

Exploring the attitudes of neurotypical peers towards children with autism spectrum disorder and their behaviors through play

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ABSTRACT

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This study investigated the effects of four neurotypical preschoolers' attitudes towards nine of their peers with Autism Spectrum Disorder (ASD) and how that impacts their play behaviors. Participants were all male ranging from 3 years to 6 years of age. Children's attitudes towards their peers with ASD were evaluated using three methods: sociometric peer ratings, child interviews and a social acceptance scale. Children with ASD's behaviors were observed over a three-week period during free play to collaborate the results. Results from the sociometric peer ratings showed that a child with ASD received the highest rating from his peers. The interviews with the neurotypical peers did not demonstrate a clear awareness of a disability on the part of the children with ASD. The findings indicated that some of the lower functioning children with ASD were not nominated at all as being different and some of the neurotypical children were identified as having difficulty talking or behaving well. Consistent with the literature, this study found more instances of non-play behavior compared to play behavior in children with ASD. Taken altogether, the results showed that the neurotypical children's awareness of their peers with ASD as being different did not seem to impact their play behaviors.

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Table of Contents

	Page
LIST OF FIGURES.....	vii
LIST OF TABLES.....	viii
Introduction.....	1
Characteristics of Autism Spectrum Disorder.....	1
Social skills development in children with ASD.....	3
Neurotypical peers and children with ASD.....	5
Social Development.....	6
Play.....	13
Play and children with ASD.....	15
Friendship and children with ASD.....	19
Children with ASD and social nominations.....	25
The attitudes of neurotypical peers towards peers with ASD.....	28
The Present Study.....	30
Methods.....	32
Participants.....	32
Setting.....	33
Materials and Procedures.....	34
Social Acceptance Rating.....	34
Sociometric Peer Ratings.....	34
Interviews.....	35

Observations.....	35
Analyses.....	37
Results.....	40
Social Acceptance Rating.....	40
Sociometric Peer Ratings.....	42
Interviews.....	44
Observations.....	45
Discussion.....	49
Limitations and Implications for Education.....	60
References.....	63
Appendix A: Ethics Certificate.....	85
Appendix B: Letter to Parents.....	86
Appendix C: Social Acceptance Rating.....	87
Appendix D: Sociometric Peer Ratings.....	88
Appendix E: Play Observation Scale Coding Sheet.....	89

LIST OF FIGURES

	Page
Figure 1. Social Acceptance Peer rating of children with ASD by NT children.....	39
Figure 2. Social Acceptance Peer rating of NT children of each other.....	40
Figure 3. Sociometric Peer Ratings of children with ASD by NT children.....	41
Figure 4. Sociometric Peer Ratings of NT children by NT children.....	42
Figure 5. Children's identification of a classmate with a disability for each interview question.....	43
Figure 6. Play compared to non-play behavior for children with ASD.....	45
Figure 7. Play behaviors of children with ASD with peers with ASD or NT children.....	46
Figure 8. Comparison of parallel and cooperative play for each child with ASD...	47
Figure 9. Social cognitive map of children with ASD and NT children.....	59

LIST OF TABLES

	Page
Table 1. Characteristics of the Participants.....	32
Table 2. Definitions of Play Behaviors.....	36
Table 3. Coding for Social Acceptance Peer rating.....	38
Table 4. Instances of all observed behavior for children with ASD.....	44

Introduction

Characteristics of Autism Spectrum Disorder

With the increasing number of children who are being diagnosed with Autism Spectrum Disorder (ASD) in the general education classrooms (Lindsay, Proulx, Thomson & Scott, 2013), professionals must continually devise methods to best serve these children's needs in an inclusive setting. According to the Centers for Disease Control and Prevention, ASD is a developmental disorder that now affects 1 in 68 children in all ethnic and socioeconomic classes. ASD is 4.5 times more likely to occur in boys than girls (Centers for Disease Control and Prevention, Autism Spectrum Disorder (ASD), Data & Statistics. Retrieved July 3, 2017, from <https://www.cdc.gov/ncbddd/autism/data.html>).

Autism was officially recognized as a mental disorder by the psychiatrist Leo Kanner in 1943. Some of the earlier features identified in the disorder were an inability to relate with others, disturbances in language and a rigidity with sameness (Reber, 2012). The definition for autism has evolved over the years and under the current Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, it is referred to as autism spectrum disorder that now includes previously separate disorders such as Pervasive Developmental Disorders and eliminates others such as Asperger's syndrome.¹

Presently ASD is characterized as a developmental disorder that impacts multiple domains including communication, cognition and behavior. Often language is delayed or impaired in which the individual experiences difficulty in comprehension or there may be a

¹ Note: Although current research uses the term 'Autism' – when reviewing the literature previous to the DSM-5, the original term used in the publication such as Asperger's syndrome or High Functioning ASD (HFASD) will be retained.

presence of echolalia. ASD can also be comorbid with an intellectual disability. Stereotyped, restricted or repetitive interests may include hand flapping or an inflexibility to change in routine (Reber, 2012). Symptoms of the disorder were previously categorized into a triad of impairments: social communication, impaired social interaction, restricted and repetitive interests. Under the DSM-5, the symptoms of the disorder were reduced into two categories; social communication and interaction were combined together to form one category and restricted patterns of behavior, interests or activity formed the second category. Despite changes in the criteria for the disorder, communication impairments remain a central feature in the identification of individuals with ASD (Beighley, Matson, Rieske, Konst, & Tureck, 2013).

Within this spectrum, children's abilities in communication may range from a high level of functioning such as having age appropriate verbal skills to low level of functioning such as not being able to express their needs and desires. Social deficits are often a main area of difficulty for children with ASD regardless of level of functioning (Kasari & Rotheram-Fuller, 2007). These social deficits may be manifested by difficulties in attention, focus, the capability of seeing the bigger picture and comprehending the perspectives and emotions of others which then affects their abilities to make and maintain friendships (Petrina, Carter, & Stephenson, 2014). Also, a large percentage of individuals with ASD have been observed to have poor eye contact, to display an inappropriate emotional reaction and have difficulty showing empathy when others are in distress. In addition, they have difficulties orienting towards social stimuli, decreased initiation to interact socially and problems in understanding social cues either verbal or nonverbal (Weiss & Harris, 2001). These social deficits, if not mitigated in early childhood continue throughout their schooling and later in life, which can have negative repercussions on their occupational and social outcomes (Rao, Beidel, & Murray, 2008).

Social skills development in children with ASD

Friendships importantly, influence social development in children. It is through these friendship relationships that children cultivate prosocial behaviors. Friends provide emotional support and protection against loneliness and rejection (Bauminger et al., 2008). For individuals with ASD, difficulties in forming reciprocal relationships, maintaining social communication and problematic behaviors create challenges in the formation of meaningful friendships (Petrina et al., 2014). As well, lacking appropriate social skills increases the likelihood for the development of maladaptive behaviors as well as other problematic behaviors for children with ASD.

Furthermore, having poor social skills decreases learning opportunities found in peer relationships (Wentzel, Barry, & Caldwell, 2004), as well as impacting the development of other important skills such as emotional regulation, conflict resolution, working collaboratively with others and communication which are all important for social interaction (Newcomb & Bagwell, 1995). Peer relationships are especially fundamental to a child's success at school (Kasari, Rotheram-Fuller, Locke, & Gulsurd, 2012). Having appropriate and functional social skills particularly in childhood is strongly associated with academic achievement, acceptance by peers, better mental health and a more positive developmental outcome (Hartup, 1989). Moreover, having friends is strongly related to classroom engagement and involvement with peers (Wentzel et al., 2004). Previous studies on children with learning challenges indicate a strong correlation between social abilities and academic achievements (DiPerna & Elliot, 1999; Welsh, Parke, Widaman, & O'Neil, 2001) and social abilities particularly in the area of peer acceptance and peer interaction. Petrina et al., (2014) found that children with ASD who had friendships did better academically. Hamm and Faircloth (2005) found that children who possessed a number of quality friendships demonstrated a higher sense of belonging at school, a positive attitude toward

school (Ladd & Hart, 1992) and had lower incidences of peer victimization (Hodges, Boivin, Vitaro, & Bukowski, 1999).

The social skill of learning to interact positively with others is an important skill that is generally acquired in early childhood (Katz & Girolametto, 2013). The preschool environment offers many opportunities for the development of positive social skills through the interaction with peers (Cohen & Mendez, 2009). A big challenge confronting teachers is cultivating a classroom environment in which neurotypical peers accept and understand their peers with special needs as well as accepting them as friends (Yu, Ostrosky, & Fowler, 2015). When children with ASD are put in a setting with typically developing children, little to no social interaction usually occurs with their peers (Campbell, 2006). Research also indicates that in some instances when children and adolescents with ASD are integrated into regular classrooms they are more at risk for isolation and rejection (Chamberlain, Kasari, & Rotheram-Fuller, 2007). Chamberlain, Kasari and Rotheram-Fuller (2007) examined 398 children in mainstream classrooms in grades 2 to 5, of which 17 of the children were diagnosed with High Functioning Autism Spectrum Disorder (HFASD) or Asperger's syndrome. Children were given questionnaires on friendship qualities, loneliness, peer acceptance and asked to name who their friends were. Overall, children with ASD were found to be less socially involved and less accepted than their typically developing peers but did not report more feelings of loneliness. In other studies, young children with ASD have reported feelings of loneliness compared to their typically developing peers and a desire for more social interaction (Bauminger & Kasari, 2000).

Preparing typically developing (neurotypical) classmates for interactions with peers with ASD has been identified as an important part of successful inclusion however, more research is needed as to what is the best approach (Campbell, 2006). Studies have shown that when peers

were taught how to interact with children with ASD in a positive way during play, there was a positive effect on the social skills of the children with ASD. For example, a study by Banda, Hart and Liu-Gitz (2010) examined two children with ASD and three of their neurotypical peers, during academic activities in their kindergarten classrooms. In this study, the intervention consisted of two parts: the investigator first modeled appropriate questions and answers between the ASD child and the neurotypical child. In the second part of the intervention, the investigator randomly prompted different parts of the conversation between the neurotypical child and child with ASD, either in posing questions or answering questions. The results showed positive findings for children with ASD who were observed to socially initiate more and to be more reciprocal to social initiations (Banda, Hart, & Liu-Gitz, 2010). Nelson, McDonell, Johnston, Crompton and Nelson (2007) found similar results with this type of peer intervention in children with ASD and they were also found to be engaged longer in joint activities and observed to be playing physically closer to their peers.

Neurotypical peers and children with ASD

Attitudes towards individuals with ASD have been identified as a critical factor that determines whether they are socially accepted (Humphrey, 2008). Attitudes can be defined as a set of behavioral, affective and cognitive components (Nowicki & Sandieson, 2002). Since attitudes are considered good predictors of behaviors or intentions (Kraus, 1995), understanding how children with ASD are perceived by their peers can better shape individualized interventions for children with ASD. There are insufficient studies exploring the attitudes of neurotypical children towards peers with ASD (Kasari et al., 2011; Mavropoulou & Sideridis, 2014; Petrina et al., 2014). The majority of studies focusing on peer attitudes were conducted using a hypothetical peer with ASD. For example, Swaim and Morgan (2001) studied 233 typically

developing children in grades three to six. The participants were randomly assigned one of three conditions that either showed 1) a video or picture of a hypothetical neurotypical peer, 2) a video or picture of a hypothetical peer with ASD or 3) a video of a hypothetical peer with ASD and given information on the disorder. Participants were then asked questions on their attitudes about this individual and their willingness to play with them. The results showed that in both ASD conditions, the participants demonstrated less positive attitudes toward the hypothetical peer with ASD. Even when the children were given information on ASD, their attitudes and behavioral intentions did not change (Swaim & Morgan, 2001).

The promotion of prosocial behaviors during the preschool years is fundamental in laying the foundation for children's positive interactions with their peers in later school years (DiLalla, Bersted, & John, 2015) and to the development of friendships (Jordan, 2003). Exploring these behaviors in preschoolers will offer important information about the various influences on early friendships and peer interactions, as well as giving insight into understanding the development of prosocial behaviors and relationships (DiLalla et al., 2015). The following sections will review social development, play and friendship formation in young children as well as the impact of peer attitudes on individuals with ASD.

Social Development

During the early years in typically developing 3 to 4 years old, children begin to achieve a better understanding of their own feelings and the feelings of others. As well, with their increased verbal abilities they are becoming better at emotional regulation. As a result of this increased self-awareness children also become more skilled communicators and more adept at anticipating the thoughts and feelings of others (Berk, 2009). Unlike typically developing

children, social development in children with ASD is often impaired as a result of their interpersonal difficulties.

There are several proposed explanations to describe the interpersonal difficulties that individuals with ASD experience: 1) affective viewpoint, 2) ToM (Theory of Mind) and 3) Weak Central Coherence (WCC) theory. Hobson, Chidambi, Lee and Meyer (2006) developed the affective viewpoint based on the original perspective of Kanner that children with ASD are unable to experience relationship-based emotions. This perspective maintains that the problem individuals with ASD have in developing intimacy and closeness is derived from a core deficit in intersubjective sharing. These difficulties not only extend into the formation of friendships but also in how they view interpersonal relationships. Individuals with ASD may have difficulties in recognizing emotions from another's facial expressions and they have been found to rely less on situational cues in comparison to typically developing individuals (Tell & Davidson, 2015). It has been observed that many individuals with ASD do not even recognize or acknowledge the presence of others (Cheng, Chiang, Ye, & Cheng, 2010), which may affect their abilities to respond empathetically (Butean, Crotescu, & Dobrean, 2014). Past research has shown that difficulties experiencing empathy significantly affects social development in children with ASD (Butean et al., 2014). Butean, Crotescu and Dobrean (2014) explored empathetic responses of 26 children with ASD compared to typically developing children. The authors specifically looked at emotional responses related to affectivity, behavior and verbal empathetic utterances as well as prosocial behaviors. Empathetic responses were measured by observations that were recorded on two cameras and rated using a scale that was originally conceptualized by Young, Fox and Zahn-Waxler (1999) and adapted by McDonald and Messinger (2012). The observations took place in a room where therapy normally took place and was familiar to the child. The experimenter and a

confederate would act out a scenario in order to elicit an empathetic response, which was then recorded on camera. Compared to the typically developing group, the results of the children with ASD revealed a large effect size, $d = 0.74$. Overall the findings of the study revealed that children with ASD had less empathetic and behavioral responses than their typically developing peers. In addition, although not statistically significant, children with ASD demonstrated fewer prosocial behaviors. A limitation in the study was that children were only given one trial and the findings may have also been influenced by the differences in age between the two groups with the mean age of 5.9 years in typically developing children and 8.2 years in children with ASD.

