# Parent Descriptions of the Active Play Behaviours of their Twins and Triplets with Autism

by

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An oral defense of this thesis took place on July 28, 2022, in front of the following examining committee:

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The above committee determined that the thesis is acceptable in form and content and that a satisfactory knowledge of the field covered by the thesis was demonstrated by the candidate during an oral examination. A signed copy of the Certificate of Approval is available from the School of Graduate and Postdoctoral Studies.

## ABSTRACT

Children with autism engage in active play in different ways than children who are neurotypical, but the active play behaviours of children with autism are not well understood. Research with twins and triplets with autism offers a unique opportunity to explore the active play behaviours of children with autism because children within a twin or triplet sibling group share many similarities (age, access to toys, etc.) enabling the researcher to gain a clear picture of their play behaviours. Through semi-structured interviews, this descriptive phenomenological study aimed to explore and describe the active play behaviours of 19 twins and triplets with autism from the perspective of their parents (N=9). The interviews revealed three main themes including1) parents' descriptions of active play, 2) parents' descriptions of social play and 3) active play as a window into a child's world. The results from this study reveal the diverse play behaviours of twins and triplets with autism; parents described their children engaging in sensory, indoor, outdoor, and organized play and making play choices based on their unique interests, strengths, and motivations. These results suggest that parents value active play as a way to connect with their children and that children with autism may be meeting the definition of active play in non-traditional ways.



**Keywords:** Autism; Active play; Multiples

## AUTHOR'S DECLARATION

I hereby declare that this thesis consists of original work of which I have authored. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

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_____ Marie Abu Itham

## STATEMENT OF CONTRIBUTIONS

I hereby certify that I am the sole author of this thesis and that no part of this thesis has been published or submitted for publication. I have used standard referencing practices to acknowledge ideas, research techniques, or other materials that belong to others. Furthermore, I hereby certify that I am the sole source of the creative works and/or inventive knowledge described in this thesis.

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## LIST OF ABBREVIATIONS AND SYMBOLS

| | |
|---|---|
| Autism | Autism Spectrum Disorder |
| ADHD | Attention-Deficit/Hyperactivity Disorder |
| DSM-V | Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition |
| DSM-IV | Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition |

# Chapter 1. Introduction

## Overview of Active Play and Children with Autism

Active play is a functional and age-appropriate occupation for children (Case-Smith & Kuhaneck, 2008) particularly because of the opportunity it affords them to develop physically, cognitively and socially (Lubans et al., 2010; Yogman et al., 2018). However, literature suggests that children with autism engage in active play in ways that are considered atypical compared to their neurotypical peers (Calder et al., 2012; Gilmore et al., 2019; Hancock, 2020; Harper et al., 2007). Most literature supporting this narrative is based on opinion pieces and research studies seeking to compare the play behaviours of children with autism to children who are neurotypical (Boucher, 1999; Brown & Murray, 2001; Calder et al., 2012; Harper et al., 2007). This is a concern because of the lack of empirical research supporting these claims with descriptions of children with autism playing actively. Qualitative research conducted with twins and triplets where both/all children in the sibling group have autism can provide a clear picture of the active play behaviours of children with autism because of the opportunity to control for confounding variables. The current descriptive phenomenological study is the first to employ this method by gathering parents' descriptions of the active play behaviours of their twins and triplets with autism.

## Active Play

Active play refers to the gross motor or total body movements that young children use to expend energy in a way that is freely chosen, fun, and unstructured (Truelove et al., 2017). Because the focus is on fun rather than intensity, active play is an appropriate form of physical activity for young children (Tremblay et al., 2017; Truelove et al., 2017). A child's experience of enjoyment during such activities can greatly impact their future

physical activity choices (Hyndman et al., 2017; Rickard et al., 1995; Truelove et al., 2017). Beyond the physical domain, active play also serves specific cognitive and social functions in a developing child (Feleihi et al., 2022; Pellegrini & Smith, 1998). As a reflection of this, a child's active play behaviours will typically evolve as they develop in childhood (Pellegrini & Smith, 1998; Ridgers et al., 2011). For example, the play of children ages 4 or 5 years old commonly involves running and climbing, actions which serve to strengthen their muscles, lung function and movement skills. (Pellegrini & Smith, 1998). Conversely, 8-10 year old children more commonly engage in social forms of active play (e.g. chasing, play fighting, etc.) which enable the child to learn age appropriate social and communication skills (Pellegrini & Smith, 1998). Active play experiences during childhood are associated with optimal physical, social, and cognitive developmental outcomes (Lubans et al., 2010; Pellegrini & Smith, 1998; Truelove et al., 2017; Yogman et al., 2018).

Positive active play experiences have a considerable impact on the developmental trajectories of children during the pre-school and school age years (Brown & Murray, 2001; Lifter et al., 2005; Lubans et al., 2010; Pellegrini & Smith, 1998; Truelove et al., 2017). During play, children tend to show components of pleasure, active engagement, spontaneity, intrinsic motivation, self-direction, flexibility, and make-believe (Brown & Murray, 2001; Cooper, 2000). These typical play behaviours are well documented in the literature (Brown & Murray, 2001; Chester et al., 2019; Cooper, 2000; Harper et al., 2007; Locke et al., 2016); however, a child's particular play style may differ based on their gender, culture, disability status, and other individual characteristics (Cooper, 2000). The importance of play for all children is recognized by The United Nations Convention on the

Rights of the Child which is evidenced in Article 31 where play is listed as a human right (Arts, 2014; United Nations, 1989).

**Autism Spectrum Disorder**

Autism spectrum disorder (henceforth referred to as autism) is a neurodevelopmental disorder characterized by differences in social, communication, and restricted and repetitive behavioural development, specifically in the way one communicates and interacts within the environment (American Psychiatric Association, 2013). In Canada, 1 in 66 children have a diagnosis of autism spectrum disorder (Public Health Agency of Canada, 2018). Studies have shown a high proportion of twins both being autistic, specifically in cases where one twin has already received a diagnosis of autism (Hallmayer et al., 2002). In these cases, the probability of both individuals of a twin group being autistic is as high as 88% for identical twins, and 31% for non-identical twins (Ronald & Hoekstra, 2011). For the purpose of this research, the author has chosen to use person-first language to speak about children with autism; this decision is based on the preference expressed by the majority of parent participants in this study. Therefore, the term 'child with autism' will be used rather than 'autistic child'. While the decision has been made to use person-first language in this document, it is important to note that there are varying opinions represented among both the study participants and the larger autism community on the use of person-first versus identity-first language (Kenny et al., 2016).

From early childhood, children with autism show differences in social communication, social interactions, and restricted and repetitive behaviours (American Psychiatric Association, 2013). There is variability in the expression of these differences because autistic traits exist on a spectrum (American Psychiatric Association, 2013;

Couteur et al., 1996) and atypical play behaviours are often among the first of such differences to be observed in children with autism (Brown & Murray, 2001; Pellegrini & Smith, 1998). For example, children with autism may make little to no eye contact with playmates during game play (Jung & Sainato, 2015) and have strong preferences for specific and structured activities (e.g., lining up toy cars) (Gilmore et al., 2019; Winter-Messiers, 2007).

**Play of Children with Autism**

Children with autism tend to exhibit different behaviours than those that are considered typical for childhood play (Calder et al., 2012; Gilmore et al., 2019; Hancock, 2020; Harper et al., 2007; Memari et al., 2015). For example, fun and spontaneity are considered to be a hallmarks of typical play behaviours (Yogman et al., 2018), yet compared to children who are neurotypical, children with autism often show less of these characteristics in their play (Brown & Murray, 2001; Wolfberg et al., 2012). In a 2013 study, Hobson and colleagues found evidence suggesting that even when children with autism are performing the mechanics of spontaneity in play (e.g., voluntarily incorporating an object from their environment in their play) they show less signs of 'fun', enjoyment and creativity (Hobson et al., 2013). Furthermore, children with autism tend to hold restricted and repetitive patterns of interests and behaviours in play (Winter-Messiers, 2007). For example, they may only be interested in playing with toy trains and show a strong preference for playing with such play objects in repetitive ways (e.g., repeatedly pushing the toy train down a hallway) (Fahy et al., 2021; Winter-Messiers, 2007). Additionally, they can have unique play interests, often involving highly sensory components (e.g., preoccupied with the noise created when tapping their shoes on the floor)

(Conn, 2015; Mitchell & Lashewicz, 2018). There are many opinions in the literature regarding the play characteristics of children with autism (Boucher, 1999; Boucher & Wolfberg, 2003; Brown & Murray, 2001; Kasari et al., 2013; Todd, 2012), but there is a lack of empirical studies exploring these play characteristics.

Qualitative methodologies may be well suited to explore the nuances of the play behaviours of children with autism. In 2018, Mitchell and Lashewicz conducted a narrative inquiry qualitative study to explore how fathers of children with autism understood their children's play. The researchers conducted semi-structured, one-on-one interviews with eleven fathers of children with autism aged 5-12 years old (Mitchell & Lashewicz, 2018). This study revealed three main narratives of how fathers perceive their children's play: fathers taking an active approach in play with their child, fathers adjusting their expectations of their children's play, and fathers challenging the societal conceptions of 'normal' play (Mitchell & Lashewicz, 2018). These findings suggest that the fathers valued a balanced approach in engaging with their children with autism in play; while they spoke of some situations where it was appropriate to push their child out of their comfort zones in play, other times it was more appropriate to follow their child's lead in play by joining in with their atypical play interests and behaviours (Mitchell & Lashewicz, 2018). Most research that investigates the play behaviours of children with autism focuses on comparing their play with that of children who are neurotypical, with the ultimate aim to equip children with autism to play in "typical ways", to help them play like other children (Calder et al., 2012; Harper et al., 2007). Mitchell and Lashewicz' (2018) qualitative exploration of parent perceptions of their children's play adds important context regarding the diverse play behaviours of children with autism.

The active play behaviours of children with autism are a poorly understood phenomena; yet literature suggests that positive active play experiences may be an important medium through which both motor and social skills may be developed (Bremer et al., 2015; Elliott et al., 2021; Lloyd et al., 2013). This is important because children with autism generally display poor fundamental motor skills (e.g., balancing on one foot, catching a ball, etc.) that are needed for engaging in active play (Hulteen et al., 2018; Lloyd et al., 2013; Ruggeri et al., 2020). These children also tend to exhibit poor social skills that are facilitated by active play experiences (e.g., taking turns appropriately, gaining a friend's attention) (Bremer et al., 2015; Elliott et al., 2021; Guest et al., 2017). It is important that future research seek to better understand the play of children with autism. Addressing this gap in the literature will enable researchers and practitioners to engage with children with autism at the level of their play, therefore promoting developmentally appropriate skills (Bremer & Lloyd, 2016; Pellegrini & Smith, 1998).

**Play of Children with Autism and Their Siblings**

Research suggests that children with autism desire quality relationships with playmates (Bauminger et al., 2009; Calder et al., 2012). Furthermore, research has shown a positive correlation between the development of active play skills and increased social skills in play with siblings (i.e. turn taking, cooperation) (Elliott et al., 2021). One study conducted by Conn and Drew (2017) investigated the nature of the play between children who are neurotypical and their siblings with autism. Using semi-structured one-on-one interviews, the researchers collected narratives from three adults who are neurotypical (2 male, 1 female) regarding their memories of childhood play with their sibling with autism (Conn & Drew, 2017). The study revealed that siblings may frequently engage in specific

play activities together because of shared motivations and family values (e.g., building with Lego) (Conn & Drew, 2017). Furthermore, the results indicated that a close age gap may facilitate positive play experiences between siblings (Conn & Drew, 2017). These findings suggest that a secure, familiar sibling relationship may be important for children with autism in active play (Conn & Drew, 2017). These findings also support the notion that sibling play may be an appropriate context from which to explore the active play behaviours of children with autism. Currently, there is a paucity of research seeking to describe the active play behaviours of children with autism in the context of a secure, sibling relationship.

Multiple birth children (henceforth referred to as multiples) are those belonging to a set of twins, triplets, etc. (Feldman & Eidelman, 2004). Multiples are unique in that they can share regular play experiences with another same-age individual who is genetically and phenotypically identical, or very similar, to them (DiLalla & Caraway, 2004). Although there are some hypotheses regarding the play of twins and triplets who are neurotypical (DiLalla, 2006; DiLalla & Caraway, 2004), the play of this population remains a poorly understood phenomenon. Furthermore, even less is known regarding the active play behaviours of multiples with autism when engaged together in play; there is a need for literature describing the active play behaviours of multiples with autism. Research suggests that positive active play experiences facilitate social, cognitive, and physical development in children (Brown & Murray, 2001; Hancock, 2020; Harper et al., 2007; Winter-Messiers, 2007) and there is some indication in the literature that play with siblings may enhance active play experiences for children with autism(Conn & Drew, 2017; Shivers & Plavnick, 2014). Despite these indications, there has been no research to date describing the play of

multiples with autism and thereby seeking to explore how this phenomenon may relate to children with autism.

## Gaps in the Literature

A review of the literature has revealed a gap in the understanding of the active play behaviours of multiples with autism. This research focus is especially important as it may be productive in addressing the need for future research clarifying the characteristics of the active play behaviours of children with autism (Hancock, 2020). Research with twins and triplets with autism has potential to uncover unique data regarding the play behaviours of children with autism because the siblings are very similar, with the same diagnosis, age, genetics, home environment, socioeconomic status, etc. Furthermore, the inclusion of parents as key informants in this research may provide rich descriptions of the play behaviours of children with autism (Mitchell & Lashewicz, 2018; Romero-Ayuso et al., 2021). While there have been some studies exploring the play behaviours of twins who are neurotypical (DiLalla, 2006; DiLalla & Caraway, 2004), these studies investigated these behaviours when the twins were each engaged in play with different, unfamiliar playmates. To date, no studies have sought to explore the play behaviours of multiples when engaged in play together and even more significantly, none have been conducted with multiples with autism. There is a need for future research seeking to explore and describe the active play behaviours of twins and triplets with autism from the perspective of a parent.

## Research Questions

1. How do parents of twins and triplets with autism describe the active play of their children?
2. What value do parents place on play for their twins and triplets with autism?

## Expected Impact and Significance

The active play behaviours of children with autism are not well understood (Fahy et al., 2021; Hancock, 2020; Wolfberg et al., 2012). There are many opinions regarding the characteristics of their active play (Boucher, 1999; Boucher & Wolfberg, 2003; Brown & Murray, 2001; Göncü et al., 2000; Kasari et al., 2013), but there is a lack of empirical research supporting these claims. This will be the first qualitative study to explore and describe the active play behaviours of twins and triplets with autism from the perspective of their parents. A descriptive phenomenological methodology will facilitate a critical examination of the experiences of parents of twins and triplets with autism regarding their children's active play behaviours (Matua & Van Der Wal, 2015). The inclusion of parents as key informants in this study is important as parents can provide rich descriptions of the play of their children with autism, thereby revealing hidden meanings and the overall essence of this poorly understood phenomenon (Childress, 2010; Matua & Van Der Wal, 2015; Romero-Ayuso et al., 2021). We anticipate the findings of the proposed study will provide insight into the active play behaviours of children with autism. This deeper understanding of their play behaviours will benefit autism service providers from a variety of contexts (policy makers, educators, clinical practitioners, family members). Some practical implications may include creation of new community active play programs for children with autism, revisions to existing programming, informing future policies, etc. This literature will fill a substantial gap in the literature regarding the characteristics of the active play behaviours of children with autism.

## Purpose

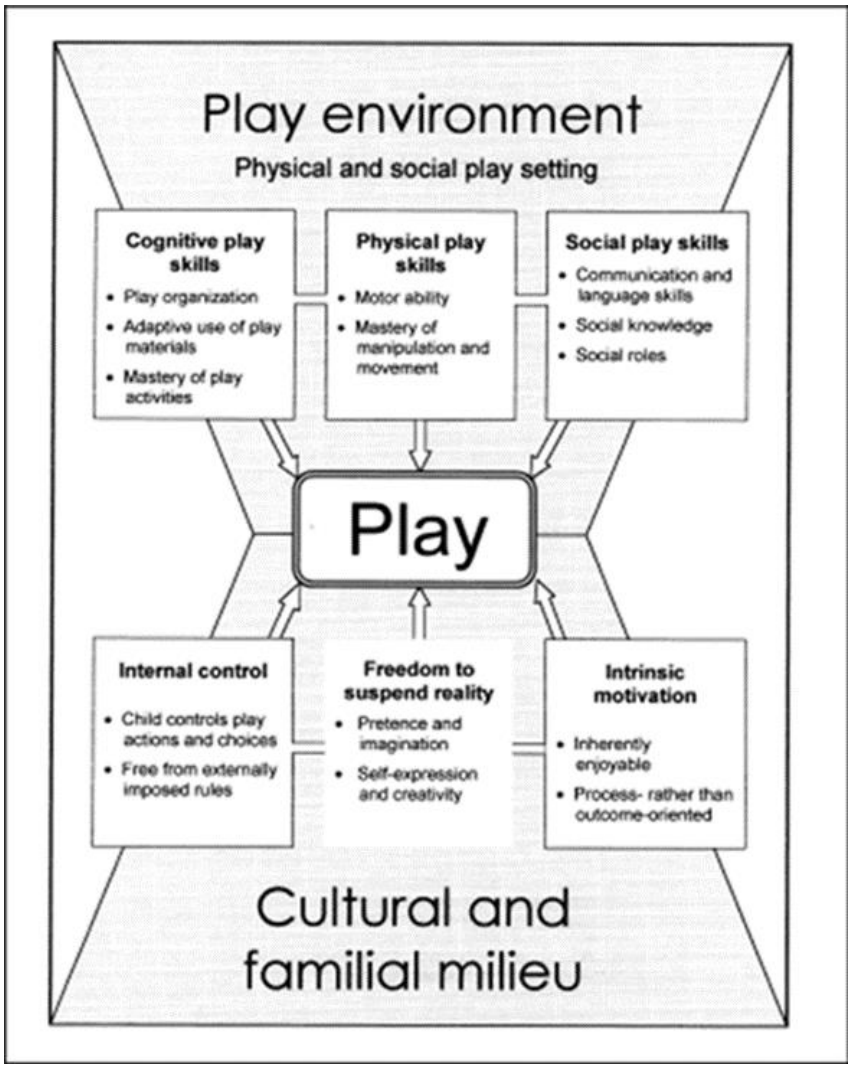
The purpose of this descriptive phenomenological study is to explore and describe the active play behaviours of twins and triplets with autism from the perspective of their parent. Active play is considered to be any kind of unstructured indoor or outdoor play where children use their whole body in their play, using their energy in a way that is fun and towards something they are choosing to do.

## Theoretical Framework

Play research has primarily focused on comparing the active play behaviours of children with autism with those of children who are neurotypical (Lifter et al., 2011). Recent research suggests that this focus on typical play behaviours has resulted in play becoming medicalized for children with autism (Mitchell & Lashewicz, 2018; Wolfberg et al., 2012). This approach devalues the spontaneous, fun attributes of play, core to its definition, thereby reducing it to a tool, wielded to move children with autism towards normative physical, social, and cognitive developmental milestones (Mitchell & Lashewicz, 2018; Wolfberg et al., 2012). Some literature suggests that children with autism do engage in play in similar ways to their peers who are neurotypical, but their play behaviours are ambiguous, therefore not well understood by others (Hancock, 2020; Wolfberg et al., 2012). Literature regarding the play of children with autism is limited in general, and what literature there is, focuses on the differences between the play of children with autism and that of their peers who are neurotypical (Hancock, 2020).

**Figure 1**

*Cooper's Model of Children's Play (Cooper, 2000)*




There is a need for research describing the play of children with autism with more precision and detail (Hancock, 2020). Cooper (2000) developed the 'Model of Children's Play' (depicted in Figure 1) to describe atypical play behaviours. The descriptive model separates out the individual and environmental factors that may affect a child's play style or their capacity for play in general (Cooper, 2000). The 'Model of Children's Play' specifically facilitates rich descriptions of a child's underlying play skills, behavioural

elements, and physical and social environments (Cooper, 2000). In this way, the model enables rich description of the dynamic interplay of individual and environmental factors that contribute to a child's play behaviours (Cooper, 2000). This model was originally developed to position research exploring the emergent play behaviors of children who have experienced physical, sexual or emotional abuse (Cooper, 2000). Since its development, the 'Model of Children's Play' has been used in studies investigating the playfulness and imagination that children with autism exhibit in their play (Lee et al., 2016; Lin et al., 2017; Pinchover et al., 2016; Skaines et al., 2006), however as of yet it has not been used in studies exploring the *active play* behaviours of children with autism.

The primary focus of the proposed study is to explore how parents of twins and triplets with autism describe the active play behaviours of their children with autism. According to the 'Model of Children's Play', a child's cultural and family social environment as well as their individual social, physical and cognitive characteristics can impact their play (Cooper, 2000). The perceptions that parents have regarding their child's individual characteristics and social environment may enable a deeper understanding of the relationships between these factors and a child's emergent active play behaviours. The model also shows how a child's intrinsic motivations, freedom to suspend reality and internal control impact their play behaviours. These sections of the model represent areas where children with autism may have more challenges in play (Hobson et al., 2013), yet the proposed study seeks to elicit rich descriptions from parents regarding these aspects of their children's active play. This model will aid in the development of rich descriptions of the active play of children with autism based on parent perceptions.

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# Chapter 2. Literature Review

**Active Play**

The importance of active play as a childhood occupation cannot be overstated given its function of promoting social, physical, linguistic, and cognitive development (Brown & Murray, 2001; Pellegrini & Smith, 1998). Although on the surface it may appear aimless, play has a significant influence on a child's developmental trajectory and is a focus of researchers and practitioners alike in fields such as education, psychology, healthcare, and disability support (Brown & Murray, 2001; Lifter et al., 2011; Lubans et al., 2010; Pellegrini & Smith, 1998; Truelove et al., 2017; Whitebread et al., 2012; Yogman et al., 2018). The importance of play is recognized by the United Nations Convention on the Rights of the Child and is considered a human right in Article 31 (Arts, 2014; United Nations, 1989). In general, active play is defined as "a form of gross motor or total body movement in which young children exert energy in a freely chosen, fun, and unstructured manner " (Truelove et al., 2017, p. 164). More specifically, play can be defined as "a transaction between an individual and the environment that is intrinsically motivated, internally controlled and free of many of the constraints of objective reality" (Bundy, 1991, p. 59). Typical play behaviours show evidence of pleasure, active engagement, spontaneity, intrinsic motivation, self-direction, flexibility, and make-believe (Brown & Murray, 2001; Cooper, 2000). The 'player' is the director of their own play-- motivated intrinsically and controlling their own actions, restricted neither by another individual's control nor by limits of where their imagination may lead (Cooper, 2000; Stagnitti, 2004).

In their 1998 seminal narrative review on play, Pellegrini and Smith identified three main stages of active play development where a child's play serves developmentally appropriate functions across multiple domains. The researchers reviewed twenty-one

observational studies of children's play at varying stages of development (ages 0-13 years) to better understand how children develop typical play skills (Pellegrini & Smith, 1998). Based on these studies, they found that active play typically begins in the first year of an infant's life as the infant moves in rhythmic stereotypies while their brain learns to control the body's movement in preparation for functional movements to emerge (Pellegrini & Smith, 1998). These early active play behaviours eventually disappear around 12 months of age as the second stage of active play development begins and more pronounced gross motor play behaviours emerge (Pellegrini & Smith, 1998). The second stage, known as exercise play, peaks around age 4 or 5 as the child engages in vigorous play activities (e.g. chasing) gaining necessary muscle strength, lung function and movement skills, otherwise known as motor skills (Pellegrini & Smith, 1998). While social behaviours may begin to emerge during exercise play activities, they do not typically peak until the next stage of development (Pellegrini & Smith, 1998). The last stage known as 'rough and tumble play' peaks around age 8 to 10 years old and involves a significant social component (e.g. wrestling) (Pellegrini & Smith, 1998). The play activities which children typically engage in throughout childhood, from rhythmic stereotypies in infancy to rough-and-tumble play in preadolescence, serve specific developmental functions (Pellegrini & Smith, 1998).

The gross motor movements required for participation in active play, referred to by Pellegrini and Smith (1998) as 'exercise' and 'rough-and-tumble' play, are complex as they require significant coordination, motor planning and control (Lloyd et al., 2013). It is important for children to develop fundamental motor skills (e.g., jumping, running, throwing, catching) from an early age so they will be confident and competent with the variety of movements involved in active play (Hulteen et al., 2018; Lloyd et al., 2013;

Lubans et al., 2010). For example, Lubans and colleagues (2010) conducted a systematic review of twenty-one studies that analyzed the relationship between fundamental motor skills and any potential health benefits in children who are neurotypical aged 3-18 years old. The results of the review showed a strong correlation between fundamental motor skills and physical activity levels in children and adolescents (Lubans et al., 2010). These results suggest that children who are more competent in performing fundamental motor skills may be more inclined to participate in physical activities (Lubans et al., 2010).

