s alpha coefficients (two-factor model \( \alpha = .78 - .8 \), three factor model \( \alpha = .58 - .78 \), see Table 1), and CFA goodness of fit indicators (see Table 2). Per guidelines discussed in Hu and Bentler (1999), the Standardized Root Mean Square Residual (SRMR) for the two-factor model was adequate (SRMR = .08), where this statistic for the three-factor model did not indicate a good fit (SRMR = .1). Additionally, the comparison between the Akaike Information
Criteria (AIC) and sample-size adjusted Bayesian Information Criteria (aBIC) demonstrated support for the two-factor model. Raftery (1995) suggests that a difference of -10 indicates a better fit, with smaller values being superior; the two-factor model demonstrated differences ranging from -250.93 to -253.29 when compared to the three-factor model.

**Table 1**

*Cronbach’s Alpha Coefficients by Factor*

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<td>Including all items</td>
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<td>Factor 3</td>
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**Table 2**

*SCQ-LD Model Comparison*

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<th>Three-factor model</th>
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<td>P-value (Chi Square)</td>
<td>&lt; .001</td>
<td>.002</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.11</td>
<td>.1</td>
</tr>
<tr>
<td>SRMR</td>
<td>.08</td>
<td>.1</td>
</tr>
<tr>
<td>AIC</td>
<td>2584.36</td>
<td>2837.65</td>
</tr>
<tr>
<td>aBIC</td>
<td>2571.9</td>
<td>2822.83</td>
</tr>
</tbody>
</table>

*Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximations; SRMR = Standardized Root Mean Square Residual; AIC = Akaike Information Criteria; aBIC = Sample-Size Adjusted Bayesian Information Criteria.*

The two-factor model also made theoretical sense; that is, the items roughly grouped together in two factors that can be broadly conceptualized as a “negative stigma” factor (Factor 1) and a “lack of stigma impact” factor (Factor 2). The factor loadings for the two-factor model are shown in Table 3. The negative stigma factor included items that focused on the perception of stigma based on others’ beliefs (e.g., *Most people have negative view about kids with learning...*)
disabilities or ADHD, even if they don’t say them out loud) and actions (e.g., Some people treat me differently because of my learning disabilities). Items within the lack of stigma impact factor represented ways that individuals internalized and coped with the impact of stigma, often through cognitive reappraisal (e.g., People make assumptions about kids with learning disabilities or ADHD, but that doesn’t affect me). Of note, all items within the lack of stigma impact factor were reverse scored on the original SCQ-LD questionnaire. Items were not reverse scored in the current factor analysis; thus, higher scores indicated less negative impact of stigma, and lower scores indicated a more negative impact of stigma perception on thoughts and beliefs.

Table 3

<table>
<thead>
<tr>
<th>Item</th>
<th>Loading: Factor 1</th>
<th>Loading: Factor 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Some people treat me differently because of my learning disability or ADHD.</td>
<td>.55</td>
<td>-</td>
</tr>
<tr>
<td>3) I worry about people judging me because I have a learning disability or ADHD.</td>
<td>.60</td>
<td>-.2</td>
</tr>
<tr>
<td>4) Most people have negative views about kids with learning disabilities or ADHD, even though they don’t say them out loud.</td>
<td>.85</td>
<td>-</td>
</tr>
<tr>
<td>6) In my experience, many people think that there is something wrong with kids with learning disabilities or ADHD.</td>
<td>.72</td>
<td>-</td>
</tr>
<tr>
<td>8) Most people think they’re better than me just because of my learning disability or ADHD.</td>
<td>.55</td>
<td>-.24</td>
</tr>
<tr>
<td>2) Most people don't judge someone else just because that person has a learning disability or ADHD.</td>
<td>-</td>
<td>.49</td>
</tr>
<tr>
<td>7) I never worry that people think I act like someone with a learning disability or ADHD.</td>
<td>-.24</td>
<td>.73</td>
</tr>
<tr>
<td>9) People make assumptions about kids with learning disabilities or ADHD, but that doesn't affect me.</td>
<td>-</td>
<td>.66</td>
</tr>
<tr>
<td>10) I don't usually think about my learning disability or ADHD when I'm with kids who don't have one.</td>
<td>-</td>
<td>.73</td>
</tr>
<tr>
<td>11) I never worry about feeling judged because of my learning disability or ADHD.</td>
<td>-</td>
<td>.60</td>
</tr>
</tbody>
</table>

Given that the SCQ-LD had only been previously validated in a small sample of adolescents with SLD who were older than the participants in the current study, and because current factor analysis results indicated evidence for a 10-item two-factor solution rather than the original 12-item one-factor model, all subsequent analyses involving stigma consciousness were
conducted using the two newly identified factors of the SCQ-LD (negative stigma and lack of stigma impact) rather than the total scale score.

**Sense of Relatedness**

Sense of relatedness was measured by the Resiliency Scales for Children and Adolescents (RSCA, Prince-Embry & Steer, 2010). The RSCA consists of 62 items that map onto three scales: sense of mastery, sense of relatedness, and emotional reactivity. For the purposes of this study, only the sense of relatedness scale was used. In the RSCA, participants rate how the item describes them on a 5-point Likert scale, where 1 = *Never* and 5 = *Almost Always*. The sense of relatedness scale consists of 24 items across three subscales: trust (e.g., *I can trust others*), support (e.g., *If something bad happens, I can ask my parents for help*), and comfort (e.g., *I can make up with friends after a fight*), with a Cronbach’s alpha of .89-.91 across subscales. The RSCA has been used in nonclinical and clinical samples (i.e., children and adolescents with various psychiatric disorders). Additionally, it has been used in schools as a tool to measure these variables in high-risk populations and students with ADHD. For the participants within the present study, the sense of relatedness scale had a Cronbach’s alpha coefficient of .87.

**Social-Emotional Health (Self-Esteem, Depression, Anxiety, and Peer Relationships)**

The Behavior Assessment System for Children’s Self-Report of Personality, 2nd Edition (BASC-2-SRP), child version and adolescent version were used to measure social-emotional health. Developed by Reynolds and Kamphaus (2004), this measure is age and gender-normed, and is a highly utilized and reliable measure of child and adolescent behavior (age 8-11: \( \alpha = .88 \); age 12-14: \( \alpha = .89 \); age 15-18: \( \alpha = .86 \)). The BASC-2-SRP child version (SRP-C) and adolescent version (SRP-A) each consist of the same 14 subscales. The questions are answered using either a True/False response or a 4-point Likert scale, where 1 = *Never* and 4 = *Almost Always*. 
For the purposes of this study, the Self-Esteem (8 items for SRP-C and 8 items for SRP-A, $\alpha = .77 - .83$), Anxiety (11 items for SRP-C and 13 items for SRP-A, $\alpha = .86$), Depression (13 items for SRP-C and 12 items for SRP-A, $\alpha = .84 - .88$), and Interpersonal Relations (6 items for SRP-C and 7 items for SRP-A, $\alpha = .79 - .81$) subscales were used. The self-esteem subscale measures feelings of respect and acceptance towards oneself, and includes items such as “I feel good about myself” and “I think I am a good person.” The anxiety and depression subscales measure symptoms associated with these mental health conditions. Items for anxiety focus on feelings of nervousness, worry and fear, and include items such as “I worry about little things” and “I worry but I do not know why.” The depression subscale measures feelings of unhappiness, sadness, and dejection, including items such as “I feel sad” and “I think my life is getting worse and worse.” The interpersonal relations subscale was used to measure peer relationships, as items measure the perception of having good social relationships specifically with peers, including items such as “Other kids hate to be with me” and “My classmates don’t like me.” This measure has age-norms that reflect the age of this study’s sample and is used for students with potential behavioral and emotional concerns. Cronbach’s alpha coefficients indicated adequate internal reliability on all scales across the child and adolescent forms for the population within the present study (Depression $\alpha = .86 - .89$; Anxiety $\alpha = .87 - .89$; Self-esteem $\alpha = .84 - .85$; Interpersonal $\alpha = .74 - .85$).