The other viewpoint that may describe the social-emotional difficulties that individuals with ASD experience is the Theory of Mind (ToM) hypothesis. Similar to the affective view, it also foresees challenges with reciprocity and empathic prosocial behaviors that essentially define the characteristics of friendships (Bauminger et al., 2008). Friendships require a certain level of theory of mind, recognizing another's emotional state, perspective and desires. This standpoint highlights the struggle that individuals with ASD have in comprehending that others can have thoughts, feelings and desires that are different from their own (Bauminger et al., 2008). Social cognition is necessary for joint and research demonstrates that joint attention is a precursor for ToM because an individual must understand and recognize the intentionality of others (Schereen, De Rosnay, Koot, & Begeer, 2013; Toth, Munson, Meltzoff, & Dawson, 2006). ToM is fundamental for social communication (Mundy, Sullivan, & Mastergeorge, 2009) and past studies have shown that children with ASD have weakened social communication and impaired ToM (Schereen et al., 2013; Schneider, Slaughter, Bayliss, & Dux, 2013).

The ToM hypothesis for individuals with ASD was first introduced by Baron-Cohen (Tager-Flusberg, 2007) and offers a cognitive explanation for the range of symptoms in ASD,

specifically among the children that fail False Belief Tasks (Peterson, Garnett, Kelly, & Atwood, 2009). The False Belief Task is widely used to test a child's understanding of wrong beliefs and as a measure to examine ToM (Muris, Steerneman, & Merckelbach, 1998). This ability to detect false beliefs typically emerges around the ages of 3 or 4 and by 6 typically developing children accurately perform such tasks. Children with ASD generally perform poorly on such tasks, like the 'Sally-Anne', which measures an individual's ability to understand the perspectives of others. Muris, Steerneman and Merckelbach (1998) found that children with ASD performed the same as children with under developed social skills for their age and claimed that problems with theory of mind also translate to social skills difficulties. A study by Kerr and Durkin (2004) examined 11 children with ASD and 11 neurotypical children. The mean age of children with ASD was approximately 5 years of age and in typically developing children the average age was 3 years of age. The participants were administered a total of six tasks. The first task was a language and memory control task and the second task was a standard False Belief Task. The third task was to determine if the children understood that thought bubbles represent thoughts and if they did not, to familiarize the children with the concept. The fourth task was created with the intention to determine whether the children understood thoughts and thought bubbles to be mental representations. In the fifth task, the children were tested to see if they accepted the idea that two people are capable of having different thoughts about the same object. The final task evaluated whether the children understood that a person's thoughts, shown in the thought bubble could falsely denote a true state of the world. For example, the children were told a boy was having a birthday and that they should place his birthday gift, which was a car, in a box and close the lid. The children were asked if the birthday boy would know what is in the box and were also asked to state what they thought was in the box. The children were then told that the birthday

boy is not sure what is in the box but that he has an idea of the contents. Next, the children were presented a picture of the birthday boy with an airplane inside a thought bubble instead of an image of a car. The participants were then asked what the birthday boy thinks is inside the box, followed by a question to verify that they remember what is really inside the box. The results showed that both groups of children failed the False Belief Tasks. However, their results did indicate that children with ASD were able to understand the concept that thought bubbles could represent thoughts, thoughts that are different, thoughts can represent an unknown reality and that thoughts can be erroneous. More specifically, the researchers found that children with ASD were able to understand mental states when using thought bubbles as representation.

Although children with ASD normally fail explicit False Belief Tasks, it has been found that some older children and adults with HFASD can usually pass these tasks (Schneider et al., 2013). It has been suggested that these individuals can accomplish these tasks due to compensatory learning strategies and can reason explicitly about other's erroneous beliefs. Although they were able to compensate, they nevertheless experienced difficulties with implicit ToM processing (Schneider et al., 2013). Schneider, Slaughter, Bayliss and Dux (2013) found that the deficits observed in implicit ToM processing of individuals with HFASD was related to behavioral differences under false belief conditions, specifically as a result of their differences noted during the eye tracking experiment. In general, children with ASD have difficulties with executive functions that involve planning, flexibility, working memory and inhibition, which are necessary features to accomplish False Belief Tasks (Tager-Flusberg, 2007). Children who have more developed inhibitory control and planning skills are more likely to pass False Belief Tasks (Tager-Flusberg, 2007). It has been suggested that children with ASD treat False Belief Tasks as logical reasoning problems and do not infer social insight, as do typical children. Children who

score higher on vocabulary also score higher on False Belief tasks and may analyze the content of speech to infer mental states; they may understand through listening and speaking that people's representation of the world may not be realistic. The ability of individuals with ASD who are able to pass the False Belief Tasks may not be based on social insight. By using functional neuro-imaging studies show that high functioning adults who pass False Belief Tasks activate different parts of their brain. Neurotypical individuals normally activate areas in the medial prefrontal cortex and temporo-parietal junction that are the areas of the social cognitive neural network as well as other regions involved in executive control. Individuals with ASD only activate those areas when doing general problem-solving events (Tager-Flusberg, 2007).

Limitations in ToM testing is that it excludes individuals with ASD with restricted language abilities and functioning (Hutchins, Prelock, & Bonazinga, 2012) as success in ToM tasks is partially contingent on language ability (Schereen et al., 2013; Tager-Flusbger, 2007). It has been found that different disorders, such as children who are non-hearing also fail the False Belief Task (Tager-Flusberg, 2007). This suggests that ToM although relevant in explaining certain characteristics of ASD, necessitates further investigation into other domains.

There is a lack of agreement on whether the impairment in ToM understanding exists at all in high functioning adults and children with ASD (Schereen et al., 2013). A study performed by White, Hill, Happé and Frith (2009), actually found that individuals with HFASD performed better or equivalent to the typically developing group on tasks requiring advanced mental state reasoning. This finding might also be explained by the fact that individuals with HFASD demonstrate different ASD characteristics. Their ability to infer mental states during social interactions in daily life still appeared to be limited and may be explained by the fact that mental state questions in the study were more structured than in a natural setting (Schereen et al., 2013).

Furthermore, children with ASD who pass False Belief Tasks, still have more difficulty than neurotypical children in the area of mind reading and demonstrate problems in everyday life (Peterson, Garnett, Kelly, & Attwood, 2009).

Another explanation for the interpersonal difficulties that individuals with ASD experience is the Weak Central Coherence (WCC) theory. WCC posits that the difficulties individuals with ASD have in processing information in its appropriate context can either be the result of a problem processing global information or being skilled at processing local information in a highly specific way (Happé & Frith, 2006). These cognitive impairments may affect their friendship abilities, difficulty with attention, focus and the capability of seeing the bigger picture (Petrina et al., 2014). There have been a number of studies that have not found a clear relationship between WCC and social ability in individuals with ASD (Pellicano, Maybery, Durkin, & Maley, 2006) or in typically developing children (Pellicano, Maybery, & Durkin, 2005). These studies suggest that social difficulties and detailed processing in individuals with ASD may be unrelated (Russell-Smith, Mayberry, Bayliss, & Sng, 2012). However, there have been studies that have found a connection between social function and WCC. The Embedded Figures Test (EFT) is used to measure WCC in which an individual is tested on their ability to detect an object embedded within a more complex object. For example, one of tasks may test the ability to detect a crooked book on a bookshelf or finding shapes hidden within other shapes. Individuals with ASD have been found to be adept at such tasks and have been found to complete these tasks rapidly. Pellicano, Maybery, Durkin and Maley (2006) have found that individuals with ASD who scored highly on the social domain of the Autism Diagnostic Interview – Revised (Lord, Rutter, & Le Couteur, 1994) had faster EFT times.

Although there is a strong case for each theory, it is unlikely that there is a single

explanation that may explain these social deficits that individuals with ASD experience which may in fact be the result of several interacting influences (Santangelo & Tsatsanis 2005 as cited in Cotugno, 2009).

Play

In research, children's play has been operationalized as an act that a child is actively engaged in, that is freely chosen, intrinsically motivating, creative and imaginative and pleasurable (Sturges, 2003). It is through play, which emerges as early as infancy, that individuals first explore their environment (Walberg & Craig-Unkefer, 2010). Play is a central feature in childhood and it not only affords children the opportunity to socially interact and communicate but also provides a setting that demonstrates the representation of mental states and knowledge (Toth et al., 2006). As well, play has been noted to be strongly associated with children's social, cognitive and emotional development (Frost, Wortham, & Reifel, 2008 as cited in Pinchover & Shulman, 2016). Social abilities in preschool children are typically developed within the context of play (Cohen & Mendez, 2009). It is well supported that play experiences with peers greatly contribute to children's socialization, cultural participation and their overall development (Fromberg & Bergen, 2015 as cited in Wolfberg, DeWitt, Young, & Nguyen, 2015).

Play behaviors can be said to follow the developmental pattern of first being unoccupied, which can be observed in babies or young children in which they can be seen practicing the manipulation of materials without any sort of order to their behavior. Gradually children move on to sensory and manipulative play, which is related to exploring the physical characteristics of objects or may include any activity that stimulates the senses. Play then transitions to

conventional or functional play, which includes using objects in the way they are intended such as rolling a car. Simple pretense might include talking on a toy phone. The final stage of play is symbolic-pretend which typically develop between 18 and 24 months of age (Thiemann-Bourque, Brady, & Fleming, 2012). The symbolic-pretend stage includes a more advanced pretend play such as using a banana to represent a phone (Wolfberg et al., 2015). Hobson, Lee and Hobson (2009) proposed that the development of symbolic play is comprised of several interrelated factors such as flexibility, social-emotional motivation, perspective taking and generativity and that play in itself needs to be intrinsically motivating to children (Lieberman & Yoder, 2012).

Parten (1932) was one of the first to study sociability in young children aged two to five years of age. She observed that there was an increase in interactive and joint play as children age. She concluded that social development progresses in several stages. Firstly, children engage in solitary and onlooker type behavior. Often seen in very young children, between the ages of 2 and 3 years old, children will play by themselves or merely observe others playing without joining in. Gradually children around the ages of 2.5 to 3.5 years old will engage in more parallel play, in which they may play near another child and with the same material, however do not influence each other's behavior. The highest level of social interaction includes two types of play: associative, which tends to develop around the ages of 3 and 4 and cooperative play which typically begins between 4 and 6 years of age. In associative play, children play in different activities and may comment about another's behavior or exchange play material. In a more advanced type of social interaction, such as cooperative play, children are focused on the same goal or theme (Berk, 2009).

Play and children with ASD

As typical children develop, their play behaviors become increasingly more sophisticated and complex, whereas children with ASDs' play behaviors remain limited. Past studies have revealed that children with ASD interact less with their peers and when they do, it is limited in nature (Bass & Mulick, 2007). It is well established that the type of play found in children with ASD is qualitatively different (Blanc, Adrien, Roux, & Barthelemy, 2005), and that their difficulties often differentiate them from neurotypical children (Linder, 1993 as cited in Pierucci, Barber, Gilpin, Crisler, & Klinger 2015). Their uncommon form of play development is one of the defining features in the early detection of ASD (Pierucci et al., 2015). Children with ASD often require direct instruction from parents and teachers to enhance appropriate play and social abilities (Kok, Kong, & Bernard-Opitz, 2002).

Between the ages of three and five years old, children increase their amount of social interactions as their physical, cognitive and social emotional abilities develop (Hestenes & Carroll, 2000). Typical preschoolers spend more time in manipulative play, such as exploring the sensory and physical properties of objects, with themselves or others (Pierce-Jordan & Lifter, 2005; Wolfberg et al., 2015), while children with ASD demonstrate higher incidences of sensory play that tends to be less social in nature (Wolfberg et al., 2015). During the preschool years neurotypical children experience development in social peer communication that is not found in children with ASD (McGee, Feldman, & Morrier, 1997), of which they continue to show difficulties in language and play that persist into their school-age years (Murdoch & Hobbs, 2011). For children with ASD, previous observational studies show that they engage in more parallel play and exhibit less sharing and less social conversations than their neurotypical peers (Bauminger et al., 2008). They have also been found to spend less time in cooperative types of

interaction and more time alone (Humphrey & Symes, 2011 as cited in Calder, Hill, & Pellicano, 2013).

Williams, Reddy and Costall (2001) found that children with ASD in comparison to neurotypical children as well as children with Down syndrome, were less likely to engage the interest of others during play. Anderson, Moore, Godfrey and Fletcher-Finn (2004) found similar results and although the children with ASD were responsive to social initiations by their neurotypical peers, the presence of a teacher appeared to affect the amount of interactive play of children with ASD since they were more likely to socially engage with a teacher. For typical children, peer interactions were less frequent when a teacher was involved (Harper & McCluskey, 2003), and there were lower rates of social initiations and play when there was a higher adult to child ratio (Hauser-Cram, Bronson, & Upshur, 1993). Jenkins, Odom and Speltz (1989) found that children with ASD tended to interact with neurotypical children more when teachers were involved during semi-structured time. Group size appears to affect the amount of social initiations and their reciprocations, with smaller groups of one or two peers being more favorable for children with ASD (Reszka, Odom, & Hume, 2012). However, the authors also found that there was greater social engagement in a large group of three or more peers if there was an adult present.

The repetitiveness in the play behavior of children with ASD is perceived by their neurotypical peers as a routine rather than a playful or engaging experience (Jordan, 2003). It is the non-functional and recurring type of behaviors, such as lining up objects, to a point of noticeable difference from their neurotypical peers (Watt, Wetherby, Barber, & Morgan, 2008; Lee et al. 2016), which ultimately interferes with play (Honey, Leekam, Turner, & McConachie, 2007) and joint attention development (Bruckner & Yoder, 2007). In an earlier study, Jordan

(1999) found that the social aspects of pretend play were particularly difficult for children with ASD due to the spontaneous and flexible nature of joint play (as cited in Jordan, 2003). In a more recent study, Lee et al. (2016) found that children with ASD depend on others to create new play ideas, and also found that they mostly demonstrated repetitive type of play behaviors.