A child's individual characteristics such as their gender, culture, physical environment and disability status can impact their behavior during play experiences (Cooper, 2000). All of these characteristics impact not only a child's preferences in play, but also their overall play style (Cooper, 2000). For example, Benson and colleagues (2006) conducted a qualitative case study to explore how 6-year-old boy with sensory processing differences plays. The researchers conducted two 45-minute, video-taped observation periods in which the child engaged in free play in his home while the researchers interviewed his mother (Benson et al., 2006). In this way, the mother was able to communicate her perceptions of her child's play while also adding comments in real-time as he played (Benson et al., 2006). Based on the data collected from the interviews and video recordings, the researchers identified general characteristics of the child's play including those relating to their play repertoire, attention span, and sensory seeking behaviours (Benson et al., 2006). For example, the child seemed to enjoy activities that were familiar to him (e.g. sliding down the slide) and would repeat such activities over and over again (Benson et al., 2006). The child would cycle through different play activities, engaging in each for about 2-5 minutes before moving on to another (Benson et al., 2006).

The child's mother also spoke of his tendency to jump off of objects and fall to his knees; he seemed to enjoy the feeling of such movements, repeating them frequently (Benson et al., 2006). The rich descriptions provided by the mother in this study support further exploration of methodologies in which parents are included as key informants regarding their children's play. While the results of this study represent only one child and are not transferrable to the general population, they do highlight the unique play styles that can emerge from a child, based on their individual characteristics and past experiences (Benson et al., 2006).

**Autism Spectrum Disorder**

Autism spectrum disorder is a neurodevelopmental disorder characterized by differences in social, communication, and restricted and repetitive behavioural development, specifically in communicating and interacting within one's environment (American Psychiatric Association, 2013). Autism will often, but not always, co-occur alongside other neurodevelopmental disorders such as attention deficit hyperactivity disorder, developmental coordination disorder, and intellectual disability (Saito et al., 2020). The characteristics of autism are generally first observed between 12 and 24 months of age depending on severity and can have a significant impact on the development of a wide variety of social behaviours as a child with autism grows and matures (American Psychiatric Association, 2013). As a result, children with autism show differences in social behaviour from early child development as is seen in their active play behaviours which are among the first social behaviours developed in childhood (Brown & Murray, 2001; Pellegrini & Smith, 1998).

In Canada, 1 in 66 children have a diagnosis of autism spectrum disorder (Public Health Agency of Canada, 2018). Studies examining the rate of autism diagnoses among twins demonstrate that the probability of a child receiving a diagnosis of autism increases if their twin sibling has already received a diagnosis; this probability sits at about 88% for identical twins and 31% for non-identical twins (Hallmayer et al., 2002; Ronald & Hoekstra, 2011). Although these trends reflect the high heritability of autism spectrum disorder, the literature is unclear to what extent an individual's genetics and environment may contribute to their autistic traits (Elsabbagh et al., 2012; Ronald & Hoekstra, 2011). The number of males diagnosed with autism is four times higher than that of females; the mechanism behind this gender difference is largely unknown (Haney, 2016; Public Health Agency of Canada, 2018). One hypothesis which seems to be agreed on by several researchers is that autism has a different phenotype (i.e. expression of the genotype) in females, compared to males, and this difference is not adequately represented by the DSM-V (Haney, 2016). Although there is much research being conducted to identify the origins of autism from an epidemiological viewpoint, the current consensus is a broad interplay of genetic and environmental factors (Elsabbagh et al., 2012; Park et al., 2016).

The core characteristics of autism can influence the way that children with autism interact with others (American Psychiatric Association, 2013). Verbal communication differences in children with autism can include atypical tone of voice, repetitive mimicking of a phrase they have heard (i.e., echolalia) or a partial or complete lack of verbal communication (American Psychiatric Association, 2013). Nonverbal communication characteristics of a children with autism may include lack of eye contact during a conversation, atypical gestures, or an absence of an attentive gaze on an object or playmate

during a shared activity (i.e., joint attention) (American Psychiatric Association, 2013; Lee & Schertz, 2019). In addition to these communication differences, children also often have trouble understanding and reading the thoughts and emotions of others, impacting their ability to gain the attention of others or respond to another's bid for attention (American Psychiatric Association, 2013; Calder et al., 2012). Individuals with autism often hold to specific and structured patterns of behaviours such as speaking in a rhythmic manner (i.e., prosodic speech) and/or motor stereotypies (e.g., hand flapping) as well as specific and structured interests and activity preferences, for example, an intense focus on trains or a need to strictly adhere to a schedule (American Psychiatric Association, 2013). All these social and communication differences exist on a spectrum, and as such, autism spectrum disorder diagnoses are specified as more or less severe depending on the social, communicative and behavioural characteristics of each individual (American Psychiatric Association, 2013). Children with autism have demonstrated the desire to develop and maintain companionship relationships, yet research highlights the social isolation of many children with autism during activities such as active play (Harper et al., 2007; Petrina et al., 2014)

**Play of Children with Autism**

In general, the behaviours of children with autism reflect the core characteristics of autism spectrum disorder (American Psychiatric Association, 2013). This means that they show differences in social interactions and communication as well as exhibiting restricted patterns of behavior and interests (American Psychiatric Association, 2013; Gilmore et al., 2019). These social, communication and behavioural differences can impact the way that children with autism engage in play (Calder et al., 2012; Gilmore et al., 2019). Over the

years, researchers, practitioners, early childhood educators and parents alike have promoted what are often considered to be typical play behaviours in children with autism, with a long-term goal of encouraging their optimal physical, social, and communicative development (Brown & Murray, 2001; Lifter et al., 2011). When researchers first began studying play, they started by examining the play behaviours of children who are neurotypical (i.e. children with typical neurological development) (Lifter et al., 2011). As a result, the play behaviours of children who are neurotypical became the standard against which the play of children with developmental disabilities was compared (Lifter et al., 2011). For example, spontaneity (e.g. initiating a game using play materials in a creative way) is a hallmark characteristic of typical childhood play (Yogman et al., 2018), but this type of behaviour is not often observed in the play of children with autism (Brown & Murray, 2001). Over the years researchers have approached the study of play from two different directions with contrasting aims: the first is to promote typical play behaviours in children to counteract some perceived deficit (e.g. improving poor social skills) and the second is to observe a child's natural play behaviour to gain a deeper understanding of their underlying cognitive and developmental processes (Lifter et al., 2011). While the former approach utilizes play as a tool used by practitioners to promote optimal child development, the focus on deficits likely overshadows a holistic understanding of the play of children with autism (Lifter et al., 2011; Rosenbaum, 2005). With this in mind, a broader conceptualization of play is beneficial as it encourages an ideal balance between two views; harnessing play as the powerful developmental tool it is, while also giving children the freedom to simply play, engaging with their environment and interests as they desire (Mitchell & Lashewicz, 2018). Without this allowance for individual play styles, play

becomes medicalized, reduced to a tool alone and losing its spontaneous, free essence (Mitchell & Lashewicz, 2018; Qayyum et al., 2015).

The individual personality characteristics of a child - including activity preferences, imagination, self-expression, creativity, and intrinsic motivation - are essential considerations when understanding a child's play (Cooper, 2000; Skaines et al., 2006). This notion holds true whether the child's play behaviours are considered to be typical or atypical (Cooper, 2000). Pleasure and intrinsic motivation are core characteristics of play (Brown & Murray, 2001; Yogman et al., 2018) and so the unique preferences and motivations of a child should be encouraged (Brown & Murray, 2001; Cooper, 2000; Yogman et al., 2018). An example of this comes from a study conducted by Hobson and colleagues (2013) that aimed to better understand the pretend play skills of children with autism. The researchers administered the Test of Pretend Play along with a modified playfulness scale, for 57 children ages 2-9 years old (41 children with autism and 16 children with varying developmental disabilities) (Hobson et al., 2013). The results of the study showed that children with autism were less playful in their pretend play, meaning that even when they were able to go through the motions of pretending (e.g. using a yellow cup as a hat), they did not show as much investment, creativity, or fun as the children with other developmental disabilities in the study (Hobson et al., 2013). These results seem to indicate that even when a child with autism is displaying "typical play behaviours" (i.e., make-believe), they may only be performing the mechanics of an action rather than truly playing (Hobson et al., 2013; Kasari et al., 2013). It is important that researchers pay attention to the full expression of play in children with autism, rather than focusing only typical play behaviours and what skills are present or absent (Hobson et al., 2013; Kasari

et al., 2013). Future research should seek to explore and describe this poorly understood phenomenon of the active play behaviours of children with autism (Hancock, 2020).

There are many opinions regarding the play characteristics of children with autism (Boucher, 1999; Brown & Murray, 2001; Kasari et al., 2013; Todd, 2012) but there is a paucity of empirical research exploring these play characteristics. In a 2018 narrative inquiry qualitative study, Mitchell & Lashewicz explored the play of children with autism through individual interviews with eleven fathers of children with autism aged 5-12 years. The researchers sought to understand how these key informants conceptualize their children's play and what they found seems to reflect the tension seen in various fields studying play and child development. Three themes emerged from the interview data collected over the course of the study: fathers taking an active approach in play with their child, fathers adjusting their expectations of their children's play and fathers challenging the societal conceptions of 'normal' play (Mitchell & Lashewicz, 2018). While seeking significant and numerous moments to push their children out of their play comfort zones (i.e. mandatory participation in community sport as a vehicle for teaching important life lessons), these fathers spoke also of valuing the times where they follow their children into their own play interests even if the chosen activity and/or play object seemed quite abnormal, such as interacting with glimmers of light during a nighttime ride in a train observation car (Mitchell & Lashewicz, 2018). The play interests of children with autism should not simply be labelled 'abnormal', rather it would be more accurate to consider them diverse, just as those of children who are neurotypical (Mitchell & Lashewicz, 2018). This conceptualization of play as being child-centered is specifically important for children with autism since active play has often been reduced to a tool for this population, valuable

only for learning and health outcomes and consequently being stripped of its spontaneous essence (Anderson, 2012; Mitchell & Lashewicz, 2018). Child directed play is an important aspect of playful learning which, in turn is an essential component of healthy child development (Yogman et al., 2018). Future research must seek to explore and describe the play preferences of children with autism, accepting their play as valuable rather than always attaching its value to it being a context from which to teach typical play skills (e.g. social skills) (Fahy et al., 2021; Mitchell & Lashewicz, 2018).

Research indicates that children with autism display a limited repertoire of interests in play (Harper et al., 2007; Jung & Sainato, 2015), yet little is known regarding how their innate interests may facilitate play (Winter-Messiers, 2007). For example, despite being common in children with autism, restricted, repetitive patterns of interest are often perceived negatively by parents and teachers (Winter-Messiers, 2007). Yet, these deeply rooted patterns of interest are passions that "capture the mind, heart, time, attention of individuals…providing the lens through which they see the world" (Winter-Messiers, 2007, p. 142). Consequently, these interests may decrease engagement in activities that are not of interest to a child thereby limiting social interaction (Winter-Messiers, 2007). In 2007, Winter-Messiers conducted a grounded theory qualitative study to better understand how special interests (as identified in the DSM-IV) may facilitate play engagement. Specifically, in interviewing 23 youth diagnosed with Asperger's Syndrome, the researchers found that these special interest areas were closely associated with the identity of the participants, as they felt more positive about themselves due to feelings of competence and pride (Winter-Messiers, 2007). Through interviews with parents and teachers of these 23 participants, researchers found that when engaged in an activity that

had to do with their own special interest area, the participants were more likely to persist in practicing difficult fine motor skills; less affected by adverse stimuli such as the feeling of sticky glue or loud noises; better able to self-regulate during stress; increase their positive affect and exhibit more distinct, complex communication patterns (Winter-Messiers, 2007). Based on these results, the researchers called for future studies looking into the inclusion of special interest areas in learning curriculum, viewing the interests as assets correlated with increased social, communication, emotional, sensory and fine motor skills (Winter-Messiers, 2007). This emergent theory framed the unique interests of children with autism as strengths rather than deficits which fills a gap in play literature pertaining to children with autism, where there is a lack of empirical study with the aim of exploring the play characteristics of children with autism (Hancock, 2020).

In 2015, Jung and Sainato conducted a study based on the hypothesis that the unique interests of children with autism may facilitate positive play experiences. The researchers employed the unique interests of preschool aged children with autism in the process of teaching them a new board game and found an overall increase in engagement of the children (Jung & Sainato, 2015). These researchers justified their study based on a view that play must be intrinsically motivated and spontaneously engaged in, even when utilized in interventions for children with autism (Bundy, 1991; Jung & Sainato, 2015). Overall, the researchers found that employing the special interests of the child in the processing of teaching the social play skills needed for game play (e.g. proper turn taking, rules of the game, etc.) resulted in increased intervals of verbal and non-verbal engagement with the game and the play mate (e.g. looking at playmate, taking turns, offering help, etc.) during game play as well as a decrease in inappropriate behaviours (e.g. speaking repetitively,

inappropriate use of game materials, etc.) (Jung & Sainato, 2015). More research is needed to obtain a comprehensive understanding of the characteristics of the repetitive interest areas of children with autism in play, especially considering many of these specific interests may not lend themselves well to inclusion into play-based learning with peers (e.g. a child who is preoccupied with electric fans) (Winter-Messiers, 2007). There is a need for more research exploring and describing the play characteristics of children with autism to understand how these characteristics may in fact facilitate positive play experiences.

There is a significant gap in the literature pertaining to the content and structure of the play of children with autism (Hancock, 2020). The play behaviours of children with autism are consistently measured against that of children who are neurotypical and as such there is a lack of clarity regarding the characteristics of their play (Hancock, 2020). For children with autism, play is often chalked up to a luxury that is only given precedence when children have achieved normative physical, social and cognitive developmental expectations (Wolfberg et al., 2012). This gap in the literature has led to a lack of clarity regarding the developmental stages of play for children with autism (Hancock, 2020). For example, functional play skills are those skills that support a child in understanding the functional use of an object (e.g. building with bricks or bouncing a ball), enabling a child to look at a toy and perceive what it may be used for (Hancock, 2020; Skaines et al., 2006). In children who are neurotypical, these functional play skills often precede imaginative play where children will enter their own ‘world’ within their play environment (e.g., pretending to be a mountain goat on a hillside) (Hancock, 2020; Skaines et al., 2006), however there is a lack of research defining such stages of play for children with autism (Hancock, 2020). Most play research focuses on the ways that children with autism do not

meet developmental expectations in their functional and imaginative play but stops short at exploring these behavioural differences themselves (Hancock, 2020). Consequentially, little is known about how children with autism present functional play behaviours, leaving practitioners to work off vague descriptions rather than precise, in depth types and sub-types of functional play skills (Hancock, 2020). As a result, it is difficult to facilitate the development of specific play skills, set clear goals and know if those goals have been reached in measurable and meaningful ways (Hancock, 2020). To address this gap in the literature, Hancock (2020) conducted a grounded theory qualitative study, seeking to define developmental play categories specifically for functional play as this is the developmental level of play most seen in children with autism. Hancock (2020) carried out two 10 minute observation periods, including taking field notes, for 27 different children with autism ages 3-11 years old (Hancock, 2020). During these videotaped observation periods, the children were given total agency in deciding where to play (within the play area) as well as what and who they wanted to play with (Hancock, 2020). The researchers created descriptive codes (30 s intervals) for the data which categorized the play behaviours into types of play by assigning words or phrases to specific actions (e.g. using part of the [play] object) (Hancock, 2020). The researchers developed conceptual codes from the initial descriptive codes by grouping individual play actions into broader categories (e.g. positional movement related to object) (Hancock, 2020). Finally, by a process of constant comparison reviewing the relationships and connections between conceptual codes as well as integrating researcher memos, a cohesive framework was developed that described the functional play of children with autism (Hancock, 2020). The researchers identified four core areas of functional play for children with autism: interacting with one object,

interacting with two or more objects, interacting with self, and interacting with the environment (Hancock, 2020). Within these categories, the researchers included additional subcategories to further describe the functional play behaviours of children with autism; eye contact, selecting (i.e., how did they select the object), body position, facial expression, problem solving, vocalization, and functional play with peers (Hancock, 2020). Ultimately, the emergent framework described the functional play of children with autism as more complex than what is seen in children who are neurotypical (Hancock, 2020). For example, one child in the study interacted with a toy car and toy block at the same time, spinning one of the car's wheels, while with the other hand, hitting the flat side of a block on a table (Hancock, 2020). Also, as the aim of the current study was to describe the play behaviours of children with autism rather than comparing them to children who are neurotypical, the authors included restricted and repetitive behaviours as functional play behaviour (Hancock, 2020). For example, a child with autism running from wall to wall in a room, tapping each wall as they pass was included as functional play behaviour (Hancock, 2020). This is significant as these behaviours are often perceived as purposeless, being deficits that hold back the play skill development of children with autism. Ultimately, the play of children with autism is much more complex than is currently recognized, and research such as this allows for a fuller understanding of their spontaneous play initiations (Hancock, 2020; Mitchell & Lashewicz, 2018; Wolfberg et al., 2012).

Recent research suggests that children with autism do play in spontaneous ways, but their play styles are not readily understood by others because their voices are underrepresented in the literature (Conn, 2015; Fahy et al., 2021; Wolfberg et al., 2012).Conn (2015) conducted a literary analysis of autobiographies written by adults with

autism in an effort to understand what is valuable to children with autism in play (Conn, 2015). This method of data collection was chosen because many children with autism process their environments primarily in sensory ways rather than words which can make it difficult for researchers to interpret their lived experience (Conn, 2015). Following a systematic search of electronic databases, thirty texts were identified and analyzed for descriptions of spontaneous, enjoyable and intrinsically motivated play experiences the authors may have recounted (Conn, 2015). The results of the study revealed that children with autism sought out sensory experiences in play rather than social experiences (e.g. enjoying the noise created by tapping a pair of shoes repetitively on the floor) (Conn, 2015). Many writers who are autistic discussed the enjoyable sensory experience of their body moving in space (e.g. spinning, running, jumping, toe-walking, etc.), saying that they felt exhilarated by the feeling of their 'bodily self' (Conn, 2015). Another theme of the writer's values in childhood play was the sense of enjoyment that came from playing with a playmate who was familiar with their autistic thinking (Conn, 2015). Such a playmate was not only supportive of their inventive, sensory oriented games but would also join in on inventing the game, making play experiences mutually enjoyable (Conn, 2015). The authors highlighted their preference for play partners who would participate in games with strong sensory and repetitive motor components without the need for a lot of verbal communication during play (e.g. sitting across from a play partner pressing feet together and pretending to drive cars) (Conn, 2015). These insights are valuable because they reveal some of the ways that children with autism experience spontaneity in play (Conn, 2015).The findings suggest that children with autism may place a high value on sensory

experiences with objects and friends during play (Conn, 2015). This information fills a gap in the literature regarding the lived experiences of children with autism in play.

The play styles of children with autism are often considered to be ambiguous which can contribute to the lack of understanding of their play behaviours (Fahy et al., 2021; Wolfberg et al., 2012). Fahy and colleagues (2021) conducted a focused ethnography qualitative study seeking to describe the outdoor play preferences of children with autism ages 6-9 years old (Fahy et al., 2021). This study took place over a period of two months during which time the researchers collected a variety of data types; three one-hour observation periods with field notes, behavioural mapping, interviews with teachers and interviews with children using picture elicitation for those who were nonverbal (Fahy et al., 2021). The researchers used purposive sampling to gather five children with autism (1 female, 4 male), all of whom were from the same special classroom that had its own recess time apart from the rest of the school (Fahy et al., 2021). The study results revealed that the children seemed to prefer play activities that involved movement such as swinging, spinning, rolling discs, or running (Fahy et al., 2021). These activities were carried out in repetitive ways that the researchers suggested may be due the heightened sensory experience this provided (e.g. continuously shaking maracas) (Fahy et al., 2021). The researchers also found that the children seemed to enjoy playing in environments where the features of the environment itself could be incorporated into their play (e.g. rolling a disc down a slanted surface) (Fahy et al., 2021). Finally, the results of the study indicated that the children seemed to value moving around the play environment in small groups, following each other's lead in engaging with the play surface (e.g. asking for a turn to run up the slide after a peer) (Fahy et al., 2021). These results indicate that children with autism

do play spontaneously, but in their own unique patterns (Fahy et al., 2021). For example, they may spontaneously show an interest in a play activity but have a desire to engage with the play material in their own way (e.g. rolling life size Connect 4 discs down a hill, rather than using them for their intended purpose for Connect 4) (Fahy et al., 2021). Additionally, they may spontaneously initiate play with a peer, but prefer engaging in an activity alongside that peer rather than being close together (e.g. taking turns running up the slide) (Fahy et al., 2021). These findings provide insight into the play of children with autism which is important considering the paucity of research seeking to describe the play of this population. Future research should also seek to include parents as key informants as parents have the perspective of seeing their children develop play skills over time (Childress, 2010; Romero-Ayuso et al., 2021).

***Active Play Behaviours in Children with Autism***

The physical competence of a child with autism is important for their successful and enjoyable engagement in active play (Bremer et al., 2015; Gilmore et al., 2019), however, children with autism tend to show delays in the development of gross and fine motor skills (Bremer et al., 2015; Elliott et al., 2021; Pellegrini & Smith, 1998). Based on their hypothesis that the motor skills of children with autism may be delayed for their age, Lloyd and colleagues (2013) conducted a large study that quantified the gross and fine motor skills of children with autism aged 1-3 years. Using the Mullen Scale of Early Learning, the researchers measured the fine and gross motor skills of two groups of children with autism (Lloyd et al., 2013). The first group, made up of 162 children, underwent one assessment, while a second group of 58 children underwent two assessments, twelve months apart (Lloyd et al., 2013). The results of this study showed that

children with autism do have significant fine and gross motor delays. and that they became more delayed with age (Lloyd et al., 2013). The results of this study are meaningful because early gross motor skills are the fundamental motor skills that children use to explore their surroundings (Lloyd et al., 2013). Fundamental motor skills are composed of locomotor (e.g., running, hopping, skipping), manipulative (e.g., throwing a ball, catching, swinging a bat) and stability skills (e.g., jumping laterally, balancing on one foot) (Lubans et al., 2010). Ideally, these skills should be developed in early childhood as they form the foundation upon which future more complex active play movements are built from (Bremer et al., 2015; Hulteen et al., 2018). It is well documented that children with autism experience difficulty with both fine and gross motor skills (Bremer et al., 2015; Ketcheson et al., 2016; Lloyd et al., 2013; Ruggeri et al., 2020), and the social skills necessary for active play (Boucher & Wolfberg, 2003; Gilmore et al., 2019; Harper et al., 2007; Locke et al., 2016). Fundamental motor skills are essential to active play engagement and based on the reported gross motor delays in children with autism, they are an important factor to consider when considering the play of children with autism.

The development of motor skills is important for active play skill acquisition (Hulteen et al., 2018; Todd, 2012). In a systematic review on the effect of motor and physical activity interventions for children with autism ranging from ages 3-19 years, Rugerri and colleagues (2020) reported that locomotor (e.g., running) and manipulative skills (e.g., throwing) considerably improved after motor skill interventions. This means that children with autism may show improvements in active play skills when they have the opportunity to practice fundamental motor skills (Ruggeri et al., 2020). For example, Bremer and colleagues (2015) conducted a study investigating how formal motor skill

instruction may affect active play skills including motor skills, adaptive behaviors (life skills such as getting along with friends) and social skills. Pre-intervention, all nine study participants had rankings of very poor, poor or below average gross, fine and total motor skills (based on the Peabody Developmental Motor Scales-2) (Bremer et al., 2015). In order to better understand the effectiveness of motor skill training, the researchers split the group into two, giving group 1 (5 participants) the intervention while group 2 (4 participants) acted as the control (Bremer et al., 2015). Upon completion of the 12 sessions of motor skill instruction, significant differences in object manipulation motor scores were found (Bremer et al., 2015). Additionally, while the results revealed no significant difference in group scores of adaptive behaviours and social skills, they did find significant differences in these scores for individuals (Bremer et al., 2015). These results are important because improvements in adaptive behaviours and may facilitate positive play experiences for children with autism where they are better able to engage with peers and are included by peers and siblings (Bremer et al., 2015).

The development of motor and social skills seems to be interconnected around the common theme of active play in children with autism (Bremer et al., 2015; Lloyd, 2016). This relationship is further explored in a qualitative phenomenological study conducted by Elliott, Weiss and Lloyd (2021). The researchers conducted one-on-one semi-structured interviews with eight parents of children with autism who had recently taken part in a motor skill intervention (Elliott et al., 2021). The aim of the study was to understand the benefits of the motor skill intervention from the parents' perspective (Elliott et al., 2021). A secondary aim of the study was to understand how parents perceived the benefits may have extended to the rest of their family (Elliott et al., 2021). Thematic analysis of interview

transcripts revealed five main benefits of motor skill instruction that parents perceived for their child and family; these were improved motor, social, listening, turn-taking and transition skills (Elliott et al., 2021). Parents reported that their child with autism not only showed more interest in active play following the intervention, but spent more time playing active games with their siblings (Elliott et al., 2021). Parents also noticed an improvement in their child's ability to voice their preferences, take turns, and be flexible when transitioning between activities (Elliott et al., 2021). The results of this study provide evidence that active play might be the mechanism for developing important social and behavioural skills (Elliott et al., 2021). Parents also felt that active play provides a fun and motivating context in which children with autism are able to use their skills to interact with playmates (Elliott et al., 2021). Active play is an important area for future autism research because it plays an important role in facilitating motor and social skill development, traits which are characteristically poor in children with autism (Bremer et al., 2015; Elliott et al., 2021; Lloyd et al., 2013).

