CHILDREN’S PRE-EXISTING PERCEPTIONS OF ADHD BEHAVIOURS PREDICT THEIR SOCIOMETRICS GIVEN TO PEERS WITH ADHD

by

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Abstract

Children with ADHD show severe impairment in their peer relationships (Hoza, 2007; Whalen & Henker, 1992). Investigations of why children with ADHD experience difficulties in their peer relationships have nearly exclusively focused on the characteristics of children with ADHD that contribute to social rejection by their peers. Meanwhile, the contributions that the peers make to the social impairment of children with ADHD have not been explored. This study examined children’s pre-existing perceptions of ADHD as a potential contribution of the peer group to the impairment of peer relationships in children with ADHD.

Participants were 138 children (male = 66; ADHD diagnosis = 25; 6-9 years) who were unacquainted prior to the study and participated in a 2-week summer camp. At the start of the camp, children read about a hypothetical child with ADHD and were asked to rate their inclination to like the hypothetical child, attribution of uncontrollability for ADHD behaviours, and inclination to help the hypothetical child. On the last day of the camp, their sociometrics (“like”, “dislike”, friend nominations and liking ratings) given to previously unacquainted, real-life classmates with ADHD were measured. Results showed that children have pre-existing attitudes and beliefs about children with ADHD that predict their nominations and ratings given to new, previously unacquainted peers with ADHD.

Findings shed light to why peer relationships for children with ADHD may remain impaired even after receiving medication or behavioural treatment for ADHD symptoms—as these treatments do not attempt to alter the pre-existing beliefs and attitudes held by peers toward children with ADHD. Clinical implications and future directions are discussed.
Preface

This thesis is submitted in partial fulfillment of the requirements for Master of Arts in Psychology at the University of British Columbia. My research supervisor is Dr. Amori Mikami, who is the principal investigator at the Peer Relationships Laboratory. The identification and design of the research program, the writing of the thesis and the data analysis has been made solely by the author. I have done my best to provide references to the sources that I have cited in my writing. The data used in the analysis of the study was collected as part of a larger study conducted by Dr. Mikami, which was approved by the Institutional Review Board for Social and Behavioral Sciences of the University of Virginia (protocol number: 2010-0066-00). The project reported in my thesis was approved by the Behavioral Research Ethics Board of the University of British Columbia (approval certificate number: H15-00226).
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Finally, I thank my parents, for their unconditional love and encouragement. I would not be here without them.
Introduction

Attention Deficit Hyperactivity Disorder

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that begins in childhood and affects approximately 5% of youth (American Psychiatric Association, 2013). The Diagnostic and Statistical Manual, 5th edition (DSM-5; American Psychiatric Association, 2013) describes ADHD as a disorder of persistent, developmentally-inappropriate inattention and/or hyperactivity/impulsivity that interferes with functioning in multiple settings (e.g., school, home, work).

Peer Relationships in Children with ADHD

One area in which children with ADHD show severe impairment is in their peer relationships (Hoza, 2007; Whalen & Henker, 1992). Compared to typically developing (TD) children, children with ADHD are less liked, more disliked, and have fewer friends (Hoza, Mrug, et al., 2005b). These impairments in peer relationships tend to be stable across development. For instance, peer rejection persists into adolescence for youth who were diagnosed with ADHD in childhood, regardless of whether the adolescents continue to display ADHD symptoms that surpass diagnostic thresholds (Bagwell, Molina, Pelham, & Hoza, 2001).

Impairment in peer relationships is concerning because it is a strong predictor for subsequent maladjustment (Parker & Asher, 1987). Peer problems, independent of ADHD, are broadly known to lead to negative self-perceptions, affective reactions (Asher, Parkhurst, Hymel & Williams, 1990), and a range of serious adjustment problems including school failure and development of other psychopathology (Hoza et al, 2005; Ollendick, Weist, Borden, & Greene, 1992; Parker & Asher, 1987). In a longitudinal sample of children with ADHD followed into adolescence, Mrug et al. (2012) found that childhood peer rejection predicted youth engaging in
more delinquency, smoking more heavily, and experiencing more self-reported anxiety symptoms and parent-reported global impairment 6 years later, after controlling for the initial levels of the same problem behaviors.

Investigations of why children with ADHD experience difficulties in their peer relationships, have predominantly, if not nearly exclusively, focused on characteristics of children with ADHD presumed to contribute to social rejection by their peers. For example, significant literature documents that the disruptive/offensive behaviors, lack of prosocial behaviors, and poor emotion regulation of children with ADHD contribute to peers’ disliking (Erhardt & Hinshaw, 1994; Hinshaw & Melnick, 1995; Rosen et al., 2014). Although this literature contributes important information, this framework neglects to examine the ways in which peers also contribute to the social impairment of children with ADHD. Peer relationships are inherently bidirectional; nonetheless, the focus of the extant literature investigating reasons for peer problems has remained largely on the rejected child with ADHD and rarely incorporated factors in the peers who are rejecting the child with ADHD. To fully understand why peer rejection exists and how it can be ameliorated for children with ADHD, exploration into the peers’ contributions is imperative (Mikami & Normand, 2015). The framework of focusing on the problematic behaviors of children with ADHD to explain their peer problems is not only apparent when reviewing the existing literature about reasons for peer difficulties in this population, but also reflected in the methodology of measuring peer relationships as well as in the most commonly used interventions for peer problems among children with ADHD.
Assessment of Peer Relationships

Children’s peer relationships are traditionally assessed via the sociometric method, in which peers (usually classmates) report their feelings about one another. In the sociometric procedure, children nominate the classroom peers whom they like, dislike and consider friends; they may also rate the extent to which they like each of their classroom peers on a Likert scale. Coie, Dodge and Coppotelli (1982)’s sociometric classification model defines a child’s peer acceptance as the proportion score (number of nominations divided by number of classmates providing nominations) of “like” nominations a child receives from classroom peers. Conversely, a child’s peer rejection is the proportion score of “dislike” nominations the child receives. Proportion scores can also be calculated for the number of friendship nominations a child receives from peers, out of the number of peers providing nominations; a friendship is considered to be reciprocated if both children nominated each other as a friend. A sociometric rating for each child can be calculated by taking an average of the continuous, Likert-scale ratings of liking that the child receives from peers.

The sociometric procedure is considered to be a gold standard assessment method of peer relationships. Peers are the ones who are interacting with (and forming impressions about) one another, so the most valid assessment of children’s peer relationships is simply to ask the peers themselves. Adult informant measures (e.g., parent or teacher report) of children’s social competence may be more feasible to collect, but the correlations between peer sociometrics and such adult reports range from .01 to .27, suggesting that adult reports are poor proxies for peer-assessed measures (Hoza, Gerdes et al., 2005a). Crucially, peer sociometric variables have stronger predictive validity for later adjustment relative to parent and teacher ratings (Hoza et al., 2005; Parker & Asher, 1987; Rubin, Bukowski, & Parker, 1998).
Interestingly, the sociometric constructs of “like” nominations, “dislike” nominations, friendship nominations, and liking ratings are not redundant with one another. “Like” and “dislike” nominations received, as well as liking ratings received, are general, group-oriented, unilateral constructs that represent how the peer group views the target child (Bukowski & Hoza, 1989). However, their intercorrelations may be relatively modest, such that it is possible for a child to receive many “like” and many “dislike” nominations, or few nominations of either type (Bukowski & Hoza, 1989). For example, in a sample containing boys with ADHD and comparison boys, Hinshaw and Melnick (1995) found that the correlation between “like” nominations and “dislike” nominations was significant but relatively low in magnitude ($r(179) = .36$). The stability of “dislike” nominations was found to be greater over the course of a summer program relative to the stability of “like” nominations, in a sample of girls with and without ADHD (Blachman & Hinshaw, 2002). Moreover, as elaborated below, receiving few “like” nominations and receiving many “dislike” nominations have different behavioral correlates (Erhardt & Hinshaw, 1994; Coie et al., 1982), and also incrementally predict subsequent adjustment outcomes (Parker & Asher, 1987).

Relative to nominations, liking ratings may have the benefit of being more sensitive to smaller variations in children’s feelings about their peers (on a continuum from positive to negative; Bukowski & Hoza, 1989). Liking ratings do not require children to make dichotomous, yes versus no judgments regarding whether they wish to nominate a peer as someone they like (or conversely, dislike). Rather, they allow for children to distinguish between, for instance, a peer whom they like a little bit versus like a lot. The sensitivity of liking ratings over nominations may be accentuated when the sociometric procedure limits the number of nominations children can give to a set quantity, such as three.
In contrast to “like” nominations, “dislike” nominations, and liking ratings, which all reflect the peer group’s general regard of a child, friendship is a dyadic, bilateral construct that represents a particular relationship between two individuals (Bukowski & Hoza, 1989). Parker and Asher (1993) found that friendship and liking were related, but distinct. In a community sample, 45.3% of children who were disliked by peers (e.g., their liking rating was greater than or equal to 1 SD below their classroom mean) had at least one friend; by contrast, 82.3% of children who were average accepted (liking rating within 1 SD of mean) and 93.8% of children who were well accepted (liking rating greater than or equal to 1 SD above the mean) had a friend. As well, in a sample of children with ADHD, the correlation between liking ratings and reciprocated friendship was significant but moderate in magnitude ($r(163) = .47; \text{Hoza, Mrug, et al., 2005b}$). Some studies have found that having a friendship buffers the negative effects of being disliked by peers on receiving victimization (Cardoos & Hinshaw, 2011) and subsequent negative adjustment outcomes (Bagwell, Newcomb, & Bukowski, 1998). Collectively, these findings suggest that it is possible for children to be well-liked in their peer group and have no friends, or vice versa, supporting the idea that friendship is a distinct construct. Therefore, utilizing all of the four sociometric variables to examine peer relationships is crucial to capture the nuances of these related but different constructs.