Other studies have found different results for the play of children with ASD. Dominguez et al. (2006) found that children with ASD had similar amounts of functional or symbolic play compared to typically developing peers, but demonstrated less interest in certain popular toys such as dolls or construction vehicles. As well, in a study by Naber et al. (2008) examining length of manipulative, functional or symbolic play, children with ASD did not spend any less time in these forms of play compared to other children. Libby, Powell, Messer and Jordan (1997) found that children with ASD were capable of using toys in a pretend way when asked by the examiner, although the authors acknowledged that their success in the task may have been the result of responding to an instructional request of motor imitation rather than a representation of a play act (Thiemann-Bourque et al., 2012).

As children's play behaviors become more sophisticated during the first two years of life, language develops through an intricate and interactive process (Lieberman & Yoder, 2012). Possessing the appropriate play behaviors contributes in the development of language abilities (Beeghly, Weiss-Perry, & Cicchetti as cited in Pierucci, 2014). For a child with ASD to be socially included, they need to possess a certain level of social, language and play skills (Prendeville, Prelock, & Unwin, 2006 as cited in Murdock & Hobbs, 2011). Symbolic play has been associated with the development of language in neurotypical children (Laasko, Poikkeus, Eklund, & Lyytinen, 1999). It has been found that the development of language and play is more significantly related to developmental level and can better predict play level than chronological

age (Eisert & Lamorey, 1996). Typically developing toddlers who possess more language tend to have more instances of symbolic play compared to toddlers who don't use words (Thiemann-Bourque et al., 2012).

Play and developmental skills are known to have a reciprocal relationship; children who demonstrated delayed developmental skills usually displayed delayed play skills (Stanley & Konstantareas, 2007). Studies have found that children with developmental disabilities experience challenges in play due to their difficulties with social communication (Rutherford & Rogers, 2003) and especially in symbolic and functional play (Pierce-Jordan & Lifter, 2005; Wolfberg et al., 2015). Although previous research on symbolic play has found that the difficulties children with ASD experience are related to their limited language skills, other studies on functional play however, did not find a significant difference between children with ASD, children with other disabilities and typically developing peers (Blanc et al., 2005; Holmes & Willoughby; Libby, Powell, Messer, & Jordan, 1998; Williams, Reddy, & Costall, 2001). These findings are similar to those found by Williams, Reddy and Costall (2001) in which there were no differences in the amount of play time or functional play acts of children with ASD compared to typically developing children as well as children with Down syndrome. The researchers did however, find that the play of children with ASD was less varied and not as elaborate compared to the other two groups.

There may be multiple reasons to explain the difficulties in social interactions that individuals with ASD experience. An earlier study by Pierce-Jordan and Lifter (2005) found that the effort of working on two skills simultaneously such as coordinating play and social interactions were particularly challenging for children with ASD as demonstrated by their decrease in social engagement during these times (Walberg & Craig-Unkefer 2010).

In typically developing infants, social signs are given attentional priority, such as a preference for looking at faces instead of objects (Fletcher-Watson, Findlay, Leekam, & Benson, 2008). For individuals with ASD, orienting towards social stimuli is often absent, which is one of the defining features of the disorder. In eye-tracking experiments, children with ASD have been found to look more at the background when viewing photographs of various social interactions (Riby & Hancock, 2008).

Play is an internally motivated act between participants. A study by Gunn, Trembath and Hudry (2014) found that during unstructured free play, children with ASD spent most of their time in solitary play and that simply being in the presence of neurotypical children without a specific social program or strategies in place, did not improve the social outcomes of children with ASD. It is possible that children with ASD may not be as intrinsically motivated by play compared to neurotypical children. For some children with ASD, compulsive and repetitive behaviors may be more appealing than the actual play activity (Peeters, 1997 as cited in Brown & Murray, 2001).

Taken altogether, these difficulties put them at risk at being excluded from important social experiences (Wolfberg, Bottema-Beutel, & DeWitt, 2012). While some children with ASD show an interest in social interaction, they often lack the appropriate skills to initiate or reciprocate social gestures. Their social initiations can sometimes be seen as immature, aggressive or a violation of personal space, which has been found to be directly associated with rejection (Rotheram-Fuller et al., 2010).

Friendships in children with ASD

According to research on school-aged neurotypical children, it has been shown that they will on average have five friends of whom one will typically be a best friend. These types of

relationships are characterized by companionship, closeness and reciprocity (Bauminger et al., 2008; Kasari et al., 2016). It is theorized that children connect to one another for several reasons. Physical proximity is important for the development of friendship but not sufficient on its own. The other element that explains the connection between children is based on common characteristics such as similar interests, gender or cultural background (Kasari et al., 2016). The development of friendship appears to be dependent on many factors and for children with ASD, the skills required for not only making friends but also maintaining relationships poses a continuous challenge. The elements that explain why children form friendships may not be easily applied to children with ASD, as there is a tendency for there to be a greater number of neurotypical children in the classroom (Kasari et al., 2016). This may explain why children with ASD have been found to spend less time engaging in social interactions (McConnell, 2002), and have been found less likely to socially initiate with their peers (Bauminger, Shulman, & Agam, 2003) compared to their neurotypical peers (Deckers, Roelofs, Muris, & Rinck, 2014). Although some children with ASD have a desire to socially engage with their peers (Bauminger & Kasari, 2000; Calder et al., 2013; Chamberlain et al., 2007) and have been observed to initiate social interactions with their peers, their attempts are often unnoticed and their advances go unreciprocated due to their unconventional approach, such as standing too close (Kasari et al., 2012).

Studies have found that children with ASD hold a different concept of friendship and there have been differences noted in quality of their relationships (Bauminger & Kasari, 2000; Bauminger et al., 2008; Calder et al., 2013). It still remains unclear the value and purpose that friendships serve to the individual with ASD. Bauminger and Shulman (2003) found that although individuals with ASD have an understanding of how to initiate social interactions, it

was rarely put into practice and that the development of their friendships was heavily dependent on external factors such as the facilitation of teachers and parents. Having friends requires a certain amount of abilities and the difficulties that children with ASD have in their friendships impact the nature of their relationships.

It has been theorized that the understanding and expectations of friendships in individuals with ASD is different as a result of particular cognitive and social characteristics of their disorder (Bauminger, Solomon & Rogers, 2010). From this viewpoint, the meaning of friendship may not correspond to that of their neurotypical peers (Petrina, Carter, Stephenson, & Sweller, 2017). Compared to neurotypical children, children with ASD have been found to rate their friendships with regard to closeness, companionship, security and helpfulness as being lower in importance (Bauminger & Kasari, 2000). Studies have also found that children with ASD described their friendships more in the realm of companionship, instead of as somebody to bond with (Bauminger et al., 2008; Calder et al., 2013) and perceived their relationships as less important and less intimate compared to typical children (Petrina et al., 2014). Bauminger et al., (2008) found that typical peers corroborated this perception of the relationship and mutually rated their friendships with children with ASD as less close, intimate and not helpful. Kuo et al. (2013) found that children with ASD had fewer friends and lower instances of meeting outside of school compared to their neurotypical peers. Studies have also found that children with ASD had shorter friendship durations suggesting a lack of relationship stability (Rowley et al., 2012).

There have been a number of proposed theories to explain the lower instances of social interactions in children with ASD. One possibility is that children with ASD lack the social abilities to initiate and maintain contact with others (Bauminger, 2002). Or as discussed earlier,

the lower instances of social interactions in children with ASD may be due to a lack of interest and motivation to interact with others (Chevallier, Kohls, Troiani, Bodkin, & Schultz, 2012).

To date, studies have not shown any definitive results in the interest to socially interact on the part of children with ASD. The varying degrees in the results may be due to individual differences in their personalities as opposed to deficits related to their disorder (Deckers et al., 2014). For example, instances of loneliness have been reported by individuals with ASD, which would suggest a desire for more social interaction at least for some of the time. Bauminger and Kasari (2000) found that young children with ASD have reported feelings of loneliness compared to their typically developing peers and a desire for more social interaction. Furthermore, Chamberlain, Kasari and Rotheram-Fuller (2007) found that the perception of loneliness and friendship is essentially different for children with ASD and the connection between friendship and loneliness is unclear. The study examined 398 children in mainstream classrooms in grades 2 to 5, of which 17 of the children were diagnosed with HFASD or Asperger's syndrome. Children were given questionnaires on friendship qualities, loneliness, peer acceptance and asked to name who their friends were. The authors found that in the group of children with ASD, the extent of social involvement was unrelated to feelings of loneliness compared to the typically developing group in which there was a high correlation between the degree of social involvement and loneliness. Overall, children with ASD were found to be less socially involved and less accepted than their typically developing peers but did not report more feelings of loneliness.

Generally, individuals socially orient because they want to and because they find it enjoyable. In itself, social orientation is found to be a rewarding experience (Berridge et al. 2009 as cited in Chevallier et al., 2012). For example, Rekers et al. 2011 (as cited in Chevallier et al.,

2012) found that when toddlers were given a choice to receive a reward individually or share it with others, toddlers demonstrated a stronger preference for collaboration. Social interactions are generally found to be inherently motivating. When individuals engage in prosocial behaviors, it is because they find it intrinsically rewarding rather than because they expect to directly benefit from the act (Bowles, 2008). In an experiment examining spontaneous collaboration in children with ASD, it was found they were less likely to help the experimenter when a ball was 'accidentally' dropped (Liebal, Colombi, Rogers, Warneken, & Tomasello, 2008). Generally, children with ASD have been found less responsive to social rewards (Demurie, Roeyers, Baeyens, & Sonuga-Barke, 2011).

Another dimension of social motivation is the desire to maintain social exchanges over a period of time by appearing likeable, being identified in a positive way by others and being socially accepted (Leary & Allen 2010 as cited in Chevallier et al., 2012). These types of behaviors can be seen in young children as early as the preschool years where it has been found that they display themselves positively, employing prosocial lies and hiding their negative emotional responses as to not appear impolite (Talwar, Murphy, & Lee, 2007). These social exchange strategies seen in typically developing children are absent in individuals with ASD who place less importance on maintaining a positive self-image (Chevallier et al., 2012).

There is very little research examining relationship satisfaction in individuals with ASD and it is largely unknown to what degree their social needs are being met. Furthermore, given the dyadic nature of friendships there are even fewer studies examining satisfaction of both individuals (Petrina et al., 2017). Until recently Calder, Hill and Pellicano (2013) conducted the only study on friendship satisfaction and the data was limited to the satisfaction on the part of the individuals with ASD. The authors examined the friendship experiences in children with ASD in

the general education environment in the United Kingdom. The authors also examined language and cognitive factors to determine how much it accounted for variability in these friendships. As well, the perspectives of parents and teachers were taken into consideration. Participants included 8 boys and 4 girls with a mean age of 10 years old. A questionnaire was given in order to evaluate the child's perception of the quality of a relationship with a close friend. Another measure, the Strange Stories Test which included 16 short vignettes, was used to assess the individual's cognitive abilities. Each story included a short text that was read aloud by the examiner followed by a series of questions about what they understood from the vignette. Half of the stories were designed to test mental state attribution to the characters in the stories and the other half tested the ability to make physical state attributions to the characters. As well, children with ASD along with their typically developing peers were given questionnaires in which they were asked to indicate the social groups in the school. Observations on the play behaviors of the child with ASD were also performed as another measure. Interviews were conducted with the child with ASD using open-ended questions about friendship and its personal significance. Semi-structured interviews were also completed with the child's mother and teachers to get their perceptions and observations of the child's friendships. Results demonstrated a range in profiles in the children with ASD, from high to low social status and varying degrees in interest for peer interactions. Some did not demonstrate any interest in peer interactions, although none were completely socially isolated. The child's motivation to form friendships appeared to explain these individual differences according to the perceptions taken from parents and teachers. As well, their parent's perception on the importance of friendships appeared to be an influencing factor. It was found that those who had more playdates at home had more positive social interactions with their peers on the playground. What was also found was that children with ASD

scored their closest friendships lower in affective domains such as closeness, assistance and protection compared to their typically developing peers. However, no differences were noted between groups in the rating of companionship. Children with ASD self-reported being satisfied with their relationships and it was also corroborated by their parents and teachers. Teachers also observed that the children who had more friends had peers who played an active role in maintaining these friendships. These findings suggest that children with ASD desire friendships that are based on less emotional connectedness and that are qualitatively different than their neurotypical peers. Although the sample size was small and caution must be taken in their interpretations, their findings are similar to results of past studies and therefore still noteworthy. Similar results were found in a more recent study by Petrina, Carter, Stephenson and Sweller (2017). The study examined relationship satisfaction of individuals with ASD with their typically developing peers. No differences were found in relationship satisfaction in children with ASD and their peers compared to relationship satisfaction in neurotypical children.

Children with ASD and social nominations

Social domain theory is a construct that explains how children from an early age reason about social situations that are based on four areas of social knowledge. The moral domain refers to the concern for rights and justice. The societal component refers to group functioning and social conventions. The personal domain is related to individual preference and choice and the prudential domain refers to the individual's welfare. This theoretical construct can be applied when investigating the moral decisions neurotypical children make when deciding if they should include their peer with ASD. Turiel (1983) found that children's sense of morality develops from social interactions that involve moral events, rather than being learned through adult instruction and that even very young children are capable of differentiating between moral and societal

domains (as cited in Bottema-Beutel, Turiel, DeWitt, & Wolfberg, 2017). Some of the research on social domain theory has also focused on how social situations are viewed by children, the domains they utilize to explain their reasoning as well as determining whether the act is morally right or wrong. The decision to include a child with ASD for example can be a complex dilemma as a child may be contemplating their own preference to play with other children who are more similar to them coupled with the concern for the child with ASD who may feel rejected. Killen, Lee-Kim, McGlothlin, & Stangor (2002) found that reasoning involving whether to include or exclude others appears to vary with age and that younger children are more likely than older children to view the exclusion of others across a number of contexts as unacceptable. Young children until about the age of 7 years emphasize the moral domain more than other domains when contemplating multifaceted moral situations (Davidson, Turiel, & Black 1983) and it is only when they get older do they start to include other domains into their decision making (Nucci & Turiel 2009). Older children may recognize and possibly favor personal, societal or prudential dimensions more than the moral aspect of including others (Bottema-Beutel et al., 2017).