While the social differences of children with autism can make it difficult for them to engage with peers, it does not mean they do not desire, or are not capable of, social connection (Calder et al., 2012; Locke et al., 2016). An observational study conducted in 2016 by Locke and colleagues gives helpful insight into both pro- and anti-social behaviours of children with autism who primarily communicate verbally. Prosocial behaviours are any behaviours exhibited by a child that lead to social engagement with another individual; this includes both initiations on the part of the child themselves as well as responses to another child's initiations (Locke et al., 2016). The study examined the social behaviour of children with autism on their school playgrounds, comparing their

behaviour to age matched peers who were neurotypical (Locke et al., 2016). Time spent alone, and time spent jointly engaged with peers, was measured using the Playground Observation of Peer Engagement coding system (Locke et al., 2016). The researchers also measured the number of verbal or nonverbal initiation behaviours demonstrated by the children as well as the number of times they responded to another child's attention initiating behaviour (Locke et al., 2016). The results of this study indicated that children with autism who communicate primarily verbally, are capable of initiating and responding to social interactions but demonstrate statistically significant differences in social behaviour on the playground as compared to their peers who are neurotypical (Locke et al., 2016). The children with autism in this study spent 40% of their time on the playground engaged with their peers in games, conversation, etc. compared to their classmates whose percentage was 70% (Locke et al., 2016). Children with autism in this study also demonstrated significantly less attempts (successful and unsuccessful) to gain a peer's attention and showed fewer responses to a peer trying to gain their attention as compared to their matched peers (Locke et al., 2016). One limitation of note for this study is that the sample was made up of participants with autism who communicated primarily verbally, meaning the results cannot be translated to other groups of children with autism. Children with autism who primarily communicate non-verbally likely do not demonstrate these prosocial behaviours, especially on a busy playground (Chester et al., 2019). These results point to the need for future research to explore the intersection between active play and prosocial behaviours in children with autism. While there is empirical evidence of the social differences between children with autism and children who are neurotypical during active play (Calder et al., 2012; Harper et al., 2007; Locke et al., 2016), it remains unclear

how active play may facilitate social play behaviours in children with autism.

Evidence suggests that children with autism do enjoy active play with peers, but that this enjoyment itself may be communicated in ways which are not necessarily understood by others (Gilmore et al., 2019; Hancock, 2020). Gilmore and colleagues (2019) conducted a mixed method study observing the play behaviours of 55 children with autism ages 4-11 years during school recess. The researchers specifically coded and recorded field notes for children's activity choices, social communication, self-stimulatory behaviours and affect (e.g. facial expressions) (Gilmore et al., 2019). Following data analysis, the researchers found that the boys who were neurotypical interacted more physically with peers through games whereas girls who were neurotypical interacted more socially through conversation; as a reflection of this, boys with autism were more often observed taking part in structured games or standing off to the side on their own as compared to girls with autism who tended to stay in closer proximity to female peers on the playground (Dean et al., 2016; Pellegrini & Smith, 1998). The results also indicated that the children with autism in the study preferred structured activities such as games with set rules over unstructured play activities, meaning they gravitated more towards games with rules rather than opportunities for free play (Gilmore et al., 2019). The results also showed that the children with autism tended to present with a more positive affect (i.e., facial expression) as well as a lesser degree of certain types of self-stimulatory behaviours when engaged in such structured group games (Gilmore et al., 2019). In particular, they found that children with autism may engage in repetitive self-talk or long bouts of staring when stressed, but when enjoying an activity would engage in hand flapping and finger bending self-stimulatory behaviours indicating they may be excited (Gilmore et al., 2019).

These results are meaningful because they highlight nuances in the active play behaviours of children with autism (Gilmore et al., 2019). The empirical data revealed some of the challenges that children with autism encounter in play (e.g. staring off to the side when peers are playing a game), and also pointed towards their successes in play (e.g. communicating their enjoyment of active play through self-stimulatory behaviours) (Gilmore et al., 2019). Considering that the active play behaviours of children with autism is a poorly understood phenomena, future empirical studies should seek to further clarify the nuances of these behaviors (Hancock, 2020; Mitchell & Lashewicz, 2018).

**The Role of Relationships in the Play of Children with Autism**

Many children with autism are socially connected and engage with their peers during shared activities (Locke et al., 2017). In 2012, Calder and colleagues conducted a mixed method study including individual interviews with high-functioning children with autism regarding the aspect of friendship they found most satisfying. The researchers used a questionnaire called the Friendship Qualities Scale which examines 5 aspects of friendship, namely: companionship, conflict, help, security, and closeness; based on survey results, of these, companionship was the most satisfying component of peer relationships for this sample (Calder et al., 2012). Distinguishing between companionship and relational bondedness, the interviewees identified a higher value for sharing in and cooperating in an activity with a friend, rather than having someone to share their thoughts and feelings with (Bauminger et al., 2008; Calder et al., 2012). Participants made comments such as ‘they always play with me’ and ‘we like being together’ (Calder et al., 2012, p. 306). While the children interviewed in the study did identify a peer they felt they had a close companionship relationship with, there were other sections of their

interview where they admitted that friendship was very confusing and difficult to maintain. (Calder et al., 2012). Based on these findings, the social motivations of children with autism seem to be oriented towards quality rather than quantity, playmate rather than confidante; such motivations play a role in the emergent social play skills of a child (Calder et al., 2012; Cooper, 2000). This desire for a quality relationship with a playmate has not been investigated in the context of active play specifically, but future research in this area may be an appropriate avenue for exploration of the active play behaviours of children with autism as it is possible that a child with autism may play more naturally with a peer they feel secure with.

Research exploring the relationships of children with autism specifically within the family context corroborates this quality over quantity concept. Bauminger et al. (2009) identified a strong, secure relationship with a caregiver to be a main predictor for social success in children with autism (Bauminger et al., 2009). This is significant and, combined with research on siblings as intervention agents, indicates that a close, secure relationship with a family member may prove beneficial in the long run for children with autism (Hastings, 2003; Shivers & Plavnick, 2014). In their 2014 systematic review on interventions involving siblings (without autism) as peer models for children with autism, Shivers and Plavnick discovered that social skill and play interventions yielded more positive results when a sibling was involved. Given the difficulty that children with autism face in forming friendships (Bauminger et al., 2008; Calder et al., 2012), it is helpful to begin with a playmate they spend the most time with, and for many children this will be their sibling. Although there has been much research surrounding the significance of a strong attachment with a mother on future social success of a child with autism, very little

research has examined the impact of a secure relationship with a close in age sibling, or same age siblings (twin or triplet) (Claussen et al., 2002; Siller et al., 2014). Strengthening play skills during active play in the context of a secure, familiar sibling relationship may lead to increased gains in social play behaviour. Research has shown a positive correlation between the development of active play skills and increased social skills in play with siblings (i.e. turn taking, cooperation) (Elliott et al., 2021), however there is a paucity of research specifically exploring and describing the active play behaviours of children with autism in the context of a sibling relationship.

One study conducted in 2017 by Conn and Drew utilized a narrative inquiry qualitative methodology to collect stories of play between sibling dyads where one was neurotypical and the other had autism. The researchers interviewed three adults who were neurotypical (2 male, 1 female) regarding their positive memories of childhood play with a sibling with autism (Conn & Drew, 2017). The researchers carried out open ended interviews, specifically inquiring about how the participants understood what happened in play with their sibling with autism during childhood (Conn & Drew, 2017). The resultant narratives revealed that these siblings did have positive memories of play with their sibling with autism (Conn & Drew, 2017). They specifically spoke of patterns of play in which both siblings mutually enjoyed and valued a specific play activity (e.g. Lego, physical play and pretend play) (Conn & Drew, 2017). Based on the narratives, it seems that both sibling play partners were motivated to engage in certain shared play activities due to broader family value and parental support (e.g. building structures and parents providing building materials) (Conn & Drew, 2017). Another participant spoke of common interests and desires for play shared between siblings particularly in how they incorporated objects

within the home into their play (e.g. using a long hallway to gain speed when pushing cars from opposite ends to crash in the middle) (Conn & Drew, 2017). Finally, one sibling spoke of a close age difference as being a facilitator for play between herself and her brother with autism; if it weren't for the close age gap, their different play interests may have caused them to share play less often (Conn & Drew, 2017).

The narratives provided in this study by Conn and Drew (2017) seem to indicate that play experiences between siblings where one has autism and the other is neurotypical may be more positive when both play partners are both invested in, and excited by, the ideas that are being reproduced in the play. Further, the close relationships between siblings seemed to facilitate positive play experiences as both children had expectations of what would happen during the play activity—both in the relational dynamic between playmates and the use of their environment within the play activity (Conn & Drew, 2017). Specifically, it seems that the participants were well tuned to the ways that their sibling with autism incorporated sensory and motor features in their play (e.g. crashing cars in the hallway) (Conn & Drew, 2017). Based on these findings, sibling play may be an appropriate context from which to explore the active play behaviours of children with autism as the security of the sibling relationship appears to be related to positive play experiences for children with autism and their sibling play partners (Conn & Drew, 2017).

**Play Behaviours of Multiples**

Multiple birth children (henceforth referred to as multiples) are those belonging to a set of twins, triplets, etc. (Feldman & Eidelman, 2004). Beyond the scope of genetics (Bell & Saffery, 2012), there is a lack of research exploring the development of multiples (with, or without autism); most studies investigating the multiples context are focused on

their socioemotional and identity development (Åkerman & Suurvee, 2003; Feldman et al., 2004; Feldman & Eidelman, 2004; Pulkkinen et al., 2003). For example, in a 2003 study, Akerman & Suurvee explored the unique relationship that can develop between twin siblings. As a component of this 16 year longitudinal study of 32 twin pairs, each participant completed a Wartegg Drawing Test to measure aspects of their identity development (including self-confidence, self-esteem, social relations, anxiety, etc.) (Åkerman & Suurvee, 2003). Results of the tests revealed a tendency for dizygotic twin pairs to display positive identity traits, for example self-respect, ability to relate to other and optimism, while at the same time, monozygotic twin pairs tended to display identity traits such as cautiousness and anxiety, reflecting a more symbiotic relationship with their twin pair (Åkerman & Suurvee, 2003). In the same way, full term twins tended to display more positive identity traits than preterm twins (Åkerman & Suurvee, 2003). This study's findings indicate that multiples are significantly influenced by their close relationship with their multiple birth sibling (Åkerman & Suurvee, 2003). Future research should seek to explore how this unique, close relationship between multiple birth siblings may impact their behavioural development.

Multiples are unique in that they can share regular play experiences with another same-age individual who is genetically and phenotypically identical, or very similar, to them (DiLalla & Caraway, 2004). Although there are some hypotheses regarding the play of multiples who are neurotypical (DiLalla, 2006; DiLalla & Caraway, 2004), they remain a poorly understood phenomenon. In 2004, DiLalla and Caraway conducted a study with twins to test their theory that twins may show more behavioural inhibition in free play with unfamiliar peers than non-twin siblings due to the amount of time spent playing with their

sibling. The researchers recruited 205 five-year old participants including 42 monozygotic twins, 94 dizygotic twins and 69 non-twin siblings and split each sibling pair up so that every participant played in a free play setting with a playmate they had never met before (DiLalla & Caraway, 2004). Inhibition behaviours (i.e., behaving reserved or withdrawn) during play were investigated by measuring how long it took a child to touch a toy for the first time as well as how much time they actually spent interacting with the other child in the playroom (DiLalla & Caraway, 2004). Additionally, parents filled out a Child Behaviour Checklist specifically quantifying their child's tendencies towards withdrawn behaviours (DiLalla & Caraway, 2004). Results of the study indicated that monozygotic and dizygotic twins did not significantly differ in their inhibition behaviours during free play, but did show significantly more inhibition behaviours than the non-twin sibling (DiLalla & Caraway, 2004). These results suggest that twins may be more quiet and withdrawn in play with unfamiliar peers due to a lack of experience playing with children who are not genetically and phenotypically like themselves (DiLalla & Caraway, 2004). These findings are meaningful as they indicate that multiples may exhibit unique patterns of play behaviour when engaged in play with their multiple birth sibling as compared to another playmate (DiLalla & Caraway, 2004).

The study by DiLalla and Caraway (2004) supports a hypothesis proposing that multiples may display less age-appropriate prosocial behaviours (i.e., complimenting playmate, offering a toy, etc.) than singletons. In contrast, there is a competing hypothesis that multiples may actually be more prosocial in free play than singletons because they of their experiences growing up playing with a same age peer in their home (DiLalla, 2006). DiLalla (2006) conducted a two-part longitudinal study with five-year-old twins (N=91)

and singletons (N= 152) to investigate these two hypotheses. For the first study, the researchers randomly paired up each child with another same-age, same-sex study participant they had never met before and had them come into the lab's playroom for a 20 min free play session (DiLalla, 2006). During each play session, a trained rater, blind to the purpose of the study, rated the children on items related to prosocial and aggressive behaviours (e.g. telling the other child what to do, enjoying their time, complying with the other child's instructions, etc.) (DiLalla, 2006). Assertive behaviours were included in the study based on the rationale that a lack of such behaviours in play can actually inhibit a child's social relationships (DiLalla, 2006). The results of this first study indicated that twins may be less prosocial than singletons but show similar levels of assertive behaviours (DiLalla, 2006).

The second study of the aforementioned two-part project by Dilalla (2006) involved parents of 10-15 year old twins and singletons completing mailed questionnaires (Parent Checklist of Peer Relationships) . The study participants included a subset of the twins (N= 14) and singletons (N=84) from the initial study, with the addition of new twin participants (N=48) to supplement some unreachable participants of the initial study (DiLalla, 2006). The questionnaire specifically asked parents to rate their children's social competence and reactive and proactive aggressive behaviours; twin questionnaire data was then compared to that of a randomly selected singleton (DiLalla, 2006). Results of this second part of the study indicated that twins may show more assertive (i.e., leadership) social behaviours among peers in adolescence and similar prosocial (i.e., cooperative) behaviours to singletons later in adolescence (DiLalla, 2006). The researchers hypothesize that the differences in social behaviours between the two study parts, may be due to an increase in

socialization with other same-age peers during school age years, resulting in more outgoing and friendly behaviours with unfamiliar individuals (DiLalla, 2006). The researchers also discuss that these differences may also be a result of the different methods taken for the two studies (trained rater vs. parent report) (DiLalla, 2006). Regardless, the results of this study are meaningful as they suggest the presence of a same age playmate in a child's home (i.e. twin) does not automatically mean that child will be more social than a child without a same-age playmate in the house (DiLalla, 2006). There appears to be something unique specifically related to a playmate who is genetically and phenotypically like that child, specifically in younger years (up to age 5) that necessitates further study (DiLalla, 2006). It is possible that the secure relational bond between multiples (Åkerman & Suurvee, 2003; Feldman & Eidelman, 2004) may impact their active play behaviours, however there is a lack of research investigating this phenomenon. There is even less clarity regarding how the relationship between multiples with autism may impact their active play behaviour; currently there is no research exploring the active play behaviours of multiples with autism.

There is evidence suggesting that multiples are considerably influenced by their close relationship with their multiple birth sibling (Åkerman & Suurvee, 2003; Feldman & Eidelman, 2004). There is also evidence suggesting that multiples may exhibit unique play behaviours in play with this sibling as compared to other playmates (DiLalla, 2006; DiLalla & Caraway, 2004). However, there is a paucity of research exploring the play behaviours of multiples engaged in play together, as the studies that have been conducted have split up the multiples for the purpose of the study (DiLalla, 2006; DiLalla & Caraway, 2004). For this reason, future research should focus on exploring and describing the play skills of multiples when engaged in play together. Furthermore, while there have been some studies

conducted that address the gap in the literature regarding the social play characteristics of multiples in free play (DiLalla, 2006; DiLalla & Caraway, 2004), no studies have sought to explore and describe their active play behaviours. The literature surrounding multiples has focused on the socioemotional skills and identity development of multiples (Åkerman & Suurvee, 2003; Feldman et al., 2004; Feldman & Eidelman, 2004), leaving a substantial gap in the literature exploring the characteristics of their active play behaviours. This gap in the literature is important to address, especially given the evidence that positive active play experiences may facilitate social, cognitive and physical development (Hancock, 2020; Harper et al., 2007; Winter-Messiers, 2007); further, there is evidence indicating that positive active play experiences may be facilitated by sibling play for children with autism (Conn & Drew, 2017; Shivers & Plavnick, 2014). Additionally, while there have been some studies investigating the patterns and behaviours of the play between children with autism and their siblings who are neurotypical (Conn & Drew, 2017), none have explored this phenomena with multiples with autism. There is a lack of clarity regarding the active play behaviours of multiples with autism and so there is a need for future research to be conducted in this area to fill the literature gap.

## Conclusion

To date, there is no research exploring the active play behaviours of multiples with autism. The literature is clear that positive active play experiences facilitate social, cognitive, and physical development in all children (Bremer et al., 2015; Elliott et al., 2021; Harper et al., 2007; Pellegrini & Smith, 1998). Data suggests that improvement in motor skill proficiency is correlated with an increase in social, behavior and communication skills (Bremer & Lloyd, 2016; Guest et al., 2017; Lloyd et al., 2013; Ruggeri et al., 2020).

However, children with autism generally have poor fundamental motor skills (Lloyd et al., 2013), as well as poor social, behaviour and communication skills that are facilitated by play (American Psychiatric Association, 2013; Boucher & Wolfberg, 2003; Gilmore et al., 2019). It is possible positive active play experiences may be the medium through which improved motor skills lead to improved behaviour, social and communication skills (Elliott et al., 2021; Lloyd et al., 2013; Truelove et al., 2017). If this is the case, future research should focus on studying the active play experiences of children with autism, especially considering this is a poorly understood phenomenon. Although there are lots of opinions about the play characteristics of children with autism (Boucher, 1999; Boucher & Wolfberg, 2003; Brown & Murray, 2001; Kasari et al., 2013; Todd, 2012), there is a paucity of research exploring and describing the characteristics of their play. Furthermore, while there are several studies comparing the play skills of children with autism to children who are neurotypical (Harper et al., 2007; Locke et al., 2016), there is a lack of research rather seeking to explore and describe the structure and function of their active play (Hancock, 2020).

Multiples research may be an appropriate method of study for exploring the active play of children with autism. Evidence suggests that children with autism play more naturally with siblings who are neurotypical because they have a secure relationship, secure bond with that sibling (Conn & Drew, 2017; Shivers & Plavnick, 2014). The close relationship means the sibling may be more attuned to their autistic thinking and willing to play games with sensory and motor features (Conn & Drew, 2017). Furthermore, siblings may have similar expectations going into a play activity as oftentimes the idea for the play is based on shared family culture or interests (Conn & Drew, 2017). Overall, sibling play

may be an appropriate context from which to describe a poorly understood phenomena as this secure relationship seems to be connected to satisfying play experiences for children with autism (Conn & Drew, 2017). While there have been some studies investigating the patterns and behaviours of children with autism and their siblings who are neurotypical (Claussen et al., 2002; Conn & Drew, 2017; Siller et al., 2014), none have sought to explore and describe active play behaviours specifically. Furthermore, none have explored this phenomenon with siblings who are same-age, genetics, environment, socioeconomic status, access to toys, etc. The active play behaviours of multiples with autism are a unique phenomenon that remains unexplored beyond the scope of genetics and medical research. Given the opportunity for novel information afforded by exploration of this phenomenon, this research area holds promise as exploration of active play behaviours between siblings with autism may provide helpful insight into active play characteristics of children with autism.

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# Chapter 3. Parents' Descriptions of the Active Play Behaviours of their Twins and Triplets with Autism

## Abstract

**Purpose:** The purpose of this descriptive phenomenological study was to describe the active play behaviours of twins and triplets with autism from the perspective of their parents.

**Methods:** Purposive sampling techniques were used to recruit an international sample of parents of twins and triplets with autism, 4-11 years of age (N=9). Parents took part in a single, online one-on-one semi-structured interview. Interviews were audio recorded, then transcribed and thematically analyzed, employing Nvivo software to support the organization of the data.

**Results:** Through the process of organizing parent observations, the researcher generated two main themes from the data. The first theme, active play includes five subthemes which are descriptions of active play characteristics, indoor play, outdoor play, sensory play, and organized play. The second theme, social play, includes three subthemes which are play with twin or triplet, play alone, and play with others.

**Conclusions:** The findings of this study suggest that the active play of twins and triplets with autism is diverse; parents described their children choosing to engage in a variety of active play types including examples such as chasing, rough and tumble, and sensory play. Furthermore, parents included descriptions of their children playing actively by themselves, together and with other children both at home and away from home. These results suggest that children with autism may be meeting the definition of active play in non-traditional ways.

## Introduction

Play is a child's primary occupation throughout their developing years (Case-Smith & Kuhaneck, 2008). Active play is one type of play where young children use gross motor or total body movements to expend energy in a way that is freely chosen, fun, and unstructured (Truelove et al., 2017). When their play is fun, children are more motivated to be physically active in an age-appropriate way (Rickard et al., 1995; Truelove et al., 2017). Active play experiences during childhood are associated with optimal physical, social, and cognitive developmental outcomes (Lubans et al., 2010; Yogman et al., 2018) and can either be solitary (e.g. running, climbing) or with playmates (e.g. chasing, play fighting) (Pellegrini & Smith, 1998). A child's active play behaviours typically evolve in line with the physical, cognitive and social changes they experience during their developing years (Pellegrini & Smith, 1998). Play is considered essential for healthy childhood development (Yogman et al., 2018) and is listed as a human right for children of all abilities in Article 31 of The United Nations Convention on the Rights of the Child (United Nations, 1989).

Autism spectrum disorder is a neurodevelopmental disorder characterized by differences in social interaction, communication, and restricted and repetitive behavioural development, specifically in the way one communicates and interacts within their environment (American Psychiatric Association, 2013). Children with autism spectrum disorder (henceforth referred to as autism) engage in play in different ways than what is considered typical for childhood play (Calder et al., 2012; Gilmore et al., 2019; Hancock, 2020; Harper et al., 2007). Global data estimates that 1 in 100 children have a diagnosis of autism, further indicating that boys are four times more likely to be diagnosed than girls

(Zeidan et al., 2022); in Canada, the ratio for male to female diagnoses are similar, but the prevalence is estimated to be 1 in 66 children . In twins, where one sibling has already received a diagnosis of autism, the probability of the second twin also being autistic increases to 88% for identical twins and 31% for non-identical twins (Hallmayer et al., 2002; Ronald & Hoekstra, 2011). The social, communicative, and behavioural differences that children with autism demonstrate are reflective of the core characteristics of autism (American Psychiatric Association, 2013; Couteur et al., 1996) and can impact the way that children with autism engage in play alone and with others (Calder et al., 2012; Gilmore et al., 2019).

Children typically behave spontaneously during active play experiences, showing signs of pleasure, flexibility, active engagement, intrinsic motivation, self-direction, and make-believe (Brown & Murray, 2001; Cooper, 2000). While research is limited, it is suggested that children with autism tend to exhibit less spontaneous play behaviour, often engaging in restrictive and repetitive patterns during play (Brown & Murray, 2001; Winter-Messiers, 2007; Wolfberg et al., 2012). For instance, a child with autism may have a very limited number of play interests (e.g., playing with trains) (Harper et al., 2007; Jung & Sainato, 2015) or repeat the same play activity again and again (e.g., going up and down a slide) (Fahy et al., 2021; Winter-Messiers, 2007). It is also common for children with autism to include sensory experiences in their play, some examples being spinning, climbing, or swinging (Conn, 2015; Mitchell & Lashewicz, 2018). While there are many opinions regarding the play characteristics of children with autism (Boucher, 1999; Brown & Murray, 2001; Kasari et al., 2013; Todd, 2012) there is a paucity of empirical research exploring these play characteristics.

Despite the lack of research exploring and describing the play characteristics of children with autism, there is some indication in the literature that their play may be much more complex than is currently recognized (Hancock, 2020; Mitchell & Lashewicz, 2018; Wolfberg et al., 2012). For example, it is possible that children with autism do play spontaneously, but their spontaneous initiations are different from what may be seen in a child who is neurotypical and are therefore not readily understood by others (Conn, 2015; Fahy et al., 2021; Wolfberg et al., 2012). Specifically, they may move around an outdoor play space engaging with multiple playground features, but use particular features in ways that differ from the intended purpose of the playground feature (e.g. repeatedly climbing up a slide rather than sliding down) (Fahy et al., 2021). Research suggests that children with autism may be more motivated by the sensory experience afforded to them by a play activity (e.g. running along a fence, crawling through a tube in a play structure) than they are by the social affordance of a playmate (Conn, 2015; Fahy et al., 2021; Mitchell & Lashewicz, 2018). In some cases, children with autism may spontaneously initiate a game with a playmate, but prefer to take turns rather than completing the activity at the same time as their peer (e.g. crawling through a play tunnel one at a time) (Fahy et al., 2021). Research suggests that children with autism may enjoy playing with playmates who also enjoy playing games with sensory and repetitive motor components (Conn, 2015; Conn & Drew, 2017; Shivers & Plavnick, 2014).