**BASC-2-SRP Factor Structure.** Anxiety and depression frequently co-occur in youth and are both examples of internalizing disorders (Garber & Weersing, 2010). Measures of anxiety and depressive symptoms, including the Behavior Assessment System for Children (BASC) and the BASC Behavioral and Emotional Screening System (BASC BESS), often group these symptoms together into one factor or composite score (Reynolds & Kamphaus, 2004;
Dowdy et al., 2011; Harrell-Williams et al., 2015). In order to determine the factor structure of the BASC-2-SRP in this population and to explore whether anxiety and depression could be collapsed as one outcome variable for the purposes of this study, both EFA and CFA were conducted with the items from the anxiety and depression scales. Due to variations in the questionnaire items (i.e., True/False and Likert responses; different items on the Child SRP and the Adolescent SRP), per the protocol outlined by Xu and Leung (2018) separate analyses were conducted for the following responses: 1) Child form True/False responses, 2) Child form Likert responses, 3) Adolescent form True/False response, and 4) Adolescent form Likert responses; results of the factor model comparisons are reported in Appendix D. Of note, tetrachoric correlation coefficients were used for the binary True/False responses EFAs as suggested by Watkins (2018), and the diagonal weighted least squares estimates were used rather than the robust maximum likelihood estimates in the True/False CFAs as directed by Li (2016).

Statistical estimations of the number of factors using eigenvalues, parallel analysis, and Velicer’s MAP test indicated evidence for a range of one to four factors across the forms and response types. On the Adolescent form, most anxiety and depression items were grouped by variable across two to four factors. As such, the results did not indicate evidence for a single combined anxiety and depression outcome variable. On the Child form, one to three factors were detected, all of which contained a mixture of both anxiety and depressive items. CFAs were conducted for both the Adolescent and Child form responses in order to compare a possible one-factor structure to the two-factor structure as determined by the BASC-2-SRP. The results did not indicate strong evidence for a one-factor model over the established two-factor models. In comparison to the two-factor model, the one-factor model did not show substantial improvement across any goodness of fit indicator (see Appendix D), including the Akaike information criteria.
(AIC), sample-size adjusted Bayesian information criteria (aBIC), comparative fit index (CFI), Tucker-Lewis index (TLI), root mean error of approximations (RMSEA), or the standardized root mean square residual (SRMR).

Overall, factor analyses of the BASC-2-SRP in this sample did not demonstrate compelling evidence for changing the original factor structure of the measure for the purposes of this study. Because the BASC-2 has been normed on much larger samples that included youth with SLD and ADHD (Reynolds & Kamphaus, 2004), the original factor structure was used for this study and anxiety and depression were treated as separate variables.

Data Analysis Plan

Data Cleaning

Upon receiving the data from Haft et al. (2019), the data were organized using Excel and screened for inclusion criteria, which led to a sample of 152 participants. Fifty-six participants were identified as having missing data points. To determine whether there were significant group differences between the 96 participants with complete data and the 56 participants with missing data, chi-square and t-tests were completed on demographic variables (i.e., age, family affluence, gender, race/ethnicity, diagnosis), predictor variables (i.e., stigma consciousness factors, self-esteem, interpersonal relations), and outcome variables (i.e., anxiety, depression, and sense of relatedness). There were no significant differences between included and excluded participants on predictor or outcome variables (all ps > .05). However, there were significant differences in age (p = .005), family affluence (p < .001), and race/ethnicity (p = .004) between the two groups. Participants with missing data were on average older, had lower scores of family affluence, and were a more racially/ethnically diverse group than participants who were ultimately included in the final sample. All results reported hereafter pertain to the final sample (N = 96).
Data Analysis

All statistical analyses were conducted using the statistical software R (R Core Team, 2013). As part of data preparation, exploratory and confirmatory factor analyses were conducted to determine the appropriate factor structure to use for the SCQ-LD and the BASC-2-SRP (as noted on pp. 35-39 and 40-42). The determined factor structure was used throughout the remaining analyses. The descriptive statistics were then obtained for all demographic, predictor, and outcome variables, and analyses were run to examine score distribution, identify outliers, and check skewness and kurtosis. Bivariate correlations were run between variables to determine potential associations, and multicollinearity was evaluated prior to running regression analyses.

To answer research question 1, one-factor analysis of variance (ANOVA) tests were conducted for each variable (i.e., stigma consciousness and social-emotional health variables). Each one-way ANOVA included three levels based on diagnosis: 1) youth diagnosed with SLD; 2) youth diagnosed with ADHD; and 3) youth diagnosed with comorbid SLD/ADHD.

In order to answer questions 2-4, hierarchical multiple regressions were run to determine the role of various factors in accounting for variance in the outcomes of anxiety (question 2), depression (question 3), and sense of relatedness (question 4). In each hierarchical multiple regression, variables were included in accordance with their hypothesized predictive power, with variables hypothesized to be the least predictive entered first and those hypothesized to be the most predictive entered last.

Data Preparation

Distribution of Variables. The distributions of the predictor and outcome variables were examined using guidelines for interpreting skewness as described by Kline (2015); all variables appeared to be normally distributed (i.e., skewness < 3). All variables were screened for outliers
as described by Tabachnick and Fidell (2013). Three outliers were identified in the interpersonal relations scale (10, 10, 15), five outliers were identified in the self-esteem scale (10, 10, 10, 13, 13), and two outliers were identified in the depression scale (87, 89). Of note, the outliers in each of these scales are in the clinically significant range per BASC-2-SRP interpretation guidelines, with scores falling <1<sup>st</sup> percentile or >99<sup>th</sup> percentile. All analyses were conducted including the outliers and excluding the outliers to determine the relative impact of outliers (Sweet & Grace-Martin, 2011). Results including descriptive statistics, factor analyses, and the analysis of variance (ANOVA, question 2) did not differ without the outlier data points. However, the results of the hierarchical regressions (questions 3-5) did change. Because of the changes within the regression outcomes, Cook’s Distance analysis was conducted as an additional step to examine the influence of outlier data points specifically within the regression results. All outlier points were below the threshold of influence as described by Lane (2014), and thus all were included in the final analyses.

**Results**

**Univariate Descriptive Statistical Analysis**

*Predictor Variables: Stigma Consciousness, Self-Esteem, and Interpersonal Relations*

See Table 4 for means and standard deviations of stigma consciousness (negative stigma and lack of stigma impact), self-esteem, and interpersonal relations. Of note, per BASC-2-SRP interpretation guidelines, 5.5% ($n = 5$) of participants were in the at-risk range for low self-esteem and 4.4% ($n = 4$) of participants scored in the clinically significant range of low self-esteem. Fourteen percent ($n = 13$) of participants were in the at-risk range for issues with interpersonal relations and 8.6% ($n = 8$) of participants were in the clinically significant range.

*Outcome Variables: Anxiety, Depression, and Sense of Relatedness*
See Table 4 for means and standard deviations of anxiety, depression, and sense of relatedness. Per BASC-2-SRP interpretation guidelines, 9.4% \((n = 9)\) of participants were in the at-risk range for anxiety and 16.7% \((n = 16)\) of participants reported clinically significant anxiety. Fourteen percent \((n = 13)\) of participants were in the at-risk range for depression and 8.5% \((n = 8)\) of participants reported clinically significant depression.

**Table 4**  
*Predictor and Outcome Variables Means and Standard Deviations*  

<table>
<thead>
<tr>
<th>Variable</th>
<th>M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Predictor Variables</strong></td>
<td></td>
</tr>
<tr>
<td>SC: Negative Stigma</td>
<td>2.3 (0.79)</td>
</tr>
<tr>
<td>SC: Lack of Stigma Impact</td>
<td>2.76 (0.76)</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>52.23 (8.3)</td>
</tr>
<tr>
<td>IR</td>
<td>48.52 (10.54)</td>
</tr>
<tr>
<td><strong>Outcome Variables</strong></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>51.06 (10.84)</td>
</tr>
<tr>
<td>Anxiety</td>
<td>53.44 (12.91)</td>
</tr>
<tr>
<td>Relatedness</td>
<td>50.16 (11.99)</td>
</tr>
</tbody>
</table>

*Note. SC = Stigma Consciousness; IR = Interpersonal Relations.*

**Bivariate Statistical Analysis**

**Correlational Analysis**

Results of bivariate correlational analyses of continuous variables are shown in Table 5. Self-esteem and interpersonal relations were significantly correlated with each outcome variable (anxiety, depression, and sense of relatedness) in the expected direction (all \(ps < .05\)). Negative stigma was positively correlated with anxiety and depression, but not correlated with sense of relatedness. Lack of stigma impact was correlated with sense of relatedness; it was not significantly correlated with anxiety or depression. Negative stigma, self-esteem, and interpersonal relations were also significantly correlated with one another in the expected directions, though the correlations were weak \((rs = \leq |.45|)\). Lack of stigma impact was weakly correlated with negative stigma \((r = -0.22)\) and self-esteem \((r = .21)\). Family affluence was also significantly positively correlated with interpersonal relations \((r = .28)\) and negatively correlated
with anxiety \((r = -.21)\) and depression \((r = -.23)\). Age was positively correlated with negative stigma \((r = .22)\). A variance inflation factor test was conducted to identify any possible multicollinearity given the correlations between the predictor variables. Results indicated that the correlations were not strong enough to introduce issues of multicollinearity, and thus corrective measures were deemed unnecessary.