There are few studies examining friendships and interactions of children with ASD and those that have been conducted seldom look at friendship reciprocity and rely only on asking children or their parents to name who their friends are (Kasari et al., 2011). Research has found that neurotypical students tend to play more with each other rather than with the child with ASD and children with ASD tend to remain socially isolated due to their inability to adequately understand social situations. Children with ASD often will engage others in inappropriate ways and are often misunderstood by their peers and this further perpetuates their separation (Bass & Mulick, 2007). Rotheram-Fuller et al., (2010) found that in the earlier grades children with ASD resembled their typical peers in friendship nominations in that younger children reported bigger

social networks compared to adolescents and adults (Howlin, Moss, Savage, & Rutter, 2013). However, friendship reciprocity decreased around eight years of age as relationships became more complex. As children mature, friendships are based on shared interests, associations, strengths and aspirations (Carter et al., 2013) and increase in levels of companionship and intimacy (Freeman & Kasari, 1998). Kasari, Locke, Gulsrud and Rotheram-Fuller (2011) examined 60 children with ASD and 815 neurotypical children in grades one to five. The researchers used the Friendship Qualities Scale (Bukowski, Hoza, & Boivin, 1994), a questionnaire that looked at five aspects of friendship quality such as companionship, helpfulness, a sense of security, closeness in relation to intimacy and conflict. As well, they observed the children's interactions with their peers on the playground. The researchers also collaborated their findings with teacher questionnaires on their perception of children's social skills. The children were also asked to name the children whom they liked to hang out with as well as to name their top three friends. The findings revealed that friendship reciprocity was low for children with ASD who received 18% nominations compared to their neurotypical peers who received 64% of nominations. In another study, Chamberlain et al., (2007) examined how children with ASD viewed their social connections in their classroom as well as how other children perceived them. The authors found that children with ASD rated themselves as belonging to a social group although they did not receive any reciprocal nominations from any of the members of that group. Generally, children with ASD perceived themselves as more socially involved than how their peers deemed them to be. For some of the children with ASD who did have reciprocal friendships with neurotypical peers, their peers viewed these friendships as qualitatively different from their friendships with their neurotypical peers. As well, their difficulties in understanding social cues may also explain the lower instance of friendship

nominations from their peers.

The attitudes of neurotypical peers towards peers with ASD

Neurotypical peers have often been found to hold misconceptions about children with ASD, such as the belief that all children with ASD prefer to be alone and lack interest to play with other children (Calder et al., 2013; Chamberlain et al., 2007). A study by Humphrey and Lewis (2008) examined 20 HFASD aged 11 to 17 years of age. Participants were interviewed and asked to keep a daily diary of their thoughts and feelings for a period of one month. Some of the common themes that emerged were the feelings of not being 'normal' or being labelled by their peers as 'odd' and as if something was wrong with them. Neurotypical peers may interpret the behavior of the individuals with ASD as 'strange' and 'odd' making the child with ASD more vulnerable to bullying (Humphrey & Lewis, 2008). It has been found for example, that adolescents with ASD tend to experience high incidences of bullying (Masten et al., 2011) and Bellini (2006) found that 49% of the participant's self-reported feelings of social anxiety were at higher levels compared to their typical peers.

Previous research has also shown that children with ASD generally encounter pejorative attitudes and behaviors from neurotypical peers (Swaim & Morgan, 2001). Neurotypical peers tend to perceive children with ASD in a negative way compared to their neurotypical counterparts as demonstrated in how they thought and behaved towards them (Campbell, Ferguson, Herzinger, Jackson, & Marino, 2004; Swaim & Morgan, 2001). Studies are lacking on the possible correlation between prior knowledge of ASD and current cognitive beliefs (Campbell, 2006). To date, research on the relationship between knowledge of individuals with ASD and positive attitudes is inconclusive (Campbell, 2006). A limitation in many of the studies involving attitudes toward children with ASD is the predominant use of measuring attitudes

towards hypothetical children with ASD rather than examining participants who had actual contact with children with ASD.

Some studies show that the attitudes and behaviors of neurotypical children are unaffected when having no prior knowledge of individuals with ASD. A survey by Swaim and Morgan (2001) of children in grades three to six, found that very few were actually familiar with the term 'autism' and that there were no changes in attitudes when these participants were given the explanation of autism as the cause of their unusual behavior. On the other hand, Campbell (2007) found that individuals who possessed prior knowledge of individuals with ASD demonstrated more positive attitudes and positive social intentions. Mavropoulou and Sideridis (2014) also found more positive attitudes and behaviors on the part of neurotypical children towards children with ASD when they were in regular contact and given more information on the disorder. Contact theory (Allport 1954) would suggest that discrimination towards a group can be mitigated through regular contact with those individuals (Yuker, 1988 as cited in Mavropoulou, & Sideridis, 2014).

Campbell et al. (2004) found that focusing on the similarities between the child with ASD and neurotypical peers improved their behavioral and cognitive attitudes (Morton & Campbell, 2008). Ochs, Kremer-Sadlik, Solomon and Sirota (2001) found that children with ASD whose diagnosis was shared with peers and school professionals were given more social support in the classroom and the playground. The reported willingness to play with a child with a disability has been found to be a strong predictor of interactions on the playground and in the classroom by their neurotypical classmates (Hestenes & Carroll, 2000).

Hestenes and Carroll (2000) claimed that a neurotypical child who has an understanding of the disability is able to make the necessary adjustments in play that would suit that child.

Therefore, a greater understanding of the disability can lead to more social initiations. According to Vygotsky's theory of the Zone of Proximal Development, there are advantages for both children with ASD and neurotypical peers since they are learning from one another through reciprocation. Children with ASD will benefit from this interaction as they develop their play and social skills. Neurotypical children will learn how to modify their own social behaviors to accommodate others who are limited in play and social abilities (Wolfberg et al., 2015), because children with ASD may demonstrate a tendency to dominate in play and exhibit very rigid tendencies that make playing with others difficult (Rowley et al., 2012).

Generally, the research has found that children with ASD are less accepted by their peers compared to their neurotypical classmates (Chamberlain et al., 2007). Lower functioning children with ASD tended to be more accepted by their peers compared to individuals with HFASD because they resembled more closely their typically developing peers and therefore were expected to behave like them (Kasari et al., 2011). Gray (2002) proposed that the negative perception of individuals with ASD might be attributed to the lack of an apparent and clear explanation for the unusual or disruptive behaviors that can be demonstrated by individuals with ASD. For example, unusual behaviors exhibited by an individual with Down syndrome would be better understood and accepted as part of their disability because of the obvious difference in the physical characteristics of their facial features. While there are typical manifestations of ASD, the variations within this disorder make understanding this population more difficult. Therefore, more studies are needed in examining individuals with regular interaction with children with ASD (Campbell, 2007).

The present study

Many positive results have been shown in the improvement of the social salience of

children with ASD through educating their typically developing peers and using them as social facilitators (Goldstein, Schneider, & Thiemann, 2007; Katz & Girolametto, 2013; Wang & Spillane, 2009). Research shows that when social skills are promoted in early childhood, it acts as a protective factor in social relationships in later years and increases children's feelings of self-worth (Bauminger, Shulman, & Agam, 2004) and lower levels of emotional distress (Wentzel & Caldwell, 1997). Positive peer relationships in early childhood are associated with peer acceptance and positive learning behaviors (Cohen & Mendez, 2009). Difficulties developing the appropriate social skills can hinder an individual's ability to cultivate meaningful social relationships that can result in peer rejection, anxiety, depression as well as poor academic achievement (Bellini, Peters, Benner, & Hopf, 2007).

One very important aspect of childhood is play. To help develop children's positive attitudes towards children with ASD, it is fundamental to understand how neurotypical peers perceive children with ASD and their play behaviors with them (Yu et al., 2015). Therefore, the present study will investigate how neurotypical preschoolers perceive children with ASD. This study will explore the relationship between neurotypical children's attitudes and their actual play behaviors, either in parallel, associative or cooperative play.

The following research questions were addressed in this study;

1. Are neurotypical preschoolers aware of their peers with ASD in their classroom?
2. What is the degree of relationship between a neurotypical children's knowledge of a child's disability and their willingness to play with them?

3. Is there a relationship between the type of play behavior exhibited by the child with ASD and the willingness of the neurotypical child to play with them?
4. Do friendship nominations on the part of neurotypical children involve their peers with ASD?

Methods

Participants

The participants in this study were thirteen ($N=13$), 3-6 years old children ($M=5.17$ years). Nine of the children had a diagnosis of ASD and four were neurotypical. All participants were male. Inclusion criteria for participants included: (a) being over 3 years of age, (b) having a diagnosis of ASD by a mental health professional and (c) a neurotypical peer of a child with ASD participating in the same early education environment.

Table 1 provides some basic information on each participant, in which C1 to C9 represent the group of children with ASD and C10 to C13 represent the neurotypical (NT) group.

Table 1

Characteristics of the Participants (N=13)

Class	Child No.		Gender	Age (years; months)	Ethnicity
A	C1	ASD	male	3.09	Asian
A	C2*	ASD	male	6.02	Caucasian
A	C3*	ASD	male	5.08	Caucasian
B	C4	ASD	male	4.11	Caucasian
B	C5	ASD	male	4.11	Asian
B	C6	ASD	male	5.02	Caucasian
B	C7	ASD	male	5.03	Caucasian
A & B	C8*	ASD	male	5.08	Caucasian
A & B	C9*	ASD	male	4.10	Caucasian

B	C10	NT	male	5.06	Caucasian
B	C11	NT	male	5.08	Caucasian
B	C12	NT	male	5.01	Middle Eastern
B	C13	NT	male	5.00	Caucasian

$$M = 5.17$$

Note. * Child spends 50% time in general classroom and 50% in individualized teaching

Setting

The study took place at a private preschool located in the west end of Montreal. It is a unique setting as the preschool aims to have half of their student population comprised of children with learning challenges integrated with typically developing children. Children with ASD are offered individualized Applied Behavioral Analysis (ABA) programming and therapy. There were three teachers trained in early childhood education special needs or had experience working as ABA therapists. Additionally, there were four ABA therapists who provided individualized teaching for some of the children with ASD who required more support and one program supervisor who oversaw their curriculum. The preschool accepts children from 2.5 years to 6 years of age and at the time of the study they had a total of 22 children enrolled in the preschool, of which 11 were diagnosed with ASD. The preschool is located in a building, which was previously a private residence, with two floors and a basement. The top level has a bathroom and two rooms that were used for classrooms. One of the classrooms used for the 4 year olds, resembled a typical setting that was equipped with a smart board along with groups of tables and chairs. At the back of the classroom there was a bookshelf and closet of toys. Toward one side of the room there was a shelf of material used by the teachers. The other classroom used for some of the children with ASD that required more individualized instruction, contained one table, a bookshelf and a carpeted area with a chair that was used for reading to the children. The main floor had a play area on one side of the room, which contained a variety of toys such as trucks, books, costumes and blocks typically found in early childcare settings. On the other side of the

room there were long tables used for lunch or group activities. As well, on the main floor there were two other rooms in which one was used as a classroom for the 3 year olds and the other was used for individualized therapy. In the basement, there is another washroom and two rooms used for staff. Occasionally one of the rooms in the basement was used for individualized therapy. The backyard play area in which the children spent their free play together after lunch contained three structures of which one was equipped for swinging and the others for climbing and sliding. Two child size picnic tables could also be found in the corner. Two teachers and an ABA therapist would be present during these times for supervision and would occasionally participate in the children's play or intervene if there were any inappropriate behaviors displayed. The nearby public park that was frequented occasionally for free play also contained three large structures for climbing, swinging and sliding. The same supervision and play participation by the teachers was also observed during these times. For the instructional part of their day, the children spent their mornings in their subsequent classrooms according to their age, however were integrated all together during early morning drop-off, lunch period and afternoon free play. As well, all the children spent Fridays together for music and art. Most children attended the preschool in the morning and a few children with ASD spent the afternoon working on their individual programming.

Materials and Procedure

This research project was approved by the Concordia University Office of Research (see Appendix A for a copy of the ethics certificate). Following this approval, recruitment began through criterion sampling and convenience sampling. Various daycares and preschools were contacted in the general Montreal area. One private preschool expressed interest and a meeting was setup with the Director to explain the details of my study. After the Director had discussed

the study with the teachers and obtained their consent, permission letters were sent home to the parents of the children by the teachers (see Appendix B). A total of 19 letters were sent to the children in the 3 years and 4 years classrooms, of which the parents of 16 children gave consent. Two observation visits of the setting took place before the data collection began. The Social Acceptance Rating, the Sociometric Peer Rating and interviews with the participating children took place, in that order, during class time once the teacher determined they had completed their work. Children were taken out of the class one by one by a volunteer for the preschool and taken to the lunchroom which provided a quiet place to interview the children which took place over the course of four days. Concurrently, play observations of the children with ASD were also conducted on the days the interviews took place.

Social Acceptance Rating. Adapted from the Social Acceptance Ratings Scale (Diamond, 1994; Yu et al., 2015), this measure was designed to determine the acceptance of a child with a disability. Two drawings were shown to the children that were placed at opposite ends of the table (see Appendix C). One picture showed one child apart from the group. The interviewer pointed to the picture and stated: “this child does not have a lot of children to play with.” The other drawing showed the same child playing with others. The interviewer pointed to that picture and stated: “this child has lots of friends to play with.” Using the names of each child who had given consent, the interviewer asked the children to list which children seemed most like the child in either picture. For each name chosen the child was asked if those selected children “are a lot” or “a little bit like” the child in the picture. The scale determined the perception of the neurotypical child on the level of acceptance of the ASD child in their group.

Sociometric Peer Ratings. An adaptation of the Sociometric Peer Ratings (Asher, Singleton, Tinsley, & Hymel, 1979), was used to explore children’s preferences in playmates.

This measure has been found to be highly reliable in preschool age children (Balda, Punia, & Punia, 2002 as cited in Yu et al., 2015). As a pretrial, children were asked to categorize various toys into three boxes by pointing to three picture labels ranging from “like to play with a lot” that was represented with a happy face, “like to play with a little” that was depicted with a neutral face, and “do not like to play with” that was shown as a sad face. Once completed, the children were then asked to assign the names of their classmates into the same three pictures (see Appendix D) (Odom et al., 2006).