The sociometric method has been widely used to characterize the peer functioning of children with ADHD. Children with ADHD are consistently shown to receive fewer “like” nominations, more “dislike” nominations, fewer reciprocated friendship nominations and lower liking ratings, relative to their TD classmates (Hinshaw & Melnick, 1995; Hoza, Gerdes, et al., 2005a; Hoza, Mrug, et al., 2005b). Absolute values of the effect sizes (Cohen’s $d$) across the studies range from 0.53 to 1.10 (Hinshaw & Melnick, 1995; Hoza, Mrug, et al., 2005b), which
are considered to be medium to large effects (Cohen, 1992). Furthermore, children with ADHD and their TD classmates differ most on “dislike” nominations or on their average liking rating received, followed by “like” nominations received (Mrug et al., 2008), which again suggests that there are distinctions between these sociometric constructs.

The way sociometric variables have been operationalized reflects the aforementioned framework focusing on problem behaviors among disliked children that explain their rejection. Specifically, the overwhelming majority of the research using the sociometric method correlates children’s behavior deficits with the proportion of “like”/“dislike” nominations received or liking rating received from peers. An expansive literature exists about child behavior deficits that predict peer problems in ADHD samples, but due to limited space, only an extremely abbreviated summary is presented. Receiving many “dislike” and few “like” nominations from peers has been connected to children with ADHD displaying aggressive, noncompliant, annoying, intrusive and disruptive behaviors (Erhardt & Hinshaw, 1994; Hinshaw & Melnick, 1995). For children with ADHD showing low levels of aggression, social isolation predicted receiving “dislike” nominations (Hinshaw & Melnick, 1995). Moreover, a study with 172 children with ADHD found that poorer teacher-reported social self-control was associated with children’s greater externalizing behavior, which was then linked to receiving fewer “like” nominations (Rosen et al., 2014). These findings are essential to understanding how problematic behaviors and social skills deficits in children with ADHD lead to peer rejection.

By contrast, extremely few studies examine predictors of the nominations or ratings peers give to others. In other words, even the way in which the sociometric method is operationalized reflects the field’s emphasis on how a child is perceived by peers as opposed to how peers develop perceptions of other children. The current study attempts to address this understudied
perspective, to understand factors that lead to peers giving fewer “like”, more “dislike”, and fewer friendship nominations, as well as lower liking ratings, to children with ADHD.

Impact of Treatment on Peer Relationships

The vast majority of treatments for peer problems among children with ADHD attempt to remediate problem behaviors among children with ADHD, under the assumption that if children with ADHD improve their behavior, this will be sufficient to improve peers’ sociometric liking. However, this does not seem to be the case. For example, the Multimodal Treatment Study of Children with ADHD (MTA) is an example of a treatment study for ADHD symptoms and disruptive behavior that has not been successful in normalizing peer relationships in children with ADHD. In the MTA Study, 579 children with ADHD across six sites in the United States and Canada were randomly assigned to one of four treatment groups: medication management, behavior therapy, the combination of medication management and behavior therapy, and usual community care (MTA, 1999; Jensen et al., 2001). Participants in the first three groups were provided 14 months of treatment by study personnel, and the treatments were state-of-the-art and intensive, at a level exceeding what would be received in typical clinical practice. Despite this, participants’ sociometric functioning did not differ depending on their treatment group; children with ADHD remained considerably more disliked and less liked by their peers, and had fewer reciprocated friendships, relative to their TD classmates (Hoza, Gerdes, et al., 2005a). These findings are concerning, in light of the extensive literature documenting the negative long-term consequences of peer impairment in childhood.

Very few treatments target the peer group as an approach to improve the peer relationships of children with ADHD. One suggestive study tested the idea that an adjunctive component targeting peers’ contributions would augment the efficacy of traditional behavioral
management interventions on the peer functioning of children with ADHD (Mikami et al., 2013). Making Socially Accepting Inclusive Classrooms (MOSAIC), a novel treatment that supplemented behavioral management for children with ADHD with procedures for training peers to be socially inclusive, was compared to contingency management training (COMET), a traditional behavioral management treatment designed to improve socially competent behavior in children with ADHD. Results showed that children with ADHD received relatively fewer “dislike” nominations, more favorable sociometric ratings and more reciprocated friendships when they were in MOSAIC than COMET. The authors concluded that the adjunctive procedures in MOSAIC that targeted peers’ contributions to the social problems of children with ADHD by encouraging the peers to be inclusive of their classmates may have played a role in improving peers’ sociometric liking of children with ADHD (Mikami et al., 2013).

In sum, the treatment literature suggests that exclusively focusing on the contributions of children with ADHD to their peer problems may be a misguided approach. The efficacy of treatments for peer problems may be improved by also targeting the contributions of the peer group that rejects the child with ADHD. This underscores the importance of further investigations into how peers’ perceptions and biases play into the rejection seen in ADHD populations—as is done in the current study.

**Peers’ Sociometric Nominations and Ratings Given to Children with ADHD**

As much as it is important to understand which characteristics of children with ADHD lead to them being rejected by peers, it is equally important to understand the perceptions of the peers who are rejecting the children with ADHD. One way of addressing this question is to examine the characteristics of peers that predict them giving few “like” nominations, many “dislike” nominations, few friendship nominations, and low liking ratings, to children with ADHD.
Unfortunately, as outlined above, studies have neglected to look at reasons why peers give certain patterns of nominations and ratings to children with ADHD, instead focusing on reasons why children with ADHD receive the nominations and ratings from peers that they do.

One exception is a unique study by Hoza et al. (2005), which examined both received and given sociometric nominations and ratings in a sample of children with and without ADHD. Overall, children with and without ADHD were found to select similar classmates as friends and nonfriends. However, peers who chose children with ADHD as nonfriends (e.g., gave more “dislike” nominations to children with ADHD) had received more “like” and fewer “dislike” nominations themselves and received higher liking ratings themselves than those peers who chose TD children as nonfriends; these results suggest that children with higher social status themselves are more likely to dislike children with ADHD (Hoza, Mrug et al., 2005b). Blachman and Hinshaw (2002) also found that sociometric nominations given by ADHD and TD girls were generally similar—girls were more likely to give “like” nominations to TD girls and “dislike” nominations to girls with ADHD; but within this finding, girls with ADHD were slightly more likely to receive “like” nominations from other girls with ADHD than TD girls. However, despite the vast number of studies using the sociometric method, no study to our knowledge has examined the potential for peers’ biases and pre-existing notions about ADHD to influence their sociometric nominations and ratings given to children with ADHD.

The current study aims to understand the pre-existing perceptions and beliefs peers hold about ADHD, in order to provide insight into why children with ADHD are rejected beyond their characteristics and behaviors. Peers’ pre-existing perceptions and beliefs about ADHD will be used to predict the sociometric nominations and ratings that peers give to previously unacquainted children with ADHD in a real-life summer camp setting.
Pre-existing Perceptions of ADHD

The condition of ADHD possesses three qualities that have been shown to lead to the greatest level of societal stigma: Symptoms of ADHD are highly visible, often perceived as controllable, and misunderstood by the public (Canu, Newman, Morrow, & Pope, 2007). A wealth of research suggests that stigmatizing attitudes and beliefs toward ADHD are prevalent in both child and adult populations (Lebowitz, 2013). These attitudes and beliefs develop early and are present across the lifespan; even young children identify deviant behaviors (Spitzer & Cameron, 1995) and hold negative views about mental illness (Hinshaw, 2005; Wahl, 2002).

Studies have demonstrated that stigmatizing beliefs and attitudes are not only an effect of the diagnostic label of ADHD, but are also elicited by the behavioral symptoms displayed by children with this condition. Children with ADHD tend to show hyperactivity and impulsivity in social situations (e.g., they are bossy, have trouble waiting their turn, don’t follow the teacher’s directions; Hoza, Gerdes, et al., 2005a) and these behaviors are salient even when classroom peers may not be aware of a child’s official ADHD diagnostic status. In a study involving 120 children aged 11-12 years, children’s negative attitudes toward and their willingness to engage in activities with a child described in a hypothetical vignette as having inattentive, hyperactive, and impulsive behaviors were unaffected by the addition of diagnostic (‘Attention Deficit Hyperactivity Disorder’) or labeling (‘Attention Deficit Hyperactivity’) information (Law, Sinclair, & Fraser, 2007). This finding suggests that observing ADHD behaviors (without a diagnostic label being applied) is sufficient to evoke stigma in the peer group, and also suggests the potential value in studying children’s perceptions of ADHD.

Within the research literature about stigma of mental illness, the following components, among others, are considered to measure individuals’ stigma toward various mental illnesses: (a)
desire for social distance; (b) attributions made for the target individual’s condition; and (c) behavioral responses to the target individual (Link, Yang, Phelan, & Collins, 2004). In this study, I will be looking at children’s inclination to like a hypothetical classmate with ADHD (social distance), attribution of uncontrollability for ADHD symptoms (attribution of condition) and inclination to help a classmate with ADHD (behavioral response). The three elements of stigma will be collectively referred to as peers’ “pre-existing perceptions” about children with ADHD where necessary. I will examine whether each of these perceptions predict “like”, “dislike”, friendship nominations and liking ratings subsequently given to real-life classroom peers with ADHD in a novel setting. The following sections discuss how each of these pre-existing perceptions have been examined in the stigma research literature, how each of them may be particularly accentuated for the disorder of ADHD, and how each potentially relates to sociometric nominations and ratings given to classmates with ADHD.