**Table 5**

<table>
<thead>
<tr>
<th></th>
<th>FAS</th>
<th>Age</th>
<th>NS</th>
<th>LSI</th>
<th>IR</th>
<th>SE</th>
<th>Anx.</th>
<th>Dep.</th>
<th>SR</th>
</tr>
</thead>
<tbody>
<tr>
<td>FAS</td>
<td>-</td>
<td>.11</td>
<td>.03</td>
<td>-.06</td>
<td>.28***</td>
<td>-.07</td>
<td>-.21*</td>
<td>-.23*</td>
<td>.01</td>
</tr>
<tr>
<td>Age</td>
<td>-</td>
<td>.22*</td>
<td>0</td>
<td>.02</td>
<td>.14</td>
<td>.13</td>
<td>-.03</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>-</td>
<td>-.22*</td>
<td>-.45***</td>
<td>-.29***</td>
<td>.47***</td>
<td>.46***</td>
<td>-.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LSI</td>
<td>-</td>
<td>.1</td>
<td></td>
<td>.21*</td>
<td>-.17</td>
<td>-.14</td>
<td>.25*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IR</td>
<td>-</td>
<td>.40***</td>
<td>-.47***</td>
<td>-.7***</td>
<td>.27**</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SE</td>
<td>-</td>
<td>.45***</td>
<td>-.61***</td>
<td>.43***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anx.</td>
<td>-</td>
<td></td>
<td>.68***</td>
<td>-.04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dep.</td>
<td>-</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.27**</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* FAS = Family Affluence Scale; NS = Stigma Consciousness Negative Stigma Factor; PSI = Stigma Consciousness Lack of Stigma Impact Factor; IR = Interpersonal Relations; SE = Self-esteem; Anx. = Anxiety; Dep. = Depression; SR = Sense of Relatedness.

Research Questions

**Question 1: Comparison Across Diagnostic Groups**

Based on one-way ANOVA tests, youth with SLD, ADHD, and comorbid SLD and ADHD did not differ in levels of depression, sense of relatedness, self-esteem, interpersonal relations, or stigma consciousness (negative stigma factor and lack of stigma impact factor). They did, however, significantly differ in their levels of anxiety \((F(2, 93) = 3.3, p = .041)\; see Table 6\). Tukey’s test was utilized as a post hoc analysis, which determined that participants diagnosed with SLD experienced significantly higher levels of anxiety than those with comorbid SLD/ADHD \((p = .04)\); there were no significant differences between participants diagnosed with ADHD and participants diagnosed with SLD \((p = .94)\) or comorbid SLD/ADHD \((p = .16)\).

**Table 6**

*Analysis of Variance in Social-Emotional Health Outcomes by Diagnosis*
<table>
<thead>
<tr>
<th>Variable</th>
<th>SLD M (SD)</th>
<th>ADHD M (SD)</th>
<th>SLD/ADHD M (SD)</th>
<th>F value</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anxiety</td>
<td>56 (12.47)</td>
<td>54.92 (15.37)</td>
<td>48.75 (9.56)</td>
<td>3.30</td>
<td>.041*</td>
</tr>
<tr>
<td>Depression</td>
<td>53.65 (13.46)</td>
<td>52.25 (12.57)</td>
<td>49.25 (9.46)</td>
<td>1.21</td>
<td>.304</td>
</tr>
<tr>
<td>Sense of Relatedness</td>
<td>50.98 (11.88)</td>
<td>50.75 (12.32)</td>
<td>46.91 (12.11)</td>
<td>1.17</td>
<td>.316</td>
</tr>
<tr>
<td>SC: Negative Stigma</td>
<td>2.4 (0.7)</td>
<td>2.38 (0.58)</td>
<td>2.19 (0.54)</td>
<td>1.09</td>
<td>.34</td>
</tr>
<tr>
<td>SC: Lack of Stigma Impact</td>
<td>2.28 (0.68)</td>
<td>2.12 (0.68)</td>
<td>2.2 (0.69)</td>
<td>0.43</td>
<td>.655</td>
</tr>
<tr>
<td>Self-Esteem</td>
<td>49 (14.12)</td>
<td>47.79 (13.74)</td>
<td>53.19 (7.9)</td>
<td>1.59</td>
<td>.209</td>
</tr>
<tr>
<td>Interpersonal Relations</td>
<td>47.28 (11.22)</td>
<td>46.54 (13.35)</td>
<td>48.09 (13.28)</td>
<td>0.11</td>
<td>.898</td>
</tr>
</tbody>
</table>

*p < .05.

Note. SC = Stigma Consciousness

Questions 2-4: Hierarchical Regressions

For the following questions (questions 2-4), multiple hierarchical regressions were conducted in order to determine the best model and the variance accounted for by various factors. All coefficients, $R^2$ values, $F$ values, and $p$ values are reported in Tables 7-9. The variables were introduced as follows:

-Step 1: Demographics (age, gender, race, family affluence composition score, diagnosis)

-Step 2: Self-esteem and interpersonal relations

-Step 3: Stigma consciousness factors (negative stigma and lack of stigma impact)

-Step 4: Interaction terms of diagnosis by self-esteem, interpersonal relations, and/or stigma consciousness (i.e., negative stigma or lack of stigma impact) depending on the significance of these predictors as determined in step 3

Question 2: Variables Accounting for Anxiety. Hierarchical regression analyses were conducted to determine factors that predict anxiety. The first step of the model, which included only demographic variables, was significant and accounted for 6% of variance of anxious symptomatology ($R^2 = .06, F(10, 85) = 2.45, p = .011$). The second step of the model, which included self-esteem and interpersonal relations, accounted for an additional 25% of the variance, which was a significant improvement ($R^2 = .31, F(12, 83) = 19.23, p = < .001$). When accounting for demographic variables, self-esteem, and interpersonal relations, the addition of
the stigma consciousness factors (negative stigma and lack of stigma impact) significantly improved the model and accounted for an additional 5% of the variance of anxious symptomatology ($R^2 = .36, F(14, 81) = 4.73, p = .012$). Negative stigma and self-esteem were significant predictors in step three, and thus they were included as interactions by diagnosis in step four. Within the fourth step of the model, two interactions were significant (SLD * self-esteem, $\beta = -1.11, p = .049$; ADHD * negative stigma $\beta = 0.7, p = .041$), suggesting that the impact of self-esteem on anxiety is strengthened when youth have a SLD diagnosis, and the impact of negative stigma on anxiety is increased for youth with an ADHD diagnosis. However, the addition of these interaction variables (i.e., diagnosis by negative stigma and self-esteem) did not significantly improve the model overall ($F(18, 77) = 2.31, p = .065$).

**Model of Best Fit.** The model that was significant and accounted for the highest percentage of variance was the third step of the model, including demographics, self-esteem, interpersonal relations, and stigma consciousness factors (negative stigma and lack of stigma impact; $R^2 = .36, F(14, 81) = 4.72, p = .012$). Within this model, family affluence ($\beta = -0.22, p = .035$), negative stigma ($\beta = 0.29, p = .007$), and self-esteem ($\beta = -0.28, p = .005$) were significant.