Interviews. Children were interviewed to determine their awareness of disabilities among their classmates. Children were asked the following questions of each of the other children in their class who had given consent (adapted from Diamond, 1993):

1. Can you tell me if there are any children in your class that you have difficulty understanding as well as the other children?
2. Can you tell me if there are any children that do not behave the way other children do?

For each of the children selected, the interviewer asked the child why she/he doesn't think that child doesn't behave like or speaks as well as the other children. The responses were written.

Observations. Behavioral intentions are one aspect of attitude formation and it is described as the degree to which children accept or reject a person with a disability as demonstrated in their actions towards them (Swaim & Morgan, 2001). Observations were conducted in the playroom, outside play area or the park using the revised version of the Play Observation Scale (POS, Rubin, 2001) only on the children with ASD. Children with ASD were only selected for play observations because this study is interested in the effect neurotypical children have on the play behaviors and friendships of children with ASD. This scale consists of

10 mutually exclusive and exhaustive social participation categories with the cognitive play measures (such as dramatic play) that can be found within the main social participation categories of solitary, parallel, and group play (see Table 2). As children with ASD frequently engage with teachers or aids, another category was added, ‘adult conversation’. Modifications of this scale has been applied effectively in past research to children with developmental delays similar to those in this study (Guralnick et al., 1996).

Table 2 provides the definitions of the play behaviors that were recorded.

Table 2

Definitions of Play Behaviors (adapted from Rubin, 2001)

Behavior	Goal or Intent
Solitary	To engage in an activity entirely alone, usually more than three feet (one meter) away from other children
Parallel	To engage in activity beside (but not with other children), usually at a distance at three feet or less
Group	To engage in an activity with another child or children, in which cognitive goal or purpose is shared amongst all group members
Functional	To experience sensory stimulation through simple, repetitive muscular movements
Constructive	To create or construct something
Dramatic	To dramatize life situations or bring life to an inanimate object
Game-with-rules	To engage in competitive game-type activity following pre-established rules and limits
Exploratory	To obtain visual or auditory information from an object
Reading	Examining, exploring books and related materials
Unoccupied	There is complete lack of goal or focus during this behavior
Onlooker	To watch (or to listen to) the behaviors and activities of other children
Transition	To prepare for, set out activity, or to move from one activity to another
Conversation	To communicate verbally with others
Aggression	To express displeasure, anger, disapproval through hostile means
Rough-and-Tumble	Playful physical activity
Anxious behaviors	Display of wary/fearful behaviors
Hovering	Onlooking at a close proximity
Peer Conversation	Engaged in conversation with peer

Adult interaction	Engaged with an adult in conversation or activity
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Children with ASD's play behaviors were observed during unstructured time over a two-week period. Each observation session was conducted for a 10-minute period that was divided into 15-second intervals. A total of 40 minutes of observations were conducted, twice a week. After observing for 15 seconds the researcher recorded the dominant behavior in that time frame and placed a check mark next to one of the boxes (see Appendix E). The number of peers the child with ASD was engaged with was also recorded. As well, if the child with ASD was engaged in an adult conversation either with the teacher or aid instead of play, it was also recorded. Unoccupied behavior was recorded if the child was not engaged in any activity or focused on others. Peer conversation was recorded if the child with ASD was speaking with another peer and not playing. The observations were used to corroborate the answers from the interview questions concerning who children liked to play and which child had a disability.

Analyses

To determine the relationship between the attitudes of neurotypical children and the acceptance of children with ASD, the study involved analysis of the following: children's attitude responses, friendship nominations and observations of behaviors of children with ASD. Children's responses on the Social Acceptance Peer rating were scored as developed by Yu et al., (2015) see Table 3. Higher scores indicated more acceptance. The higher scores were allocated for the categories in which the child in the picture is shown playing with others as opposed to the child who is alone. These categories were further broken down in the degree to which the participant perceived their peer to resemble that child in the picture, either a lot or a little. Originally, I intended to conduct content analysis on the explanations the children gave to

see what patterns of behavior or themes may have emerged, however none of the children provided any explanations as to why they thought the children they named were different. When further probed, the children simply answered that they just did not know.

Table 3

Coding for Social Acceptance Peer rating (adapted from Rubin Yu et al., 2015)

A lot a like	child is alone	1 point
A little bit like	child is alone	2 points
A little bit like	child is playing with others	3 points
A lot a like	child is playing with others	4 points

The observations of the amount of time the child with ASD played with a neurotypical child were tabulated to examine the relationship between friendship nominations and actual play behaviors. As well, the observations were used to explore the relationship between a neurotypical child's willingness to play and the types of behavior the child with ASD predominantly engaged in.

In the interviews, the participants were asked which children do not behave or talk as other children do. If a child with ASD was identified, they received a score of 1 for identification or 0 if the child with ASD was not identified. Higher score demonstrates an awareness of a disability. Analysis of these scores helped illustrate the development of attitude formation and the relationship with actual play behaviors (Yu et al., 2015).

Results

Social Acceptance Rating

Results for the Social Acceptance Rating were not very different between the children with ASD ($M=8$) and the neurotypical children ($M=9$).

Figure 1 illustrates the perceived acceptance of each child with ASD. If the NT child found that the child with ASD was a lot like the child playing with other children, that child received a score of 4. If the child with ASD was found to be a little like the child playing with others, the child with ASD received a score of 3. If the child with ASD was found to be a lot like the child that was alone, that child received a score of 1. If the child with ASD was found to be a little like the child alone, the child with ASD received a score of 2. All scores were then tallied and only the responses from the NT children ($N=4$) were considered. A higher score indicated more acceptance. Figure 2 illustrates the perceived acceptance of NT children ($N=4$) by fellow NT children ($N=4$). These results were compared to their perceived acceptance of children with ASD to see if there were any differences. The same scoring used for children with ASD were also applied to NT children. A higher score indicates more acceptance. For example, C1 received a score of 9, whereas C3 received a score of 4, which would indicate that C1 was perceived as more accepted by his peers.

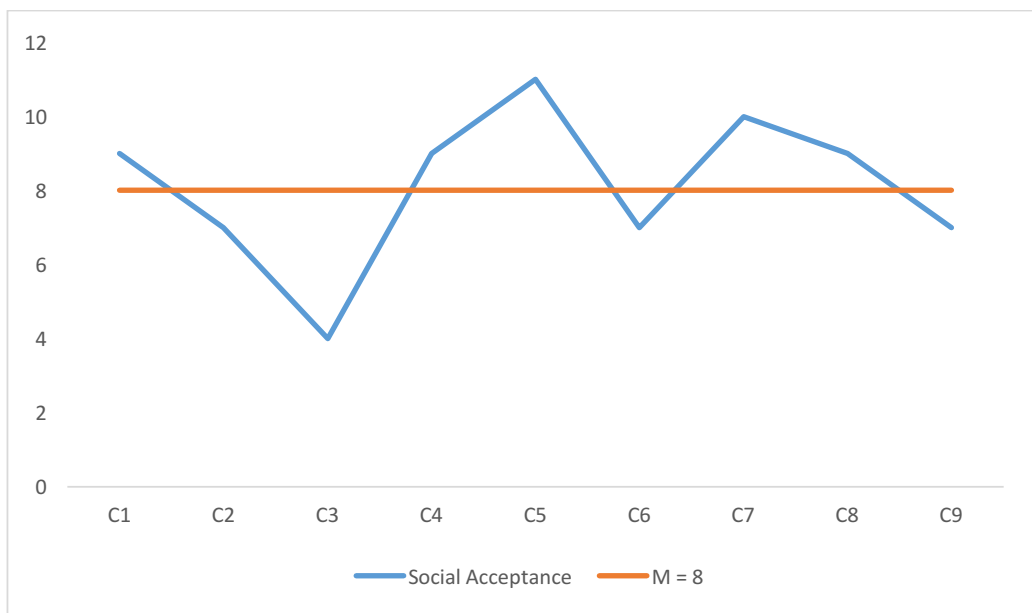


Figure 1. Social Acceptance Peer rating of children with ASD by NT children

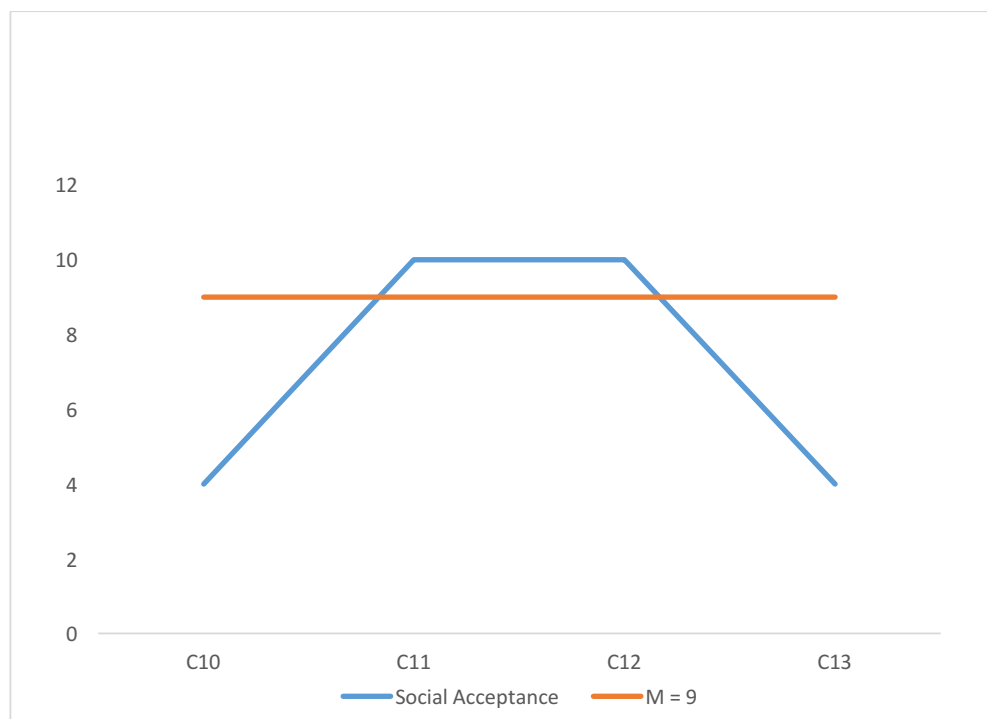


Figure 2. Social Acceptance Peer rating of NT children of each other

Sociometric Peer Ratings

In terms of play preferences, there was an almost even number of votes for each category (see Figure 3). The category “don’t like to play with” received a total of 12 votes with a mean of 1.3. The category “like to play with a little” received a total of 13 votes with a mean of 1.4. The category “like to play with a lot” received a total of 11 votes with a mean of 1.2. Only one child with ASD, C4 received 100% of votes in the “like to play with a lot” category. Compared to the children with ASD the neurotypical children generally stated that they liked to play with fellow neurotypical children a lot, with a total of 12 votes and a mean of 2.5 (see Figure 4). Within the group of neurotypical children, 50% of the neurotypical children received votes that their neurotypical peers did not like to play with them at all.

Figure 3 illustrates the results of the Sociometric Peer ratings by NT children of children with ASD, broken down by the number of votes for each category, “don’t like to play with”, “like to play with a little” and “like to play with a lot” for a total of 4. The names of every child that had given consent was read to the NT child who was asked how much they liked to play with that child. The number in every category represents the number of times they were nominated in that category.

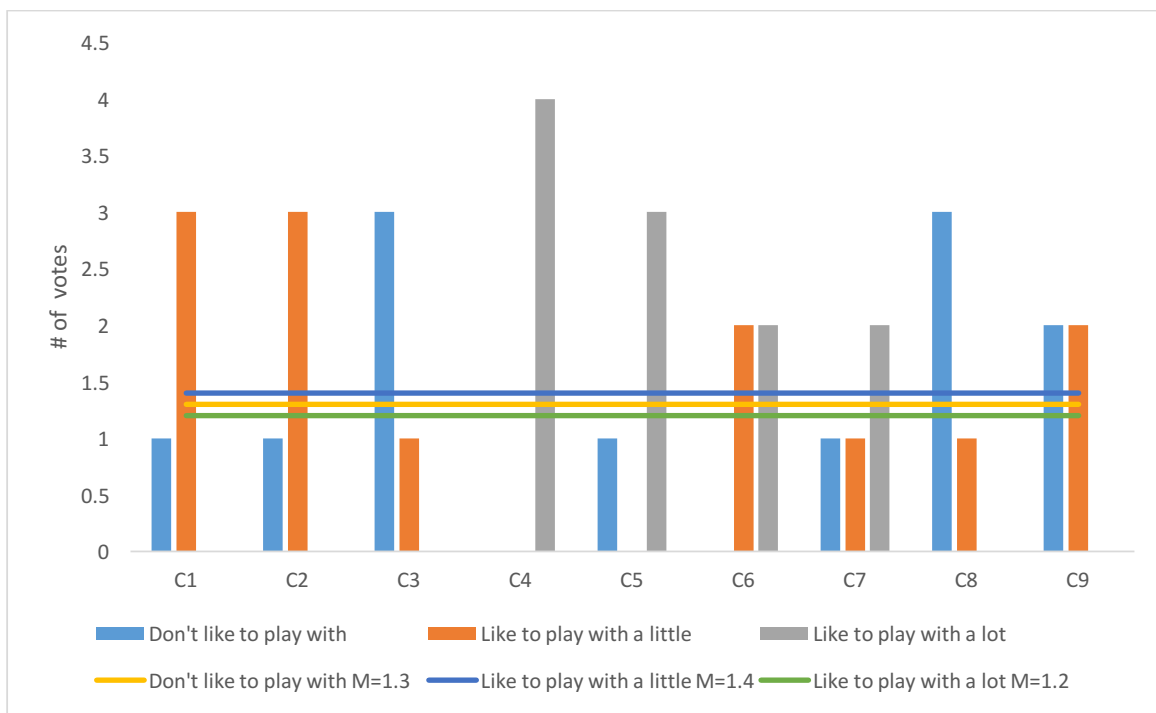


Figure 3. Sociometric Peer Ratings of children with ASD by NT children

Figure 4 illustrates the results of the Sociometric Peer ratings by NT children of fellow NT children, broken down by the number of votes for each category, “don’t like to play with”, “like to play with a little” and “like to play with a lot” for a total of 3.