**Inclination to like a child with ADHD.** One widely used measure for assessing stigmatizing beliefs and attitudes toward mental illness is social distance. Generally, measures of social distance assess a person’s willingness to interact with a target individual in different types of relationships and settings (Link et al., 2004). It is hypothesized that school-age children will possess tendencies toward social distance from classmates with ADHD, because they are likely to have been exposed to ADHD behaviors already, given the high prevalence rates of this disorder (Wolraich et al., 2012). In fact, research suggests that symptoms of ADHD may be associated with more social distance, relative to other child disorders such as depression or anxiety. In a study by Bellanca and Pote (2012) involving 273 children (ages 7 to 11 years old), participants showed an increased desire for social distance and ascribed more negative attributes toward a hypothetical child described in a vignette as having ADHD relative to hypothetical
children described as having depression or learning disorders; as expected, children expressed more social distance regarding all three hypothetical children with mental disorders relative to a hypothetical child described as TD. As argued by the authors, externalizing disorders such as ADHD may be more likely to evoke social distance relative to internalizing disorders because peers may feel that children with externalizing behaviors are likely to bully others. As well, social distance may generalize across domains. Law et al. (2007) found that TD children who reported more positive attitudes toward a hypothetical child with ADHD were more inclined to report they would engage with the vignette child across general social, academic, and active or physical recreational activities.

Crucially, few studies have correlated individuals’ expressed willingness for social contact with a stigmatized target (obtained in hypothetical vignettes) with behavioral measures of how individuals actually interact with someone in the stigmatized group in a real-life setting. Responses on self-report measures could be biased by social desirability and underestimate the extent of true social distance (Link et al., 2004). One key study examined the stigmatizing effects of negative expectancies about ADHD on observed social distance behaviors (Harris, Milich, Corbitt, Hoover & Brady, 1992). Participants were 68 pairs of unacquainted boys in grades 3-6. In each pair of boys, a TD boy was in the “perceiver” role and the boy in the “target” role either was also TD or had ADHD. For half of the dyads (randomly assigned), the boy in the perceiver role was told only the target boy’s name and grade; for the other half of the dyads, the boy in the perceiver role was given a description of the target boy that included specific ADHD symptoms (e.g., “He gets in trouble a lot for disrupting the class, talking when he shouldn’t…”) – independent of whether the target, in actuality, had ADHD or was TD. Each dyad then completed cooperative and competitive tasks together. Results showed that boys in the perceiver
role who expected the target to have ADHD were observed to be less friendly toward the target boy and talked less often. The negative effects of the ADHD expectancy on perceivers’ behavior occurred regardless of whether the target boy in actuality had ADHD or was TD. This finding shows that the negative expectations children hold about ADHD can lead to behavioral indicators of social distance toward their partners above and beyond the effect of the target child’s actual ADHD status (Harris et al., 1992).

**Attribution of uncontrollability of ADHD.** Measures based on the attributional theory (Weiner, Perry, & Magnusson, 1988), which focuses on respondents’ beliefs about the controllability of mental illnesses, are also widely used to assess stigmatization of mental illness (Link et al., 2004). The stigma literature has examined how attribution of uncontrollability impacts individuals’ perceptions of disorders. When an illness is attributed to uncontrollable causes, such as structural causes (e.g., genetic or biological), the perceiver is more likely to feel pity and to provide sympathy and help to the individual with the illness (Corrigan, 2000). Conversely, when the onset of an illness is viewed as being controllable, such as being attributed to individual causes (e.g., bad character), the perceiver is more likely to feel anger and fear and to reject and avoid the individual with the illness; perceivers may also be more likely to withhold help and support coercive treatment (Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Martin, Pescosolido, & Tuch, 2000).

In support of these findings, a study found that when child participants viewed peers with emotional disorders as being responsible for their difficulties, they felt angrier and showed less pity toward them (Corrigan & Watson, 2007). Furthermore, a qualitative study reported that perceptions of responsibility and blame play a significant role in peers’ acceptance and emotional responses to children’s emotional difficulties (Dixon, Murray, & Daiches, 2013).
Another study found that a child described as aggressive in a hypothetical vignette was less well liked by same-age participants when he was believed to be responsible for this behavior relative to when the behavior was perceived to be out of his control (Sigelman & Begley, 1987).

A study of children’s beliefs about causes of ADHD found that children often blame classmates with ADHD for their behaviors, generally perceiving that ADHD symptoms should be controllable (Coleman, Walker, Lee, Friesen, & Squire, 2009). Coleman et al. (2009) in a sample of children and youths aged 10-18, found that 23% of the respondents who were assigned to read a hypothetical vignette about a classmate with ADHD ($n = 380$) blamed the classmate with ADHD for his condition, compared to 13% of those who were assigned to read a hypothetical vignette about a classmate with asthma ($n = 372$). Another study examining children’s stigmatization toward ADHD and depression found that a hypothetical peer with ADHD was viewed as being more responsible for his or her condition compared to a peer with depressed mood (O’Driscoll, Heary, Hennessy, & McKeague, 2012). These findings are consistent with the mental illness stigma literature, but more research is needed to deepen our understanding of the role of attributions in children’s attitudes toward their peers with ADHD. Specifically, no studies have examined the association between attribution of uncontrollability or controllability of ADHD symptoms and sociometrics given to peers with ADHD.

**Inclination to help a child with ADHD**

As an extension of the attributional model, individuals’ behavioral intentions toward the stigmatized person that arise from the attributions they make of the condition have been used to assess the degree of stigmatizing attitudes. One frequently assessed behavioral intention is an individual’s willingness to help someone with mental illness (Link et al., 2003). Research has found that the decision to help another person depends on the perceived cause of the need for
help—or in other words, the attributions that an individual makes regarding why the person needs help (Weiner et al., 1988). Specifically, if an individual perceives that help is needed because of external barriers or low ability, this is likely to arouse pity, which in turn elicits helping behavior (Fiske, & Glick, 2007). However, if an individual perceives that help is needed because the person has not put in enough effort, the individual is likely to feel anger and withdraw help.

In a study examining children’s attitudes and behavioral intentions toward hypothetical children displaying symptoms of psychological disorders, Meyer, Santo and Bukowski (2011) found that children were least inclined to help the hypothetical child with conduct disorder, followed by the hypothetical child with ADHD, and more inclined to help the hypothetical children with anxiety or depression. The authors did not explore reasons for differences between children in inclination to help a hypothetical child with ADHD. However, as mentioned above, some evidence exists that symptoms of ADHD are believed to be under the child’s control (Coleman et al., 2009); attribution of controllability has been associated with withdrawal of help (Corrigan et al., 2003). As such, children’s inclination to help might be particularly impaired for targets with ADHD. In addition, no studies, to my knowledge, have examined the relationship between children’s intention to help a member of a stigmatized group and their sociometric liking of actual members of that stigmatized group.

**Moderation by ADHD Diagnostic Status**

Broadly, research on stigma shows that individuals who are familiar with and/or have experience with mental illness perceive others with mental illness more favorably and have a better understanding the condition. For instance, individuals who had been diagnosed with depression or schizophrenia themselves, or had a family member with this diagnosis, perceived
people diagnosed with depression or schizophrenia as less dangerous and were less likely to desire social distance from these people (Angermeyer, Matschinger, & Corrigan, 2004).

These findings may be applicable to the population of ADHD. In a study by Bellanca et al. (2012), child participants were given a vignette of a hypothetical child with ADHD and were asked to rate how much contact they have had with a child like the vignette child in the past; as well, participants completed measures of social distance and attitudes toward the vignette child. Results suggested that children who felt that they had previous contact with the vignette child with ADHD had increased desire for social contact and positive cognitive attitudes toward the vignette child relative to those children who felt that they had no previous contact. Moreover, in regard to the effect of personal experience on the understanding of ADHD, another study reported that children with ADHD were more likely to give biological reasons for the condition, whereas TD children were more likely to believe that individuals with ADHD have control over their behaviors and exhibit their symptoms intentionally (McMenamy & Perrin, 2008).

I will examine the potential for the participant’s own ADHD diagnostic status to moderate the relationship between pre-existing perceptions toward a hypothetical peer with ADHD and sociometric nominations and ratings given to children with ADHD. Given findings that familiarity and experience lead to more favorable attitudes toward the stigmatized group, children with ADHD may make more favorable attributions about ADHD symptoms (and therefore be more inclined to say they like the hypothetical peer with ADHD) than TD children. However, whether their attributions will be more or less associated with their actual sociometric nominations and ratings given to peers with ADHD is unknown. Furthermore, whether children with ADHD are more likely to believe that ADHD symptoms are uncontrollable because of their personal experience with these symptoms is unknown. Research suggests that children with
ADHD have a “positive illusory bias”, whereby they fail to self-report having behavior problems (see Owens, Goldfine, Evangelista, Hoza, & Kaiser, 2007), so it is possible that children with ADHD will fail to self-identify as having these behaviors.

**Hypotheses**

**Primary hypotheses.** The overall aim of this study is to examine whether peers’ pre-existing perceptions and cognitions about children with ADHD will affect the sociometric nominations and ratings they subsequently give to previously unacquainted children with ADHD in a novel setting. Pre-existing cognitions about children with ADHD will be measured by their responses to a hypothetical child with ADHD. The term “positive sociometrics given” is used to represent the presence of “like” nominations, lack of “dislike” nominations, presence of friendship nominations, and high liking ratings given to children with ADHD in a sociometric procedure. Based on the literature, I hypothesize the following:

**Hypothesis 1.** Inclination to like the hypothetical child with ADHD will predict positive sociometrics given to children with ADHD.

**Hypothesis 2.** Attribution of uncontrollability for the hypothetical child’s ADHD symptoms will predict positive sociometrics given to children with ADHD.

**Hypothesis 3.** Inclination to help the hypothetical child with ADHD will predict positive sociometrics given to children with ADHD.

**Secondary hypotheses.** The moderating effect of the participant’s own ADHD status on Hypotheses 1-3 will be explored. Given the gaps in the stigma literature, the direction of the moderation cannot be predicted. However, based on the literature that familiarity and experience of mental disorder leads to better understanding and less desire for social distance, I predict that
there may be differences in the effect of pre-existing perceptions of a hypothetical child with ADHD on sociometrics given depending on the participant’s own ADHD diagnostic status.
Method

Participants

Participants were 25 children with ADHD (13 boys, 11 girls) and 113 TD youth (53 boys, 60 girls). All children were between the ages of 6.8 - 9.8 and had completed Grade 1, 2, or 3. Participants were 81% White, 6% Asian American, 3% African American, 2% Latino, and 8% of more than one ethnicity. TD children and ADHD children did not differ in most demographic measures (age, sex, ethnicity, family income); however they did differ on Full Scale IQ (see Mikami et al., 2013). TD and ADHD samples were recruited through community centers and advertisements; children with ADHD were also recruited through pediatricians and schools.