Previous literature indicates that children with autism generally engage in social play in different ways than children who are neurotypical (Chester et al., 2019; Locke et al., 2016). Specifically, they may show less spontaneous social interactions such as making fewer attempts to get a playmate's attention, and offering fewer responses to a peer trying

to get their attention (Locke et al., 2016). This may mean that children with autism have difficulty maintaining certain play activities, such as a game of catch with a playmate (Harper et al., 2007). Conn and Drew (2017) conducted a qualitative research study in which adults who are neurotypical were interviewed about their memories of childhood play with their autistic sibling. The study's findings suggest that play with siblings may facilitate positive play experiences for children with autism because siblings often have similar ideas for what they can do in play, based on their shared home and family environment (Conn & Drew, 2017). The researchers suggest these shared play ideas may be due to the familiarity shared between siblings in regards to their relationship but also their environment; both siblings are thinking similar thoughts of what might happen in play because they know their playmate and they know their environment (Conn & Drew, 2017). Considering this research suggesting that play with close-in-age siblings may further facilitate positive play experiences for children with autism (Conn & Drew, 2017), it is likely that research with twins and triplets may be an appropriate method for exploring the poorly understood phenomena of the active play behaviours of children with autism.

Evidence indicates that the play of children with autism is likely much more complex than is currently recognized (Hancock, 2020). Most research investigating the play behaviours of children with autism compares their play to that of children who are neurotypical (Calder et al., 2012; Harper et al., 2007; Mitchell & Lashewicz, 2018). Research with twins and triplets with autism allows the researchers to control for confounding factors such as age, diagnosis, home environment, play opportunities, parenting style, and socioeconomic status. Furthermore, the inclusion of parents as key informants allows for rich descriptions of their children's play as parents are well attuned

to their children; their perspectives may provide clarity regarding the play behaviours of children with autism (Childress, 2010; Di Renzo et al., 2020; Matua & Van Der Wal, 2015; Romero-Ayuso et al., 2021). There is a need for research to provide both rich descriptions of children with autism engaging in active play and a more comprehensive understanding of the way that children with autism play in general (Hancock, 2020; Mitchell & Lashewicz, 2018; Wolfberg et al., 2012). Such empirical research is necessary to address a gap in the literature, providing a more in-depth understanding of the complex play characteristics of children with autism. To date, there is also no research exploring the active play behaviours of autistic multiples. While there have been some studies investigating the patterns and behaviours of autistic children and their non-autistic siblings (Claussen et al., 2002; Conn & Drew, 2017; Siller et al., 2014), none have sought to explore and describe active play behaviours specifically. This research describes the play of twins and triplets with autism from the perspective of their parent.

The purpose of this descriptive phenomenological study was to explore and describe the perceptions that parents of twins and triplets with autism have regarding their children's active play behaviours. This study was guided by the question: How do parents of twins and triplets with autism describe the active play of their children?

It is important to note that the use of person-first language (i.e., child with autism) in this study rather than identity first language (i.e., autistic child) was informed by the parents reporting their own preferences. The majority of parents interviewed for this study preferred child with autism. As is reflective of the varying opinions within the autism community (Kenny et al., 2016), most but not all parents preferred the use of person-first language when speaking about their children.

# Methodology

## Methodological Framework

One of the guiding tenets of the research process is the idea that the research question itself determines the design of the study (Kowalski et al., 2018). Accordingly, a descriptive phenomenological approach was chosen for this study, to explore the active play behaviours of twins and triplets with autism, a phenomenon which has not yet been studied, and as such remains poorly understood. A descriptive phenomenological approach is used to gather descriptions of a phenomenon (i.e., any problem, issue or topic) for the purpose of providing a clear picture of it (Matua & Van Der Wal, 2015; Van de Ven, 2016). The dynamic and inductive nature of descriptive phenomenology is well suited for the exploration of phenomena like this, where very little is known (Matua & Van Der Wal, 2015; Reiners, 2012). Additionally, this phenomenological approach facilitates the generation of new knowledge as the researcher and participant interact and contribute throughout the research process (Reiners, 2012). Rather than seeking to interpret the participant's lived experiences by pursuing the deeper meanings behind their words, the researcher sought to develop a clear description of the phenomena, namely the active play behaviours of twins and triplets with autism (Matua & Van Der Wal, 2015).

The goal of this descriptive phenomenological study was to gather participants' descriptions of their conscious experiences observing and engaging in active play with their twins and triplets with autism (Chan et al., 2013; Matua & Van Der Wal, 2015). In taking this approach, the researcher was able to gather detailed descriptions of both the participant's real-life experiences—past, present and anticipated—and the way they perceive their twins' and triplets' active play behaviours (Creswell & Poth, 2018; Matua &

Van Der Wal, 2015; Patton, 2019). Furthermore, this phenomenological approach enabled the researcher to communicate the essence of the phenomenon by identifying themes in the participant's described experiences and perceptions (Patton, 2019).

**Positionality and Bracketing**

In qualitative research, the researcher themself serves as a tool throughout the entire research process and particularly while interacting with the participants to generate knowledge (Chan et al., 2013; Kowalski et al., 2018; Reiners, 2012). Descriptive phenomenology was chosen as a methodology for this study as it is my belief, as the researcher, that in light of my role in this research process, I must keep my preconceived notions separate from my analysis of the descriptions given by participants of their lived experience (Patton, 2019; Reiners, 2012). With this phenomenological attitude, I was able to, as much as possible, approach the participant's descriptions with a sense of curiosity and wonder, as if it were completely new to me (Hobson et al., 2013; Patton, 2019). While it was not possible to eliminate bias completely (Chan et al., 2013), strategies for self-reflection were put into place to mitigate any preconceived notions, assumptions or prior experiences I might have brought to the research process (Creswell & Poth, 2018; Korstjens & Moser, 2018; Patton, 2019).

The social context, or position that the researcher approaches the research process from is important to communicate to the reader as it impacts the qualitative research from beginning to end (Creswell & Poth, 2018; Hopkins et al., 2017; Rowe, 2014). My own underlying philosophical assumptions can most concisely be communicated through the language of the social constructivist framework (Creswell & Poth, 2018). It is my belief that individuals construct meaning based on their individual experiences therefore

researchers can gain knowledge inductively by gathering the views that individuals have regarding their own experiences (Creswell & Poth, 2018). Having stated my positionality, it is also important to note that phenomenology is based on the philosophical belief that a researcher can and must direct their consciousness towards something other than themselves throughout the research process (LeVasseur, 2003). To achieve this phenomenological attitude, I set aside, or bracketed, my own lived experiences from what was presented to me by the participants so that I was able to direct my consciousness towards their perceptions of the phenomenon and not my own (LeVasseur, 2003; Patton, 2019). In conversation with my master's supervisor, I decided to frame this bracketing exercise with reflections on my previous education and experiences as well as my underlying beliefs and values.

> *During my undergraduate degree in kinesiology, I was introduced to the concept of physical activity as a form of medicine for the human body. Now, as a masters student working within the realm of adapted physical activity, the concept of exercise as medicine for all individuals continues to be reinforced by my study of the role of active play in the development of children with autism. Not only do active play experiences provide a foundation for future movement skills, but they also help children build confidence in themselves, teach them to explore their worlds and create opportunity for them to develop relationships with their peers. Since beginning to work with my supervisor Dr. Lloyd, my perspective on active play has been continually shaped and refined. Where I used to think of*

*active play only through the lens of my own experience, I am learning to think with more wonder and curiosity.*

*Throughout my teenage years and early twenties, I had the opportunity to work at summer sports camps for children where, for the most part, I worked with children with typical development. From my perspective, I was facilitating fun play experiences for the kids and hopefully helping them to refine their skills across a variety of sports. More recently, I've had the opportunity to work in some therapeutic recreation settings, facilitating active play sessions for children with autism. In these settings, I've learned about the value of positive play experiences and what those entail. When a child is motivated to participate by some aspect of the activity, is enjoying themselves, and feels at least somewhat competent, they will most likely enjoy themselves and want to participate again. To create these positive play experiences, I've learned that I need to get to know each child on a one-on-one relational level. Each child with autism is so different and I can't assume that I understand them. It will take time. But hopefully this process will pay off and they will find some aspect of physical activity that they enjoy and are motivated to participate in moving forward.*

*Finally, I think it is important to say that beyond my experiences working with children with autism in a therapeutic recreation setting, I do not have autism, nor do I have any lived experience as a parent, family member or close friend of an individual with autism. Also relevant is that I myself am not a twin or triplet, although I do have a close friend who is a*

*twin. While this naiveté may serve me well in approaching the interviews with parents with an attitude of curiosity, it also comes with certain biases. I have spent countless hours reading articles and learning about children with autism and active play, so I have much book knowledge. The articles I have read come from diverse backgrounds, with some examples being adapted physical activity, education, occupational therapy. All this to say that I will certainly have much to bracket and think reflexively about.*

**Eligibility**

Participants were considered eligible for this research study if they were a parent or legal guardian of twins or triplets 4-11 years of age, where both/all children in the multiple group had a diagnosis of autism, as reported by the parent. Additionally, they needed to be able to speak and read English, have access to the technology needed for Google Meet Videoconferencing (i.e., a phone, tablet, or computer) and have given their consent to participate.

**Recruitment and Participants**

This study was approved by the Ontario Tech Research Ethics Board (Appendix 1). Purposive sampling techniques were used to gather nine parent participants, a sample size that was sufficient to reach thematic saturation, a point where no new codes or themes were emerging (Fusch & Ness, 2015; Sebele-Mpofu, 2020). This sample size is also within the range recommended by a variety of researchers (~5-25 participants) (Patton, 2019) and was particularly appropriate considering the recommendation for quality over quantity particularly relevant in cases such as this where there is one main researcher interviewing and analyzing the data for the study (Creswell & Poth, 2018; Patton, 2019). Dr. Lloyd, the

lead supervisor on the research project contacted eligible parents of children who previously participated in her research studies and had given consent to be contacted for future studies. Snowball sampling was then used as one participant posted the recruitment poster (Appendix 2) on a global social media group for parents of multiples with autism. The recruitment documents (Appendix 3 and 4) for the study provided parents with a detailed description of the study and directed them to contact the leader researcher if they were interested in participating.

All participants read and digitally signed a consent form (Appendix 5) and then were sent a Google Meet link for the date and time of the interview. Parents were also given the link to an online demographic form (Appendix 6) and were asked to fill it out before the beginning of the interview; all nine participants filled out the demographic form. Participants were given a $50 Amazon gift card following the completion of the interview.

The diverse group of participants who were recruited for this study included individuals from different countries but also different life experiences along the spectrum of autism spectrum disorder. As the goal of qualitative research is to generate transferable findings, that is findings which may be applied to a population in the same or different context (Nowell et al., 2017), it is important to provide thick descriptions such as these in order to assist the reader in deciding for themselves if these findings are transferable to their context (Creswell & Poth, 2018).

**Study Design**

Before beginning data collection, the interview guide (Table 1) was pilot tested with a mother of four-year-old twins who are neurotypical to ensure the questions were easily understood, the variety of probes were appropriate, and quantity of the questions

were suitable for a 60–90-minute interview. The interview guide provided structure for each interview, allowing the researcher to ask pre-planned, in-depth questions while also providing the flexibility of probing questions allowing the researcher to explore the participant's experiences (Creswell & Poth, 2018). Prior to each interview, the researcher laid out an operational definition of active play to assist participants in understanding the scope of the topic. Specifically, parents were told that active play is any kind of unstructured play where children use their whole body in their play; when they are playing actively, they are using their energy in a way that is fun and towards something they are choosing to do (Truelove et al., 2017). In order to gather rich descriptions from parents of their own children in play, the researcher chose not to employ the use of checklists or frameworks to further train parents as observers. Nine semi-structured interviews took place online via Google Meets throughout November 2021. All interviews were audio-recorded and transcribed in real time using Otter.ai. Immediately following each interview, the researcher de-identified each transcript and compared them to the audio recording to correct any errors in the transcript.

**Table 1**

*Semi-Structured Interview Guide*

| Question | Probe |
|---|---|
| 1. Can you tell me a little bit about your family? | • How many children do you have? What are their ages, genders?<br>• Can you tell me about "name", "name" (and "name")?<br>• What is he/she like? What are his/her favourite things to do?<br>• How old are they?<br>• Do they use words to communicate? |

| Question | Probe |
|---|---|
| | • Do they have their own form of communication between themselves?<br>• Do they play more with each other or another sibling? (If they have other siblings)? |
| 2. Can you tell me a little about your twin's/triplet's play when they were toddlers (1-2 years old)? What about when they were 3-5 years old? Now that they are in school do you think their play has changed? (Questions tailored depending on the age of the participants) | • What do you think has been the biggest change in their play as they have grown up?<br>• Do any stories come to mind of how they played at that age?<br>• Do you see them stimming during play? If so, what does this look like for "name"? And "name"? (and "name"?) (e.g., using body, environment, etc.)<br>• Do you see them trying to have any particular sensory experience in their play?<br>• Are they drawn to certain toys or objects? |
| 3. Can you tell me about how your twins/triplets play together? | • Do they usually play with toys or objects?<br>• When your children go outside, what do they immediately go to? A certain play object or activity?<br>• Do they like to go to the playground? If so, what do they like to play on? (Specific play structures? The grass?)<br>• How do they play in the house?<br>• Do they have a favourite place they like to play (e.g. their room, backyard, playroom)? |
| 4. Think back to the most recent time that you noticed that your twins/ triplets were playing really well | • Where were they?<br>• What where they doing? |

| Question | Probe |
|---|---|
| together. Can you tell me what stuck out to you about that? | • What did you think made it go so well?<br>• What generally works to get active play happening in your home?<br>• Can you tell me about some situations that might cause play to break down between your children?<br>• What would be your ideal play space for your children? Why would you choose that setting over another?<br>• Are there any locations or situations that make active play hard? |
| 5. In the course of a week, what kind of play activities do you do with your twins/triplets? | • Is it generally you trying to engage them in their play or are they coming to you wanting to play with you?<br>• Is it easy or hard to engage with them?<br>• When you do play with them, what do you do?<br>• Why do you choose those particular activities? |
| 6. If you had some friends or family over for a visit in the backyard, would your twins/triplets play with the other children? | • If so, can you describe what that play looks like?<br>• Do they sometimes split off from each other and play with other children? or do they generally stick together when playing with other children?<br>• Do they every play just the two of them, ignoring the other children?<br>• Do they play games with the other children or more so do their own thing or a similar thing alongside the other children?<br>• If not, can you describe their play in that setting? |
| 7. Can you tell me about a time when your child was playing, and you felt proud of them? | • Have they ever surprised you by doing something in their play that you didn't know they could do? |

| Question | Probe |
|---|---|
| 8. If you could do anything on a Saturday afternoon with your children, what would you do? | • What things do you have to think about when you're making plans to play with your children?<br>• Based on your answers so far, it seems that you value play. Can you tell me why?<br>• If active play is not something you value, can you tell me a little bit about why not?<br>• Has there been a person/program/experience in your life that has influenced how you view active play?<br>• What are some things you do as a family because you value active play? |

Immediately following each interview, the researcher engaged in reflexive journaling to reflect on anything they found unexpected or that heightened their awareness of a bias they may have been carrying with them. This was also an opportunity to take reflexive notes, framing the interview data with any contextual information that stuck out to the researcher (e.g., participant's demeanor when talking about certain topics, overall dynamic of the interview, etc.) (Korstjens & Moser, 2018; Penner & McClement, 2008). Journal entries were also written outside of data collection to further cultivate self-awareness (Korstjens & Moser, 2018) and were most often stimulated by conversations with the researcher's supervisor and peers within the graduate studies program at Ontario Tech. The researcher intentionally sought out open and honest conversations such as these as they are recommended for researchers engaging in phenomenological inquiry (Penner & McClement, 2008). All throughout the study, the researcher also kept notes on each step

of the research process, creating an audit trail to ensure the results of the study would be both dependable and confirmable (Korstjens & Moser, 2018).

**Data Analysis**

Before beginning data analysis, the researcher sent the participants two separate member checking documents about one month apart to add to the credibility of the study (Korstjens & Moser, 2018). The first, a verbatim transcript of their interview, was sent within a week of their interview; participants were then given two weeks to respond with changes they wished to make (i.e., additions, clarifications, omissions). While five of the nine participants responded, only two participants requested minor changes.

While awaiting participant feedback on the first member checking document, the researcher began the process of creating synthesized member checking documents for each participant. This process involved going through each transcript multiples times, reading the transcript and listening to the audio, to familiarize themselves with the overall narrative (Bradley et al., 2007; Kowalski et al., 2018). The researcher also wrote memos, recording common phrases or ideas from each interview to broaden their perspective and identify preliminary key themes (Kowalski et al., 2018). After about one month undergoing this iterative process, the memos eventually became individualized synthesized member checking documents beginning with key themes of the interview and followed by supporting quotations from the interview itself. Each participant was sent their individualized synthesized member checking document along with a list of questions to help guide them through the process of reflecting on their document (e.g., “Do the findings capture the essence of what you shared?”), and were again invited to respond with any

comments, clarifications or changes they wished to make. Three out of the nine participants responded, though none had any changes they wished to make to the document.

Once the member checking process was complete, and the transcripts were finalized, the researcher began analyzing the data through a process combining both deductive and inductive content analysis. Nvivo was used to support analysis through the organization and searching of the data. To develop the initial coding structure, the researcher utilized pre-existing codes from the deductive content analysis framework suggested by Bradley and colleagues (2007) (see Table 2). . To further develop some initial conceptual codes, the researcher included some codes based on findings from the initial memoing as well as some types of play as described in Coopers' Conceptual Model of Children's Play (Cooper, 2000). Once the initial coding structure was in place, the researcher engaged in an iterative, constantly evolving coding process, creating new codes and sub-codes, splitting up existing codes into more specific sub-codes, and re-naming existing codes or sub-codes to better reflect concepts and themes as they became more fully developed.

**Table 2**

*Framework for Deductive Content Analysis*

| Code Type | Description | Example |
|---|---|---|
| Conceptual | Information describing key concepts | Social play |
| Relationship | Descriptions of links between conceptual codes | Verbal communication during play together |
| Participant Perspective | Positive, negative, or neutral perspectives | Positive perspective |

| Code Type | Description | Example |
|---|---|---|
| Participant Characteristics | Descriptions of participants | Child characteristics |
| Setting | Descriptions of settings | Indoor play |

Throughout this process, the primary researcher and the research supervisor met regularly to discuss the emergent codes and subcodes to ensure credibility of the study by way of investigator triangulation (Creswell & Poth, 2018; Korstjens & Moser, 2018). Through conversation and reflection, it became apparent that certain codes might be described better by a different name or be more appropriately grouped with a different collection of codes. After about a month of a rigorous analysis and review process, the final themes, and the primary researcher and research supervisor began to meet to discuss and ensure that each code and sub-code was appropriately named and defined in the codebook (Appendix 7). At this point, the researcher went over the transcripts a final time to ensure consistency of the codes in each transcript.

## Results

Eight mothers of twins with autism, and one mother of triplets with autism (n=9), took part in a virtual interview. Four participants were from Canada, four from the United States and one from Portugal. Six of these participants had other children in addition to their multiples, while three participants only had the twin or triplet set. In total, the results of this study pertain to 19 children (11 female, 8 male) between 5-11 years of age (Table 3). These children represent a diverse sample that reflects the differences commonly seen on the autism spectrum. In this sample, differences exist between and within dyads and triads. Some children communicate primarily verbally and others primarily non-verbally. Similarly, there are a variety of behavioural differences (e.g., self-stimulating behaviours

or difficulty with transitions) and social differences (e.g., not making eye contact or difficulty engaging in interests of others) within the sample. Contributing to these differences, are a variety of co-occurring diagnoses reported by parents which include Apraxia, Tourette's, Epilepsy, brain tumour/cancer, ADHD, Cerebral Palsy, Eosinophilic Esophagitis, Encephalopathy, Hypotonia and Torticollis Plagiocephaly. Further demographic information describing these children is included in Table 3. Three multiple sets had previously taken part in a motor skill intervention and eight of the nine parents specifically mentioned their multiples participating in organized recreational physical activity.

**Table 3**

*Demographic Information of Children as reported by Participants*

| Participant | Age | Zygosity | Sex |
|---|---|---|---|
| 1 | 6 | Fraternal | Male, Female |
| 2 | 7 | Two Identical, One Fraternal | Male, Male, Male |
| 3 | 5 | Fraternal | Female, Female |
| 4 | 10 | Identical | Female, Female |
| 5 | 9 | Fraternal | Female, Female |
| 6 | 7 | Identical | Male, Male |
| 7 | 11 | Fraternal | Male, Female |
| 8 | 10 | Identical | Female, Female |
| 9 | 7 | Fraternal | Male, Female |

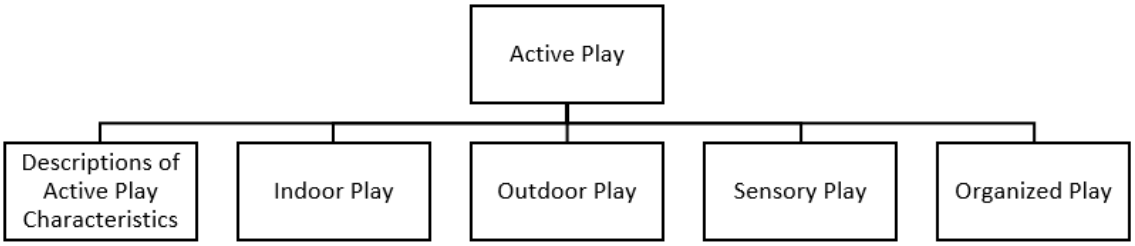
When asked to describe their children's active play behaviours, parents gave descriptions which can be categorized into two main themes: *Active Play* and *Social Play.* Each of these themes include sub-themes.

## Active Play

The theme of *Active Play* (Figure 2) was derived from parents' descriptions of their children using gross motor or total body movements in their play to expend their energy in a way that is unstructured, freely chosen and fun (Truelove et al., 2017). As shown in Figure 2, this theme is split into subthemes which are: *descriptions of active play characteristics, indoor play, outdoor play, sensory play* and *organized play.*

**Figure 2**

*Parents' Descriptions of the Active Play Behaviours of their Twins and Triplets*




### *Descriptions of Active Play Characteristics*

Parents described a variety of active play characteristics that they had observed in their children. Many parents specifically discussed the choices their children made during this free play, sometimes describing how their children were commonly drawn to a certain type of play activity or that they would tend to find an activity they really enjoyed and repeat it over and over.

> …if we go to a park and there's another child, [Henry] will always end up playing with that kid…Victoria will always just end up going back and forth across the monkey bars or climbing up and down the pole…very repetitive (P1).

Parents also described their children choosing to move around a play space, engaging with multiple play stations they found enjoyable rather than focusing on just one activity.

> …they both really like going on the trampoline, especially Oliver, and then there's also a big, huge, huge, like, ball pit type thing. And they just run and jump right into it…they also like… an area that has like a ladder sort of, and they climb up that as well. Oh and the balance beam (P6).

In some cases, parents described their twins or triplets moving around play spaces together. “If they are running around, it's usually all three of them like a herd, a stampede, or something…full tilt up the slides, down the slides this way that way all over” (P2). In other cases, they talked about their children making differing play choices, playing separately in the same play space. “…she'll um kind of go off and do her own thing…We have a little bit of property. So she has a couple things set up that she likes to do” (P4). In both cases, parents discussed the characteristics they observed in their children, based on the play choices they made during active play. “Chad would go do his balance beam routine on the railing, and Oliver would run straight to our swing set” (P6).

Some parents also talked about their children’s restricted interests and behaviours, specifically describing their determination to play a specific way or to play only their favourite activity. “…they'll still when we go to the beach. Dig a big hole, get in it, cover themselves up…I've tried to do sandcastles with them… they'd much rather dig a hole and bury themselves in it” (P7). Other parents talked about their children’s need to have a prior understanding of what to expect in play, both from the environment and the activity itself. “…they prefer to do the same, they prefer to have everything controlled. It gives them assurance to know what's going to happen is very important to them” (P8). For some

children, this desire for control translated to the avoidance of risk during play. “Very careful. Always. Like afraid to, to try new things. He likes two feet on the ground.” (P1). However, other parents described their children being inclined to engage in risky play because of their enjoyment of the thrill they experienced. “Dominic's more…full tilt play, full tilt run, full tilt everything. So whatever accidents happen it's just because I'm just full tilt have fun right? Where I think Andrew actually calculates. That's kind of risky. I'm gonna do it” (P2). In other cases, parents described their children’s tendency to think creatively, using their imaginations while playing games of make-belief and bringing pretend elements into their play. “…they play pretend which again is like not what you would expect when they're autistic…they pretend to be pokemons…they have battles with each other like, they're just like wrestling on the couch.” (P3). Overall, parent gave thorough descriptions of the various behaviours their children displayed during active play.

***Indoor Play***

Parents described their children playing actively indoors, both at home and away from home. When describing their children’s indoor active play at home, parents described their twins and triplets making use of certain spaces and resources (e.g., trampoline, music videos) inside the home to use their energy in a way that they find fun.

> It's like a, a dome that we have in our playroom. And that's what Chad prefers to do in the playroom because he could climb up higher than he can on the trampoline. But Oliver prefers the trampoline, because of that jumping motion (P6).

> But they also like to dance so they turn on music, they really liked at the moment... to find some videos on YouTube which had um oh, how do you call those? Wii? the Wii, the games thing... And they like to play the same songs on and on and on and on. Because then they already know the moves (P8).

Parents also discussed their twin and triplet's play behaviours at indoor play places such as trampoline parks and play structures. In some cases, children moved around these spaces, exploring, and interacting with different features. "…there's a really cool slide that three can go down in a row… it's an indoor place and there's lots of like abilities to climb up um and check things out from very high heights…There's lots of space to run…" (P2). In other cases, parents described their children's overwhelmed behaviour in response to the environment.