**Table 7**

*Anxiety Hierarchical Regression*

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>$R^2$</td>
<td>.06</td>
<td>.31</td>
<td>.36</td>
<td>.4</td>
</tr>
<tr>
<td>Change in $R^2$</td>
<td>-</td>
<td>.25</td>
<td>.05</td>
<td>.04</td>
</tr>
<tr>
<td>$F$</td>
<td>2.5</td>
<td>19.23</td>
<td>4.73</td>
<td>2.31</td>
</tr>
<tr>
<td>Change in $F$</td>
<td>-</td>
<td>16.73</td>
<td>-14.5</td>
<td>-2.42</td>
</tr>
<tr>
<td>p-value</td>
<td>.012*</td>
<td>&lt;.001***</td>
<td>.012*</td>
<td>.065</td>
</tr>
</tbody>
</table>

**Standardized Coefficients ($\beta$)**

**Step 1: Demographics**

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.18</td>
<td>0.21*</td>
<td>0.15</td>
<td>0.15</td>
</tr>
<tr>
<td>Gender</td>
<td>0.05</td>
<td>0.06</td>
<td>0.14</td>
<td>0.14</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asian</td>
<td>-0.13</td>
<td>-0.07</td>
<td>-0.07</td>
<td>-0.07</td>
</tr>
<tr>
<td>Black</td>
<td>-0.09</td>
<td>-0.07</td>
<td>-0.06</td>
<td>-0.04</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.06</td>
<td>0.04</td>
<td>0.02</td>
<td>-0.01</td>
</tr>
</tbody>
</table>
Multiracial  -0.11  -0.05  -0.04  -0.09
Unsure/ Not Disclosed  0.02  -0.02  -0.04  -0.07
Affluence  -0.22  -0.18  -0.22*  -0.15
Diagnosis
ADHD  0.21  0.15  0.13  0.09
SLD  0.19  0.15  0.12  1.02

Step 2:
Self-Esteem  -  -0.33**  -0.28**  0.09
Interpersonal Relations  -  -0.28**  -0.16  -0.17

Step 3: SC factors
Negative Stigma  -  -  0.29**  0.09
Lack of Stigma Impact  -  -  -0.05  0.02

Step 4: Interactions
ADHD * Self-Esteem  -  -  -  -0.53
SLD * Self-Esteem  -  -  -  -1.11*
ADHD * Negative Stigma  -  -  -  0.7*
SLD * Negative Stigma  -  -  -  0.27

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

Note. SC = Stigma Consciousness

**Question 3: Variables Accounting for Depression.** Hierarchical regression analyses were conducted to determine factors that predict depression. Though the first step of the model including demographic factors was significant, the $R^2$ value was negative and close to zero, so the model was not a good fit ($R^2 = -.01, F(10, 85) = 2.25, p = .023$). The second step of the model, which included self-esteem and interpersonal relations, accounted for 60% of the variance, which was a significant improvement ($R^2 = .6, F(12, 83) = 68.48, p < .001$). Though the additions of the stigma consciousness factors (negative stigma and lack of stigma impact) increased the variance by 2%, and negative stigma was a significant predictor in this step, their addition did not significantly improve the model overall ($R^2 = .62, F(14, 81) = 2.38, p = .099$). Negative stigma, self-esteem, and interpersonal relations were all significant predictors in step three, and thus they were included as interactions by diagnosis in step four. The additions of these interactions (i.e., diagnosis by negative stigma, self-esteem, and interpersonal relations) also did not significantly improve the model ($F(20, 75) = 0.77, p = .599$).
Model of Best Fit. The model that was significant and accounted for the highest percentage of variance was the model at step two, which included demographic factors, self-esteem, and interpersonal relations ($R^2 = 0.6, F(12, 83) = 68.48, p < .001$). Within this model, self-esteem ($\beta = -0.41, p < .001$) and interpersonal relations ($\beta = -0.52, p < .001$) were significant.

Table 8
Depression Hierarchical Regression

<table>
<thead>
<tr>
<th></th>
<th>Step 1</th>
<th>Step 2</th>
<th>Step 3</th>
<th>Step 4</th>
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<td>$R^2$</td>
<td>-.01</td>
<td>.6</td>
<td>.62</td>
<td>.61</td>
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<td>Change in $R^2$</td>
<td>-</td>
<td>.61</td>
<td>.02</td>
<td>-.01</td>
</tr>
<tr>
<td>F</td>
<td>2.26</td>
<td>68.48</td>
<td>2.38</td>
<td>0.77</td>
</tr>
<tr>
<td>Change in F</td>
<td>-</td>
<td>66.22</td>
<td>-66.1</td>
<td>-1.61</td>
</tr>
<tr>
<td>p-value</td>
<td>0.023*</td>
<td>&lt;0.00***</td>
<td>0.099</td>
<td>0.599</td>
</tr>
</tbody>
</table>

Standardized Coefficients ($\beta$)

Step 1: Demographics
- Age: 0.03, -0.01, 0.06
- Gender: -0.01, 0.02, 0.06
- Race/Ethnicity
  - Asian: -0.09, 0.02, 0
  - Black: 0, -0.01, 0.06
  - Hispanic: 0.01, -0.03, -0.04
  - Multiracial: 0.02, 0.1, 0.11
  - Unsure/Not Disclosed: 0.11, 0.05, 0.04
- Affluence: -0.22, -0.11, -0.13

Step 2: Diagnosis
- ADHD: 0.09, 0.01, -0.01
- SLD: 0.14, 0.09, 0.08

Step 3: SC factors
- Negative Stigma: -0.41***, -0.4***, -0.12
- Lack of Stigma Impact: -0.52***, -0.45***, -0.47***

Step 4: Interactions
- ADHD * Self-Esteem: -0.37
- SLD * Self-Esteem: -0.84
- ADHD * Interpersonal Relations: 0.07
- SLD * Interpersonal Relations: 0.09
- ADHD * Negative Stigma: 0.26
- SLD * Negative Stigma: 0.07
Question 4: Variables Accounting for Sense of Relatedness. Hierarchical regression analyses were conducted to determine factors that predict sense of relatedness. The first step of the model, which included only demographic variables and diagnosis, was not significant \( F(10, 85) = 1.62, p = .115 \). However, the second step of the model, which introduced self-esteem and interpersonal relations, was a significant improvement and accounted for 27% of the variance \( R^2 = .27, F(12, 83) = 14.98, p < .001 \). The addition of the stigma consciousness factors (negative stigma and lack of stigma impact) did not explain any additional variance beyond demographics, self-esteem, and interpersonal relations \( F(14, 81) = 1.1, p = .336 \). Only an interaction term of diagnosis by self-esteem was added in step four, which did not significantly improve the model \( F(16, 79) = 0.32, p = .729 \).

Model of Best Fit. The model that was significant and accounted for the highest percentage of variance was the second step of the models, which included only demographic factors, self-esteem, and interpersonal relations \( R^2 = .27, F(12, 83) = 14.98, p < .001 \). Within this model, gender \( (\beta = 0.2, p = .032) \), diagnosis \( (\text{ADHD}: \beta = 0.23, p = .028; \text{SLD}: \beta = 0.24, p = .031) \), and self-esteem \( (\beta = 0.46, p < .001) \) were significant.

Table 9
Sense of Relatedness Hierarchical Regression

<table>
<thead>
<tr>
<th>Step</th>
<th>R²</th>
<th>Change in R²</th>
<th>F</th>
<th>Change in F</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.02</td>
<td>-</td>
<td>1.62</td>
<td>-</td>
<td>.115</td>
</tr>
<tr>
<td>2</td>
<td>0.27</td>
<td>0.25</td>
<td>14.98</td>
<td>-13.36</td>
<td>&lt;.001***</td>
</tr>
<tr>
<td>3</td>
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<td>0</td>
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<td>-13.88</td>
<td>.336</td>
</tr>
<tr>
<td>4</td>
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<td>-.1</td>
<td>0.32</td>
<td>-.78</td>
<td>.729</td>
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</table>

Standardized Coefficients (β)

<table>
<thead>
<tr>
<th>Step 1: Demographics</th>
<th>Age</th>
<th>Gender</th>
<th>Race/Ethnicity</th>
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<tbody>
<tr>
<td></td>
<td>0.05</td>
<td>-0.01</td>
<td>-0.02</td>
</tr>
<tr>
<td></td>
<td>0.19</td>
<td>0.2*</td>
<td>0.2*</td>
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<tr>
<td></td>
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</tbody>
</table>
### Discussion

This study examined the role of different factors in social-emotional health outcomes for youth with learning differences. First, differences in social-emotional health across diagnostic groups (i.e., SLD, ADHD, and comorbid SLD/ADHD) were explored. Stigma experienced by youth with learning differences was also explored as a potential factor, as the experience of stigmatized attitudes and actions from others may play a role in social-emotional health for this population. As such, this study investigated the role of stigma consciousness alongside known predictors of social-emotional health, including demographic variables, self-esteem, and peer relationships, in predicting levels of anxiety, depression, and sense of relatedness.