Procedure

Parents who were interested in participating in the study were first administered a screener interview over the phone to determine their eligibility. Parents rated their children on the 18 ADHD symptoms from the Child Symptom Inventory (Gadow & Sprafkin, 1994) and reported peer impairment using seven questions (e.g., “Is disliked or actively avoided by peers”) on a 4-point scale (0 = never, 1 = sometimes, 2 = often, 3 = very often). If parents gave consent to contact the teachers during the screener interview, children’s regular school teachers were asked to complete the same screening questions and to estimate the proportions of peers who like, dislike, and ignore the child (Dishion & Kavanagh, 2003).

To be eligible, children with ADHD had to have at least six of the nine symptoms of inattention or six of nine symptoms of hyperactivity/impulsivity rated by both parent and teacher as often or very often. Furthermore, at least three of seven items assessing peer impairment had to be endorsed as often or very often by parent and teacher, and less than 50% of peers rated as liking them by the teacher. TD children needed to have no more than three symptoms of
inattention or hyperactivity/impulsivity and no more than four total ADHD symptoms endorsed by the parent or teacher. In addition, they also must have had no more than one symptom of peer impairment endorsed by parent or teacher, and the teacher must have reported that at least 50% of peers liked them.

Following the screener interview, parents and children were invited to the lab where the Kiddie Schedule for Affective Disorders and Schizophrenia (KSADS; Kaufman et al., 1997) was administered to the parents. To be eligible for study participation, children with ADHD had to have an ADHD diagnosis validated in the KSADS. For children with ADHD, comorbid diagnoses, with the exception of autism spectrum disorders, were not exclusionary. These comorbidities were diagnosed based on the parent endorsement of diagnostic criteria on the KSADS and a $T$ score of greater than 60 on the Teacher Report Form (Achenbach, 1991). Five out of 24 children with ADHD met diagnostic criteria for oppositional defiant disorder (ODD), 4 met criteria for internalizing problems (depressive and/or anxiety), and an additional 7 met criteria for both ODD and internalizing problems. TD children could not meet criteria for any disorder, including ADHD, on the KSADS and teacher questionnaires. All children, both ADHD and TD, had to have a Full Scale IQ of at least 80 on the Wechsler Abbreviated Scale of Intelligence (Wechsler, 1999). Children with ADHD who were medicated ($n = 10$) were included in the study, and all stayed on a consistent medication regimen during the summer program.

**Summer program.** Children who met the eligibility criteria were enrolled in the summer program and assigned to 16 classrooms. Each classroom had an average of 10.1 children ($SD = 0.93$) in total, which consisted of an average of 3.0 children with ADHD ($SD = 0.52$) and 7.1 TD children ($SD = 1.00$). Within each classroom, all children were the same sex and within a 12-month age span, and attended different schools to minimize previous interactions.
Two summer program teachers were assigned to each classroom. They were told that some children had ADHD, but were not informed the number of children with ADHD or which children had this diagnosis. All 32 summer program teachers were students enrolled in a teacher credentialing program in the school of education at one of two local public universities. Twenty were pursuing a credential in elementary education, six in special education, five in secondary education, and one in speech pathology. All but one of the teachers were female; teachers had a mean age of 22.4 years ($SD = 1.4$), and were 70% White, 12% Asian American, 12% Latina, and 6% African American.

The summer program was conducted from 9 a.m. to 3 p.m. on weekdays for 4 weeks, divided into a Session 1 and Session 2 of 2 weeks each. All children with ADHD ($n = 24$) attended both sessions; in each session, they were assigned to a different classroom with new, previously unacquainted peers and teachers. TD children ($n = 113$) were enrolled in either Session 1 ($n = 61$) or Session 2 ($n = 52$). Children remained with their classroom peers during all program activities and engaged in class, art, music or drama, and physical education periods with their summer program teachers and recess and lunch breaks without teachers. Children did not interact with peers from other classrooms. Attendance at camp was high, with the average child attending over 95% of days.

The current investigation occurred in the context of a larger study testing the efficacy of classroom interventions, Making Socially Accepting Inclusive Classrooms (MOSAIC) and Contingency Management Training (COMET), in improving behavioral and social problems in children with ADHD. Summer program classrooms were randomly assigned to either MOSAIC or COMET conditions. Please see Mikami et al. (2013) for further details about the interventions and other measures not used in the current study.
Measures

All measures were administered throughout camp on an identical schedule in Session 1 and in Session 2. The same measures were administered to children with ADHD and TD children.

**Perceptions of a hypothetical child with ADHD (predictor).** Upon camp arrival (i.e., on the morning of the first day), research assistants pulled children aside in individual interviews, during which they read children a description of a hypothetical child with ADHD symptoms. The hypothetical child, Jordan, was always the same gender as the participant. Children were asked to imagine that Jordan was in their class. Jordan was described as having difficulty paying attention, not being able to stay in his/her seat when he/she is supposed to, not waiting for his/her turn in games, interrupting others, forgetting to do things and losing lots of things. The vignette did not mention the term ADHD or describe Jordan as having a diagnostic label, because generally children do not necessarily know which classroom peers have a formal diagnosis of ADHD, and largely make their judgments based on observed ADHD behaviors; also we note research suggesting that the degree of stigma evoked by behavioral descriptions of ADHD did not differ with the addition of diagnostic or labeling information (Law et al., 2007). Research assistants then asked children to respond to a series of questions about Jordan, which are described below. The children’s responses were used to index their pre-existing perceptions about peers with ADHD symptoms. This measure was adapted from Children’s Attitudes and Behavioral Intentions toward Hypothetical Peers Displaying Symptoms of Psychological Disorders, a measure developed by Meyer, Santo and Bukowski (2011). See Appendix A for this measure. Of note, children were also administered hypothetical vignettes describing children with depressive symptoms as well as with no behavioral problems (see Appendix A). However, only the vignette about the child with ADHD symptoms was included in the current study.
**Inclination to like (predictor).** Children’s inclination to like a hypothetical peer with ADHD symptoms was measured by asking them to rate their desire to engage in various social interactions (e.g., work together in class, play together during recess, be his/her friend) with Jordan on a 4-point scale (1 = not at all, 2 = a little bit, 3 = pretty much, 4 = very much). Children were presented with a visual graphic to help them understand the response scale. This scale was composed of three items. A composite score was calculated by taking the average of the three items and was used as an overall ‘liking’ variable (Cronbach’s alpha = .85).

**Attribution of uncontrollability (predictor).** Children also rated the extent to which they believed Jordan is not able to control the way he/she is on a 3-point scale (1 = no, 2 = maybe, 3 = yes). Other uncontrollability-related items (‘He was just born like this’; ‘He has parents who teach him to act this way’) were excluded because reliability analysis revealed that the items did not hold well together (Cronbach’s alpha = .25). This item was considered to indicate children’s pre-existing perceptions of the extent to which peers with ADHD symptoms cannot control their behaviors.

**Inclination to help (predictor).** Children’s inclination to help a peer with ADHD symptoms was measured by asking questions pertaining to whether Jordan could and should be helped. First, children were asked to rate, on a 4-point scale, how much they would want to help Jordan (1 = not at all, 2 = a little bit, 3 = pretty much, 4 = very much), again accompanied by a visual graphic to help them understand the response scale. Then, they were asked to rate, on a 3-point scale (1 = no, 2 = maybe, 3 = yes), their beliefs on whether it is possible to help Jordan and whether Jordan should be helped by his/her classmates, teacher and parents. A composite score was calculated by taking the average of the z-scores of the 5 items (Cronbach’s alpha = .67).
**Peer sociometric procedure (outcome).** Children completed a standard peer sociometric procedure (Coie, Dodge, & Coppotelli, 1982) on the last day of camp (i.e., the end of the 2 week session). Research assistants, who were kept unaware of children’s ADHD diagnostic status and treatment group, administered the sociometric procedure to children in individual interviews. They provided children with pictures and names of classmates to aid recall. Children were asked to provide an unlimited number of nominations to classroom peers whom they liked (“like” nominations), disliked (“dislike” nominations), and considered to be friends (friendship nominations). Children were also asked to indicate their liking of each of their classroom peers on a 5-point rating scale (1 = really do not like, 5 = really like), with a visual graphic provided to help children understand the response scale.

The pattern of sociometric nominations and ratings each participant gave to classroom peers with ADHD was calculated as follows: For each child, the number of nominations (e.g., like, dislike, friendship) given to their classroom peers with ADHD was divided by the number of total classmates with ADHD. In this way, proportion scores were obtained for the proportion of nominations (like, dislike, friendship) that the child gave to peers with ADHD relative to the number of possible peers with ADHD that the child could have nominated. These proportion scores were calculated in the same manner for both participants with ADHD and TD participants; however, for participants with ADHD, the denominator of the proportion score (indicating the number of possible classmates with ADHD that could be nominated) was reduced by 1 to exclude the participant him/herself. As well, the average rating of liking that each child gave to classroom peers with ADHD was also calculated.
Data Analytic Plan

As previously mentioned, TD children attended either Session 1 or Session 2 of the summer camp whereas children with ADHD attended both sessions. All of the TD children, regardless of whether they were in Session 1 or 2, were included in the dataset for the current study to increase the number of participants and to boost statistical power. For children with ADHD, only their Session 1 data was included in the dataset, so that all data are from the session in which children were experiencing the camp for the first time. All children were unacquainted prior to the start of the camp, and did not interact with children and teachers in other classrooms.