> But um, you know, she wants to jump and then she wants to go climb over here. And then she wants to go jump on the foam pit and there's, like there's almost too much stuff to do. And then it you know, it almost builds up the energy instead of expelling the energy because now she's, she doesn't know what she wants to do (P1).

While some parents described their children's behaviour in certain indoor play spaces as being the result of overstimulation, parents still described many instances of their children engaging with various features across a variety of indoor play spaces.

***Outdoor Play***

Parents also described their children playing a wide variety of outdoor activities both at home and away from home. For instance, parents described their children having

fun and using total body movements to expend their energy while interacting with nature and objects in the yard. “They'll play with their scooters though in the front yard and stuff too when it's you know, nicer weather and stuff” (P9). In some cases, parents also described their children engaging with animals during their play. “Gabby loves to let the chickens out. And then chase them around the backyard…she thinks it's really funny” (P4).

Similarly, parents described their children engaging in active play in outdoor spaces away from home. These spaces commonly included outdoor play structures and nature trails.

> We have been doing this with them since they were kids… walking on the on trails …at first, they are always very active and very fast and running … They love picking up flowers, picking up leaves, picking up, um pine cone (P8).

> … they're starting off at either the field to play soccer or baseball, or football, or the basketball court, and they might make it over to the playground as well (P7).

Whether at home or away from home, parents described their children choosing to incorporate multiple environmental features (e.g., objects, toys, animals, nature) into their active play based on their own interests.

***Sensory Play***

Parents discussed the unique sensory characteristics their twins and triplets exhibited, specifically describing their children’s preferences for certain movements (e.g., swinging) or tendencies to become emotionally regulated or dysregulated by certain play

experiences (e.g., smiling and making eye contact when playing in the water). One prominent theme discussed by parents was their perception that their twins and triplets will often regulate themselves through sensory experiences in active play. “Elena it's almost like she gets that rush and then she's like ahhhhhh. That feels better. You know? But Gabby, it's like, she's never completely satisfied. So she's constantly seeking sensory input” (P4).

Parents described their children sliding, swinging, and climbing often on playground equipment. “…if left to their own devices, they would, if they were outside, they wanted to swing. That's what they like to do and if they couldn't have the swing, they would pace” (P5). Parents also described their children playing on non-play equipment (e.g., railings or shelves).

> He um, in our backyard, we have this big deck, and there's a railing around the deck…he just walks around it… like a balance beam…… So he really seeks out that kind of stimulation, I suppose? …And when you watch him, you can kind of see like, he thinks about where he's going to put his foot each time. He doesn't, he's not careless at all (P6).

Parents also described their twin’s and triplet’s sensory play in nature. In particular, parents talked about their children’s preferences for interacting with the different textures of mud and dirt found in nature. “…she's really into mud…I think it's because she likes the feeling of it squishing through her hands. So she plays with mud a lot outside and she gets covered head to toe in mud” (P4). Some parents described changes in their children’s behaviour and communication when they are experiencing the sensation of being in the water.

> But when she was in the water, and she was moving around a bunch and floating her body and moving, you know, feeling the water, she would say a random word…it wouldn't mean anything in context. But it would be so clear like you can understand what she was trying to say to you…if I would make a funny face, she would try to mimic that… it's almost like she would have a sense of humor in the water (P5).

Parents gave many examples of their twins and triplets engaging in sensory play, sometimes using their favourite gross motor movements (e.g., spinning, jumping, running) to move their bodies in a way that was fun for them and other times enjoying the feeling of certain textures or environments (e.g., mud or water) during their active play.

***Organized Play***

In addition to unstructured active play opportunities, parents described their children engaging in a variety of organized, community recreation opportunities which are given structure by the expectation of adherence to rules (e.g., the bowling ball can only be thrown down the lane way). Parents discussed their twins and triplets participating in general, and adaptive program designs, including bowling, cheerleading, circus, dance, equestrian, gymnastics, hockey, ringette, rock climbing, soccer and swimming.

> So it's a, it is a special needs gymnastics class…So there's usually not a lot of other distractions or anything, but there are, it is a class of like, I don't know, like six or seven kids. And um it's nice, because there's like the main teacher, and then each of the kids has like a helper or a buddy that stays with them (P6).

> They didn't do like dance moves, like you would think for cheerleading squad, they did more of the 'rah rah' with your, you know fist in the air, and you're moving to side to side, they were very robotic moves. And she seemed to kind of fall into that pretty well (P5).

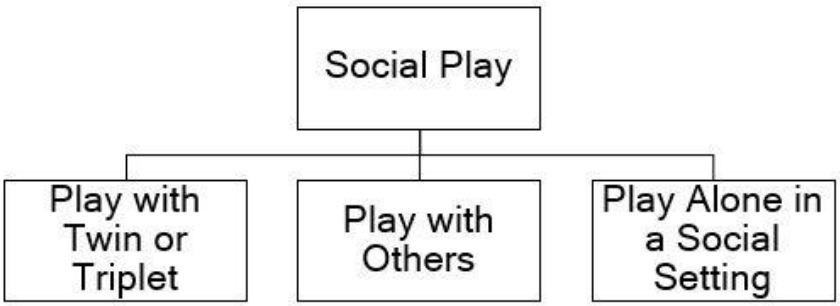
Whether parents described their children participating in adaptive or general programs, they generally discussed their perceptions that their child enjoyed that particular activity because they had fun with similar activities at home (e.g., climbing at home and climbing at gymnastics).

**Social Play**

One primary aspect of their children's play which parents discussed was their children's play behaviour when engaged in active play with at least one other person (e.g., twin or triplet, peer, adult). Parents described three main categories of this social play which have been divided into the sub themes as seen in Figure 3*: Play with Twin or Triplet, Play with Others, and Play Alone in a Social Setting*.

**Figure 3**

*Parents' Descriptions of Their Twin's and Triplet's Social Play*



***Play with Twin or Triplet***

Parents described their twins and triplets playing actively with each other, specifically within their dyad or triad. Parents discussed the considerable amount of time that their twins and triplets spend playing in the same physical space due to the necessity of keeping them on the same schedule.

> …when you have twins, like, you make sure they're on the same routine, the same stage, the same phase, the same, everything…Okay, I have to go outside and rake the leaves. So you guys are coming with me. And you can jump in the leaves (P1).

While parents did describe their children enjoying these play opportunities together, most did not speak about their children preferring to play together as compared to with other children. Parents described their twins and triplets choosing to play together both inside and outside the home. Parents reported observing their children having fun while playing in a way that requires energy expenditure and total body movements. "…occasionally, they will like chase each other, like run around the house and what, you can tell one's running after the other. And they'll laugh super hard when they do that" (P6). Parents also described each of their children entering the same imaginative world during play and verbally communicating their play ideas.

> They were playing in their treehouse. What stuck out…I was really impressed at how they were communicating with each other finally… there was a spaceship. Um, there was a battle. There's bad guys over there. So there's a lot of like, Oh my god! They're there! Pointing!...pew pew pew (P2).

In some cases, parents described their twins or triplets playing side by side but with limited engagement. Each was aware of the other engaging in the same activity nearby but did not join their play.

> when they played they would um, a lot of running…Not necessarily playing a game. Definitely not talking to one another. But there seemed to be a little bit of you know, okay, you're going this way, so I'm going that way. I'm not saying there was um, there was any, they weren't synchronized by any means, but um they were aware of what direction the other was going in (P5).

Parents also consistently described how their twins and triplets engage in active play in different ways.

> …he's more gross motor skills. So he's got the like…the sport, like the kicking the throwing, the bat, the hockey. She's more fine motor, the painting, the coloring, the climbing, the gymnastics, that very um specific movements as opposed to like the large body movements…She struggles again just one more way for them to be polar opposite (P1).

Parents discussed that one twin would often take on the role of leader during physically active co-play experiences, directing the play and the other would happily follow along. "…sometimes they'll you know, pretend they're, you know, I guess a fish or something…Ella does more pretend play for sure…like she'll instigate it you know? Where, and David will just kind of follow along because he's having fun" (P9).

Parents described their twins and triplets learning to communicate their own play preferences during play experiences with their twin or triplet. Parents commonly described this dynamic emerging more so as the children get older. "…as he's gotten a little bit more mature, he's advocating for himself a little bit more" (P7). Parents also described their children becoming aware of their twin or triplet sibling's play preferences.

> I think he, he's starting to recognize that, like, she doesn't play action figures the way he wants to, because she doesn't have that communication to like, for the dialogue back and forth. So I think he's, he's learning how to play with her and how to tolerate her (P1).

As is typical for childhood play, parents described some instances of their children experiencing conflict during active play experiences that was not resolved and ultimately resulted in play coming to an end. Some parents discussed the difficulty their children had calming down after such arguments. "…usually if they're getting into fights, it's 'cause somebody accidentally gets hurt or somebody isn't getting a fair deal in their minds… I think the only thing unusual is the duration of the aftermath, I guess" (P3). During each interview, parents described many variations of their twins and triplets playing actively together.

***Play with Others***

In some cases, parents observed their twin and triplet's curiosity of other children playing near them. Parents described varying outcomes of this curiosity. In some cases, their twins or triplets chose to join in the play and in others, they chose to observe. "…sometimes Oliver will see my dad playing with Chad, and then he'll be like, I want in on that…" (P6).

Parents also described their children engaging in active play with children outside their twin or triplet group (e.g., siblings, children at the playground). In some cases, twins or triplets exhibited flexible play behaviours by taking turns and following other's play ideas. In other cases, parents described their children as rigid in their play, particularly in their desire to dictate what happens in the play.

> And Katlyn is is more flexible than then Dana. So Katlyn can more easily joins the plays with the other kids. Dana has a more stiff way of thinking…and but but if you think um, on the spectrum, Katlyn is more into the spectrum than Dana. Dana is more functional, but what happens is that Dana is fully aware of her incapacities, and she suffers a lot from them. So that's why she struggles so much with the, with the plays of the friends she, she understands she cannot play as well as them. She's not as fast as them (P8).

Parents described various types of play their twins and triplets engage in when they play with other children. Some examples included rough and tumble play, chasing play and play with a ball. "And then, you know, the whole we'll all show up at the park in our costumes. And again, then it's just the running around playing, chasing each other, karate chopping each other" (P1). "…I would say soccer…He will play basketball with his friends, but that's probably his go to right now…They play at school at recess sometimes" (P7).

In some cases, parents described their children gravitating towards adults in play. A common theme of child-adult play described by parents was of their twins and triplets 'play wrestling' with an adult.

> …one of their therapists at school is this young man… he can like throw them up in the air and do all kinds of crazy stuff and they love it. And he comes to the in-home therapy, so when he shows up, they usually know, like, oh, we can play with him (P6).

In some cases, parents described their twins or triplets taking on the role of director, thereby removing themselves from the play experience. Parents discussed that in some cases this rigid behaviour would end in fights between their children and their playmates. “She tells everybody else how to play and what they should be doing. And she kind of just wants to be almost like the teacher that directs everybody versus someone who's actively engaging” (P4). In all, parents described a wide variety of examples of their children engaging in active play with others, including non-twin or -triplet siblings, peers and adults.

***Play Alone in a Social Setting***

While some parents described their twins as being frequent play partners for each other, others discussed that their twins or triplets commonly choose to play separately rather than together.

> They're also just kind of different levels of autism…So I think sometimes Elena just doesn't have the patience to have Gabby play with her and she gets frustrated and she'll often say I don't want to play baby games... So Gabby is just kind of gotten used to not even trying (P4).

Parents talked about their twins detaching from group play opportunities by entering their ‘own little worlds’ or simply enjoying physically active play activities that don’t require a playmate.

> It's like he's, he's there playing with everybody but at the same time, if things get a little too hectic or busy in whatever's being discussed or played… it's like he's now playing the same thing as everybody? As opposed to playing with…Like I'm still here playing but I'm not necessarily playing with you. I'm just playing on my own. Doing my thing. I'm still playing. My imaginations over here (P2).

Parents described various occurrences of their children choosing to play alone during group play opportunities, sometimes discussing the challenges their twin or triplet experiences during social play opportunities and other times discussing their child's personality and preference for solo active play.

During each parent's one-on-one interview, they described the play of their twins and triplet in rich detail. Parents discussed their children's indoor and outdoor active play, engagement in organized play opportunities and sensory play. In each of these themes, parents were specifically describing their children choosing to use total body movements to expend their energy in way that they find fun. Parents also discussed their own direct and indirect involvement with their children's play for the purpose of facilitating positive play experiences for their twins and triplets with autism. Furthermore, parents described their children engaging in active play in various social settings including play with their twin or triplet(s), play with others and choosing to play alone despite being in a social play setting. Overall, parents provided thorough descriptions of their twins and triplets with autism playing actively.

## Discussion

The purpose of this descriptive phenomenological study was to gather parents' descriptions of their twins or triplets with autism engaging in active play that is freely chosen, fun, and unstructured. The study was guided by the question: How do parents of twins and triplets with autism describe the active play of their children? The descriptions given by parents of their children's active play behaviours fall into two main themes: *Active Play* and *Social Play*.

### Active Play

Parents have unique insight into their children's worlds and because of this, are equipped to provide descriptions of their children's strengths, interests, and needs in play (Harte, 2009). The descriptions given by parents of their children's active play behaviours in the current study indicate that twins and triplets with autism seek out varying physical, sensory, social and pretend play experiences during active play. These results are meaningful as they provide descriptions of children with autism expressing enjoyment in multiple play activities of their own choosing; an account of play that is inconsistent with the general narrative present in autism research.

There are many documented differences in the literature between the play of children with autism and children who are neurotypical (Kossyvaki & Papoudi, 2016; Winter-Messiers, 2007; Yogman et al., 2018). In general, the play of children with autism is considered to be both repetitive and restricted, as these children tend to have a limited number of interests and become intensely focused on the sensory features of objects (American Psychiatric Association, 2013; Kossyvaki & Papoudi, 2016). Literature on play and autism suggests that play is a domain in a child's development where differences

related to autistic traits are first observed (Brown & Murray, 2001; Pellegrini & Smith, 1998). The findings of the current study indicated that this may also be true for twins and triplets with autism as they show similar play behaviours to that of singletons with autism (i.e., not a twin or triplet), including the presence of repetitive patterns in play, a preference for structured and predictable play settings, and an interest in sensory experiences. In contrast, children who are neurotypical are often characterized as spontaneous, creative, emotionally expressive, flexible, intrinsically motivated and self-directed (Brown & Murray, 2001; Cooper, 2000; Hobson et al., 2008). Consequently, previous research has often considered the play of children with autism to be divergent from the play of children who are neurotypical and in need of intervention (Brown & Murray, 2001; Hobson et al., 2008).

The parents in the current study sometimes described their children engaging in active play that was repetitive in nature (e.g., riding a scooter down a hill over and over again); which is not surprising considering all of the children had autism. However, it is important to note that oftentimes parents specified that their children were choosing to repeat the task out of a desire to perform it better than the last time (e.g., get all the way down the hill without falling). Parents described their children seeking out a variety of opportunities for physical challenge, findings which are similar to those of Fahy and colleagues (2021), who observed that children in their study enjoyed being given the creative license to design their own versions of games, often being drawn towards those that involved some sort of physical challenge, such as shooting a basketball into the net. Parents in our study described some of their children expressing joy and excitement (e.g., laughing, smiling) after completing a challenging task in their play, which is also a finding

reported by Fahy and colleagues (2021). These findings are particularly meaningful in light of previous research suggesting that children with autism are not playful, that is they do not interact spontaneously with their physical or social environments in play based on what they think will be fun (Hobson et al., 2013). In contrast, our results highlight the playfulness that children with autism express through their investment, creativity and satisfaction during play activities that are repetitive in nature. Furthermore, our results highlight the diverse capabilities of children with autism in interacting with their physical environments as some parents described their children's strengths relating to particular movement skills (e.g., balance, hand-eye coordination, etc.). These results suggest that while many children with autism do experience challenges performing motor skills (Bremer et al., 2015; Lloyd et al., 2013),this may not be true of all children with autism in the same way. Overall, these findings indicate that children with autism do exhibit spontaneity, emotional expression, intrinsic motivation and self-directedness during active play, albeit in their own unique ways.

The findings of the current study are novel as they describe the play behaviours of multiple same-age children with autism raised in the same home and play environment. Yet despite the inherent similarities, the diverse play behaviours of children with autism are further emphasized by parents' discussions of the differences they observed even between their own children. These differences between twin and triplet siblings speak to the variety of individual preferences and motivations that drive children with autism in active play (Blake et al., 2018; Dickie et al., 2009; Fahy et al., 2021). Furthermore, these findings identify differences in the active play behaviours of twins and triplets where both/all children have a diagnosis of autism which is particularly relevant considering the

varying levels of autism reported by parents in the study. It is unclear whether these differences in play behaviours may be related to either a child's proverbial location on the autism spectrum, their unique personalities, or both; in any case there is a need for future research to investigate further the different active play behaviours that twin and triplet siblings with autism exhibit in specific domains of play.

The literature on children who are neurotypical indicates that children bring their own unique individuality to play experiences by acting on their intrinsic motivations and preferences (Cooper, 2000; Yogman et al., 2018). In the case of active play, individual preferences are particularly important as, by definition, the child is given agency to direct their own play in an unstructured environment based on what they find fun (Truelove et al., 2017). In children who are neurotypical, the individual preferences and motivations that a child brings to their play are seen as beneficial as they facilitate communication between players (Cooper, 2000; Yogman et al., 2018). For example, a child being 'silly' in play enables their playmate to share their sense of humour (Yogman et al., 2018). In contrast, most research on the play of children with autism focuses on exploring the variety of ways that the play of these children fall short of that of children neurotypical (Calder et al., 2012; Harper et al., 2007). As a result, there is a lack of research seeking to explore the subjective experiences of children with autism during active play (Conn, 2015). The findings of the current study are particularly important in light of Article 31 of The United Nations Convention on the Rights of the Child (1989) which states that all children, including children with disabilities, have a right to participate in leisure and play that is free from outside demands. While there is a place for children with autism to work towards developmental goals, child-directed active play grants them the necessary opportunities to

develop positive identities, free from external pressures (Bagatell, 2007). The findings of the current study provide a glimpse into some of the preferences that children with autism have for movement and physical challenge in active play. Such aspects of the play of children with autism should be regarded more highly, especially considering research highlighting the importance of free play as an opportunity for children to express themselves.

Parents' individualized descriptions of their children's active play behaviours provide contextual information that paints a picture of the diverse activities, movements and interests that can make active play fun for children with autism. Descriptions such as these are less common in the autism literature as the focus tends more towards quantitative assessments of the number of turns taken, amount of eye contact given, and the number of social responses appropriately offered (Jung & Sainato, 2015; Zhao & Chen, 2018). In contrast, the subjective qualities of play experiences that make participation meaningful for children with disabilities themselves are often ignored (Martin Ginis et al., 2016). The findings of the current study indicate that a child with autism experience quality participation in active play in various situations, when swinging alone on a swing at the park, or playing tag with friends, for example. Youth with disabilities have expressed that participation experiences are not made meaningful simply because one is involved in a particular activity in a normative way (Kramer et al., 2012). Instead, participants get more value out of participation when others are able to understand their unique needs and abilities and also respect their personal autonomy to make accommodation decisions (Kramer et al., 2012). By describing their children's play in detail, including discussions of each child's preferences, strengths, weaknesses and dislikes in play, parents in this study

provided important context regarding the diverse needs and abilities that children with autism can have in active play. In turn, such descriptions provide community recreation providers and participants with the context needed to understand how to better accommodate the various forms of active play that make up quality play experiences for children with autism. With this knowledge, recreation providers and parents alike will be able to facilitate positive play experiences that empower children with autism to develop play-related skills.

***Sensory Oriented Active Play***

Parents in our study described their children spontaneously choosing to run, spin, swing, slide and climb because such activities are active and fun, both of which are characteristics that children who are neurotypical look for in play (Miller & Kuhaneck, 2008). Contrary to the narrative often presented in autism research (Boyd et al., 2007; Hochhauser & Engel-Yeger, 2010), our findings agree with those of Dickie and colleagues (2009) who reported that parents of children with autism often frame their children's sensory play behaviours as strengths. Parents in our study expressed feelings of admiration and fulfilment when watching their children use their strengths in play (e.g., motor skills or attention to detail) and spontaneously choose activities that sparked joy for them in a variety of settings. While these findings reflect the views of the participants in this study, it is important to note that some parents of children with autism may perceive that sensory seeking behaviours inhibit their children's full experience of active play (Dickie et al., 2009). Regardless, the descriptions of sensory play given by parents in this study have been included under the umbrella of active play because this reflects the views of the participants.

Although parents in this study described their children's sensory play alongside other forms of active play, it is important to note that sensory play is contested as being an "acceptable" form of play for children with autism (Baranek, 2002; Schaaf et al., 2014). While some argue that sensory play is merely a different form of play (Goodley & Runswick-Cole, 2010; Mitchell & Lashewicz, 2018), others hold the view that it is deficient as it holds a child back from social engagement and quality participation in play activities with other children (Hochhauser & Engel-Yeger, 2010; Reynolds et al., 2011; Schaaf et al., 2014). Due to their unique sensory oriented and repetitive nature, these play behaviours are often categorized as restricted and repetitive patterns of behaviour, interests or activities — one of the core diagnostic criteria for autism spectrum disorder (American Psychiatric Association, 2013; Boyd et al., 2010). For example, a child's tendency to repeatedly choose the same activity during free play (e.g., jumping on a trampoline), is considered to be evidence of restricted interests and is therefore labeled a deficient or abnormal form of play, or not play at all (Boyd et al., 2007; Kirby et al., 2016). Similarly, the enjoyment of squishing mud between one's fingers is considered to indicate an abnormal interest in the sensory features of one's environment (American Psychiatric Association, 2013; Kirby et al., 2016; Turner-Brown & Frisch, 2020) and yet most daycares and kindergartens include sensory stations (e.g. water, slime, playdough) for children without disabilities. It may be possible that the differentiating factor is the time and attention a child devotes to the activity but nevertheless, research indicates that the sensory experiences of individuals with autism are more complex than is currently recognized (Ashburner et al., 2013). In turn, there is a need to acknowledge the sensory, and physical, aspects of the play of children with autism; if such play interests are not acknowledged,

children with autism may be given less opportunity for child -directed play and less access to materials that might enhance their play, both of which are within their rights to receive (Conn, 2015).

While there are a variety of contexts in which a child can use total body movements to exert their energy, during active play they are using these gross motor skills to use their energy in a way that they are choosing, rather than being told to do (Truelove et al., 2017). The purpose of this type of play is that it is fun for the child themselves (Truelove et al., 2017). The concept of fun and the quality of a play experience itself is subjective; what is fun for one child may not be fun for another (Martin Ginis et al., 2016). Parents in this study described their twins and triplets having fun while moving their bodies and interacting with various textures during active play. It is important to acknowledge that the descriptions given by parents in the current study may not reflect the opinions of all parents of children with autism; some parents might perceive their children's play as being overly repetitive and rigid, to the point of holding them back from experiencing fun and enjoyment through the activity. However given the results of the current study, there is a need to consider the possibility that many children with autism are meeting the definition of active play but in non-traditional or non-normative ways (Truelove et al., 2017). If this is true, it may be appropriate for stakeholders to break away from viewing play as a way to normalize children with autism and begin capitalizing on their interests and strengths and play to help them develop further play related skills.

**Social Play**

This study is the first to explore how twins and triplets with autism engage in active play together. While there has been research conducted on twins who are neurotypical,

these studies often split up twins, seeking to understand each twin's social play behaviours with other non-twin children (DiLalla, 2006; DiLalla & Caraway, 2004), and as such there is still very little known about how twins engage in play together. While there is a lack of research exploring twin and triplet play behaviours, there is some indication in the literature that these siblings share a close relationship which may positively impact their behaviour during play together (Åkerman & Suurvee, 2003).

One major theme that developed from the results of the current study was that parents frequently described their twins and triplets with autism playing with each other. Parents spoke about the unique reality of raising twins or triplets, explaining that they try to keep both/all children on the same schedule and stage of development, as much as possible in order to keep home life running smoothly. As a result of this dynamic, twins and triplets tended to spend much of their time playing in the same space, whether outdoor or indoor. Parents talked about their children playing a variety of activities together such as swinging on the swings, jumping on the trampoline and chasing one another. These findings contrast research suggesting that singletons with autism may prefer to play by themselves (Calder et al., 2012). It is possible that the presence of a familiar, ever-present, playmate may be a motivating factor for children with autism to engage in play with another child rather than by themselves, and this may benefit both children over the long-term.

There is much discussion in the literature about the challenges that children with autism exhibit in play with peers (Baker, 2000; Chester et al., 2019; Dean et al., 2016; Gilmore et al., 2019). Researchers highlight the difficulty that singletons with autism have in communicating, taking turns with peers, directing their attention to the same object or

individual as their playmate, understanding social cues and expressing emotions (Boucher & Wolfberg, 2003; Hobson et al., 2008; Jung & Sainato, 2015). While parents in our study did provide some similar descriptions, they also talked about their twins and triplets engaging verbally and non-verbally (e.g., eye contact) during play together and discussed how their children would often express their enjoyment of the activities through smiling and laughing. Parents described their children inviting each other to play, laughing while having fun, and verbally sharing their play ideas. In light of these findings, it is possible that this 'built-in' familiar playmate may facilitate social play for twins and triplets with autism. Previous research has suggested that children with autism may enjoy play in familiar physical and social environments with playmates who share similar preferences for games with strong sensory and repetitive motor components (Conn, 2015; Conn & Drew, 2017). It is possible that this dynamic is seen to a greater extent in twins and triplets with autism given previous research suggesting that children with autism may enjoy playing in environments where they are afforded opportunities for social interaction, particularly when those environments are more familiar and predictable (Blake et al., 2018; Fahy et al., 2021).