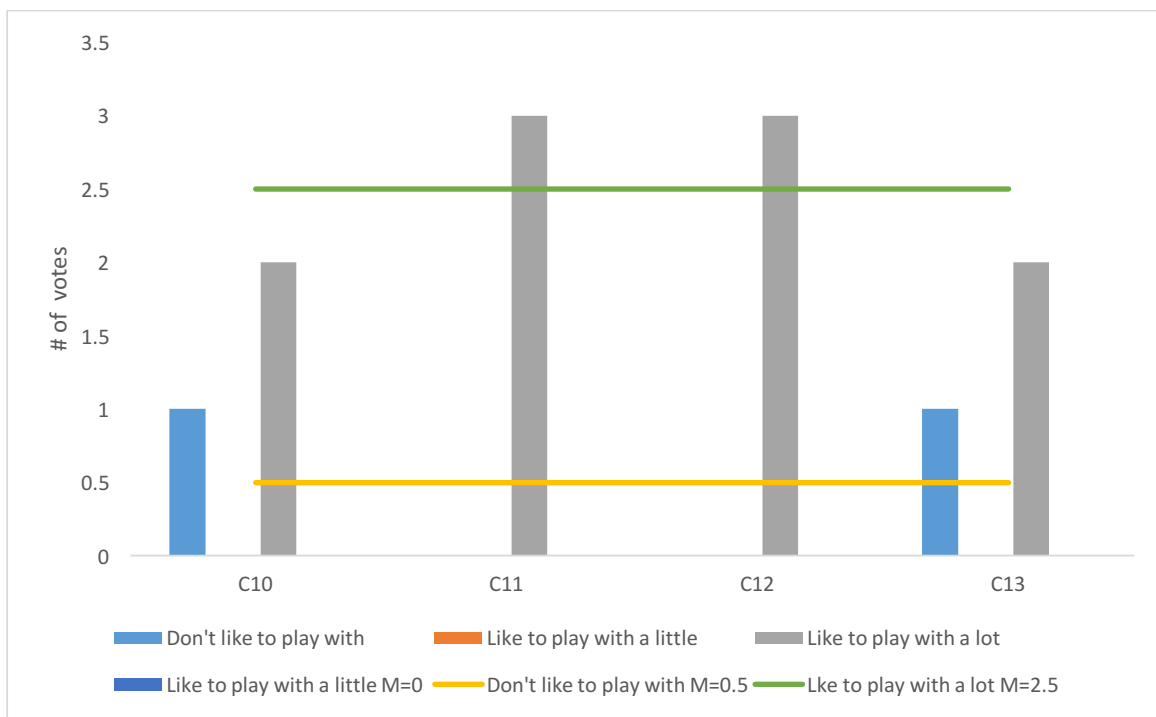
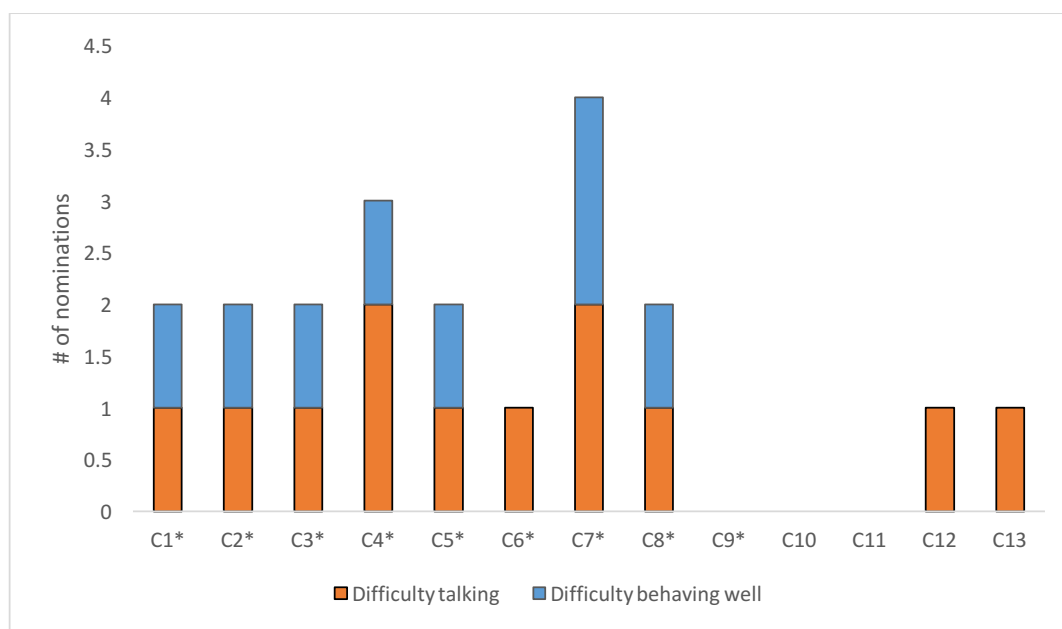


Figure 4. Sociometric Peer Ratings of NT children by NT children

Interviews

During the interviews, almost every participating child was named at least once for either being difficult to understand or not behaving as other children do, with the exception of C9 a child with ASD and a typically developed child, C10 (see Figure 5).

Figure 5 shows the number of times a child was identified as either being difficult to understand or not behaving as other children do. C9, C10 and C11 were not nominated at all for having difficulty talking or being difficult to understand. C6, C12 and C13 were not nominated at all for having difficulty behaving well.



Note. * Child with ASD

Figure 5. Children's identification of a classmate with a disability for each interview question

Observations

Overall for the entire group of children with ASD there were more instances of non-play behaviors ($M=115.22$) compared to play behaviors ($M=44.78$) see Table 4 and Figure 6.

Among the play behaviors of the children with ASD there was a lot of variation and one child, C9 did not display any play behaviour. Overall there were more instances of play with NT children ($M=33.4$) than play with their peers with ASD ($M=21.4$) see Figure 7. There was one child with ASD, C2 who engaged in play, was the only one observed to not have any play behaviors with his typically developing peers. Overall, there were also more instances of cooperative play ($M=30.78$) compared to parallel play ($M=14$) see Figure 8.

Table 4 illustrates all of the observed behaviors for the children with ASD. These behaviors are classified into categories of type of play (parallel or cooperative) with sub-

categories that explain more specifically the type of play they were engaged in (i.e. dramatic, functional, etc.) and non-play behavior. Each number represents the number of instances recorded for each event and totalled to account for the entire amount of observed behaviours of each child with ASD.

Table 4

Instances of all observed behavior for children with ASD

	Behavior	C1	C2	C3	C4	C5	C6	C7	C8	C9	Mean
Non-play Behavior	unoccupied	6	65	53	-	-	2	-	1	31	17.56
	onlooker	5	9	-	2	1	7	6	-	7	4.11
	Hovering	-	1	-	-	-	-	3	-	-	0.44
	Aggression	-	10	-	-	-	3	6	2	-	2.33
	Peer conversation	2	11	-	2	8	5	3	17	-	5.33
	Adult conversation	6	14	2	4	3	15	10	13	9	8.44
	Solitary (exploratory)	23	17	7	14	4	12	5	3	19	11.56
	Solitary (constructive)	18	-	-	35	-	3	72	3	67	22
	Solitary (functional)	56	30	90	18	3	45	-	47	27	35.11
	Solitary (dramatic)	-	-	-	-	4	38	2	12	-	6.22
	Solitary (games)	-	-	-	1	-	-	-	-	-	0.11
	Solitary (reading)	-	-	-	-	-	-	15	3	-	2
	Total non play-behavior	116	157	152	76	23	130	122	101	160	115.22
Parallel play	Parallel (exploratory)	-	-	-	3	1	1	1	-	-	0.67
	Parallel (constructive)	-	-	-	26	4	3	9	1	-	4.78
	Parallel (functional)	44	-	8	-	-	-	-	-	-	5.78
	Parallel (dramatic)	-	-	-	1	6	14	4	-	-	2.78

Cooperative play	Group (exploratory)	-	-	-	2	-	-	-	-	-	0.22
	Group (constructive)	-	-	-	9	2	-	-	-	-	1.22
	Group (functional)	-	-	-	-	-	-	-	2	-	0.22
	Group (dramatic)	-	3	-	38	99	-	6	-	-	16.22
	Group (games)	-	-	-	5	25	12	18	56	-	12.89
	Total play behavior	44	3	8	84	137	30	38	59	0	44.78

Figure 6 shows a graph of play behavior versus non-play behavior for each child with ASD.

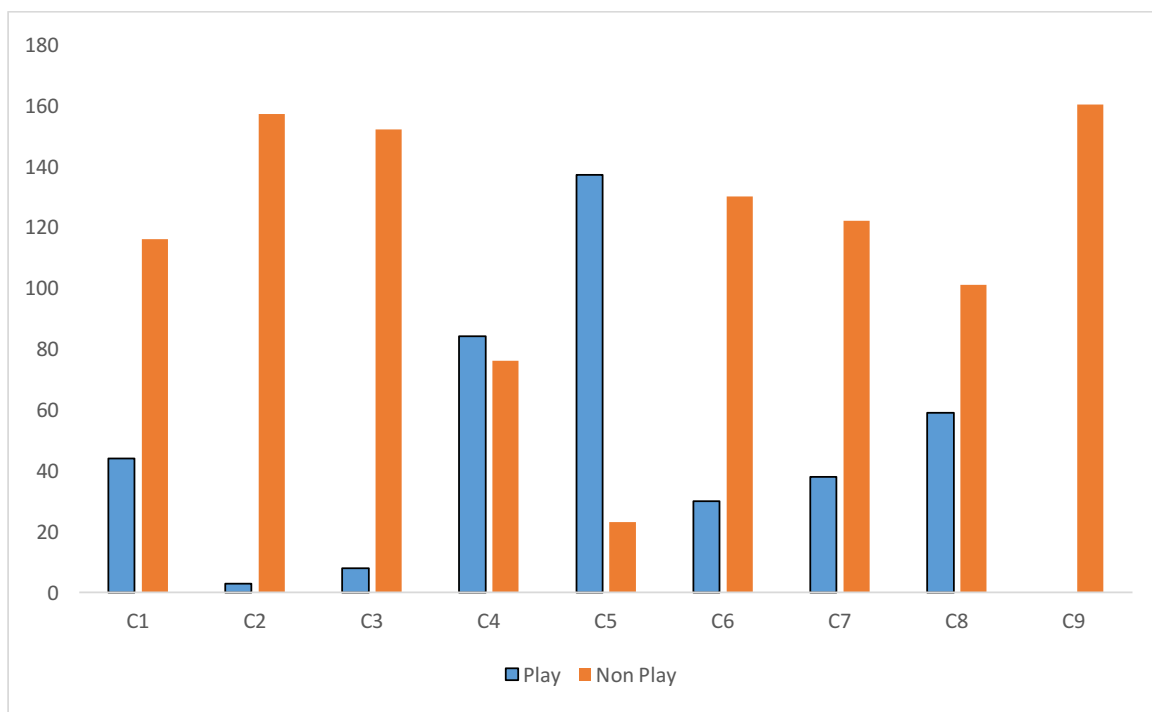


Figure 6. Play compared to non-play behavior for children with ASD

Figure 7 shows whether the children with ASD played with NT children or other children with ASD.

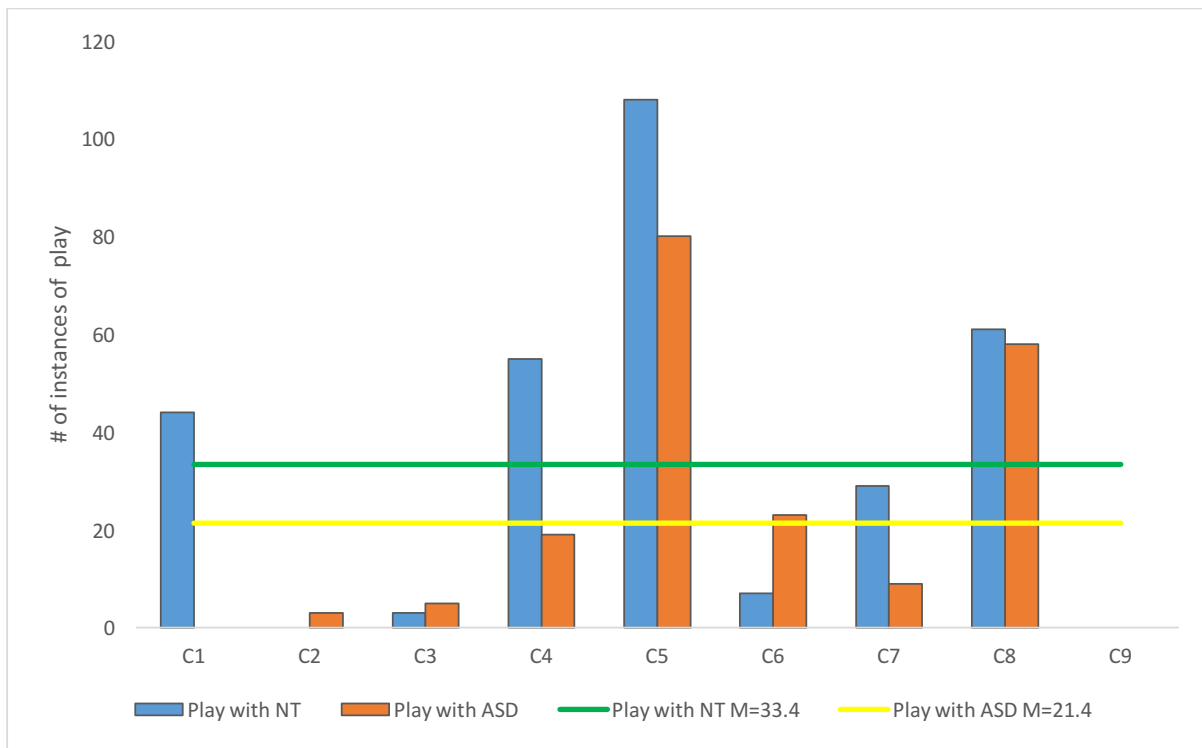


Figure 7. Play behaviors of children with ASD with peers with ASD or NT children

Figure 8 shows the comparison of parallel and cooperative play behaviors of the children with ASD.