The four criterion variables: “like” nominations, “dislike” nominations, friendship nominations and ratings given to children with ADHD, were tested separately for each of the predictor variables. As mentioned previously, the term “positive sociometrics given to children with ADHD” is used to denote the presence of “like” nominations, lack of “dislike” nominations, presence of friendship nominations, and high liking ratings given to children with ADHD.

All hypotheses were tested using hierarchical multiple regressions. First, all predictor variables were centered (Aiken & West, 1991). In all regressions, the participant’s own ADHD status was entered in Step 1, because I am interested in whether children’s pre-existing perceptions predict positive sociometrics given to children with ADHD above and beyond the contribution of children’s ADHD status. Treatment condition was not entered as a covariate because independent samples t-tests revealed that there were no significant main effects of treatment condition on “like” nominations given ($t(136) = 0.39, p = .70$), “dislike” nominations given ($t(136) = -.95, p = .34$), friend nominations given ($t(136) = .43, p = .67$) and liking ratings given ($t(127) = -1.20, p = .23$) to peers with ADHD on the last day of camp. One thing to note is previously published research showing children with ADHD received significantly more
favorable ratings, fewer “dislike” nominations, and more reciprocated friendship nominations at the end of camp when they were in MOSAIC relative to COMET, as assessed using a repeated measures design (Mikami et al., 2012). The discrepancy between these published results of Mikami et al. (2012) and the current findings is attributable to differences in the data analytic methodology, reflecting the different research questions in each investigation. The purpose of Mikami et al. (2012) was to maximize power for investigating the treatment effect of MOSAIC versus COMET for sociometrics received by children with ADHD, whereas the purpose of the current study is to examine the effect of pre-existing perceptions of children with ADHD on children’s positive sociometrics given to peers with ADHD at camp.

**Hypothesis 1.** To test the hypothesis that children’s inclination to like the hypothetical child with ADHD predicts positive sociometrics given to children with ADHD the following steps were executed: After a statistical control of children’s own ADHD diagnostic status on Step 1, children’s inclination to like the hypothetical child with ADHD was entered on Step 2. Four separate regression analyses were conducted, one with each sociometric variable as the criterion measure.

**Hypothesis 2.** To test the hypothesis that children’s attribution of uncontrollability for the hypothetical child’s ADHD symptoms predicts positive sociometrics given to children with ADHD, procedures identical to Hypothesis 1 were used, except attribution of uncontrollability for the hypothetical child’s ADHD symptoms replaced the inclination to like the hypothetical child with ADHD.

**Hypothesis 3.** To test the hypothesis that children’s inclination to help the hypothetical child with ADHD predicts positive sociometrics given to children with ADHD, procedures
identical to Hypothesis 1 were used, except inclination to help the hypothetical child with ADHD replaced inclination to like hypothetical child with ADHD.

**Secondary hypotheses.** To test the moderating effect of the participant’s own ADHD diagnostic status (dichotomous, dummy coded), three separate interaction terms were calculated for by taking the cross-product of ADHD status and each of the three predictor variables (inclination to like the hypothetical child with ADHD; attribution of uncontrollability for the hypothetical child’s ADHD symptoms; and inclination to help the hypothetical child with ADHD). In Step 3 of each hierarchical regression presented in the section above, the interaction term was entered. Statistically significant interactions were probed further via simple slope analyses with the plot values generated by the PROCESS macro developed by Hayes (2014).

**Power Analysis**

Preliminary power analysis was done using G*Power and the available parameters. Under ‘F test’, ‘Linear multiple regression: fixed model $R^2$ deviation from zero’ was selected as the statistical test. ‘Post hoc: Compute achieved power - given alpha, sample size, and effect size’ was chosen as the type of power analysis. The effect size was obtained from the preliminary linear multiple regressions conducted with the dataset. The obtained squared multiple correlation ($R^2$) was .078, and the effect size was calculated by using the formula $f^2 = (R^2) / (1-R^2)$. The following parameters were inputted into the calculator: Effect size, $f^2 = .085$; alpha error probability: .05; total sample size = 137; number of predictors = 3. Following the convention used to interpret effect sizes ($f^2$), small = .01, medium = .06, large = .14, the power for detecting a medium effect size of $f^2 = .085$ is .81.
Results

Descriptive Statistics

Descriptive statistics of the primary study variables are presented in Table 1 and the correlation matrix is presented in Table 2.

Means and standard deviations for ADHD versus TD groups are presented in Table 3. There was no significant difference between children with ADHD and TD children on their inclination to like ($t(136) = .14, p = .89$) and help a hypothetical child with ADHD ($t(136) = .75, p = .75$). However, children with ADHD were more likely to rate the hypothetical child’s ADHD symptoms as uncontrollable than were TD children, $t(136) = -2.01, p = .046$.

There was no significant difference between children with ADHD and TD children on their “like” nominations ($t(136) = -.39, p = .70$), “dislike” nominations ($t(136) = -.95, p = .34$), friendship nominations ($t(136) = .43, p = .67$), and liking ratings ($t(127) = -1.20, p = .23$) given to classmates with ADHD.

Inclination to Like as Predicting Positive Sociometrics Given to Children with ADHD

Table 4 shows that children who were more inclined to like the hypothetical child with ADHD gave significantly fewer “dislike” nominations, and higher liking ratings to children with ADHD. However, the inclination to like the hypothetical child with ADHD was not a significant predictor of “like” and “friendship” nominations given to children with ADHD.

Attribution of Uncontrollability as Predicting Positive Sociometrics Given to Children with ADHD

As displayed in Table 5, children’s attribution of uncontrollability for the hypothetical child’s ADHD behaviors was not a significant predictor of positive sociometrics given to children with ADHD.
Inclination to Help as Predicting Positive Sociometrics Given to Children with ADHD

As displayed in 6, inclination to help the hypothetical child with ADHD was not a significant predictor of positive sociometrics given to children with ADHD.

Participants’ ADHD Status as a Moderator

The interaction term between participants’ own diagnosis and attribution of uncontrollability for the hypothetical child’s ADHD behaviors significantly predicted “like” nominations given to children with ADHD (Table 5). Probing of this interaction revealed that children with ADHD who believed the ADHD behaviors to be uncontrollable were more likely to give fewer “like” nominations to children with ADHD ($b = -.28, p = .003$), suggesting that believing that ADHD behaviors were controllable was associated with more liking (Figure 1). For TD children, there was no conditional effect of attribution of uncontrollability on their “like” nominations given to children with ADHD ($b = -.01, p = .81$).

In addition, the interaction term between participants’ own diagnosis and inclination to help the hypothetical child with ADHD significantly predicted friendship nominations given to children with ADHD (Table 6). Probing revealed that inclination to help the hypothetical child with ADHD was positively associated with friendship nominations given to children with ADHD among participants who had ADHD themselves ($b = .18, p = .001$; Figure 2). For TD children, inclination to help was not associated with their friendship nominations given to children with ADHD ($b = .013, p = .83$). None of the other interaction terms reached statistical significance.
Discussion

This study explored whether children’s pre-existing perceptions of ADHD predict their liking toward peers with ADHD in a new setting. Specifically, children’s inclination to like and help a hypothetical child with ADHD and their attribution of uncontrollability for ADHD symptoms of a hypothetical child were explored as predictors for “like” nominations, “dislike” nominations, liking ratings and friendship nominations subsequently given to previously unacquainted, real-life peers with ADHD. The results showed that children’s inclination to like a hypothetical child with ADHD predicted fewer “dislike” nominations and higher liking ratings subsequently given to real-life peers with ADHD. Children with ADHD who believed that ADHD symptoms were uncontrollable were more likely to give fewer “like” nominations to peers with ADHD compared to those who believed that ADHD symptoms were more controllable. For TD children, however, attribution of uncontrollability was not associated with “like” nominations given to children with ADHD. In addition, for children with ADHD, the more inclined they were to help the hypothetical child with ADHD, the more they were likely to nominate peers with ADHD as friends. Again, for TD children, their level of inclination to help was not associated with their friendship nominations given to children with ADHD.

Inclination to Like a Hypothetical Child with ADHD

As predicted, children who were more inclined to engage in various social interactions with a hypothetical child with ADHD were less likely to reject and more likely to give higher liking ratings to real-life peers with ADHD in a new setting. These findings support the idea that children enter into novel social situations with pre-existing attitudes and beliefs about ADHD behaviors and children who display these behaviors. The findings further support the idea that
ADHD behaviors rather than the diagnostic label evoke stigmatizing beliefs and attitudes in children (Law et al., 2007).

Previous research has shown that positive attitudes toward a hypothetical child with ADHD lead to stated desire to engage in more activities with the hypothetical child (Law, Sinclair, & Fraser, 2007); this study took the important step of demonstrating that the positivity toward a hypothetical child displaying ADHD symptoms translates to the liking of an actual peer with whom the participant was previously unacquainted. The majority of stigma research thus far has used social distance and behavioral intentions to engage in activities as a measure of stigma toward stigmatized individual. This method of measuring stigma is limited, because children’s self-report of how they would act in a hypothetical situation may not reflect how they would act in a real-life situation. The current findings extend previous studies by demonstrating that children who have more positive existing attitudes toward a hypothetical child with ADHD not only state greater intention to engage in social activities with the hypothetical child, but also give more positive ratings and fewer “dislike” nominations to real-life, actual peers with ADHD whom they met for the first time. Importantly, the findings demonstrate a real-life process of children entering a new peer group with pre-existing perceptions of ADHD, which shape how they subsequently perceive and respond to new peers with the condition.