Despite the similarities shared between twins and triplet siblings in terms of environment, available toys, family culture and age, parents talked about many differences they observed in the way that their twins and triplets played. Parents also talked about their children's different interests, preferences, skills, flexibility, and social attunement when engaged in active play together and with other children. Parents reflected on the different skills of their children, discussing how one child had stronger gross motor skills while the other might demonstrate more skill in fine motor tasks. In some cases, one sibling was

motivated to seek out playmates on the playground while their sibling(s) tended to explore on their own. Some parents talked about one of their children as being more likely to direct play, introducing their own play ideas, while the other was more flexible, willing to follow along with a variety of play ideas. While there is much consensus in the literature regarding the diversity that exists along the autism spectrum (Lanou et al., 2012; Uljarević et al., 2020), the current study is the first to demonstrate these differences in the active play behaviours of twins and triplets with autism.

Parents in the current study compared and contrasted the different ways that their children engaged in pretend play, both in play with their twin or triplet sibling and in larger social play settings. While a common theme in research pertaining to singletons with autism is the lack of imagination observed in their play (Hobson et al., 2013; Kasari et al., 2013; Wolfberg et al., 2012), parents in our study often described at least one of their children as being more imaginative than their twin or triplet sibling in play, despite both/all children having autism. A common dynamic expressed by parents was how one of their children was more creative than their sibling and would tend to come up with play ideas while the other(s) would be happy to follow along. Because of this dynamic, parents often described their twins and triplets playing pretend games together such as attacking 'bad guys' in the tree fort or being fish swimming together in the water. These findings suggest a child with autism's challenges with imaginative play may be related to their unique cluster of autistic and personality traits. This is particularly meaningful considering that parents often described their children as being distinct from one another in the presentation of their autistic characteristics. Furthermore, it is possible that differences in strengths and interests between twins and triplets, may actually serve as a facilitator of play as children

can observe the play of their sibling and also practice it themselves. There is a need for future research to explore how the experience of being a twin or triplet may impact a child's experience of active play.

Parents also discussed their children's play behaviours when engaged in play with other children outside their sibling group. When talking about their children's play in groups with other children, parents often described one twin or triplet as being more outgoing and socially motivated than their sibling(s). These findings contrast those of previous research indicating that twins who are neurotypical tend to show unique play behaviours with their twin or triplet, tending towards more withdrawn and hesitant behaviours in play with an unfamiliar playmate (DiLalla & Caraway, 2004). While this description may be true of some twins and triplets described in the current study, it is not true of them all. Parents frequently described one or more of their children as being very socially motivated, always wanting to be included in the group and doing their best to ensure that all the children in the group were getting along. In contrast, parents also described some twins and triplets as being more likely to play on their own when in a group play setting. Overall, these results suggest that twins and triplets with autism exhibit a range of social behaviours.

Previous research has established the important role that siblings play in the social development of children with autism. (Ben-Itzchak et al., 2018; Petrina et al., 2014). While parents can provide their children with autism helpful prompts and structure to develop their play skills, this can sometimes be at the cost of the child having opportunity to spontaneously initiate interactions on their own (El-Ghoroury & Romanczyk, 1999). In contrast, when a sibling who is neurotypical is playing with a sibling with autism, they are

less likely to take on a teacher role, giving the child with autism space and time to practice initiating play while benefiting from their sibling as a peer model (El-Ghoroury & Romanczyk, 1999). The current study presents similar findings in play interactions between sibling dyads and triads who all have autism. Parents gave multiple examples of their children developing play skills through play experiences with each other. For example, some parents described how children who tended to be more passive in play were learning to communicate their play preferences to their twin. Others discussed their children slowly gaining the ability to understand their sibling's play preferences and learning to make compromises. These results suggest that being a twin or triplet may be beneficial for children with autism as they learn new play skills. Inclusion criteria for this study stipulated that all children in the set of multiples have autism, it would be very interesting to also study multiples where not all the children have autism (i.e., one with autism and one without) to examine if there are differences in social play.

While previous research has investigated the play of twins who are neurotypical there have been a limited number of studies exploring how these children play together (DiLalla, 2006; DiLalla & Caraway, 2004). Therefore, the findings of the current study are novel as it is the first study to explore the nature of active play between children who both/each have a diagnosis of autism as all other research with siblings has focused on the play between a child with autism and a sibling who is neurotypical (Baker, 2000; Ben-Itzchak et al., 2018; Conn & Drew, 2017; Shivers & Plavnick, 2014). It is possible that twins and triplets with autism may benefit from their differences as each of their distinct strengths, weaknesses and preferences may provide the other child(ren) opportunities to be

challenged and learn new play skills, however there is a need for further research into this dimension of dyads and triads where all children have a diagnosis of autism.

## Strengths and Limitations

The virtual interview setting allowed for a diverse group of international participants to be recruited which ultimately increased the credibility of the findings because descriptions could be gathered from participants across different regions within Canada, The United States and Portugal (Korstjens & Moser, 2018). Unfortunately, this method of conducting interviews did exclude any potential participants who did not have access to virtual platforms and/or the ability to navigate an online environment. Another limitation of this study is the presence of self-selection bias, the potential skewing of results towards the life experiences of individuals who volunteer for the study (Robinson, 2014). Individuals who chose to volunteer for this study may have been those who opted in because they had an interest in dedicating some time to talking about their children's active play (Robinson, 2014). Therefore, it is possible that the results of the study pertain more towards individuals with positive experiences to share about their children's play than to those who may not and therefore did not participate (Robinson, 2014). To mitigate this bias, and in an attempt to draw a more representative sample, the researchers offered a $50 Amazon gift card as renumeration for each participant's time. The presence of self-selection bias may also be why only mothers of multiples with autism responded to the recruitment flyer, as women tend to be more likely to volunteer for studies (Robinson, 2014). Women are appropriate participants for a study such as this as they tend to serve as primary caregivers for children (Kuhaneck et al., 2010). However, research shows that fathers interact with their children with autism in play in different ways than mothers do

(Pisula, 2008) and as such, may have been able to provide varying perspectives of their children's play to compliment those of the mothers. However, given the large, international sample, we could not control who responded to the recruitment ad and participants were taken on a first come, first served basis. Another limitation is that the researchers only spoke English and therefore we were only able to recruit English speaking participants.

A noteworthy characteristic of this study is that, of the 9 multiples sets discussed, four were female dyads, one was a male dyad, two were male-female dyads, and one was an all-male triad (Altogether, eleven females and eight males). It is possible that a triplet context may be different from a twin context, but the findings did not capture such nuance because eight of the nine sets in this study were twins. Furthermore, the proportion of females and males in this study can be seen as a limitation because it does not match the 4:1 ratio documented in autism literature(Zeidan et al., 2022). Conversely, this can also be viewed as a strength as this study provides descriptions of the active play behaviours of females with autism, a population that is underrepresented in play and autism literature (Dean et al., 2016).

## Conclusions

The current study showcases the diverse active play behaviours of twins and triplets with autism. Children with autism are engaging in multiple types of active play, such as running, climbing, swinging and sliding, which those recommended for the healthy development of children. Parents described their twins and triplets exerting energy during active play while moving their bodies and having fun. While it is clear that many children with autism prefer to play in repetitive and sensory oriented ways, these study findings indicate that such characteristics may not be getting in the way of full engagement in active

play for children with autism. While a child with autism may play certain activities in different ways than a child who is neurotypical may choose to, the results of this study suggest that they are still engaging in similar types of activities. In fact, children with autism may be meeting the definition of active play, albeit in non-traditional ways. Future research should engage children with autism directly, seeking to understand the aspects of active play experiences that make them enjoyable and motivating.

This study was the first to explore the active play behaviours of twins and triplets with autism, a unique population in which children share many similarities in age, diagnosis, home environment, access to toys, etc. The findings revealed how twins and triplets can serve as built-in playmates for one another, positively impacting the overall play experience for each child with autism. While similarities in play preferences and motivations served as facilitators for play, such dissimilarities also acted as facilitators by creating valuable learning opportunities in the home. In this way, children with autism accumulate a significant amount of practice playing with their twin or triplet playmate(s), learning skills which can then be generalized into larger social contexts such as schoolyard or playground play. Where previous research has explored the effect that peer models who are neurotypical can have on the play of children with autism, future research should explore how frequent play experiences with children who share the same age and diagnosis (siblings and non-siblings) may contribute to positive play experiences for children with autism.

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# Chapter 4. Parents' Descriptions of Active Play as a Window into the Worlds of their Twins and Triplets with Autism

## Abstract

**Purpose:** The purpose of this descriptive phenomenological study was to describe the value that parents of twins and triplets with autism place on active play.

**Methods:** The researchers used purposive sampling techniques to recruit a sample of parents of twins and triplets with autism. The sample was comprised of mothers of children ages 4-11 years old from Canada, USA and Portugal (N=9). Mothers each took part in a single semi-structured online interview with the researcher. Interviews were audio recorded, transcribed and thematically analyzed, using Nvivo software to support.

**Results:** One main theme entitled active play as a window into a child's world was generated from the data. This theme contained five sub-themes: Parent perceiving child's strengths and weaknesses in active play, parent facilitating active play experiences, parent perceiving child's intrinsic motivations for active play, parent interpreting child's active play behaviours and active play experiences as a medium for parent/child communication.

**Conclusions:** The findings of this study suggest that parents value active play because it affords them opportunity to observe and perceive a number of their children's characteristics through their active play behaviours (e.g., strengths, weaknesses, and intrinsic motivations). Parents then use what they have learned to encourage and facilitate new active play experiences for their children that encourage their overall development. Active play also serves as a context for parents and children with autism to practice communicating both verbally and non-verbally with each other.

## Introduction

Autism spectrum disorder (henceforth referred to as autism) is a neurodevelopmental disorder characterized by differences in social communication and restricted, repetitive behavioural development impacting the way that one communicates and interacts within their environment (American Psychiatric Association, 2013). Global prevalence data estimates that 1 in 100 children have a diagnosis of autism (Zeidan et al., 2022) but in Canada this estimation increases to 1 in 66 children (Public Health Agency of Canada, 2018); both data sets indicate that boys are four times more likely to receive a diagnosis than girls (Public Health Agency of Canada, 2018; Zeidan et al., 2022). Studies examining the rate of autism diagnoses among twins demonstrate that the probability of a child receiving a diagnosis of autism increases if their twin sibling has already received a diagnosis; this probability sits at about 88% for identical twins and 31% for non-identical twins (Hallmayer et al., 2002; Ronald & Hoekstra, 2011). Even within twins, autism traits vary from person to person (Couteur et al., 1996), yet despite this wide spectrum of attributes, the differences in communication and social behaviours that children with autism exhibit are reflective of the core characteristics of autism (American Psychiatric Association, 2013).

The differences that children with autism show in both their social communication and behaviour can be seen in their daily life experiences, including in the way they relate to others and engage in daily occupations such as play (American Psychiatric Association, 2013; Case-Smith & Kuhaneck, 2008; Davis & Neece, 2017; Preece & Jordan, 2010). For example, children with autism often struggle to pick up on emotional and interpersonal cues during social interactions (Schwartz et al., 2021) and may make use of fewer verbal

and non-verbal methods to communicate during a social interaction (Tager-Flusberg, 2016). These differences can also impact the way that they engage in play by themselves and with others (Brown & Murray, 2001; Calder et al., 2012; Gilmore et al., 2019). For instance, fun and spontaneity are considered to be a hallmarks of typical play behaviours (Yogman et al., 2018), yet compared to children who are neurotypical, children with autism often show less of these characteristics in their play (Brown & Murray, 2001; Wolfberg et al., 2012). The social communication, and behavioural differences exhibited by children with autism exist on a spectrum and so there is substantial variability in their expression (American Psychiatric Association, 2013; Couteur et al., 1996). Differences in play behaviours are often among the first of these to be observed in children with autism (Brown & Murray, 2001; Pellegrini & Smith, 1998).

Previous research has demonstrated how parents of children with autism are able to gain perspective into the inner experiences of their children through active play, specifically their children's perspectives, interests, and strengths (Di Renzo et al., 2020; Dickie et al., 2009; Harte, 2009; Mitchell & Lashewicz, 2018). Active play refers to any time of freely chosen and unstructured play where a child is using total body movements to exert their energy in a way that they are choosing because it is fun (Truelove et al., 2017). In a qualitative study exploring the experiences of fathers during play with their children, Mitchell and Lashewicz (2018) found that fathers were able to simultaneously take note of their children's differences in play, while also celebrating their capabilities. For example, one father described the bravery his son showed in climbing a tall climbing structure in front of a group of children (Mitchell & Lashewicz, 2018). Beyond simply observing their children's characteristics in play, fathers also discussed the access to their children's world,

afforded to them by co-play (Mitchell & Lashewicz, 2018). Fathers talked about these experiences as being instrumental in helping them to connect with their children's humanity, coming to accept their children's unique qualities as pieces of who they are (Mitchell & Lashewicz, 2018). In both observing and participating in play with their children with autism, parents are able to gain insight into their children's inner worlds, their motivations, preferences and personalities.

Previous research has also shown that play can serve as a platform for parents to communicate with their children with autism (Di Renzo et al., 2020; Dickie et al., 2009; Dolev et al., 2014). Di Renzo and colleagues conducted a mixed method study in which 50 parents of children with autism were videotaped during play with their children in their homes (Di Renzo et al., 2020). Following the recorded play session, parents were then interviewed about their perceptions of what had gone on in their child's mind during the play interaction (Di Renzo et al., 2020). The results of the study indicated that many parents were not only attuned to their children's signals but also able to respond appropriately (Di Renzo et al., 2020). Based on interviews, the researchers distilled down the main parental characteristics that enabled parents to communicate well with their children during play experiences (Di Renzo et al., 2020). These parents were open to their child's point of view, accepting who their child was and seeking to understand their perspective (Di Renzo et al., 2020). Further, they prioritized the relationship with their child, being present in the moment and being mindful of their children's mental state, wishes and difficulties as they presented them (Di Renzo et al., 2020). Ultimately, because of the parent's level of attunement to their children, they were able to understand their children's verbal and

nonverbal communication and then respond appropriately (Di Renzo et al., 2020; Dolev et al., 2014).

While research has shown that parents of children with autism are able to connect with their children through play (Di Renzo et al., 2020; El-Ghoroury & Romanczyk, 1999; Karst & Van Hecke, 2012), this close relationship does not always come naturally (Guo et al., 2017). Parents often seek emotional connection with their children by matching their child's smile or laugh at a particular object or movement, yet research indicates that children with autism may spend more time engaging with objects than with their parent during co-play experiences (Guo et al., 2017). There is also some indication that, though children with autism do initiate positive emotional interactions with their parent, they do not stay focused on this interaction for very long before changing their focus to something else in their environment (Guo et al., 2017). These results indicate that although parents of children with autism are very sensitive to their children's emotions during play, they may have difficulty sustaining connection in their children's inner worlds (Guo et al., 2017).

Previous research exploring the relationships between parents of triplets, twins and singletons who are neurotypical indicates that parent-child communication may be more difficult in triplet contexts given the extra demand on parents (Feldman & Eidelman, 2004). To measure the level of parents' engagement with their children's needs, researchers conducted a two year follow up study of 69 parents of triplets, twins and singletons in which data was collected through home observations, video recorded parent-child free play sessions, and parent interviews (Feldman & Eidelman, 2004). Researchers found a correlation between the level of emotional connection each child had with their parent during both play and non-play interactions at home (e.g., parent and child expressing

happiness at the same time) and their development of social skills (Feldman & Eidelman, 2004). While the researchers did not find significant difference between the development of singletons and twins, the results of the study did indicate that parents of triplets may be less likely to be sensitive to their children's emotions, preferences and needs during play. Considering the communication differences that children with autism display (Di Renzo et al., 2020; Guo et al., 2017), it is possible that parents of twins and triplets with autism may face barriers in connecting with their children's world. There is a paucity of research exploring the relationship dynamic between parents and their twins and triplets with autism.

Evidence indicates that play experiences can facilitate closer parent-child relationships for children with autism (Mitchell & Lashewicz, 2018; Romero-Ayuso et al., 2021). Research specifically points to the level of emotional connection built between a parent and their child during play as being facilitated by a parent's ability to gain an understanding of the child's inner world (Di Renzo et al., 2020; Dolev et al., 2014; El-Ghoroury & Romanczyk, 1999; Guo et al., 2017; Karst & Van Hecke, 2012). The quality of verbal and nonverbal communication between parents and children is increased when parents able to perceive their child's strengths, weaknesses, preferences and needs in play (Di Renzo et al., 2020; Dickie et al., 2009; Dolev et al., 2014). This communication between parent and child is essential for children with autism as it provides an opportunity for children to understand and practice social interactions from an early age (Dolev et al., 2014; Feldman & Eidelman, 2004). Although there is some research indicating that parents of triplets who are neurotypical may face barriers in building strong emotionally connected relationships with their children due to the increased demand on their attention (Feldman

& Eidelman, 2004), there is an overall paucity of research on the topic. Furthermore, there is no research exploring the ways that parents of twins and triplets connect with their children through active play.

The purpose of this descriptive phenomenological study was to explore and describe the perceptions that parents of twins and triplets with autism have regarding their children's active play behaviours. This study was guided by the question: What value do parents place on active play for their twins and triplets with autism?

The choice to use person-first language (i.e., child with autism) in this study rather than identity first language (i.e., autistic child) was informed by the parents report of their own preferences. As the majority of parents interviewed for this study preferred child with autism, the authors adopted person-first language. It is important to note that, as is reflective of the varying opinions within the autism community (Kenny et al., 2016), most but not all parents preferred the use of person-first language when speaking about their children.

## Methodology

### Methodological Framework

This study is the first to explore the value that parents place on active play for their twins and triplets with autism. Accordingly, a descriptive phenomenological approach was deemed appropriate to guide the research process (Matua & Van Der Wal, 2015) because this methodology employs both the researcher and participants in a dynamic and inductive process of developing an accurate picture of the phenomenon (i.e., any problem, issue or topic) in order to generate new knowledge (Matua & Van Der Wal, 2015; Reiners, 2012; Van de Ven, 2016). Specifically, the researcher gathers descriptions of the phenomenon

from individuals who have everyday life experiences with it; rather than seeking to interpret the deeper meanings behind participant's words, the researcher focuses on developing a clear description of the phenomenon (Matua & Van Der Wal, 2015; Reiners, 2012).

To accomplish this, the researcher gathered participant's descriptions of their conscious experiences both observing and engaging in active play with their twins and triplets with autism (Chan et al., 2013; Matua & Van Der Wal, 2015). Participants spoke not only of their real-life experiences, but also of their perceptions of the active play behaviours of their twins and triplets with autism (Creswell & Poth, 2018; Matua & Van Der Wal, 2015; Patton, 2019). By identifying themes in these experiences and perceptions, the researcher was able to communicate the essence of the phenomenon (Patton, 2019).

**Positionality and Bracketing**

Qualitative methodologies require the researcher to serve as a tool throughout the entire research process and in particular, when interacting with participants to generate knowledge (Chan et al., 2013; Kowalski et al., 2018; Reiners, 2012). It is my belief as well as a guiding tenet of descriptive phenomenology, that I must keep my preconceived notions separate from my analysis when serving as a tool to collect and analyze the descriptions that participants give of their real-life experiences (Patton, 2019; Reiners, 2012). While it was not possible to eliminate bias completely (Chan et al., 2013), this phenomenological attitude assisted me in approaching the participant's descriptions with a sense of curiosity and wonder as if I had no prior knowledge or experience with the phenomenon (Patton, 2019). Furthermore, I employed a variety of self-reflection strategies to mitigate my pre-

conceived notions, assumptions and prior experience (Creswell & Poth, 2018; Korstjens & Moser, 2018; Patton, 2019).

One such self-reflection strategy is that of positionality, which required me as the researcher to reflect on and name the position, or social context, that I approached the research process from (Creswell & Poth, 2018; Hopkins et al., 2017; Rowe, 2014). Stating my positionality as a researcher was important as my underlying philosophical assumptions could impact the research process from beginning to end (Rowe, 2014). Coming from a social constructivist viewpoint, it is my belief that individuals construct meaning based on their individual experiences and so researchers can gain knowledge by gathering these views that individuals have about their own experiences (Creswell & Poth, 2018). It is my belief that researchers are able to direct their consciousnesses towards something other than themselves throughout the research process, so long as they engage in reflective journaling and conversations with others on the research team in order to cultivate both self-awareness and an ongoing practice of suspending judgments, bias and presuppositions (Creswell & Poth, 2018; LeVasseur, 2003; Patton, 2019). And so, beyond stating my positionality, it was also critical that I set aside, or bracket, my own experiences from the descriptions and perceptions that the participants expressed to me regarding their own lived experience of the phenomenon (LeVasseur, 2003; Patton, 2019). In conversation with my masters' supervisor, I decided to include a bracketing exercise here, framing it with reflections on my own previous education and experiences as well as my underlying beliefs and values.

> *During my undergraduate degree in kinesiology, I was introduced to the role of physical activity and play in the lives of people with disabilities. Specifically, I had the opportunity to learn about how children*

*with disabilities experience and benefit from participation in physical activity and play. One topic which grabbed my attention was that of inclusive sporting experiences, how these can be facilitated by making simple adaptations to physical spaces, rules and equipment. I found this topic so engaging because I had never given thought to how the social and physical environment of a simple basketball game could exclude certain individuals. I believe it was around this point in my life when my curiosity about the lived experiences of people whose characteristics are different than mine.*

*It was also around this time that I had the opportunity to begin working with children with autism in a physical activity setting. As I got to know the children I was working with, I found myself appreciating how each one was so unique; some liked to run around and explore on their own and others preferred to walk with you, telling you all about what was on their mind. Regardless, I noticed that I had to get out of my comfort zone to really connect with them and their world. While I had a lot of previous experience working with children with typical development in physical activity settings, this was my first time working with children who communicated and expressed themselves in different ways; I was learning ways to expand my coaching and mentorship 'toolbox'. As part of this process, I also began to appreciate interactions with parents, observing and learning from how they communicated with their children and helped them deal with transitions and sensory sensitivities. Overall, I found that my experiences during my*

*undergraduate degree helped me to think with more wonder and curiosity, rather than being limited to the lens of my own life experience.*

*Now, as a masters student working within the realm of adapted physical activity, I have become even more curious about the variety of ways that children with autism experience physical activity and play. Are there ways that we can adapt physical activity experiences for children with autism so that they experience a higher quality of participation? How can come to know what might be important to these children in play? While I had initially planned to work directly with children with autism in this research, I ultimately decided, given the public health restrictions surrounding COVID-19, that I could also learn a lot by interviewing parents of children with autism. I believe that parents have unique relationships with their children that enable them to have perceptions about their children's inner worlds.*

*Finally, I think it is important to say that beyond my experiences working with children with autism in a therapeutic recreation setting, I do not have autism, nor do I have any lived experience as a parent, family member or close friend of an individual with autism. Also relevant is that I myself am not a twin or triplet, although I do have a close friend who is a twin. While this naiveté may serve me well in approaching the interviews with parents with an attitude of curiosity, it also comes with certain biases. I have spent countless hours reading articles and learning about children with autism and active play, so I have much book knowledge. The articles I*

*have read come from diverse backgrounds, with some examples being adapted physical activity, education, occupational therapy. All this to say that I will certainly have much to bracket and think reflexively about.*

**Eligibility**

Eligible participants were those who were a parent or legal guardian of twins or triplets 4-11 years of age, where both/all children in the multiple group had a diagnosis of autism, as reported by parents. Participants also needed to be able to speak and read English, have access to the technology needed for Google Meet Videoconferencing (i.e., a phone, tablet, or computer) and have given their consent to participate. Any participants who could not meet this inclusion criteria were excluded from this study.

**Recruitment and Participants**

This study was approved by the Ontario Tech Research Ethics Board (Appendix 1) and nine participants were recruited, using purposive sampling techniques. A sample size of nine is within the recommended range for phenomenological studies (~ 5-25 participants) (Creswell & Poth, 2018; Patton, 2019) and was also sufficient to reach the point of thematic saturation, the stage in data analysis where no new codes or themes are generated from the data (Fusch & Ness, 2015; Sebele-Mpofu, 2020). Dr. Lloyd, the lead supervisor on the project, acted as a gatekeeper by contacting eligible parents of children who previously participated in her research studies and had given consent to be contacted for future studies. A snowball sampling strategy was also employed as participants were encouraged to invite any eligible participants from their social circles to participate. One participant posted the recruitment poster (Appendix 2) on a global social media group for parents of multiples with autism which ultimately led to the enrollment of six participants.

The recruitment documents (Appendix 3 and 4) for the study provided parents with a detailed description of the study and directed them to contact the leader researcher if they were interested in participating.