### Differences Between Diagnostic Groups

There were no significant differences between youth diagnosed with SLD, ADHD, or comorbid SLD/ADHD in self-esteem, peer relationships, depression, or stigma consciousness (negative stigma or lack of stigma impact). There were, however, differences between the

<table>
<thead>
<tr>
<th>Group</th>
<th>Mean 1</th>
<th>Mean 2</th>
<th>Mean 3</th>
<th>Mean 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asian</td>
<td>-0.1</td>
<td>-0.16</td>
<td>-0.15</td>
<td>-0.15</td>
</tr>
<tr>
<td>Black</td>
<td>-0.04</td>
<td>-0.05</td>
<td>-0.03</td>
<td>-0.03</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.12</td>
<td>0.13</td>
<td>0.13</td>
<td>0.14</td>
</tr>
<tr>
<td>Multiracial</td>
<td>-0.03</td>
<td>-0.08</td>
<td>-0.08</td>
<td>-0.06</td>
</tr>
<tr>
<td>Unsure/Not Disclosed</td>
<td>-0.2</td>
<td>-0.15</td>
<td>-0.15</td>
<td>-0.14</td>
</tr>
<tr>
<td>Affluence</td>
<td>0.02</td>
<td>0.05</td>
<td>0.06</td>
<td>0.05</td>
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</table>

### Step 2: Self-Esteem

- 0.46***

### Step 3: SC factors

<table>
<thead>
<tr>
<th>SC factor</th>
<th>Mean 1</th>
<th>Mean 2</th>
<th>Mean 3</th>
<th>Mean 4</th>
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</thead>
<tbody>
<tr>
<td>Negative Stigma</td>
<td></td>
<td>-</td>
<td>0.02</td>
<td>0.02</td>
</tr>
<tr>
<td>Lack of Stigma Impact</td>
<td></td>
<td>-</td>
<td>0.14</td>
<td>0.13</td>
</tr>
</tbody>
</table>

### Step 4: Interactions

- ADHD * Self-Esteem: 0.15
- SLD * Self-Esteem: 0.43

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

Note. SC = Stigma Consciousness
diagnostic groups in levels of anxiety. Youth diagnosed with SLD experienced significantly higher levels of anxiety than those with comorbid SLD/ADHD. This finding is in direct opposition to the hypothesis that youth with comorbid SLD/ADHD would experience poorer social-emotional health outcomes than youth with only SLD or only ADHD.

Findings from the current study generally differ from the extant literature on this topic. Previous research supports findings of elevated levels of anxiety in youth diagnosed with SLD and ADHD, though this research has mostly been conducted in comparison to the general population. Literature indicates that anxiety in youth with learning differences may be understood through the secondary reaction hypothesis, which posits that anxiety is a secondary reaction to having SLD or ADHD in a society where academic achievement and behavioral regulation is expected (Nelson & Harwood, 2011b). Anxiety in youth with SLD also tends to increase throughout childhood and adolescence as academic demands increase (Panicker & Chelliah, 2016). Other researchers have hypothesized that youth with SLD may have higher rates of anxiety due to feeling that things are beyond their control or worrying about school performance (Mammarella et al., 2016). For youth with ADHD, some researchers have reported that high levels of anxiety may be associated with attention deficits (Vloet et al., 2010) or social difficulties (Lee et al., 2012), though others have reported that attention deficits do not impact levels of anxiety in youth with ADHD (Rodríguez et al., 2014). Literature regarding anxiety in youth with comorbid SLD/ADHD is limited, particularly in comparison to youth with SLD and ADHD. Existing studies reported no statistically significant differences between youth with SLD, ADHD, and comorbid SLD/ADHD across various measures of anxiety (i.e., general anxiety, Nelson & Gregg, 2012; anxious-shy temperament, Miranda, 2008; social anxiety, McNamara et al., 2005). The results of this study, on the other hand, indicated a difference in
anxiety between youth with SLD and youth with comorbid SLD/ADHD. It is possible that youth with SLD in this sample experienced greater secondary reactions based on their learning differences in a school setting (where this survey was administered) in comparison to youth with comorbid SLD/ADHD who may encounter different factors or situations that heighten anxiety based on which of their challenges feel the most difficult or salient. Because the perceived deficit for youth with SLD is in one specific academic area, they may also be prone to hyper-focus on that situation leading to anxiety, versus youth with comorbid SLD/ADHD who may experience a more diffuse set of challenges. Previous research has also conceptualized comorbid SLD/ADHD as a possible unique condition that has a greater cognitive and functional impact than SLD alone or ADHD alone (Dupaul et al., 2013), so it is possible that anxiety may manifest differently among youth with SLD/ADHD. Given the relatively small sample size for each group in this study (i.e., 40 youth with SLD, 24 youth with ADHD, 32 youth with comorbid SLD/ADHD), results should be interpreted with caution. Further research is needed to clarify any differences that may exist for youth with SLD/ADHD in comparison to youth with only SLD or only ADHD.

**Stigma Consciousness**

Though previous research by Daley and Rappolt-Schlichtmann (2018) found that one factor was sufficient for the SCQ-LD, the current study identified a two-factor structure as the best fit for this questionnaire. The two factors were conceptualized as a negative stigma factor, which included items that described a participant feeling negatively about their diagnosis such as “*Some people treat me differently because of my learning disability or ADHD,*” and a lack of stigma impact factor, which included items such as “*I never worry about feeling judged because of my learning disability or ADHD.*” The original Stigma Consciousness Questionnaire (SCQ),
authored by Elizabeth Pinel (1999), was designed for adult women, and focused on two content areas: 1) women’s phenomenological experiences in interacting with men, and 2) beliefs about how men view women. Although Pinel (1999) designed the questionnaire with two concepts in mind, a one-factor model was deemed sufficient based on exploratory factor analyses results. The original SCQ items may be read and interpreted by youth differently, particularly youth with learning differences who may struggle with sustained attention or reading. Daley and Rappolt-Schlichtmann (2018) noted this for the adolescent population in their study for the SCQ-LD, and altered items accordingly. However, this study demonstrates potential support for further alteration of the SCQ-LD if it is to be used with children as well (i.e., ages 9-13). It is reasonable to consider that coping with stigma is a cognitive skill that improves with development. Further, because the sample in the current study was comprised of youth younger in age than other samples that have been administered the SCQ or SCQ-LD, this may partially explain why the experience of dismissing or preventing worry in the lack of stigma impact factor did not effect social-emotional health. Previous research indicated that perceived discrimination has a larger negative effect on the well being of children (i.e., under age 13) in comparison to adults, whereas there was no significant difference between the impact on adolescents and adults (Schmitt et al., 2014). Additionally, skills involved in cognitive restructuring required to dismiss or prevent worry, including metacognition and scientific reasoning, typically develop throughout late childhood and preadolescence (Garber et al., 2016), and therefore may not be as accessible to children in comparison to adolescents. Finally, many youth with SLD or ADHD are first diagnosed in elementary school (Dhuey & Lipscomb, 2009; Visser et al., 2014), giving adolescents with these diagnoses more time to cope with their individual challenges and any negative associations. Future studies with a larger sample size may help contribute to additional
knowledge regarding the best fit of the SCQ-LD factor structure for children and adolescents with learning differences.

The Role of Stigma Consciousness in Social-Emotional Health for Youth with Learning Differences

Negative stigma was negatively correlated with peer relationships, self-esteem, and sense of relatedness, and positively correlated with anxiety and depression. However, lack of stigma impact was only weakly correlated with sense of relatedness and self-esteem, and was not associated with other social-emotional health variables. In line with correlational associations, lack of stigma impact did not improve the model significantly for any outcome. Negative stigma, however, was determined to be a significant predictor for anxiety in youth with learning differences even when accounting for demographic variables and levels of self-esteem and peer relationships. Although negative stigma accounted for some variance in depression, adding this factor in the regression did not significantly improve the model. Negative stigma did not improve the model or have predictive power for sense of relatedness in this study.