Interestingly, even though inclination to like a hypothetical child with ADHD predicted the participant giving fewer “dislike” nominations, it did not predict the participant giving more “like” nominations. “Like” nominations and “dislike” nominations, even though they are correlated, are not exact opposites of one other (Dijkstra, Lindenberg, & Veenstra, 2007; Grygiel, Humenny, Rębisz, Bajcar, & Świtaj, 2014). The relationship between the two constructs may be curvilinear (Bukowski, Sippola, Hoza, & Newcomb, 2000) and asymmetrical (Csaba &
Pål, 2010). Thus, the absence of “dislike” nominations does not equate to the presence of “like” nominations. In fact, research suggests that receiving “like” nominations is independently associated with positive social behaviors, whereas receiving “dislike” nominations is uniquely related to negative social behaviors (Coie et al., 1982). Further, being actively disliked by peers appears more stable over time relative to simply not being actively liked (Parker & Asher, 1987) and being disliked, relative to simply not being liked, is a relatively greater risk factor of an array of adjustment problems in later life (Ollendick, Weist, Borden, & Greene, 1992). In the light of the negative consequences and stability of “dislike” nominations, the finding that inclination to like a hypothetical child leads to fewer “dislike” nominations is encouraging and suggests that altering children’s pre-existing liking toward children with ADHD might lead to better adjustment outcomes for children with ADHD.

One reason why the inclination to like a hypothetical child with ADHD predicted increased sociometric liking ratings (in the absence of increased “like” nominations) toward classmates with ADHD might be because liking ratings are capturing the decrease in “dislike” nominations, as ratings encompass both disliking and liking measured on a continuum. Another possibility is that because sociometric liking ratings are a more sensitive way (relative to nominations) of measuring children’s feelings about their peers (Asher & Hymel, 1981; Bukowski & Hoza, 1989), ratings could be capturing the small incremental differences in liking.

The inclination to like a hypothetical child with ADHD did not predict friendship nominations given to classmates with ADHD, even though it predicted higher liking ratings and lower “dislike” nominations. Peer status and friendship, as measured by sociometric methods, are clearly distinct constructs (e.g., Bagwell et al., 1998; Parker & Asher, 1993). Moreover, Oden and Asher (1977) reported that coaching children in social skills led to increases in children’s
liking ratings but not friendship nominations. Therefore, the process through which friendships form may differ from the process through which liking/disliking is established. Relevant to the current results, we speculate that participants’ quick responses to a hypothetical vignette do not reflect the in-depth involvement and intimacy required for friendships, but may be more pertinent to the relatively faster judgments of liking and disliking that children make.

**Attribution of Uncontrollability of ADHD Symptoms**

Overall, attribution of uncontrollability of a hypothetical child’s ADHD symptoms did not predict positive sociometrics given to children with ADHD. This was unexpected because previous research in the stigma literature has consistently shown that when a condition is attributed to uncontrollable causes, it arouses pity, which leads to sympathy and helping behavior (Corrigan, 2000). When a condition is perceived to be controllable, it has shown to arouse anger and fear, which leads to rejection, avoidance, coercion and withdrawal of help (Corrigan, Markowitz, Watson, Rowan, & Kubiak, 2003; Martin, Pescosolido, & Tuch, 2000). The current findings, however, suggest that at least in the case of ADHD, perceiving ADHD behaviors to be controllable may be largely unrelated to children’s liking of peers with ADHD. In fact, for children who have ADHD, perceiving ADHD behaviors to be controllable may actually be associated with more positive responses (i.e., more “like” nominations given) toward peers with ADHD. However, children’s emotional reactions to the hypothetical child with ADHD, such as pity, sympathy, anger, and fear, were not assessed. This limits the exploration of whether, in this study, children did not show the expected emotional reactions to a hypothetical child with ADHD when they perceived that child’s ADHD behaviors to be controllable.

A potential explanation for this unexpected finding could relate to the fact that the outcome measure used in the study is sociometrics given in a real-life classroom, rather than a
measure about hypothetical liking of a child in a vignette. When making a judgment about a hypothetical target, attributing their mental illness to uncontrollable causes could lead to more expressions of pity and sympathy, because the respondent does not have to actually interact with this individual. However, in the case of a classmate who displays disruptive and inattentive symptoms, attributing these behaviors to uncontrollable causes might not result in more positive feelings about that classmate. That is, with a real life peer, assuming his/her problem behaviors are uncontrollable may imply that they will persist (and the respondent will, in all likelihood, have to continue to endure them on a daily basis), without much hope for improvement. Related to this, although the literature has repeatedly demonstrated that attributing controllability and responsibility for a negative event may lead to anger because of the belief that the person should have made a better choice, on the flip side, it suggests that the person is able to make a better choice, and thus, children might prefer a peer who is able to control his or her ADHD behaviors when needed. Moreover, it could also be that if children believe a classmate’s ADHD behaviors are under that child’s control, then the behaviors become more predictable and easier for children to expect and understand.

Notably, previous studies have examined attributions of uncontrollability for more severe mental illnesses, such as schizophrenia (Corrigan et al., 2003), or mental illness, as a broad term (Corrigan et al., 2005). Because symptoms of schizophrenia lie so far outside the range of normative behaviors, perceiving them as out of the individual’s control may be more likely to lead to sympathy and helping. In contrast, ADHD symptoms are extremes of normal behaviors displayed by children. Children might be more annoyed and angered by peers with ADHD if they perceive the ADHD behaviors to be uncontrollable, compared to controllable, because they recognize they are able to control their own personal inattentive and hyperactive/impulsive
behaviors when needed. Moreover, because symptoms of schizophrenia are so out of the ordinary, children might be able to perceive and conceptualize schizophrenia as medical illness. In contrast, it might seem to children that symptoms of ADHD do not warrant such a medical conceptualization because they are extremes of normal behaviors.

**Inclination to Help a Hypothetical Child with ADHD**

Contrary to predictions, inclination to help the hypothetical child with ADHD did not predict positive sociometrics given to children with ADHD. Again, we speculate this may follow from the overall lack of association between attributions of uncontrollability and sociometrics given, as previous research suggests that attributing mental illness to uncontrollable causes elicits pity and sympathy, and expressions of desires to help (usually assessed in a hypothetical scenario, as opposed to observed in real life interactions).

Interestingly, however, among children with ADHD, those who were more inclined to help the hypothetical child with ADHD were more likely to nominate other children with ADHD in the summer program as friends. Helping behavior may be specifically more connected to friendship, as opposed to associated with positive regard for peers. Indeed, helping behavior among friends has been used as a measure of the quality of the friendship (Parker & Asher, 1993). For example, a meta-analysis of friendship concluded that friends evidenced more cooperation, which includes variables of helping, sharing, cooperating, giving, and expressing unselfish concern, than non-friends (Newcomb & Bagwell, 1995). Moreover, Berndt (1981) found that girls reported that they would help a friend more than an acquaintance. This is likely due to unique characteristics of friendship, such as intimacy, self-disclosure, interpersonal trust, and expectations of reciprocity (Schneider, Wiener, & Murphy, 1994). Helping often requires understanding of what the individual needs and wants, which is difficult to figure out for
acquaintances. These previous findings shed some light on why children with ADHD who were more inclined to help a hypothetical child with ADHD were more likely to nominate a child with ADHD as a friend, despite no results being found for the other sociometric criterion variables.

**Diagnosis of ADHD as a Moderator**

Among children with ADHD, attributions of controllability and inclination to help the hypothetical child with ADHD predicted them giving more positive sociometrics to peers with ADHD. In contrast, regardless of whether they perceived the ADHD behaviors to be controllable or not, TD children gave “like” nominations to about one-third of classmates with ADHD. Similarly, TD children gave friendship nominations to about one-third of children with ADHD in their classroom regardless of whether they had low or high inclination to help the hypothetical child with ADHD. These findings suggest that attribution of uncontrollability and inclination to help do not impact the positive sociometrics given to children with ADHD for TD children.

TD children’s sociometrics given to peers with ADHD might be unaffected by their attribution of uncontrollability for ADHD behavior because they perceive the behaviors to be negative regardless of whether they believe that they are controllable or not. In the obesity stigma literature, research has found no relationship between children’s attributions of controllability and their selection of overweight friends (Musher-Eizenman, Holub, Miller, Goldstein, & Edwards-Leeper, 2004). In another study, medical explanations of obesity did not affect children’s willingness to engage in positive interactions with an obese peer (Bell & Morgan, 2000). Likewise, TD children’s liking of peers with ADHD might not be affected by their attribution of uncontrollability.

Interestingly, children with ADHD seemed to prefer peers with ADHD when they perceived the behaviors to be controllable, even though they rated ADHD behaviors as more
uncontrollable than TD children on average. Their perception that ADHD behaviors are uncontrollable is consistent with previous findings that children with ADHD were more likely to view their problematic behavior as uncontrollable relative to TD children (Kaidar, Wiener, & Tannock, 2003; Wiener et al., 2012). Even though children with ADHD may view their behaviors to be uncontrollable, they may have heightened awareness that the social expectations are for them to be able to control their behaviors (perhaps because they are constantly being reprimanded to do so by parents and teachers); in fact, their reports that ADHD behaviors are uncontrollable may be a defensive response to feeling inadequate based on societal expectations.

Youths with ADHD seem to have an adequate knowledge of socially acceptable behaviors, despite their inappropriate behaviors (Hinshaw & Melnick, 1995; Whalen & Henker, 1992). Moreover, boys with ADHD (similar to TD children) also tend to give “dislike” nominations to peers with ADHD (Hinshaw & Melnick, 1995). When considered in the context of the current findings, this might suggest that children with ADHD also do prefer peers with socially acceptable behaviors. Thus, if they think a peer with ADHD is able to control his or her behavior, they are likely to like this peer more.