All participants read and digitally signed a consent form (Appendix 5) and then were sent a Google Meet link for the date and time of the interview. Parents were also given the link to an online demographic form (Appendix 6) and were asked to fill it out before the beginning of the interview; all nine participants filled out the demographic form. Participants were given a $50 Amazon gift card following the completion of the interview.

The sample recruited for this study included a group of individuals with different life experiences based in part, on their country of residence and the personalities, strengths, weaknesses, abilities and needs of the children with autism that they are a parent to. As with all qualitative research, this information is important for readers to know so that they may decide for themselves if and how these findings are transferable to their context (Creswell & Poth, 2018).

**Study Design**

An interview guide (see Table 4) was designed with pre-planned questions to provide some structure for each interview, while also allowing for flexibility through the inclusion of probing questions that the interviewer could ask to further explore participant experiences (Creswell & Poth, 2018). This interview guide was pilot tested with a mother of four-year-old twins who are neurotypical prior to data collection to ensure the quality and accessibility of both questions and probes within a 60–90-minute time frame. Before beginning each interview, the researcher laid out an operational definition of active play to ensure that each participant understood the scope of the topic. Specifically, parents were

told that active play is any kind of unstructured play where children use their whole body in their play; when they are playing actively, they are using their energy in a way that is fun and towards something they are choosing to do (Truelove et al., 2017). As the goal of the current study was to gather rich descriptions from parents of their own children in play, the researcher chose not further train parents as observers. Nine semi-structured interviews took place online via Google Meets throughout November 2021. All interviews were audio-recorded and transcribed in real time using Otter.ai. Immediately following each interview, the researcher de-identified each transcript and compared them to the audio recording to correct any errors in the transcript.

**Table 4**

*Semi-Structured Interview Guide*

| Question | Probe |
|---|---|
| 1. Can you tell me a little bit about your family? | • How many children do you have? What are their ages, genders?<br>• Can you tell me about "name", "name" (and "name")?<br>• What is he/she like? What are his/ her favourite things to do?<br>• How old are they?<br>• Do they use words to communicate?<br>• Do they have their own form of communication between themselves?<br>• Do they play more with each other or another sibling? (If they have other siblings)? |

| Question | Probe |
|---|---|
| 2. Can you tell me a little about your twin's/triplet's play when they were toddlers (1-2 years old)? What about when they were 3-5 years old? Now that they are in school do you think their play has changed? (Questions tailored depending on the age of the participants) | • What do you think has been the biggest change in their play as they have grown up?<br>• Do any stories come to mind of how they played at that age?<br>• Do you see them stimming during play? If so, what does this look like for "name"? And "name"? (and "name"?) (e.g., using body, environment, etc.)<br>• Do you see them trying to have any particular sensory experience in their play?<br>• Are they drawn to certain toys or objects? |
| 3. Can you tell me about how your twins/triplets play together? | • Do they usually play with toys or objects?<br>• When your children go outside, what do they immediately go to? A certain play object or activity?<br>• Do they like to go to the playground? If so, what do they like to play on? (Specific play structures? The grass?)<br>• How do they play in the house?<br>• Do they have a favourite place they like to play (e.g. their room, backyard, playroom)? |
| 4. Think back to the most recent time that you noticed that your twins/ triplets were playing really well together. Can you tell | • Where were they?<br>• What where they doing?<br>• What did you think made it go so well? |

| Question | Probe |
| --- | --- |
| me what stuck out to you about that? | • What generally works to get active play happening in your home?<br>• Can you tell me about some situations that might cause play to break down between your children?<br>• What would be your ideal play space for your children? Why would you choose that setting over another?<br>• Are there any locations or situations that make active play hard? |
| 5. In the course of a week, what kind of play activities do you do with your twins/triplets? | • Is it generally you trying to engage them in their play or are they coming to you wanting to play with you?<br>• Is it easy or hard to engage with them?<br>• When you do play with them, what do you do?<br>• Why do you choose those particular activities? |
| 6. If you had some friends or family over for a visit in the backyard, would your twins/triplets play with the other children? | • If so, can you describe what that play looks like?<br>• Do they sometimes split off from each other and play with other children? or do they generally stick together when playing with other children?<br>• Do they every play just the two of them, ignoring the other children?<br>• Do they play games with the other children or more so do their own thing or a similar thing alongside the other children?<br>• If not, can you describe their play in that setting? |

| Question | Probe |
|---|---|
| 7. Can you tell me about a time when your child was playing, and you felt proud of them? | • Have they ever surprised you by doing something in their play that you didn't know they could do? |
| 8. If you could do anything on a Saturday afternoon with your children, what would you do? | • What things do you have to think about when you're making plans to play with your children?<br>• Based on your answers so far, it seems that you value play. Can you tell me why?<br>• If active play is not something you value, can you tell me a little bit about why not?<br>• Has there been a person/program/experience in your life that has influenced how you view active play?<br>• What are some things you do as a family because you value active play? |

Following each interview, the researcher dedicated time to the practice of reflexive journaling; an opportunity to reflect on anything that may have heightened their awareness of presuppositions or bias and also to capture any notable contextual information, such as participant demeanor or the overall dynamic of the interview (Korstjens & Moser, 2018; Penner & McClement, 2008). Reflexive journal entries were also recorded at other times during the research process as the researcher became aware of their own thoughts about the phenomenon and/or the participants as well as following conversations with the researcher's supervisors and peers within the graduate studies program at Ontario Tech (Penner & McClement, 2008). In addition to reflexive journaling, the researcher also

recorded an audit trail, keeping detailed notes of each step of the research journey to ensure the study results would be both dependable and confirmable (Korstjens & Moser, 2018).

**Data Analysis**

Before beginning data analysis, the researcher sent the participants two separate member checking documents about one month apart to add to the credibility of the study (Korstjens & Moser, 2018). The first, a verbatim transcript of their interview, was sent within a week of their interview; participants were then given two weeks to respond with changes they wished to make (i.e., additions, clarifications, omissions). While five of the nine participants responded, only two participants requested minor changes.

While awaiting participant feedback, the researcher prepared the second member checking document beginning by going through each transcript multiples times, reading the transcript and listening to the audio, to familiarize themselves with the overall narrative (Bradley et al., 2007; Kowalski et al., 2018). During this process, the researcher wrote memos, recording common phrases or ideas from each interview to broaden their perspective and identify preliminary key themes (Kowalski et al., 2018). After about one month undergoing this iterative process, the memos eventually became individualized synthesized member checking documents beginning with key themes of the interview and followed by supporting quotations from the interview itself. Each participant was sent their individualized synthesized member checking document along with a list of questions to help guide them through the process of reflecting on their document (e.g., “Do the findings capture the essence of what you shared?”), and were again invited to respond with any comments, clarifications or changes they wished to make. Three out of the nine participants responded, though none had any changes they wished to make to the document.

Once the member checking process was complete, and the transcripts were finalized, the researcher began analyzing the data through a process combining both deductive and inductive content analysis. Nvivo was used to support analysis through the organization and searching of data and the researcher utilized the deductive content analysis framework suggested by Bradley and colleagues (2007) to develop the initial coding structure (see Table 5). To further develop some initial conceptual codes, the researcher included some codes based on findings from the initial memoing as well as some types of play as described in Coopers' Conceptual Model of Children's Play (Cooper, 2000). Once the initial coding structure was in place, the researcher engaged in an iterative, constantly evolving coding process, creating new codes and sub-codes, splitting up existing codes into more specific sub-codes, and re-naming existing codes or sub-codes to better reflect concepts and themes as they became more fully developed.

**Table 5**

*Framework for Deductive Content Analysis*

| Code Type | Description | Example |
|---|---|---|
| Conceptual | Information describing key concepts | Social play |
| Relationship | Descriptions of links between conceptual codes | Verbal communication during play together |
| Participant Perspective | Positive, negative or neutral perspectives | Positive perspective |
| Participant Characteristics | Descriptions of participants | Child characteristics |
| Setting | Descriptions of settings | Indoor play |

Throughout this process, the primary researcher and the research supervisor met regularly to discuss the codes and sub-codes that had been generated to ensure credibility of the study by way of investigator triangulation (Creswell & Poth, 2018; Korstjens & Moser, 2018). Through conversation, it became apparent that certain codes might be described better by a different name or be more appropriately grouped with a different collection of codes. After about a month of this rigorous analysis and review process, the final themes were finalized, and the primary researcher and research supervisor began to meet to discuss and ensure that each code and sub-code was appropriately named and defined in the codebook (Appendix 7). At this point, the researcher went over the transcripts a final time to ensure consistency of the codes in each transcript.

## Results

Nine participants (n=9), eight mothers of twins and one mother of triplets, each took part in one, one-on-one virtual interview in November 2021 for this descriptive phenomenological study. As a benefit of virtual interviews, the researchers were able to gather a diverse sample in that four participants were living in Canada, four in the United States and one in Portugal. As described in Table 6, the participants had 19 children in total (11 females, 8 males) between the ages of 5 to 11 years of age. While the interviews pertained only to the participant's children who were twins or triplets with autism, it is important to note that 6 participants had other children besides their twins or triplets and 3 participants did not.

**Table 6**

*Demographic Information of Children as reported by Participants*

| Participant | Age | Zygosity | Sex |
|---|---|---|---|
| 1 | 6 | Fraternal | Male, Female |
| 2 | 7 | Two Identical, One Fraternal | Male, Male, Male |
| 3 | 5 | Fraternal | Female, Female |
| 4 | 10 | Identical | Female, Female |
| 5 | 9 | Fraternal | Female, Female |
| 6 | 7 | Identical | Male, Male |
| 7 | 11 | Fraternal | Male, Female |
| 8 | 10 | Identical | Female, Female |
| 9 | 7 | Fraternal | Male, Female |

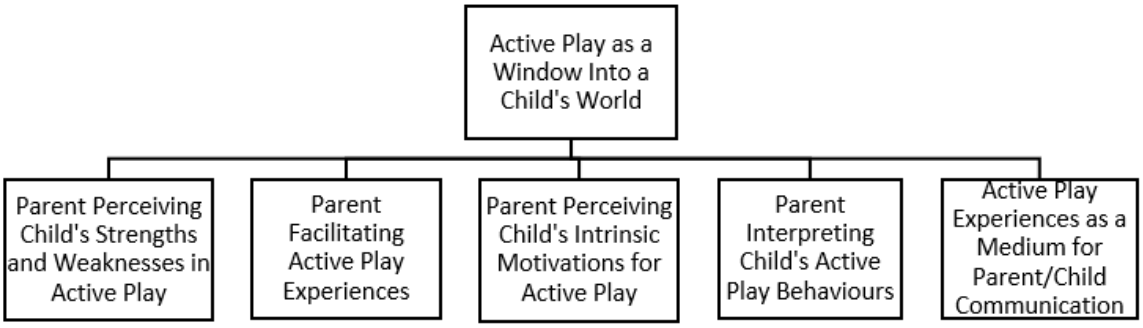
The differences observed in this sample, both within and between dyads and triads, reflect the diversity of personalities and the spectrum of social communication and behavioural differences. Some parents described their children as being vocally communicative while others expressed that their children communicated primarily through their behaviour. Some parents talked about their children being drawn towards other people and other parents described their children as being quieter and preferring to have their own space. The diversity of the sample is also seen through the variety of co-occurring diagnoses which the children had, including Apraxia, Tourette's, Epilepsy, brain tumour/cancer, ADHD, Cerebral Palsy, Eosinophilic Esophagitis, Encephalopathy, Hypotonia and Torticollis Plagiocephaly. Overall, the sample includes participants who have diverse sets of experiences raising twins and triplets with autism spectrum disorder.

During interviews, parents described their children using total body or gross motor movements to expend their energy in a way that is freely chosen, fun and unstructured. These descriptions are provided in Chapter 3. At the same time, parents expressed the value they placed on their children's active play behaviours as a window into each child's world.

Parents' discussions of this 'window' can be categorized into five main themes (Figure 4), each including subthemes: *Parent perceiving child's strengths and weaknesses in active play*, *parent facilitating active play experiences*, *parent perceiving child's intrinsic motivations for active play*, *parent interpreting child's active play behaviours* and *active play experiences as a medium for parent/child communication.*

**Figure 4**

*Active Play as a Window into a Child's World*




**Parent Perceiving Child's Strengths and Weaknesses in Active Play**

During interviews, parents described how observing their children in active play gave them a front row seat to their children's strengths and weaknesses. Some parents reflected on their children's motor skills, highlighting the various strengths and weaknesses they saw in their children.

> …she's more fine motor skills, and he's more gross motor skills. So he's got the like… the kicking, the throwing, the bat, the hockey. She's more fine motor, the painting, the coloring, the climbing the gymnastics, that very um specific movements as opposed to like the large body movements (P1).

Other parents described their children's strengths and weaknesses in understanding how to problem solve in play when things don't go their way. "…my daughter actually struggles more with like the sportsmanship kind of stuff and you know, like losing a game…Whereas my son … actually got very good at that" (P7). Other parents described their children's strengths and weaknesses in understanding how to come up with new play ideas. "…she would only have like, one or two things that she would want to do… It was like, let's go down the slide or let's sit on the swing" (P4). In some cases, parents reflected on the talents they observed in their children. "I always think like, if only they could be persuaded or taught to like, follow instructions, they would be amazing athletes, because they're just natural strength and like athletic skill is like, amazing to me" (P06). During interviews, parents described many instances of coming to better understand their children's strengths and weaknesses when observing them interact with their environment during active play.

**Parents Facilitating Active Play Experiences**

Parents described how observing their children in active play enabled them to engage with their child and their play both directly and indirectly. For example, some parents talked about the difficulty that their twins and triplets have in choosing what they want to do during an active play experience. "…he doesn't really like being outside as much unless …like giving him… very specific instruction on what we're going to do. He'll do it…If we just go outside to play, I don't know that he really knows what to do" (P1). In some cases, parents talked about taking time to play with their children, modelling certain play behaviours to help their child notice that a particular play option is enjoyable.

> "…I'd be like, Oh, I'm going to sit on the swing and this is fun. And then Elena would come over and then after a few minutes, I might be able to leave and she would kind of stay on the swing for a little bit" (P4).

Parents also discussed observing features of the play environment that facilitated play for their children. For example, some parents described their children's preference for play settings where there are multiple activities that the children can rotate between. In some cases, they described using this knowledge to facilitate successful active play experiences for their twins and triplets.

> …so when they would come to me, they'd be like, I don't know what to do…And I'd say okay, well, you know, here's this, all these little invitations to play. Why don't you go pick one? And then after about six months of me just reiterating all the different things that they could do to play, at a certain point, especially for Gabby, I saw this big switch where, then she understood all of the options that were there and different combinations that she could do and now when she goes outside, she just does them (P4).

Parents discussed their experiences of finding or setting up play environments for their children that they knew would facilitate their child's play. Parents described their children benefiting from structured play settings where there was also some flexibility for their children to take a break or move to different activities.

> They knew there was a, …. more guidelines at school than there were at home…they could drop out if they wanted and go to the quiet corner, but they didn't have that I can just completely drop out option…and they kind of just gave into it (P5).

In some cases, parents described facilitating their children's play indirectly by making sure they have everything they might need or want to have fun during an active play experience. "Okay, actually, they love the swing. So that's a sensory seeking thing, I guess… We had to get a third swing so all three of them could at least have one" (P9). In other cases, parents described facilitating their play experiences directly by joining in the play experience with their children. "…let's do something fun. Go for a bike ride…Everyone likes a bike ride… I'll make goals like, you know, Dominic, go first. And Dominic's gonna stop at the green box. Or you're gonna ride your bike to the red car" (P2).

By connecting with their children's active play experiences both directly (e.g., playing with their child) and indirectly (e.g., incorporating a feature into their child's play environment to help make the play more enjoyable for their child) parents described multiple ways in which they were able to facilitate their children's play.

**Parent Perceiving Child's Intrinsic Motivations for Active Play**

While describing their children's active play behaviours, parents also discussed their perceptions of each of their children's intrinsic motivations for choosing particular play activities. A child is intrinsically motivated to play when they are choosing that particular activity simply because of the pleasure they experience when engaged in it, as opposed to being influenced by external incentives or accomplishments (Cooper, 2000). The intrinsic motivations that parents perceived in their children can be found in Table 7 and include: movement, people, mischief, competition, performance, textures, music, curiosity and creativity.

**Table 7**

*Parents' Perceptions of Their Children's Intrinsic Motivations for Active Play*

| Intrinsic Motivation | Supporting Quote |
|---|---|
| Sensory- Movement | "She likes to move her body and she likes to move it often. She enjoys swinging, bouncing, hiking, um, things like that" (P5). |
| People | "…if he if he sees anybody, he's right over there saying hi… I think he wants to be accepted. Like he just, he wants people to know he's there and invite him over and include him" (P1). |
| Mischief | "He's got this like, sneaky, sneaky thing about it. He was always the one willing to take a toy and then run from Dominic, as Dominic chased him to get the toy back" (P2). |
| Competition | "…she wants to be better, like she's coming home so upset because she's slower than the other kids when they run at school" (P3). |
| Performance | "she likes to have all the attention on her. So when she's like scootering…She's like hey everybody! Watch how fast I can scooter down the lane! Look, I'm doing it with one leg! Look, no arms!" (P4). |
| Sensory- Textures | "They are very into feeling. Yes, Touching. They really like the, the dirt…They really, they really are into this" (P8). |
| Music | "Sarah loves to sing… she's not terribly coordinated, but she had enough physical therapy to give her some moves... I think what drove Sarah to the cheerleading thing was the fact that she got to sing really loud" (P5). |
| Curiosity | "…usually their darting or running is. Well Dominic's is more like, I'm just going to go and investigate. It's never usually I'm avoiding and I have a behavioral issue" (P2). |
| Creativity | "…they just started playing in the dirt…So they will make some things and there's a spigot back there. So they figured out how to make pottery…But it's more her thing. She, first of all it's artistic" (P7). |

Parents often cited their children's behaviour, personality, commonly chosen play activities, and level of enjoyment as hints as to what their intrinsic motivations may be. Overall, parents expressed many of their perceptions of what may be motivating each of their children to engage in certain manners of active play.

**Parent Interpreting Child's Active Play Behaviours**

While describing their children's active play behaviours, parents often reflected on their interpretations of what they had observed in their children's play. Some parents talked about their children's play as being typical for children their age, while others mentioned that they saw more conventional play behaviours when their children were younger, still others commented that they see their children exhibiting more normative play behaviours the older they get. "…they play like typical boys when they are playing together. They do fight a lot because one is bossier than the other" (P2). Conversely, some parents mentioned that their children played in ways that struck them as unique. "one's running the whole dialogue. But she'll prompt the other one what to say, and then she'll say her response … "and then you say, "Oh, wow". And then I say, "yeah"… I've never seen anyone else do that" (P3).

Parents also reflected on their children's play behaviours changing as they learned new play skills. At times these changes were attributed to a child expanding their repertoire of active play skill as they had new experiences. "…he did like really good with it. And was like super brave about it… Jumping in and, you know, swimming around…we didn't have lessons for them. They kind of just learned on their own" (P9). In some cases, parents talked about it being helpful for twins and triplets to be split up, so they could have time to be independent and practice new skills.

> …it was really important for for Katlyn to… not have the help and to not be in the shadow of her sister because … she started … doing the activities and getting involved in the activities. And Katlyn is is more flexible than then Dana. So Katlyn can more easily joins the plays with the other kids (P8).

Other parents mentioned that their children were learning new play skills simply because they had frequent play experiences with their twin or triplet sibling(s) where they had the opportunity to practice new skills.

> …And practice on each other, so when you go out into the real world, like, you know, so when he goes to school, when Henry goes to school to play with his friends, he's kind of practiced playing with Victoria, like taking turns and sharing so that it generalizes into, you know, the school environment or the park environment (P1).

Parents also discussed the impact of facilitators and barriers on their children's active play behaviours. While parents talked about a variety of facilitators, being outside and being around other people like friends or family, were commonly mentioned. "They're traipsing around in the woods … getting their feet muddy in the stream … things that they would do with dad that they don't necessarily do with mom. So there's a novelty aspect to it… adventure maybe?" (P7). Conversely, many parents talked about the impact of technology (e.g., the iPad) as a common barrier to active play for their children as children would get caught up in games and videos. Another common barrier that parents spoke about was the negative impact of certain environmental features (e.g., loud and crowded spaces, lack of fences surrounding a playground) on their children's active play.

> It really, really sucks that none of the playgrounds have fences around them. No public play spaces are really designed for kids like mine. And that really is unfortunate. Because we, we want to be out in the community a lot more than we are able to (P6).

During interviews, parents reflected on their children's active play behaviours, in both the past and the present, giving their explanations of a variety of meanings they ascribed to them.

**Active Play Experiences as a Medium for Parent/Child Communication**

During interviews, parents discussed a variety of ways, both verbal and non-verbal, that their child used to communicate with them (i.e., child to parent communication). For example, parents frequently talked about how observing their children's sensory regulation during active play helped them to understand what may be going in their heads. Depending on the child, parents talked about certain behaviours such as running, flapping their hands or jumping, as being an indication of their child's excitement, joy, anxiety, or frustration. In the cases of the former two, parents discussed the behaviours their children showed that indicated they were willing or not willing to persist with the activity.

> … you can kind of see her build up when she's about to get into an unpredictable, potentially stressful to her situation… it used to be where she just, once it started, there was no dialing it back, it would just go from zero to 100. And she would be a meltdown, and it would be a mess. Um, but she, that was the year she really seemed to um have a better control overregulating her emotions… I don't know if anybody else could, but I could watch her trying to dial it down... I could see her not even resorting

> to that stim and just trying to kind of ease into it… sometimes it worked…other times it did not. You know, she would give it she would give it her level best. (P5).

Parents also gave descriptions of their children indicating their preference for certain activities through their positive emotions and behaviours during active play.

> P3: "Yeah, they always asked to go [to the indoor trampoline park] and then once we were there, they didn't really want to jump for that long (laughs)
>
> Researcher: but at this other like indoor playground, they seemed to last longer there?
>
> P3: Yeah, cuz there's so many different things they can do. If they're tired of one thing they can do something else. Yeah, they really liked that place.

On a similar note, parents frequently discussed their observations their children experiencing joy during active play. "When Sarah is super happy and excited, she tends to clench her fist really close to her face, and grins, you know, ear to ear…and they get out there and they're having a great time" (P5).

Conversely, parents also described the behaviours and emotions their children displayed when they were not enjoying themselves during active play. In some cases, children didn't enjoy activities due to the high degree of structure, and in others, the lack of structure. "If we tried like playing with the ball, basketball … Doing that thing with the rope for them to jump a little bit. Not, not at much. It's like um, not very oriented. Like they just like to freely do things" (P8). Parents also discussed specific aspects of play experiences that their children did not enjoy, including examples such as physical touch,

loud noises and crowds, which led them to feelings of frustration. "…he liked his friends in the pool, but … they weren't letting him do his like usual stuff, or in his way or whatever, you know? … he was able to like do his usual thing that he liked" (P9). In other cases, parents described observing their children feeling anxious or fearful during play. "…it's been really hard to try to figure out what she really does enjoy doing because almost everything just gives her anxiety" (P4). Overall, parents discussed a variety of behaviours that their children often display during active play that provide them access to their children's emotional state during play, including both positive and negative emotions.

## Discussion

The purpose of this descriptive phenomenological study was to gather descriptions from parents of twins and triplets with autism about their children's active play. The study was guided by the question: What value do parents place on play for their twins and triplets with autism? The descriptions given by parents in response to this question, fall into five themes under the umbrella of the main theme, *active play as a window into a child's world*: *parent perceiving child's strengths and weaknesses in active play*, *parent facilitating active play experiences, parent perceiving child's intrinsic motivations for active play*, *parent interpreting child's active play behaviours* and *active play experiences as a medium for parent/child communication.*

### Parent Perceiving Child's Strengths and Weaknesses in Active Play

Research shows that parents of singletons with autism have an ability to recognize both their children's strengths and weaknesses in play (Clark & Adams, 2020; Harte, 2009; Mitchell & Lashewicz, 2018). This balanced understanding of the active play behaviours of children with autism is particularly important given the historical tendency of autism

research to focus on deficits (Clark & Adams, 2020; Goodley & Runswick-Cole, 2010). Findings from the current study demonstrate that this discerning eye also translates to parents of twins and triplets with autism; parents gave descriptions of their children's abilities, and challenges, in a variety of active play domains, including motor skills, problem solving, and creativity. Previous research with parents of children who are neurotypical has indicated that the value that parents give to their children's play skills is be correlated with the child's overall development of play skills (LaForett & Mendez, 2017). Emerging research pertaining to singletons with autism points towards the impact that parents can have on their children's overall development by observing and encouraging their strengths, rather than focusing only on areas where the child is weak (Clark & Adams, 2020; Lee & Schertz, 2019; Winter-Messiers, 2007). The results of the current study indicate that parents of twins and triplets with autism may be positively affecting their children's development of play skills through their strengths- based view of each child's active play.

Strengths-based models of play encourage the development of play skills by working off the capabilities that an individual presents in their play (Winter-Messiers, 2007). For example, while special interests of children with autism are often considered to be restrictive to the child's overall play experience (American Psychiatric Association, 2013); Winter-Messiers (2007) explored the way that such interests can be harnessed in singletons with autism to improve social communication, fine motor skills, and sensory processing. They found that the children felt more confident and positive about themselves when speaking about, or engaging in their special interest (e.g., trains) which then translated to an increased awareness of their social surroundings (Winter-Messiers, 2007).