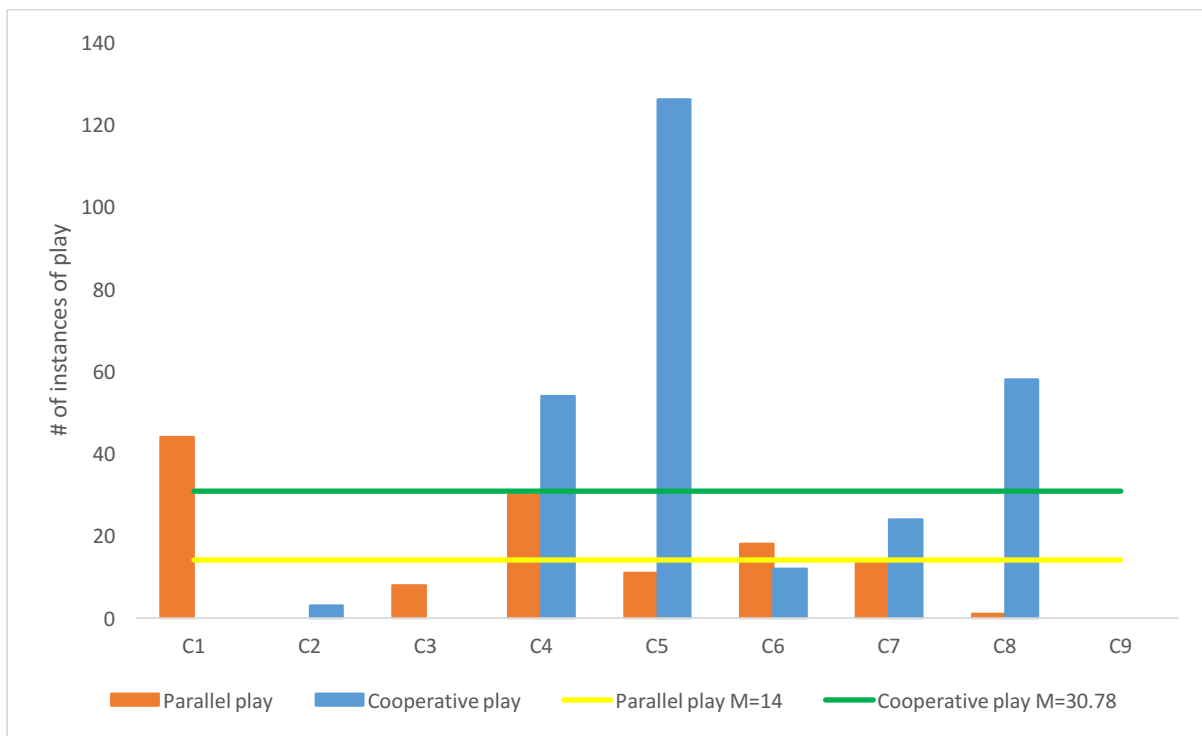


Figure 8. Comparison of parallel and cooperative play for each child with ASD

Discussion

The purpose of this study was to explore whether neurotypical children were aware of their peers with ASD. Results showed that the majority of the neurotypical children identified at least one peer with ASD as having a disability when asked to identify any children that had difficulty understanding. When asked if they could identify any children who did not behave the way the other children do, half of the neurotypical children identified children with ASD and the majority of the children with ASD were nominated. When the neurotypical children were probed

to elaborate why the children they named did not behave or talk as well as the other children, none of the children provided any additional information or simply answered 'he can't'.

One of the main findings of this study was that neurotypical children did not seem to think of their peers with ASD as being different from them since they also nominated fellow neurotypical children as being different. This finding was surprising although a possible explanation may be that the children have been taught and socialized to not recognize certain differences as disabilities. As contact theory (Allport 1954) would suggest that if regular interactions between neurotypical children and children with ASD are positive, then they should have favorable attitudes towards each other (Yuker, 1988 as cited in Mavropoulou, & Sideridis, 2014). The positive attitudes expressed by the typically developing children may possibly be due to the uniqueness of the setting where there is a 50/50 split of children with ASD and neurotypical children. As well, the group of participants in this study were made aware of their peers with ASD. Also, the teachers actively worked on raising awareness and acceptance, which most likely contributed to more positive attitudes. Ochs et al. (2001) found that more social support was given in the classroom and the playground when the diagnosis of ASD was shared with peers and school professionals. Moreover, research has found that neurotypical children enjoy activities alongside their peers with ASD appreciating the added diversity in their group and feeling that helping their peers with ASD is a rewarding experience (Jones, 2007 as cited in Simpson 2016).

Two of the children with ASD had similar scores to their neurotypical counterparts in the social acceptance peer rating and one of the neurotypical children ranked at the same level as a child with ASD who was perceived to be the least accepted. These findings may suggest that group acceptance of an individual may not necessarily be based on having a disability but more

in terms of general likeability of character. For example, Calder et al. (2013) found no such correlation between language and cognitive abilities to explain individual differences found in the friendships of children with ASD.

A secondary research question sought to investigate the degree of relationship between a neurotypical child's knowledge of a child's disability and their willingness to play with them. This study did not find a clear relationship between neurotypical children's awareness of a disability in a child with ASD and their willingness to play with them. For example, one child with ASD was a preferred playmate for the majority of the neurotypical group, had a lot of instances of cooperative play with his neurotypical peers and was not identified at all as being different, suggesting a relationship between knowledge of a disability and a willingness to play. In another instance, the other child with ASD who was not nominated at all for being different and was also nominated by the majority of the neurotypical children as a preferred playmate, had no instances of overt play behaviors demonstrating no such relationship between these variables.

The present study found similar results to the study by Yu et al. (2015) with regard to the relationship between the willingness to play with children with ASD and their positive rank on the Social Acceptance Peer ratings measure. Interestingly, the children in this study who were identified as being different had more instances of play behaviors with neurotypical children compared to more than half of the children with ASD who were not as identified as being different. These children with ASD had zero instances of play behaviors with their neurotypical peers. As well for the two children with ASD who were most identified as being different, at least half of the neurotypical children stated they really liked to play with them.

The children who were perceived to be the least accepted by the whole group were four children with ASD who did not exhibit much play behaviors. During the observations of

behaviors of these children, their dominant behaviors were mainly unoccupied or solitary play. Half of the neurotypical children nominated a large majority of children with ASD as peers they like to play with and the other half of typically developing peers named at least some children with ASD as children they like to play with. Therefore, it would seem that the lack of play instances of children with ASD is not due to the interactions with their neurotypical peers, but either because of a lack of interest by the child with ASD or the child with ASD lacking the social abilities to participate in play. It is also possible that the children with ASD felt that the social interactions were too complex and demanding (Hauck, Fein, Waterhouse & Feinstein, 1995).

Calder et al. (2013) is one of the few studies examining friendships satisfaction and found that children with ASD often described friendships as confusing, with some stating they actually preferred to play by themselves. Parents' perceptions of their children's friendships were also corroborated through interviews and they also believed that their children preferred to be alone (Calder et al., 2013). The authors also found a big difference in the motivation of the children with ASD for social interaction, ranging from high levels of inclusion and relationship satisfaction to some children expressing less interest in interacting with their peers. These findings may suggest that the individual differences in the motivation of the children with ASD to make and maintain friendships may explain the large range of variability among children with ASD's relationships (Calder et al., 2013).

It has been suggested that social motivation is what drives human behavior and that individuals with ASD can be thought to be at the extreme end of reduced social motivation (Chevallier et al., 2012). Even the more social children with ASD in the study who were well liked by their peers did not express as much interest in playing with other children as much as the

neurotypical children. However, reduced social motivation cannot account for all children in this study. One child with ASD nominated quite a few children who he would like to play with yet, had no instances of cooperative play and the parallel play he did engage in was repetitive in nature. None of his peers reciprocated any of his play nominations nor was he independently named as a preferred playmate.

Killen et al. 2002 (as cited in Bottema-Beutel et al., 2017) found that reasoning involving whether to include or exclude others appears to vary with age and that younger children are more likely than older children to view the exclusion of others across a number of contexts as unacceptable. Interestingly, in the current study there was only one child with ASD who was not nominated at all when the children were asked if there was any child that did not talk or behave as other children. As well, this child was also not perceived as being unaccepted as much as some of the other children yet, demonstrated zero play behaviors that would seem to put him at risk for exclusion. Half the neurotypical children either answered that they do not like to play with him or liked to play with him a little. This child demonstrated lower verbal abilities and as such was incapable of participating in the interview portion of the study. The level of functioning among the children with ASD in the current study did not seem to affect neurotypical children's perception of acceptance however, it did seem to affect their willingness to play with them. Although it has generally been found that children with ASD are less accepted by their peers compared to their neurotypical classmates (Chamberlain et al., 2007) and lower functioning children with ASD tended to be more accepted by their peers compared to individuals with HFASD (Kasari et al., 2011).

A third research question examined if there was a relationship between the type of play behavior exhibited by the child with ASD and the willingness to play with them on the part of

the neurotypical children. For most of the children with ASD, a relationship was found between the amount of play behavior versus non-play behavior and the willingness on the part of neurotypical children to play with them. The five children with ASD who were not nominated at all for being a preferred playmate all had more instances of non-play behavior, which would suggest a correlation between the variables. However, the results of this study did not find a clear relationship as some of the children with ASD had varied amounts of play behaviors that seemed unrelated to the willingness to play with them on the part of their typically developing peers. For example, one child (C9) who was nominated as a preferred playmate, had no instances of play behaviors. Although there was a three-year difference in age among the participants, their chronological age did seem to be as much of a factor as much as their level of functioning. For example, C1 who was the youngest participant had considerably more observed play behaviors than C2 who was the oldest participant. Locke, Williams, Shih and Kasari (2016) found that the level of functioning and their connections with their peers were two aspects that determined playground engagement and social network. Moreover, past studies have found that children with developmental disabilities experience challenges in play due to their difficulties with social communication (Rutherford & Rogers, 2003), particularly with symbolic and functional play (Pierce-Jordan & Lifter, 2005; Wolfberg et al., 2015) which may explain the lack of play behaviors. It is possible that if C9 possessed more play abilities, his typically developing peers would actually play with him. In support of the findings from Locke et al. (2016), one of the children with ASD (C5) was well liked by his peers and he was the only child with ASD to play with all of the neurotypical children. As well, he demonstrated a lot of sociodramatic play in his observed behaviors, which is considered a higher form of symbolic play (Goldstein & Cisar,

1992) indicating a high level of functioning. He was the only child with ASD who had a greater proportion of play behaviors versus non-play behaviors.

Overall, the child who received the most nominations in terms of play preferences was C4, a child with ASD. Although all of the neurotypical children stated they liked to play with C4 a lot, in examining his play behaviors he only interacted with half of the neurotypical children. Although C4's most dominant behavior was group play dramatic, a higher form of play, his second most dominant behavior was solitary constructive play. As well, out of his total observed behaviors, he almost had as many instances of non-play behaviors as play behaviors. It is unclear how these results should be interpreted as this same child also received the third most nominations for being socially unaccepted. As some studies have found, some children with ASD are not as interested in friendships. It is possible, as Williams, Reddy and Costall (2001) found that children with ASD in comparison to neurotypical children as well as children with Down syndrome, were less likely to engage the interest of others during play. Other potential explanations for the amount of non-play behaviors observed in C4 is that he may have been less motivated to play with others or he may have been limited in his play abilities despite the fact that C4 was universally well liked by his neurotypical peers.

Comparing the willingness of typically developing peers and the willingness of the child with ASD to play may explain the discrepancies found in the amount of overall play behaviors observed. Social domain theory may provide an explanation that younger neurotypical children perceive it to be wrong to exclude a child with a disability (Davidson, Turiel, & Black 1983). As well, neurotypical children have been found to assume that children with ASD are not as interested in play (Calder et al., 2013; Chamberlain et al., 2007). Furthermore, play must have mutually interested partners and there may be a lack of interest on the part of the child with

ASD. It is possible that children with ASD may not be as intrinsically motivated by play compared to neurotypical children as demonstrated by the fact that less than half of the ASD children did not play with any neurotypical children.

Past studies such as Bauminger et al. (2008) found in their observational study more instances of parallel play than cooperative play, which was not the case in this study. A possible explanation for this could be the level of functioning of the group of children with ASD, that had a smaller ratio of children considered lower functioning. Another factor that could have contributed to the higher instances of cooperative play is the time in the academic year the study took place, as it was conducted at the end of the year. The participants had already spent at least an academic year together and this could have added a level of familiarity that would make children with ASD and neurotypical children not only more comfortable with one another but potentially more understanding of differences on the part of the neurotypical group.

A fourth research question sought to investigate whether friendship nominations on the part of neurotypical children involve their peers with ASD. Locke, Gulsrud and Rotheram-Fuller (2011) found in their study that friendship reciprocity is lower for children with ASD. Although the current study also found this to be the case for the children with ASD, friendship reciprocity within the whole group was rather low, 41% for neurotypical children and 27% for children with ASD. In total, there were only three reciprocal connections between neurotypical children and children with ASD. Data from this study demonstrated that in terms of play preferences of neurotypical children, typically developing children received similar ratings as their peers with ASD. The majority of the neurotypical children stated that they did not like to play with some of the children with ASD and most of the children with ASD were nominated at least once for not being a preferred playmate. One neurotypical child did not nominate any other children when

asked if there was anyone he did not like to play with. The three children that received the most nominations for not liking to play with by neurotypical and children with ASD, were children with ASD. In general, children with ASD did not nominate many other children whom they liked to play with and it is possible that they were not as interested in friendships. Past studies have found that young children with disabilities often experience challenges developing friendships and that they have limited social interactions with peers (Buysse, Goldman, & Skinner, 2002; Guralnick, Hammond, Connor, & Neville, 2006). As well, past research has found the maintenance of friendships particularly challenging for children with ASD (Bauminger et al., 2008) which may have been the case in this present study as neurotypical children tended to describe more children whom they liked to play with compared to the children with ASD who nominated fewer peers.