One possible reason why TD children’s inclination to help does not predict friendship nominations given to children with ADHD could be their expectation that help might not be reciprocated. Friendship is a mutual, reciprocal, equal relationship between two children. As such, even if TD children have a high inclination to help the hypothetical child with ADHD, this might not translate to actual friendship with a child with ADHD, because they might perceive that children with ADHD would not be able to reciprocate help when needed—a quality required for a true friend (Newcomb & Bagwell, 1995). Kurzban and Leary (2001) suggest that human beings are designed to avoid partners who will offer them little or provide no social gain for
them. Therefore, if an individual perceives that someone with a mental illness is different from them and beneath them in social status, they might be concerned that they are being cheated in the social exchange and be less interested in interacting with this person (Overton & Medina, 2008). Furthermore, in a qualitative study examining adolescents’ reasons for excluding peers with mental health problems, participants read a vignette about a character with ADHD experiencing exclusion in a dyadic social situation (O'Driscoll, Heary, Hennessy, & McKeague, 2014). Participants’ responses suggested that they were concerned that peers with ADHD would be self-centered and unaware of emotional needs of other people, which also implies that youths perceive peers with ADHD to lack the ability to provide reciprocal support (O'Driscoll et al., 2014). Moreover, youths also reported being concerned about the fairness of potential unreciprocated support (O'Driscoll et al., 2014). In contrast, among children with ADHD, those who were more inclined to help a hypothetical child with ADHD might assume that if they help a peer with ADHD, this will be reciprocated.

**Strengths and Limitations**

One of the strengths of this study was the longitudinal design that allowed for an investigation into how children’s existing attitudes and beliefs of ADHD measured on the first day of camp predicts their positive sociometrics subsequently given to real life classmates with ADHD on the last day of camp. Moreover, all children were previously unacquainted, which helps to isolate the direction of effects from pre-existing perceptions of ADHD to actual sociometrics given to peers with ADHD in a new setting, as opposed to vice versa.

Despite the strengths of the study, there are also limitations. First, a better measure of children’s stigma toward ADHD is needed. Vignette measures should include different scenarios that describe situations in which peers, teachers and parents are affected by the ADHD
behaviors. In the current study, the target child in the vignette displayed ADHD behaviors that mostly caused trouble for teachers rather than peers or parents. If vignettes included scenarios taking place at a setting such as a birthday party where the peers are more directly affected by a child’s ADHD, more nuanced responses from respondents might arise.

Moreover, the attribution of uncontrollability measure was composed of only one item. Other items such as, “He was just born like this?” or “He doesn’t try hard enough to act differently” did not hold well together when combined with “He can’t control the way he is”. Perhaps, young children do not have a clear understanding of innate ability versus effort. A more reliable measure of children’s attribution of uncontrollability is crucial to further explore the role it plays in children’s sociometrics given to peers with ADHD. In addition, stable and global attributions should also be explored to assess whether perceiving ADHD symptoms to be stable and to be present across different situations has implications on sociometrics given to peers with ADHD.

Third, the design of this study did not allow for exploration into whether comorbid conditions in children with ADHD played a role in peers’ sociometrics given to them. Hoza et al., (2005) found that children with ADHD who also had comorbid ODD and conduct disorder or anxiety disorder experienced more peer problems than those without comorbid conditions. Therefore, comorbid conditions in children with ADHD could affect the sociometrics their classmates give them.

Further limitations concern the nature of the summer program. There were approximately three children with ADHD in each classroom, which has implications for the proportion scores calculated for “like”, “dislike” and “friend” nominations given to children with ADHD. That is, a nomination of one more child with ADHD will have a dramatic effect on the proportion score of
nominations given to children with ADHD. Moreover, this might have limited the power of the analyses. However, we note that a typical general education classroom contains approximately three children with ADHD.

Another larger issue is that, more generally, summer program classrooms differed from typical classrooms during the school year in several ways. In this study, the classrooms were same-sex, smaller in size and had a high teacher-to-student ratio. Moreover, the students did not have any academic demands. In addition, the summer program was short (2 weeks) and all students were previously unacquainted, suggesting that results of the study may be most applicable to how children form initial social ties (such as in an after school program or new extra-curricular activity). Crucially, we do not know how pre-existing perceptions of ADHD may influence children’s sociometric judgments about peers with ADHD over the longer term.

Finally, although we largely administered the hypothetical vignette measure to children before they got to know their classmates in the summer camp, they did have some exposure to their summer camp peers before the measure was administered (on the order of 1-3 hours). Sociometric impressions can form very quickly, so there was not complete isolation of children’s perceptions about the hypothetical child with ADHD from their exposure to the summer camp peers with ADHD. However, we speculate that children’s responses on the vignette measure were largely formed before they met their summer camp classmates.

Clinical Implications

Findings from this study provide further support for the importance of targeting social contextual factors surrounding ADHD rather than solely targeting the child’s problematic behaviors. Treatments should move away from the framework of only targeting the child with ADHD, and attempt to incorporate components designed to alter the biases or expectations held
by peers toward children with ADHD. Shifting the blame from the child and their family and attempting to also target peers’ perceptions could aid in reducing stigma toward ADHD, which could also contribute to reducing barriers to treatment for children and families.

**Future Directions**

Understanding the underlying mechanisms of stigma against ADHD is important in developing strategies to mitigate the stigma. Currently, not much is known about what can be done to reduce the stigma of ADHD, even though there is a lot of evidence to support that ADHD is a stigmatized condition (Lebowitz, 2013). There is no clear understanding of how stigmatizing beliefs develop and persist across the lifespan.

The majority of studies exploring development of stigma in children have focused on racial prejudices. Even though there has not been any work looking at how children develop stigmatizing beliefs and attitudes toward ADHD, or mental illnesses as a broad construct, some insight can be gained from examining research on racial stereotypes and prejudice in children. Allport (1954)’s theory of socialization of prejudice posits that prejudice in children is formed through direct interpersonal learning, conformity and contact. According to this theory, children learn from their parents’ expression of their views and become aware of the family’s social norms about outgroup members, as well as expected attitudes toward them (Rodríguez-García & Wagner, 2009). In addition, Allport argued that children’s contact with the peers of the outgroup, especially in school settings, plays a role in children’s attitudes toward outgroups, but that parental words, emotions, and ideas influence children’s attitudes more heavily (Allport, 1954). On the contrary, Rodríguez-García and Wagner (2009) speculate that children who have experiences of intergroup contact with outgroup members are likely to be influenced by their own experiences and less by their parents’ attitudes. Overall, studies have shown mixed results—
some have found that children’s attitudes are influenced by their parents’ attitudes, whereas some have found no relationship (Rodríguez-García & Wagner, 2009).

Future studies should examine the extent to which the theory of socialization of prejudice applies to stigma of ADHD to gain insight into the sources of stigmatizing beliefs in children. Studies might explore the perceptions of parents, both of children with ADHD and without, and teachers, to investigate the extent to which children model their attitudes about ADHD after the messages they receive from adults. Moreover, the impact of previous interpersonal contact and experience with peers with ADHD in school settings on children’s perception and stigma toward ADHD needs to be investigated. Most children are likely to have had experience interacting with peers displaying ADHD behaviors. However, given that children with ADHD are also likely to be disruptive, whether the experience of knowing a child with ADHD and intergroup contact would serve as a positive buffer against stigmatizing attitudes, like it does for racial prejudice, is uncertain. However, when children were asked about a hypothetical child with ADHD and were asked to rate how much contact they felt they have had with a child like the one in the vignette, those children who felt that they had previous contact with the vignette child with ADHD had increased desire for social contact and positive attitudes toward the vignette child compared to children who indicated that they had no previous contact (Bellanca et al., 2012). Future studies should extend these findings to real-life situations and investigate the impact of previous contact with peers with ADHD on children’s liking of new peers with ADHD. Furthermore, studies should examine the quality of the previous contact with peers with ADHD, to gain a more nuanced understanding of how previous contact can influence future interactions.
Conclusions

This research demonstrated that children have pre-existing perceptions of classmates with ADHD that predict their sociometrics given to previously unacquainted peers with ADHD in a new setting. The findings suggest that treatment approaches designed to alter pre-existing or expectations held by peers toward children with ADHD have potential utility as an intervention for peer rejection among children with ADHD.
Table 1

*Descriptive Statistics of Primary Study Variables*

<table>
<thead>
<tr>
<th>Measure</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inclination to like&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.47</td>
<td>.60</td>
<td>1.46</td>
</tr>
<tr>
<td>2. Attribution of uncontrollability&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.10</td>
<td>.72</td>
<td>-.15</td>
</tr>
<tr>
<td>3. Inclination to help&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.00</td>
<td>.65</td>
<td>-2.80</td>
</tr>
<tr>
<td>4. “Like” nominations given</td>
<td>.27</td>
<td>.34</td>
<td>1.00</td>
</tr>
<tr>
<td>5. “Dislike” nominations given</td>
<td>.24</td>
<td>.30</td>
<td>1.04</td>
</tr>
<tr>
<td>6. Friendship nominations given</td>
<td>.25</td>
<td>.32</td>
<td>.98</td>
</tr>
<tr>
<td>7. Liking ratings given</td>
<td>2.60</td>
<td>.79</td>
<td>-.14</td>
</tr>
</tbody>
</table>

*Note.*<sup>a</sup> attitudes toward and beliefs about the hypothetical child with ADHD.
Table 2

Correlation Matrix of Primary Study Variables

<table>
<thead>
<tr>
<th>Measure</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Inclination to like</td>
<td>.20*</td>
<td>.02</td>
<td>.06</td>
<td>-.17*</td>
<td>.06</td>
<td>.20*</td>
</tr>
<tr>
<td>2. Inclination to help</td>
<td>-</td>
<td>.18*</td>
<td>.01</td>
<td>-.08</td>
<td>.09</td>
<td>.14</td>
</tr>
<tr>
<td>3. Attribution of uncontrollability</td>
<td>-</td>
<td>-.10</td>
<td>.14</td>
<td>-.09</td>
<td>-.04</td>
<td></td>
</tr>
<tr>
<td>4. “Like” nominations given</td>
<td>-</td>
<td>-.18*</td>
<td>.51**</td>
<td>.52**</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. “Dislike” nominations given</td>
<td>-</td>
<td>-.11</td>
<td>-.68**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Friendship nominations given</td>
<td>-</td>
<td></td>
<td>.43**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Liking ratings given</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* \( p < .05 \). ** \( p < .01 \).
Table 3