The noted impact of negative stigma on anxiety is consistent with current literature, which demonstrates the negative impact of stigma on mental health across various stigmatized groups. Perceived discrimination and stigma are associated with increases in anxiety and negative affect (Schmitt et al., 2014) as well as difficulties with adjustment and growth (Mak et al., 2007). Though this study did not find that negative stigma significantly improved the model for depression in this sample, current literature indicates that experiences of stigma are associated with higher rates of depression. In a study with youth with epilepsy, stigma was the most significantly contributing factor to depressive symptoms, even beyond demographic and clinical factors (Yildirim et al., 2018). This study did not support evidence for the role of
negative stigma in sense of relatedness, but other studies have found that experiences of stigma are associated with decreased trust in helping professionals (Verhaeghe & Bracke, 2011) as well as decreased sense of belonging and increased perceived need to change in order to fit in (Good et al., 2012; Son & Shelton, 2011).

The results of this study indicate that the experiences of negative stigma (i.e., awareness of stigmatized attitudes related to learning differences as well as phenomenological experiences of being treated differently) are predictive of higher anxiety in youth with learning differences. Interestingly, reappraisal of stigma related to the lack of stigma impact factor (i.e., not worrying about others judging you, not letting negative views of your group bother you) did not seem to impact social-emotional health outcomes within this study. In combination, these findings suggest that the presence and knowledge of stigmatized attitudes and resulting discrimination are especially salient for youth in this study and may disproportionately impact one’s mental health. This is true even when individuals engage in reappraisal by dismissing or preventing stigmatizing experiences and discrimination from creating worry. However, these results should be interpreted with caution as they are based on a new factor structure for the SCQ-LD and derived from a relatively small sample; more research is necessary to further explore this phenomenon.

Many previous studies have focused more on the internal experience and response to stigma, particularly the role of self-stigma, which is associated with increased anxiety, depression, and social difficulties (Ali et al., 2015; Drapalski et al., 2013). For those with a concealable stigmatized identity, the role of stigma on psychological distress has also been found to be mediated by the active anticipation of stigma and the centrality and salience of the stigmatized identity to one’s overall sense of being (Quinn & Chadoir, 2009). However, Quinn
and Chadoir (2009) also noted the negative impact of external stigma and broader cultural devaluation on mental and physical health. Given that the stigma stems from societal beliefs and values, it is important to consider the impact of the community holding stigmatized beliefs and treating youth with learning differences accordingly, rather than over-focusing on how youth with learning differences respond to the presence of prejudice and discrimination.

**Additional Variables Impacting Anxiety in Youth with Learning Differences**

Results of the hierarchical regressions indicated that a model including demographic variables, self-esteem, peer relationships, and stigma consciousness factors (negative stigma and lack of stigma impact) was the best fit, and explained 36% of the variance in anxiety in youth with learning differences. Lower levels of family affluence and self-esteem as well as higher levels of negative stigma were significant predictors for higher levels of anxiety, which is largely consistent with current literature. Research on the impact of family income level on anxiety in youth is somewhat mixed. In line with the results of this study, some studies have also identified that lower family income is associated with higher levels of anxiety (Melchior et al., 2010; Vine et al. 2012), though this relationship may be mediated through the school environment (Coley et al., 2018) or parental anxiety (Zhu et al., 2019). Additional research also supports the role of self-esteem (In-Albon et al., 2017; Peleg 2009) and stigma (Ali et al., 2015; Schmitt et al., 2014) in anxiety. Though previous research has noted the importance of peer relationships in levels of anxiety (Sentse et al., 2017), peer relationships were not a significant predictor for anxiety in youth with learning differences in this study.

**Additional Variables Impacting Depression in Youth with Learning Differences**

Results of the hierarchical regressions indicated that a model including demographic variables, self-esteem, and peer relationships was the best fit, and explained 60% of the variance
in depression in youth with learning differences. Within this model, self-esteem and peer relationships were significant predictors, which is consistent with previous research. The association between self-esteem and depression is well documented within this population (Bonifacci et al., 2016; In-Albon et al., 2017), and previous studies have found that self-esteem mediates the relationship between a diagnosis of SLD and/or ADHD and depression (Kiuru et al., 2008; Kita & Inoue, 2017). Peer relationships is also a well-studied predictor of depression in youth with learning differences, and previous research has reported that poorer social ability and peer relationships account for a significant portion of the association between learning differences and depression (Baumeister et al., 2008; Becker et al., 2015; Simoni, 2016). Though negative stigma did not significantly improve the model for depression for the participants in this study, research in other populations demonstrates a clear connection between stigma and depression (Schmitt et al., 2014; Yildirim et al., 2018), warranting further exploration.

Though demographic variables, particularly age (adolescence) and gender (female) are also associated with higher levels of depression in youth (American Psychiatric Association, 2013; Panicker & Chelliah, 2016), no demographic variables were identified as significant predictors in this study. Self-esteem and peer relationships were influential on levels of depression in youth with learning differences even when accounting for demographic variables.

**Additional Variables Impacting Sense of Relatedness in Youth with Learning Differences**

Results of the hierarchical regressions indicated that a model including demographic variables, self-esteem, and peer relationships was the best fit, accounting for 27% of the variance in sense of relatedness in youth with learning differences. Within this model, male gender, diagnosis, and higher levels of self-esteem were significant predictors for higher levels of sense of relatedness. Of note, the only available genders for selection in the demographic survey were
male and female, which limits knowledge of those who may identify outside of the prescribed gender binary. Previous research on concepts within sense of relatedness (i.e., trust, access to social support, comfort/belonging with others, tolerance of differences) has demonstrated mixed results regarding the role of gender. In adults, men display more trust than women (Balliet et al., 2011), but women may be more willing to restore trust after unfair or negative interactions (Haselhuhn et al., 2015). In adolescents, previous research has shown no differences in trust or sense of belonging and community among genders (Kissinger et al., 2009; Lemmers-Jansen et al., 2019; Sánchez et al., 2005), but indicated that female adolescents report higher access to social support in comparison to their male peers (Hameed et al., 2018). Thus, the results of this study are a departure from previous research on the role of gender in sense of relatedness in youth.

In terms of diagnosis, the results of this study indicated that a diagnosis of SLD or ADHD was a significant predictor of increased sense of relatedness in comparison to those with a comorbid SLD/ADHD diagnosis. Though these diagnostic groups did not significantly differ in their levels of sense of relatedness when compared without controlling for covariates, the results of this regression suggest that having comorbid diagnoses of SLD/ADHD contributes to lower levels of sense of relatedness. Previous research demonstrates social difficulties and poorer social connections in youth with SLD or ADHD in comparison to typically developing youth, but there has not been sufficient research comparing sense of relatedness in those diagnosed with SLD, ADHD, and comorbid SLD/ADHD. These results indicate that this should be an area of further exploration.

Research supports a connection between levels of self-esteem and sense of relatedness in youth with learning differences (Ginieri & Coccossis et al., 2012; Harpin et al., 2016; Valås,
1999), though previous studies have largely been correlational. The results of this study go a step further to indicate that self-esteem directly accounts for a portion of the variance in sense of relatedness in this population. Though previous research supports a connection between peer acceptance/rejection or victimization and sense of relatedness (Ladd et al., 2014; Leadbeater et al., 2014), this study did not find that peer relationships significantly predicted sense of relatedness. Likewise, stigma consciousness (negative stigma and lack of stigma impact) did not explain any significant variance in sense of relatedness, which is not in line with the hypotheses of this study.

Limitations

Although the present study has highlighted important findings regarding differences in anxiety across diagnostic groups as well as the role of self-esteem, negative stigma, and peer relationships in social-emotional health, several factors limit the generalizability of results. The convenience sampling method utilized within various schools may have introduced selection bias. While the sample was geographically diverse, it was not particularly diverse in other aspects; the sample was predominately white and highly affluent. The diagnosis of SLD was slightly overrepresented in comparison to those diagnosed with ADHD or comorbid SLD/ADHD, which may have impacted the validity of comparisons between diagnostic groups. Participant diagnoses were also self-reported, and no formal screening or diagnostic review was utilized. This is an important consideration in interpretation, particularly given the potential variability in comprehensive assessment across participants and the rates of over diagnosis and misdiagnosis of ADHD in particular (Merten et al., 2017). Additionally, the sample size of this study was relatively small for the analyses that were conducted. The results from the factor analyses and hierarchical regression analyses, which included nine variables across three steps
and one to three additional variables in the fourth step, may have been more robust with a larger number of participants.