Research has found that generally children with ASD reported having more friends with disabilities compared to their neurotypical peers (Bauminger & Kasari, 2000; Bauminger and Shulman 2003; Bauminger et al. 2008), however this present study did not find it to be the case. More neurotypical children nominated children with ASD as individuals who they liked to play with compared to individuals with ASD who seemed to generally prefer playing more with their typically developing peers. A possible explanation could be that the neurotypical children were generally more interested in play compared to the children with ASD. As well, past studies have found that typically developing peers enjoy group diversity and are less likely to exclude their atypical peers at this young age. Lee et al. (2016) found that children with ASD relied more on others to generate novel play ideas which might also explain their preference in this current study to play with neurotypical children more than their fellow peers with ASD. The group of children with ASD may have seen their fellow peers with ASD as less competent which may have been

the reason they were nominated as less preferred playmates compared to their typically developing peers (Yu et al., 2015).

To epitomize the central issue in this thesis, Figure 9 depicts the social inter relationships in a social cognitive map of the children in the group that were nominated. In this figure, the single arrows represent a unidirectional interest whereas a double arrow represents a mutual interest. For example, C2 likes to play with C6, however C6 did not state that he likes to play with C2. No other children nominated C2 as somebody they like to play with; C3 was not able to complete the interview nor was he nominated by any of his peers as a preferred playmate; C4 stated that he liked to play with C7, however C7 did not reciprocate the preference. C4 and C12 mutually stated they liked to play with one another. C5, C10, C11 and C13 all stated they like to play with C4, however it was not reciprocated; C6 did not nominate any peers as children he would like to play with; C7 only nominated C5 as someone he liked to play with, however C5 did not nominate him; C6 only nominated C12 and was not reciprocated; C7 only nominated C5, however C5 did not state that he likes to play with C7; C8 and C9 were not able to complete the interviews and were not nominated by any of their peers; C10 stated that he liked to play with C7 a lot, however C7 did not state that he likes to play with C10. C10 also nominated C4 and C6, although those nominations were not reciprocated. C10 named C5, C11 and C13 and those children mutually reciprocated the nominations; C11 named C4, however C4 did not nominate C11. C11 and C12 as well as C11 and C13 mutually stated that they liked to play with each other a lot.

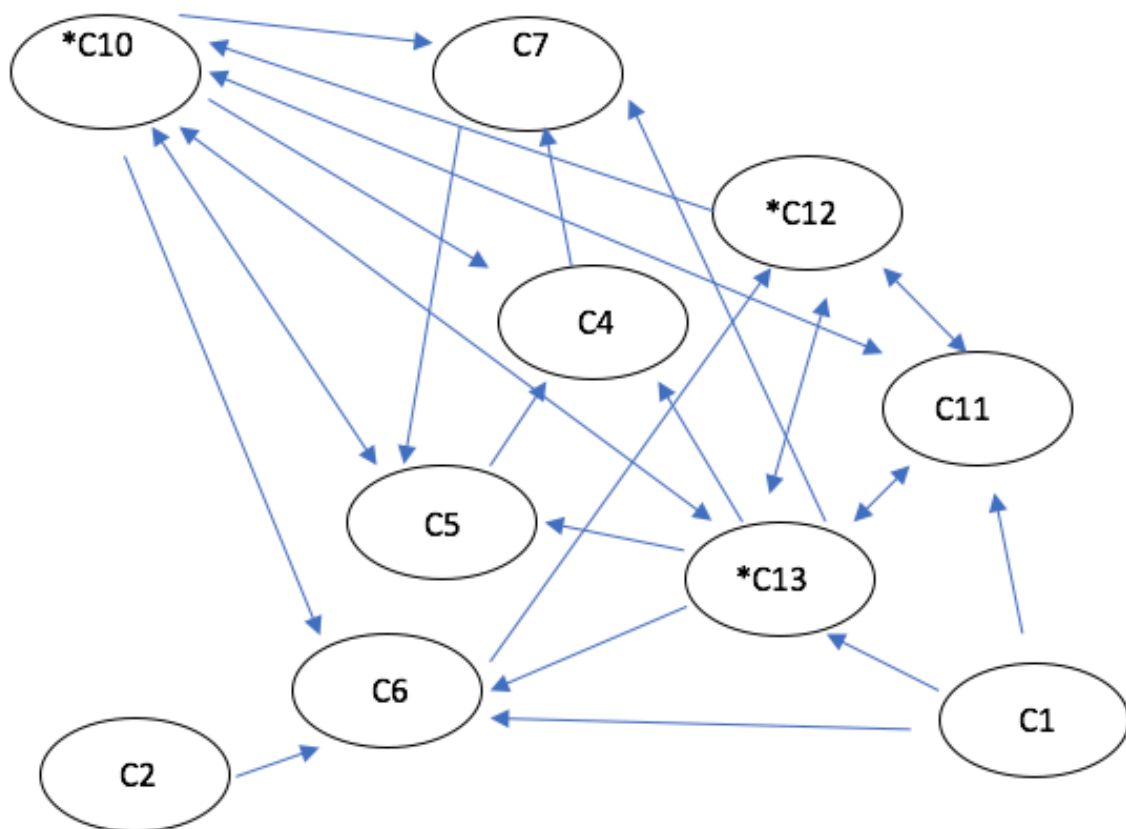


Figure 9. Social cognitive map of children with ASD and NT children

One of the main findings in the study was that the majority of children with ASD had more non-play behaviors. Kim et al. (2003) also found that children with disabilities were observed to be engaged in more non-play or solitary play compared to their neurotypical peers. Past studies have found that children with ASD might hold a different concept of friendship (Bauminger et al., 2004; Bauminger and Kasari, 2000). Calder et al. (2013) found that children with ASD reported feeling satisfied in their relationships with varying degrees of social inclusions and that the motivations of the children with ASD emerged as the main factor in the nature and extent of their friendships. A more recent study by Locke et al. (2016) found that

class size mattered in the amount of play behaviors demonstrated by children with ASD and that larger class sizes were more socially favorable, presumably because they offered a larger playmate choice. It is possible that the group in the present study, being a small group did not offer as much variability in playmate choices.

The findings in the current study adds support to the existing body of research on social interactions between children with ASD and their neurotypical peers and that friendships do exist between these two groups. As well, information gained from this study demonstrated positive support that aids in the successful inclusion of children with ASD in early childhood classrooms.

Limitations and Implications for Education

Children with ASD often have delays in comprehending verbal language and interaction with others, as well as difficulties in emotional regulation, attending to information in their environment and problematic behaviors, thus making general education difficult (Barton, Lawrence, & Deurloo, 2012; Deris & Di Carlo, 2013). As the rates of ASD keep increasing so is the number of children with the disorder who are primarily receiving education in a regular classroom (Lindsay, Proulx, Thomson, & Scott, 2013; Reeves, Umbreit, Fero, & Liaupsin, 2013). Although there are many children with ASD who possess the cognitive ability to learn academic material, their behaviors, social interactions and communication make functioning in a regular classroom difficult (Reeves et al., 2013).

Attitudes have been shown to be critical in the social acceptance and successful inclusion of children with ASD (Humphrey, 2008). Studies are lacking on the impact of typically developing children's attitudes on their peers with ASD and the results of the current study contribute to our understanding of how children with ASD are affected. The increasing rates of ASD in mainstream classrooms indicate that there will be more opportunities for socialization

with their typical peers. Socialization is an important consideration, particularly since it is a big challenge for individuals with ASD and a fundamental part of successful inclusion at any level (Horrocks, White, & Roberts, 2008).

A few limitations must be considered when reviewing the results of this study. Firstly, this study compared a large ratio of children with ASD to neurotypical children. This is not usually the norm in educational settings and thus may not give a realistic outcome for general education classrooms. Therefore, it would be useful to conduct studies with a larger ratio of neurotypical children. As well, the participants in this study were all male. Although most children diagnosed with ASD are male, the study's focus was on neurotypical children, therefore having both genders represented would give more complete results.

This study also observed the play behavior of children with ASD only. Research is lacking on how the child with ASD and the neurotypical child perceive their relationship and how these relationships manifest on the playground (Kasari et al., 2011). Studying the play behavior of neurotypical children as well may have given more information as to why the children with ASD had less play behaviors and why friendship reciprocity was low for the whole group. It is possible that the children with ASD in this study were happy with their social connection, however relationship satisfaction was not considered in this study and future studies may fulfill this gap.

Finally, this study was conducted at the end of the academic year, which may have significantly contributed to the results as the typically developing children may have had the time to become more understanding of their peers with ASD. It may be interesting to conduct a study at the beginning of the academic year as well as the end to see the evolution in attitudes and behaviors of the participants.

Enabling successful inclusion of children with ASD is largely dependent on both the child with ASD and their peers (Tonnsen & Hahn, 2016). The findings from this study demonstrate that positive attitudes on the part of the typically developing peers can only partially help social interactions in children with ASD and direct intervention that aid in the enhancement of social skills are needed. Studies have shown that the maintenance of relationships and reciprocal friendships continue to be a challenge for most children with ASD (Kasari et al. 2011) however, research on play interventions for children with ASD demonstrate that the appropriate behaviors and skills can be learned (Jung & Sainato, 2013). Successfully including children with ASD in ordinary classrooms should be an educational priority for these children where they should be made to feel a sense of belonging, have positive social interactions and friendships that will help them reach their optimal potential.

This study has contributed to the growing body of research on typically developing children's knowledge, attitudes and behavioral intentions towards children with ASD and how this affects their social outcomes and ultimately determines successful inclusion. The findings of this study also emphasize the importance of regular contact with children with ASD on the part of their typically developing peers in an inclusive setting. As well this research also demonstrates the importance for inclusionary practices for increasing knowledge and shaping positive attitudes towards children with ASD. Given the increasing rates of children with ASD in inclusive classrooms and the social difficulties children with ASD experience it is hoped that the findings of this study may contribute to more effective interventions to improve the integration of individuals with ASD (Mavropoulou, & Sideridis, 2014).

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Appendix A Ethics Certificate



CERTIFICATION OF ETHICAL ACCEPTABILITY FOR RESEARCH INVOLVING HUMAN SUBJECTS

Name of Applicant: Kimberley Chen
Department: Faculty of Arts and Science \ Education
Agency: N/A
Title of Project: Exploring the Attitudes of Neurotypical Peers
Towards Children with Autism Spectrum
Disorder and Their Behaviors Through Play

Certification Number: 30006110

Valid From: May 04, 2017 to: May 03, 2018

The members of the University Human Research Ethics Committee have examined the application for a grant to support the above-named project, and consider the experimental procedures, as outlined by the applicant, to be acceptable on ethical grounds for research involving human subjects.

A handwritten signature in black ink, appearing to be "J. Pfaus".

Dr. James Pfaus, Chair, University Human Research Ethics Committee

Appendix B

Letter to Parents

Dear Parents/Guardians,

My name is Kimberley Chen. I am currently enrolled in the Masters degree of the Child Studies program, Department of Education at Concordia University.

Having worked with children in the Autism Spectrum Disorder (ASD) for a number of years, I am particularly interested in better understanding which specific factors are key to promoting the maximum development of their potential.

Various studies on this subject suggest that there is link between the development of individuals with ASD and how they are treated by their peers. Studies also indicate that social relationships and friendships between children with ASD and their neurotypical peers are determined by the attitudes of the neurotypical peers.

The goal of my research thesis is to see which attitudes play an important part in social acceptance. These findings could eventually have an impact on different programs intended to foster social relations and friendship between children with ASD and their neurotypical peers.

To carry out my project I will be asking your children several developmentally appropriate questions to understand their perceptions of their peers. Observations will also be conducted of a child with ASD to gain a better understanding of their behavior.

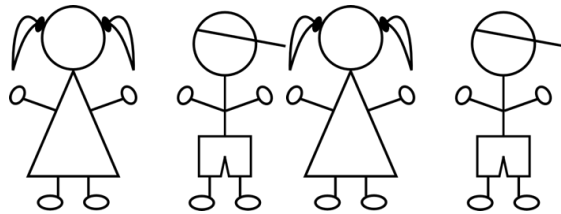
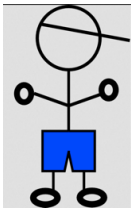
When the research is complete, the results will be reported in my thesis and possibly published. The names of the children who will participate will remain confidential. The interviews and observation recordings will be viewed and heard by me, my supervising professor, and possibly one of my supervisor's research assistants. Withdrawal from the study can be done so at any time and the data collected will not be included in the analysis.

Please sign and return the attached consent form to your child's teachers indicating whether you wish to allow your child to participate in the study or not. If you have any concerns or questions, please do not hesitate to contact me, kchen_1@education.concordia.ca, or my supervisor Dr. Miranda D'Amico, Concordia University, Miranda.damico@concordia.ca, phone 514-848-2424 ext. 2040. The daycare director is also aware of my project.

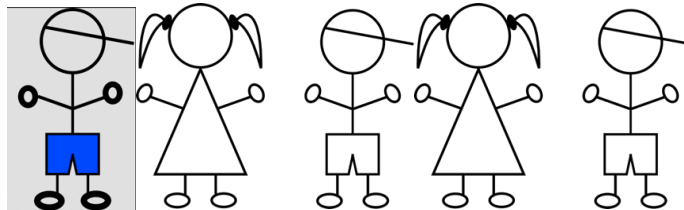
Sincerely,

Kimberley Chen

Appendix C
Social Acceptance Rating



This child does not have a lot of friends to play with



This child has a lot of friends to play with

Appendix D
Sociometric Peer Rating



“don’t like to play with”



“like to play with a little”



“like to play with a lot”

Appendix E

Play Observation Scale Coding Sheet (2001)

Name of Child: _____ ID _____ Age _____

Free Play Session _____

Time Sample

	10	20	30	40	50	60	Interacting with:
uncodable							
out of room							
transitional							
unoccupied							
onlooker							
Solitary Behaviors: Occupied							
Constructive							
Exploratory							
Functional							
Dramatic							
Games							
Parallel Behaviors: Occupied							
Constructive							
Exploratory							
Functional							

Dramatic							
Ganes							
Group Behaviors:							
Occupied							
Constructive							
Exploratory							
Functional							
Dramatic							
Games							
Peer Conversation							
Adult Conversation							
Double Coded Behaviors:							
Anxious Behaviors							
Hovering							
Aggression							
Rough-and-Tumble							