Descriptive Statistics of Primary Study Variables Grouped by ADHD Status

<table>
<thead>
<tr>
<th>Measure</th>
<th>TD</th>
<th>ADHD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>1. Inclination to like&lt;sup&gt;a&lt;/sup&gt;</td>
<td>1.47</td>
<td>.58</td>
</tr>
<tr>
<td>2. Attribution of uncontrollability&lt;sup&gt;a&lt;/sup&gt;</td>
<td>2.04</td>
<td>.72</td>
</tr>
<tr>
<td>3. Inclination to help&lt;sup&gt;a&lt;/sup&gt;</td>
<td>.01</td>
<td>.66</td>
</tr>
<tr>
<td>4. “Like” nominations given</td>
<td>.29</td>
<td>.35</td>
</tr>
<tr>
<td>5. “Dislike” nominations given</td>
<td>.25</td>
<td>.29</td>
</tr>
<tr>
<td>6. Friendship nominations given</td>
<td>.28</td>
<td>.34</td>
</tr>
<tr>
<td>7. Liking ratings given</td>
<td>2.59</td>
<td>.76</td>
</tr>
</tbody>
</table>

<sup>a</sup>attitudes toward and beliefs about the hypothetical child with ADHD.
Table 4

Inclination to Like a Hypothetical Child with ADHD as a Predictor for Sociometrics Given to Children with ADHD

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Like nominations</th>
<th>Dislike nominations</th>
<th>Friendship nominations</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$\Delta R^2$</td>
<td>$b$</td>
<td>95% CI</td>
<td>$\Delta R^2$</td>
</tr>
<tr>
<td><strong>Step 1</strong></td>
<td>.001</td>
<td>.007</td>
<td>.001</td>
<td>.01</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.03 [-.12, .20]</td>
<td>.06 [-.09, .21]</td>
<td>-.03 [-.16, .09]</td>
<td>.21 [-.21, .61]</td>
</tr>
<tr>
<td><strong>Step 2</strong></td>
<td>.004</td>
<td>.03*</td>
<td>.003</td>
<td>.04*</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.03 [-.12, .20]</td>
<td>.06 [-.09, .20]</td>
<td>-.03 [-.16, .10]</td>
<td>.21 [-.21, .63]</td>
</tr>
<tr>
<td>Inclination to Like</td>
<td>.04 [-.07, .14]</td>
<td>-.09*</td>
<td>[-.17, -.02]</td>
<td>.26* [.03, .49]</td>
</tr>
<tr>
<td><strong>Step 3</strong></td>
<td>.004</td>
<td>.008</td>
<td>.003</td>
<td>.03</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.03 [-.12, .20]</td>
<td>.08 [-.08, .20]</td>
<td>-.03 [-.16, .12]</td>
<td>.21 [-.23, .65]</td>
</tr>
<tr>
<td>Inclination to Like</td>
<td>.06 [-.07, .18]</td>
<td>-.11*</td>
<td>[-.20, -.03]**</td>
<td>.05 [-.07, .16]</td>
</tr>
<tr>
<td>Diagnosis X Inclination to Like</td>
<td>-.08 [-.31, .17]</td>
<td>.11 [-.08, .25]</td>
<td>-.07 [-.23, .25]</td>
<td>-.51 [-1.06, .45]</td>
</tr>
<tr>
<td><strong>Total $R^2$</strong></td>
<td>.009</td>
<td>.04*</td>
<td>.007</td>
<td>.08*</td>
</tr>
</tbody>
</table>

*Note. 95% Bias corrected and accelerated confidence intervals reported in brackets. Confidence intervals based on 1000 bootstrap samples.

* $p < .05$. ** $p < .01$. 
Table 5

**Attribution of Uncontrollability for ADHD Behaviors of a Hypothetical as a Predictor for Sociometrics Given to Children with ADHD**

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Like nominations</th>
<th></th>
<th></th>
<th>Friendship nominations</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \Delta R^2 )</td>
<td>( b )</td>
<td>95% CI</td>
<td>( \Delta R^2 )</td>
<td>( b )</td>
<td>95% CI</td>
<td>( \Delta R^2 )</td>
</tr>
<tr>
<td>Step 1</td>
<td>.001</td>
<td>.007</td>
<td></td>
<td>.001</td>
<td>.01</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.03</td>
<td>[.39, .70]</td>
<td>.06</td>
<td>[.09, .21]</td>
<td>-.03</td>
<td>[-.15, .08]</td>
<td>.21</td>
</tr>
<tr>
<td>Step 2</td>
<td>.01</td>
<td>.02</td>
<td></td>
<td>.008</td>
<td>.003</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.05</td>
<td>[-.10, .20]</td>
<td>.05</td>
<td>[.09, .10]</td>
<td>-.02</td>
<td>[-.13, .10]</td>
<td>.23</td>
</tr>
<tr>
<td>Attribution of Uncontrollability</td>
<td>-.05</td>
<td>[-.15, .04]</td>
<td>.05</td>
<td>[.02, .12]</td>
<td>-.04</td>
<td>[-.11, .03]</td>
<td>-.06</td>
</tr>
<tr>
<td>Step 3</td>
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<td>.01</td>
<td></td>
<td>.00</td>
<td>.02</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.10</td>
<td>[-.05, .30]</td>
<td>.02</td>
<td>[-.12, .18]</td>
<td>-.02</td>
<td>[-.15, .10]</td>
<td>.31</td>
</tr>
<tr>
<td>Attribution of Uncontrollability</td>
<td>-.01</td>
<td>[-.11, .09]</td>
<td>.03</td>
<td>[.04, .11]</td>
<td>-.04</td>
<td>[-.12, .04]</td>
<td>-.002</td>
</tr>
<tr>
<td>Diagnosis X Attribution of Uncontrollability</td>
<td>-.27*</td>
<td>[-.45, -.07]**</td>
<td>.14</td>
<td>[.06, .31]</td>
<td>.001</td>
<td>[-.18, .17]</td>
<td>-.42</td>
</tr>
<tr>
<td>Total ( R^2 )</td>
<td>.05*</td>
<td>.04</td>
<td></td>
<td>.01</td>
<td>.03</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Note.* 95% Bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals based on 1000 bootstrap samples.

* \( p < .05 \). ** \( p < .01 \).
Table 6

Inclination to Help a Hypothetical Child with ADHD as a Predictor for Sociometrics Given to Children with ADHD

<table>
<thead>
<tr>
<th>Predictor</th>
<th>Like nominations</th>
<th>Dislike nominations</th>
<th>Friendship nominations</th>
<th>Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>( \Delta R^2 )</td>
<td>( b )</td>
<td>( 95% ) CI</td>
<td>( \Delta R^2 )</td>
</tr>
<tr>
<td>Step 1</td>
<td>.001</td>
<td>.007</td>
<td>.001</td>
<td>.01</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.03</td>
<td>[.11, .17]</td>
<td>.06</td>
<td>[.08, .21]</td>
</tr>
<tr>
<td>Step 2</td>
<td>.000</td>
<td>.006</td>
<td>.007</td>
<td>.02</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.03</td>
<td>[.11, .17]</td>
<td>.06</td>
<td>[.08, .21]</td>
</tr>
<tr>
<td>Inclination to Help</td>
<td>.01</td>
<td>[.10, .09]</td>
<td>-.04</td>
<td>[.11, .07]</td>
</tr>
<tr>
<td>Step 3</td>
<td>.002</td>
<td>.002</td>
<td>.02</td>
<td>.003</td>
</tr>
<tr>
<td>Diagnosis</td>
<td>.03</td>
<td>[.11, .17]</td>
<td>.06</td>
<td>[.07, .19]</td>
</tr>
<tr>
<td>Inclination to Help</td>
<td>.02</td>
<td>[.09, .09]</td>
<td>-.05</td>
<td>[.11, .06]</td>
</tr>
<tr>
<td>Diagnosis X Inclination to Help</td>
<td>-.07</td>
<td>[.40, .27]</td>
<td>.05</td>
<td>[.25, .45]</td>
</tr>
</tbody>
</table>

Note. 95% Bias corrected and accelerated confidence intervals reported in parentheses. Confidence intervals based on 1000 bootstrap samples.
* \( p < .05 \)
Figure 1. Attribution of uncontrollability predicts “like” nominations given to children with ADHD among participants with ADHD but not TD participants.
Figure 2. Inclination to help predicts friendship nominations given to children with ADHD among participants with ADHD but not TD participants.
References


Appendix A

Now I’m going to tell you about another child. Imagine that this child is here in your class too. Jordan finds it really hard to pay attention to what the teacher says and to do his/her work. Jordan doesn’t stay in his/her seat when he/she is supposed to. Often Jordan doesn’t wait his/her turn in games and he/she interrupts other kids and the teacher when they are talking or doing things. When the teacher tells the class to do something, Jordan usually forgets to do it. He/she also loses lots of things.

Show smiley face card
1= not at all; 2= a little bit; 3= pretty much; 4= very much

J1. _____ How much would you want to work with Jordan in class time?
J2. _____ How much would you want to play with Jordan at lunch recess?
J3. _____ How much would you want to be friends with Jordan?

These next questions are about why Jordan acts the way that he/she does. You are going to tell me “yes”, “maybe” or “no” for these questions. (data entry: 3=yes, 2=maybe, 1=no)

Do you think Jordan acts this way because:
J4. _____ He/she can’t control the way he/she is?
J5. _____ He/she was just born like this?
J6. _____ He/she doesn’t try hard enough to act differently?
J7. _____ He/she has parents who teach him/her to act this way?
J8. _____ He/she is a mean person?

Show smiley face card
1= not at all; 2= a little bit; 3= pretty much; 4= very much
J10. _____ How much would you want to help Jordan with this problem of how he/she behaves?

Tell me, yes, maybe, or no. (data entry: 3=yes, 2=maybe, 1=no)
J11. _____ Is it possible to help Jordan with this problem of how he/she behaves?
J12. _____ Should you and your classmates try to help him/her?
J13. _____ Should the teacher try to help him/her?
J14. _____ Should his/her parents try to help him/her?