In terms of study method and measures, the SCQ-LD measure utilized for one of the main predictor variables, stigma consciousness, had only been validated for youth with an SLD diagnosis in one other study with a small sample ($N = 44$; Daley & Rappolt-Schlichtmann, 2018). This measure has not yet been validated in youth with ADHD, and the present study added language to the SCQ-LD in order for the questionnaire to apply to youth with SLD and/or ADHD. The present study identified a new two-factor structure for the measure that was used in later analyses; this factor structure had not been identified previously, and thus results with this factor structure should be interpreted with caution. That said, even the two-factor structure of the modified SCQ-LD accounted for only 45% of the variance.

With the exception of the depression regression model, which accounted for 60% of the variance, the variance accounted for by the other regression models was generally low as well (36% of anxiety variance and 27% of sense of relatedness variance). There are clearly other variables that influence and account for the variation in anxiety and sense of relatedness within this population that were not included in this study.

**Research Implications and Future Directions**

The findings of this study highlight numerous avenues for further exploration. First, the use of the SCQ-LD and the newly identified factor structure should continue to be further investigated in a larger sample of youth with learning differences. In the factor structure for the SCQ-LD reported in this study, many items within the lack of stigma impact factor included negatives that may have been missed or confusing for youth with learning differences, particularly those with ADHD or an SLD with impairment in reading (e.g., *I don't usually think*...
about my learning disability or ADHD when I'm with kids who don't have one). Readability is an important consideration especially when designing questionnaires for this population, and further research on the SCQ-LD in youth with learning differences will hopefully clarify if this impacted the identified factor structure. Daley and Rappolt-Schlichtmann (2018) explored the readability and usability of the SCQ-LD with a small sample of adolescents, but continued exploration of measure accessibility particularly for children with learning differences is crucial prior to continuing to use this measure with youth.

This study did not find differences between diagnostic groups (i.e., SLD, ADHD, comorbid SLD/ADHD) across measures of social-emotional health as anticipated. The one noted difference in anxiety across diagnostic groups was in the opposite direction as hypothesized, with youth with comorbid SLD/ADHD having the lowest scores. Further research is needed to investigate the experience of anxiety and other social-emotional health factors between those with SLD, ADHD, and SLD/ADHD in order to determine potential risks and tailor interventions for these specific groups as needed within the learning differences community. As there was a large amount of variance unaccounted for in the regression models for anxiety and sense of relatedness, it is crucial that future research consider other variables that may contribute to higher levels of anxiety and social difficulties in youth with learning differences.

Mixed methods or qualitative research with youth with learning differences may contextualize many of the findings presented in this paper, and allow researchers and providers to better comprehend youths’ understandings and conceptualization of their diagnoses/differences, challenges in social-emotional health, and experiences of stigma. Retrospective qualitative studies have been conducted with adults with SLD (Harðardóttir et al., 2015) and adults with ADHD (McKeague et al., 2015) regarding their experiences of challenges,
support/resilience, and stigma as children and adolescents. However, it would be helpful to also understand these experiences from the perspective of children with learning differences without the overlay of adult experiences and reflection. For example, in their SCQ-LD validation study, Daley and Rappolt-Schlichtmann (2018) included two qualitative questions (i.e., “What does having a ‘learning disability’ mean to you?” and “In your experience, what do you think most people think about kids with learning disabilities?”) in order to understand adolescent perspectives. Asking more explicitly about experiences of discrimination or stigmatized attitudes, relationships with peers and teachers, social and educational support, and what children with learning differences perceive as potential solutions or additional supports may also be informative and could guide points of social-emotional health intervention.

Finally, given that youth experience stigma related to other factors, including body size (Guardabassi et al., 2018), chronic medical conditions (Yildirim et al., 2018), other mental health or neurodevelopmental diagnoses (McKeague et al., 2015), identity variables (McKown & Weinstein, 2003), and social factors (Saunders, 2018), exploring the experiences of youth with learning differences who hold other marginalized and stigmatized identities as well may be important. Considering the intersectional impact of multiple sources of stigma may further inform how stigma impact social-emotional health, and how this may differ across groups.

**Clinical Implications and Future Directions**

Clinically, the findings of this study have implications for potential areas of intervention for social-emotional well being in this population. Results regarding the variables influential in outcomes of anxiety, depression, and sense of relatedness shed light on potential foci for both individual treatment for youth with learning differences and broader community level interventions. A few demographic variables (i.e., gender and family affluence) were influential in
sense of relatedness and anxiety, respectively. With that in mind, girls with learning differences and youth with learning differences from lower income families may be at risk for poorer social experiences or mental health. Youth diagnosed with SLD also demonstrated higher levels of anxiety within this study, suggesting that anxiety symptoms should be monitored and considered in treatment particularly for youth diagnosed with SLD. As youth with SLD experience heightened anxiety when faced with a difficult academic situation (Haft et al., 2018), both academic skill building and anxiety management or relaxation techniques may be important interventions in order to help these youth engage in school. Because self-esteem accounted for variance across all three outcomes, interventions for youth with learning differences may benefit from emphasizing techniques to bolster self-esteem and self-concept, particularly as these constructs relate to situations or areas in which youth with learning differences may struggle, such as school. Peer relationships and negative stigma were influential for levels of depression and anxiety in youth with learning differences respectively, and therefore could be a focus of future intervention as well. These results suggest that both internal and external factors contribute to social-emotional health in youth with learning differences. In this case, self-esteem represents an internal process, whereas experiences with peers can be considered to be related to external or environmental factors. Stigma consciousness, especially as it was operationalized in the current study through two distinct factors, can be understood as representing both internal and external processes: the perceived impact and ability to reappraise stigma as demonstrated by the lack of stigma impact factor reflects more internal experiences, whereas the knowledge and experience of stigma from others as captured within the negative stigma factor reflect external experiences of stigma in their community and society.
Given these findings, social-emotional focused interventions for youth with learning differences should focus on both the individual and the broader community. Both psychotherapy/counseling (Hamilton & Astramovich, 2014) and educational therapy (Saday Duman et al., 2016) have demonstrated efficacy in bolstering social skills and self-esteem for youth with learning differences. Mentorship by older adolescents or adults with learning differences has also been effective in promoting self-esteem for this population (Haft et al., 2019). Given that early screening, detection, and intervention for mental health difficulties in youth can positively alter the trajectory of social-emotional health (Colizzi et al., 2020), it is important to also take preventative action to bolster self-esteem and social support before difficulties are noted and more intensive interventions may be required. For example, research demonstrates that all youth benefit from universal interventions focused on enhancing social and emotional learning (Durlak et al., 2011), which could be incorporated in schools or various community or after-school programs. For youth with learning differences, research indicates that psychotherapy and parent training programs are also effective for the early treatment of budding social-emotional difficulties (National Institute for Health and Care Excellence, 2016). Literature suggests that it is particularly important to prioritize treatment of ADHD related symptoms for youth with this diagnosis, as this can also impact the effectiveness of social-emotional health related intervention (Friesen & Markowsky, 2021).

In a review of interventions designed to reduce stigma experienced by children with medical and physical disabilities, Smythe et al. (2020) reported that peer and parent support groups were used to target internalized stigma, whereas organizational/institutional level interventions (i.e., didactics and teaching sessions, small group discussions for teachers and peers) and community level interventions (i.e., educational film screenings, positive
representation in media, inclusive after school or sports programs) addressed stigmatized attitudes and inclusion. Previous research indicated that youth with learning differences experience stigmatized attitudes and actions from teachers (Kos, 2008; Shifer, 2016), peers (Law et al., 2007; Walker et al., 2008) and parents of peers (Geiger & Brewster, 2018; Martin et al., 2007), suggesting that schools may be an important target for community-based stigma interventions for this population. An example of a campaign that included school-based intervention is the Time to Change anti-stigma campaign, which provided resources for various workshops and information to employers, schools, and community events in order to lessen mental health stigma (Time to Change, 2021). The campaign successfully lessened stigmatized attitudes, prejudice and exclusion with a noted dose effect over a period of 10 years (Evans-Lacko et al., 2014). School programming within this campaign included lesson plans and assembly materials on the importance of mental health, normalizing mental health difficulties, discussing mental health stigma, and providing action steps to support those struggling with their mental health. The Time to Change campaign also made online trainings for teachers, classroom activities, and films designed to provide psychoeducation and lessen stigma freely available online. These disability and mental health anti-stigma interventions could be adapted to address stigma related to learning differences within schools and communities, and the findings of this study suggest this would be beneficial to the social-emotional health of this population.

Conclusion

Youth with learning differences, defined for the purposes of this study as youth with a diagnosis of SLD and/or ADHD, experience poorer social-emotional health outcomes in comparison to their typically developing peers (Al-Yagon, 2016; Nelson & Harwood, 2011b; Simoni, 2016). Social-emotional health is crucial not only for well being, but also impacts
success and engagement in relationships, school or occupational commitments, and adaptive functioning (Alzaharani et al., 2019). In order to provide mental health intervention for this population and bolster social-emotional health, it is important to understand what factors may influence these outcomes. The only significant difference in social-emotional health across diagnostic groups (SLD, ADHD, and comorbid SLD/ADHD) was in anxiety, with some emerging evidence for youth with comorbid SLD/ADHD having lower sense of relatedness. This study found that for youth with learning differences, self-esteem demonstrated significant effects on all outcome variables (anxiety, depression, and sense of relatedness), and that peer relationships significantly impacted depression. Stigma consciousness, specifically the negative stigma factor, was predictive for levels of anxiety even when accounting for the impact of self-esteem, peer relationships, and demographic variables. As this study used a new factor structure for the SCQ-LD, this measure and factor structure should be further researched in youth with learning differences. Researchers may also wish to further investigate differences in social-emotional health across diagnostic groups within youth with learning differences, as well as other factors that may influence anxiety, depression, and sense of relatedness in this population. The findings of this study suggest that both individual and community level interventions may be helpful in addressing social-emotional health in youth with learning differences; individual interventions may benefit from focusing on bolstering self-esteem and addressing the internalization of stigma in particular, whereas population level interventions would hopefully lessen the existence of stigmatized attitudes, beliefs, and actions in the broader community, and therefore lead to a reduction of stigma consciousness in youth with learning differences.
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Appendix A

Demographics Questionnaire

1. Please enter your first and last name below.

2. Please enter the school that you are currently attending.

3. When is your birthday? *(Month/Date/Year)*

4. What is your gender?
   
   Male/Female

5. What is your race/ethnicity? (Select all that you are).
   
   White/Caucasian
   Black/African-American
   Hispanic or Latino
   Asian American
   Indian or Alaska Native
   Other (Please type in to specify):
   I don't know or I don't want to say

6. Check all of the following that you do or receive:
   
   Eye to Eye
   Other mentoring program (not Eye to Eye)
   Academic Tutoring (homework help, help with school subjects)
   Personal counseling or therapy
   Speech/Language therapy or classes
   Sports Team Band/Music/Dance/Theater Art Classes
   Other (Please type in what else):
   None of the Above

7. How old are you?
Appendix B

Family Affluence Scale–II (FAS-II)

1. Does your family own a car, van or truck?
   - No
   - Yes, one
   - Yes, two or more [enter in how many]

2. During the past 12 months (year), how many times did you travel away on vacation with your family?
   - Not at all (0)
   - Once (1)
   - Twice (2)
   - More than twice [enter in how many times]

3. How many computers does your family own?
   - None (0)
   - One (1)
   - Two (2)
   - More than two [enter in how many]

4. How many tablets (such as iPads), and/or smartphones (such as Androids or iPhones) does your family own?
   - None (0)
   - One (1)
   - Two (2)
   - More than two [enter in how many]
Appendix C

Stigma Consciousness Questionnaire – Learning Disabilities

You are going to hear or read some sentences that tell how some people feel about learning disabilities or ADHD. You should tell us how much you agree or disagree with each statement. Try to be honest about how you feel. There are no right or wrong answers.

1. Some people treat me differently because of my learning disability or ADHD.

2. Most people don’t judge someone else just because that person has a learning disability or ADHD.

3. I worry about people judging me because I have a learning disability or ADHD.

4. Most people have a negative views about kids with learning disabilities or ADHD, even though they don’t say them out loud.

5. People assume I’m just like all the other kids with learning disabilities or ADHD.

6. In my experience, many people think that there is something wrong with kids with learning disabilities or ADHD.

7. I never worry that people think I act like someone with a learning disability or ADHD.

8. Most people think they’re better than me just because of my learning disability or ADHD.

9. People make assumptions about kids with learning disabilities or ADHD, but that doesn’t affect me.

10. I don’t usually think about my learning disability or ADHD when I’m with kids who don’t have one
11. I never worry about feeling judged because of my learning disability or ADHD.

12. Most people know that people with learning disabilities or ADHD can be smarter or even more creative than other people.
Appendix D

BASC-2-SRP Factor Analysis Results: One-Factor and Two-Factor Model Comparison

Table D1

**BASC-2-SRP Anxiety-Depression CFA: Child True/False**

<table>
<thead>
<tr>
<th>Goodness of Fit Indicators</th>
<th>Two-factor model (BASC)</th>
<th>One-factor model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFI</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TLI</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chi Square</td>
<td>12.73</td>
<td>16.74</td>
</tr>
<tr>
<td>P-value (Chi Square)</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SRMR</td>
<td>0.11</td>
<td>0.11</td>
</tr>
</tbody>
</table>

*Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximations; SRMR = Standardized Root Mean Square Residual.*

Table D2

**BASC-2-SRP Anxiety-Depression CFA: Child Likert-Scale**

<table>
<thead>
<tr>
<th>Goodness of Fit Indicators</th>
<th>Two-factor model (BASC)</th>
<th>One-factor model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFI</td>
<td>.80</td>
<td>.80</td>
</tr>
<tr>
<td>TLI</td>
<td>.76</td>
<td>.76</td>
</tr>
<tr>
<td>Chi Square</td>
<td>117.03</td>
<td>117.26</td>
</tr>
<tr>
<td>P-value (Chi Square)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.15</td>
<td>.15</td>
</tr>
<tr>
<td>SRMR</td>
<td>.10</td>
<td>.97</td>
</tr>
<tr>
<td>AIC</td>
<td>1115.87</td>
<td>1114.10</td>
</tr>
<tr>
<td>aBIC</td>
<td>1073.56</td>
<td>1073.36</td>
</tr>
</tbody>
</table>

*Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximations; SRMR = Standardized Root Mean Square Residual; aBIC = Sample-Size Adjusted Bayesian Information Criteria.*

Table D3

**BASC-2-SRP Anxiety-Depression CFA: Adolescent True/False**

<table>
<thead>
<tr>
<th>Goodness of Fit Indicators</th>
<th>Two-factor model (BASC)</th>
<th>One-factor model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFI</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>TLI</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Chi Square</td>
<td>33.24</td>
<td>38.88</td>
</tr>
<tr>
<td>P-value (Chi Square)</td>
<td>.985</td>
<td>.94</td>
</tr>
<tr>
<td>RMSEA</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>SRMR</td>
<td>.09</td>
<td>.10</td>
</tr>
</tbody>
</table>

*Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximations; SRMR = Standardized Root Mean Square Residual.*
Table D4

*BASC-2-SRP Anxiety-Depression CFA: Adolescent Likert-Scale*

<table>
<thead>
<tr>
<th>Goodness of Fit Indicators</th>
<th>Two-factor model (BASC)</th>
<th>One-factor model</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFI</td>
<td>.92</td>
<td>.87</td>
</tr>
<tr>
<td>TLI</td>
<td>.90</td>
<td>.84</td>
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<tr>
<td>Chi Square</td>
<td>93.85</td>
<td>115.21</td>
</tr>
<tr>
<td>P-value (Chi Square)</td>
<td>.009</td>
<td>0</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.095</td>
<td>0.12</td>
</tr>
<tr>
<td>SRMR</td>
<td>.08</td>
<td>.08</td>
</tr>
<tr>
<td>AIC</td>
<td>1590.81</td>
<td>1610.18</td>
</tr>
<tr>
<td>aBIC</td>
<td>1558.70</td>
<td>1579.26</td>
</tr>
</tbody>
</table>

*Note. CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximations; SRMR = Standardized Root Mean Square Residual; AIC = Akaike Information Criteria; aBIC = Sample-Size Adjusted Bayesian Information Criteria.*