Research indicates that the implementation of a strengths-based approaches has important implications for singletons with autism, not only for addressing their unique challenges, but also for supporting their confidence, self-esteem, social relationships and overall health and wellbeing (Lee & Schertz, 2019; Winter-Messiers, 2007). While there is not yet research on the impact of strengths-based models on the development of twins and triplets with autism, the current study revealed that the parents in this study did perceive a variety of strengths in their children. Findings from our study also indicated that parents of twins and triplets with autism are recognizing and encouraging their children's unique strengths in the home, specifically strengths pertaining to active play such as motor skills and turn-taking. The implementation of a strengths-based approach such as this in the home may have important implications for each child overall development (Lee et al., 2020).

Parents in our study talked about placing value on their children's active play because of the opportunity it afforded them be able to distinguish between each of their twins' and triplets' unique abilities and challenges. This is particularly relevant considering previous research indicating that parent of triplets who are neurotypical may be less attuned to each of their children because of the extra pressure of raising a multiple set of three children (e.g., higher rates of stress and maternal depression) (Feldman et al., 2004; Feldman & Eidelman, 2004). Adding to this dynamic, research shows that raising one child with autism can put strain on parents; while there is limited research exploring the relationships between parents and their twins and triplets with autism, it is conceivable that this strain might be amplified if one were raising multiple children with autism. However, the findings of our study are similar to those of Burgoine (1983) whose case study of triplets with Asperger's Syndrome highlighted the mother's capacity to be emotionally connected

with all three of her children and documented a variety of ways that she was closely involved in her children's lives. It is possible that the level of attunement that parents in our study showed to their children's unique strengths and weaknesses is highlighted due to the fact that parents were discussing their children's play. During interviews, we found the demeanor of parents to be overall, light-hearted as they talked about the value they placed on their children's play. One parent even expressed her thoughts regarding the importance of such conversations "[Researchers] say what they [children with autism] don't, but they don't say what they *do*…sometimes you have to get inside their world so that then you can bring them to your, your world" (P8). Considering these parents volunteered to participate in this study, it is possible that they are more engaged in their children's play than other parents might be and therefore have more to say on the topic. Even still, it may be possible that active play provides a helpful context for parents to observe their kid's strengths and weaknesses in flexible home and community environments in a way they don't get to see in other structured contexts (e.g., academics or therapy). In light of these findings, there is a need for more research exploring how parents of children with autism may gain valuable insight into their children's strengths and weaknesses by observing them engaging in free play.

**Parents Facilitating Active Play Experiences**

The findings of the current study point to the role that parents fulfill in facilitating a broad range of active play experiences for their twins and triplets. During interviews, parents discussed the value they placed on observing their children's active play because of how it helped them come to a better understanding of the various components of play tasks and environment that either promoted or hindered play for each specific child. Parents

then discussed a variety of strategies they took to support their children, either joining in the play with the child, providing suggestions from the sidelines, or making changes to the play environment.

Parents talked about encouraging their children to pursue active play experiences based on their preferences. In some cases, parents discussed setting up play spaces structured with specific play stations that they had previously observed their children enjoying (e.g., slip-n-slide, swing set, sandbox). Beyond active free play, parents also talked about using their observations of their children's active play choices to guide decisions regarding organized recreational activities to sign their children up for. Parents observed certain strengths in their children, such as a love to sing, or incredible motor skills, and translated these into participation in recreational programs such as cheerleading or rock climbing. These findings regarding a parent's attunement to their children's play experiences are corroborated in a study conducted by Di Renzo et al. (2020) who found that parents of singletons with autism focus on their relationship with their children during play, rather than on the activity itself, and as a result, are more understanding and accepting of their child's point of view (Di Renzo et al., 2020). This orientation towards their singleton children in play enabled them to perceive their children's desires and challenges in play and respond accordingly (Di Renzo et al., 2020). This same dynamic was present in the current study with parents of twins and triplets with autism as parents encouraged and challenged their children based on their observations of each child's interests in play. These findings indicate that parents of twins and triplets with autism play an important role in encouraging their children to engage freely in active play by embracing each of their children's diverse play behaviours.

Similarly, parents can also play an important role in addressing the unique challenges their children exhibit in active play (Di Renzo et al., 2020). This dynamic was described by parents in the current study as they demonstrated an ability to understand the task and environmental constraints that impact play for their twins and triplets. Parents reflected on examples of their children not knowing how to engage in free play; in some cases, children did not understand the play options available to them, became overwhelmed by the sensory input of an environment, or were not able to find ways to have fun unless it was their favourite activity. Furthermore, although the concept of a child freely choosing to play an activity is integral to the definition of active play, parents in the current study discussed that their children did not always know how to make such decisions; those who were younger or who had a more severe challenges related to their autism sometimes needed guidance from parents about what they could play with. In response to these difficulties, parents took varying approaches to facilitate positive play experiences for their children based on each individual child's unique abilities and needs. Previous literature supports these findings by suggesting that parents can help their children become more physically active by assisting them in coming to an understanding of what types of active play they enjoy (Healy & Marchand, 2020; Hinckson et al., 2013). Individualized, strengths-based intervention strategies such as this where children are encouraged to pursue their interests are appropriate as they can take place in a child's natural environment (Healy & Marchand, 2020). The results of the current study indicate that parents of twins and triplets may already be using their children's strengths and interests to assist them in developing active play skills in their everyday lives.

Our findings indicate that parents value the opportunity that active play affords them to better understand each of their children and to facilitate positive play experiences for their children. However, this remains a difficult task due to the diverse social, behavioural, and motor differences of children with autism and so parents must be creative and able to dedicate a substantial amount of time to the task (Healy & Marchand, 2020). Previous research suggests that this dynamic may also be complex for parents of twins and triplets who are neurotypical as parents must be observant and responsive towards two or more children who are different from one another and therefore require different parental responses (Feldman & Eidelman, 2004; Lytton, 1977). Nevertheless, the current study provides evidence of the important role that parents of multiples with autism play in the home by revealing how they facilitate their children's play development through encouragement and coaching. However, while parents are experts in their own children, most do not have education in early childhood education or physical education training, and as a result don't always have all the information needed to facilitate positive active play experiences for their children (Columna et al., 2021; Healy & Marchand, 2020). For this reason, parents would benefit from coaching support from community organizations, providing them with creative ideas for play activities to try at home as well as opportunities for community play (Healy & Marchand, 2020). In this way, parents will feel more supported, motivated and encouraged to facilitate individualized physical activity opportunities for their children (Healy & Marchand, 2020). Further research is needed to understand the needs that parents have in facilitating active play for their children and how community organizations may be able to come alongside them through parent-mediated active play interventions for children with autism.

**Parent Perceiving Child's Intrinsic Motivations for Active Play**

There is some indication in the literature that children with autism may be intrinsically motivated to engage in their favourite activities for similar reasons to those of children who are neurotypical (Grove et al., 2016). More specifically, research suggests that singletons with autism may be motivated by feelings of enjoyment, excitement, and/or accomplishment that come from participation in a certain type of activity (Grove et al., 2016). These findings are particularly illuminating in light of previous research suggesting that children with autism have strong preferences for certain activities simply because such activities help to ease anxiety or other negative emotions (Lidstone et al., 2014; Rodgers et al., 2012; Spiker et al., 2012). It is entirely possible that children with autism may be motivated to play for all of the above reasons; however, the point is clear, children with autism are intrinsically motivated to play (Grove et al., 2016; Spiker et al., 2012).

The results of our study add to these previous research findings regarding intrinsic motivations in children with autism, in that parents of twins and triplets with autism discussed a variety of reasons why their children found play to be valuable and enjoyable. Parents gave examples such as children running around the playground to explore and satisfy their curiosity or making creations out of sticks and mud in the backyard out of a desire to be creative. These findings are in line with those of previous research stating that, despite all their similarities, same-sex twin pairs can be differently motivated to engage in physically active leisure based on their preferences and what they hope to get out of the activity (Aaltonen et al., 2012). It is possible that these findings are amplified by the fact that this study is pertaining to twins and triplets, as parents were able to compare and contrast their perceptions of why each of their twins or triplets chose to engage in different

play activities. For example, one child might enjoy the creativity and sensory aspects of digging in the mud to make pottery creations, while the other might be motivated to play tag with other children at the park out of a desire to be social with other children. It is possible that this theme of intrinsic motivations may not have come through so strongly were it not for this comparing and contrasting of twins and triplets differing play choices despite being in the same environment. Nevertheless, the intrinsic motivations of children with autism are important to consider as researchers have found that singletons with autism show marked improvements in joint attention, language, social communication, emotional regulation, motor skills, self-confidence, and positive self-image when they are allowed to engage in play that they are particularly interested in (Kryzak et al., 2013; Winter-Messiers, 2007).

The results of the current study provide evidence that parents of twins and triplets with autism value active play because it enables them to perceive their children's intrinsic motivations for play. Research exploring play interactions between parents and singletons with autism has revealed similar findings as parents have expressed that they are better able to connect with their child when they understand why they are enjoying a particular play activity (Mitchell & Lashewicz, 2018; Román-Oyola et al., 2018). For example, some parents of singletons have expressed that parent-child play interactions are more rewarding and enjoyable when the parent engages in the play in a way that lines up with what the child is hoping to get out of it, rather than trying to assert their own wishes onto the play (Román-Oyola et al., 2018). Furthermore, parents of singletons with autism have emphasized the value they place on quality time spent with their child; they would rather spend more time with their child playing a repetitive activity that the child themselves is

excited about, than spend that time pressing their child to play a more normative activity (Mitchell & Lashewicz, 2018). Parents in our study expressed similar sentiments of enjoyment and satisfaction when observing their children engaging in play that brought them joy. These findings are particularly meaningful as there is a paucity of research exploring how the innate interests of children with autism may serve to facilitate positive play experiences (Winter-Messiers, 2007). It is possible that parental attunement towards children's intrinsic motivations play may serve to strengthen relational bonds between parents and twins and triplets with autism. This finding is of particular importance given that some parents of twins and triplets with autism may have difficulty connecting with their children in play due to each child's unique social communication and behavioural differences (Burgoine & Wing, 1983; Di Renzo et al., 2020; Guo et al., 2017).

**Parent Interpreting Child's Active Play Behaviours**

One unique aspect of the current study is that parents had the opportunity to talk about their twins' and triplets' play as it evolved throughout their childhood, to date. As a result, the findings captured a variety of parents' impressions of their children's play over time. In particular, parents reflected on instances when their children played in ways that they perceived as being typical for childhood play (e.g., a game of tag) as well as giving examples of their children exhibiting what they perceived to be unique, or unexpected behaviours (e.g., running along a fence line). These findings reflect similar themes to those found in a study conducted by Mitchell and Lashewicz (2018) who identified that the parents of singletons with autism in their study each went through similar processes coming to terms with their children's unique, or 'quirky' play behaviours. Although the fathers interviewed for the study described some of their children's play as being different from

what they would expect to see in a child who is typically developing, they spoke positively of such play behaviours (Mitchell & Lashewicz, 2018). Similarly, while the parents in our study described some of their children's play as being different from what they might expect to see in children who are neurotypical, they often framed such play behaviours as intriguing rather than concerning because of the way it gave them a window into their child's inner world. While there is much research framing the play differences of singletons with autism as abnormal (Boyd et al., 2007; Kirby et al., 2016), these findings suggest that parents of children with autism may view their children's play as more complex than simply being deficient or typical. Moreover, the findings of the present study suggest that parents of children with autism may enjoy and encourage some of their children's play behaviours that might generally be seen as atypical because they value the opportunity this type of play provides them to connect with their children.

While it appears that parents of children with autism do not always steer their children towards more "normative" play behaviours, research has shown that parents of singleton children with autism do take an active role in addressing features of their children's play that they perceive as needing improvement (El-Ghoroury & Romanczyk, 1999; Harte, 2009; Mitchell & Lashewicz, 2018). Over the years, research has developed a number of successful intervention contexts from which to address play-related behavioural changes in children with autism, some examples being, parent-child co-play, peer models at school, and sibling play (Bass & Mulick, 2007; Kasari et al., 2015; Wolfberg et al., 2012). Building upon these findings, interviews with parents in our study revealed the positive effect that a built-in play partner can have on the development of new play skills in children with autism. These findings are a direct function of this study's approach

in interviewing parents who have multiple same-age, same-diagnosis, children with autism. In some cases, parents attributed the development of play skills to the opportunity that their children with autism had to 'practice' playing with their twin or triplet and then to generalize new skills into larger social contexts. In these instances, parents often highlighted the role that differences in their children' strengths and weaknesses played in providing opportunity to practice playing well with a peer who is different (e.g., learning to perceive and accommodate another's preferences). In other cases, parents discussed the need to split their children up; when each child had an opportunity to play with other playmates on their own, they were able to practice new play skills that they would otherwise rely on their twin or triplet sibling for (e.g., learning to come up with ideas in play rather than simply following their sibling's ideas). These findings are similar to those of research exploring the play behaviours of twins who are neurotypical as these studies also found that the close relationships developed between twins may serve to both help and hinder play skill development in various ways; children may tend to be more shy or withdrawn when playing with unfamiliar playmates while others may actually be more confident and assertive (DiLalla, 2006; DiLalla & Caraway, 2004). While these findings regarding children with autism and those who are neurotypical suggest that twins and triplets can be beneficial play partners for one another, they also point to the role that parents play in making decisions about when it may be appropriate to facilitate twin and triplet co-play versus when it may be beneficial to split children up. Future research should seek to gather further insight from parents of multiples with autism regarding the specific benefits of encouraging co-play between children who are the same age with similar diagnoses as compared to play with peers who are different in these ways.

**Active Play Experiences as a Medium for Parent/Child Communication**

Play experiences between parents and children with autism have been shown to provide an effective opportunity for the development of quality communication between parent and child (Di Renzo et al., 2020; Solomon et al., 2007). Research indicates that parents of singletons with autism report high stress levels in part due to the reality of their child's lower communication skills and presence of socially disruptive behaviours (Bradshaw et al., 2020; Lorang et al., 2021). Nevertheless, previous research has identified the positive effect that parent-child play experiences can have on the development of communication between parents and singletons with autism (Solomon et al., 2007). Similarly, the findings of the current study also suggest that active play experiences may have a positive modifying effect on the quality of relationship between parents and twins and triplets with autism. Parents in the current study discussed that they valued opportunities to observe their children in active play because they could come to better understand their children's preferences; they were able to connect with their children on a deeper level as they observed the types of play that brought their children joy and those that induced anxiety or fear. For example, one mother described her twin boys with autism as being 'silly', which she later attributed in part, to their tendency to laugh and sing while running, climbing and jumping. It is important to highlight that similar to Solomon and colleagues' (2007) findings, parents described positive correlations between play experiences and parent-child communication regardless of the verbal ability of the children. In other words, both parents of children who are verbal as well as those who are primarily or completely non-verbal, expressed an increased ability to connect with their children through active play. It is possible that in active play, parents are able to be more attuned to

their children's non-verbal communication styles. These findings point to the value that parents place on active play as a window into their child's world.

Previous research has explored the perceptions that parents of singletons with autism have regarding their children's sensory experiences (Dickie et al., 2009). Specifically, parents have demonstrated an ability to be sensitive to their children's positive and negative responses to sensory stimuli, examples being a child's enjoyment of watching and chasing bubbles as compared to a dislike of the feeling of being tickled (Dickie et al., 2009). Parents in the current study demonstrated a similar ability to not only perceive their children's positive and negative responses to sensory stimuli but also to understand what their child might be communicating through a particular response to such stimuli. These findings are further emphasized by the fact that parents demonstrated the ability to perceive and respond to the sensory experiences of both/all their children with autism even though these were different from child to child. These findings point to the value that parents of children with autism may place on sensory experiences as opportunities to connect with their children's experiences. While much autism research paints sensory play as detracting from the overall play experiences of children with autism (Hochhauser & Engel-Yeger, 2010; Reynolds et al., 2011; Schaaf et al., 2014), these findings point to the important role they may play in facilitating close parent-child relationships among parents and children with autism.

There is a need for further research exploring the positive effects that active play can have on both verbal and non-verbal communication between parents and children with autism. It is possible that this phenomenon may be more prominent in relationships between parents and multiples with autism as these parents may spend more time engaged

with their children's autistic worldviews as a function of having two or three children with autism. Conversely, it is also possible that the relationship between active play and parent-child communication may be stronger between singletons with autism and their parents; where parents of multiples must divide their attention between two or more children, parents of singletons can focus on just one child. This is an interesting point for further study as it may reveal important information regarding the positive effect that active play experiences can have on the quality of communication between parents and children with autism. This area of research is particularly meaningful as previous research has identified a positive correlation between relationship quality, warmth and verbal praise for parents of children with autism as well as fewer internalizing and anti-social behaviours among children with autism (Smith et al., 2008). With this in mind, there is a need for future research to further explore the positive effect that active play experiences can have on parent-child communication among families with children with autism.

## Strengths and Limitations

This study is the first to explore the value that parents of twins and triplets with autism place on their children's active play; in doing so, it fills a gap in the literature pertaining to the active play behaviours of twins and triplets with autism. Another strength of the current study was the online format; because the interviews were conducted online, researchers were able to collect information from participants in three different countries (Korstjens & Moser, 2018). This is a benefit because it enabled the researchers to explore which features were specific to a participant's specific context and which were common to the value that parents of twins and triplets place on active play (Sim & Sharp, 1998).

Despite its strengths, this study was not without limitations. One such limitation is the inclusion of parents of both twins and triplets. It is possible that parents of triplets may have different life experiences than those with twins, however because this is the first study to explore this phenomenon, the researchers decided to include them in order to gather as much data as possible. Furthermore, because this study was interview-based, the researchers accepted volunteers on a first-come, first-serve basis and therefore the presence of self-selection bias is possible because participants who chose to volunteer may have been those who feel particularly connected with their children through active play (Robinson, 2014). To mitigate this potential for this bias, the researchers offered a $50 Amazon gift card. Finally, our sample included a disproportionately large number of girls with autism in comparison to boys which can be seen as a limitation because it is not representative of the true ratio of children diagnosed with autism which is four boys to one girl (Zeidan et al., 2022). Conversely, this can also be seen as a strength as the researchers were able to gather data pertaining to girls with autism, a population who is underrepresented in the literature (Dean et al., 2016).

## Conclusions

The findings of the present study highlight how observant and perceptive parents of twins and triplets with autism are regarding their children's active play. During interviews, parents described the value they placed on active play as an opportunity to better understand the strengths, weaknesses, and intrinsic motivations of each of their children. The level of connection between parents and children with autism during active play experiences has direct benefits for both the child and the parent. The findings of the current study indicate that active play is valuable for parents because it serves as a helpful

context for parents and children with autism to practice communicating with one-another, both verbally and non-verbally. When parents can observe their children having fun in play, free from external pressures, they have an opportunity to see into their child's world, getting a closer glimpse into their personality and perceiving what brings them joy in their play. This connection may be especially important for parents of children with autism as this population often reports higher levels of stress due to the realities of parenting a child with social communication and behavioural differences.

Parents in this study not only described the strengths, weaknesses and intrinsic motivations they saw in their children but also discussed that they valued their children's active play because they are able to use what they have observed of their children in play to facilitate further development of play skills. These findings are meaningful given research proposing strengths-based models as beneficial intervention strategies for improving the overall quality of life and wellbeing of children with autism. Based on the findings of the current study, parents can benefit from spending time with their children in active play contexts, both observing and facilitating play as they see fit.

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# Chapter 5. Thesis Conclusions

## Overview

The primary purpose of this study was to describe the active play of twins and triplets with autism from the perspective of their parents; these descriptions can be found in manuscript one. The secondary purpose, as addressed in manuscript two, was to describe the value that parents place on active play for their twins and triplets with autism.

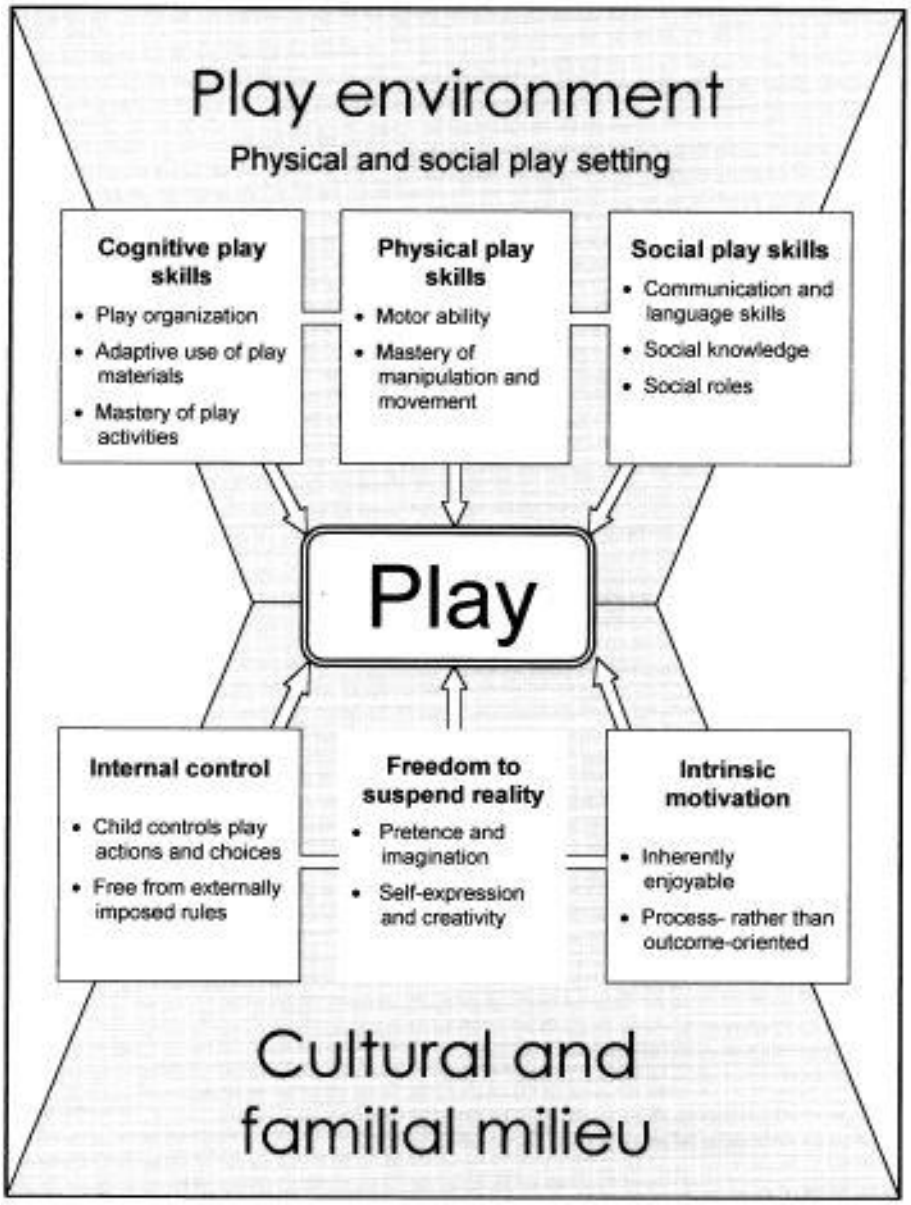
Active play refers to any type of a play where children are using total body or gross motor movements to exert their energy in a way that they are choosing because it is fun (Truelove et al., 2017). While there have been many opinions regarding the active play of children with autism over the years (Boucher, 1999; Boucher & Wolfberg, 2003; Brown & Murray, 2001; Kasari et al., 2013), there is a lack of empirical research exploring the characteristics of their active play. In general, children with autism tend to show restricted and repetitive patterns of interests and behaviours, a love for physical movements, and a particular interest in sensory experiences in their play (Blake et al., 2018; Conn, 2015; Fahy et al., 2021). In comparison, children who are neurotypical often behave spontaneously during active play experiences, showing signs of flexibility, active engagement, intrinsic motivation, self-direction, and make-believe (Brown & Murray, 2001; Cooper, 2000).Much of the literature on active play not only frames the play behaviours of children with autism as lacking compared to those of children who are neurotypical (Boyd et al., 2007; Kirby et al., 2016) but also excludes certain behaviours (e.g., restricted and repetitive interests) from descriptive models based on the presupposition that such behaviours are purposeless (Hancock, 2020) This is a sentiment that many researchers and parents of singletons with autism push back against, arguing that while these play behaviours are unique, they are not deficient (Burke & Claughton, 2019; Goodley & Runswick-Cole,

2010; Mitchell & Lashewicz, 2018). Research suggests that the unique play behaviours of children with autism can not only be harnessed to encourage their overall development (Grove et al., 2016; Kryzak et al., 2013; Winter-Messiers, 2007), but also used to facilitate better quality connections between parents and their singletons with autism (Dickie et al., 2009; Mitchell & Lashewicz, 2018). In light of these implications, the current study sought to describe the play behaviours of twins and triplets with autism as they presented themselves, not only because they have never been studied in this context before, but also because the researchers believed that such a study design would elucidate clear descriptions of their active play behaviours given the opportunity to control for factors such as age, diagnosis, home environment, access to toys, etc.

Cooper's (2000) Model of Children's Play (Figure 5) was used to guide the discussion of the active play of the twins and triplets in this study. The model is appropriate in the context of the current study because although it is established that children with autism play in different ways than children who are neurotypical (Gilmore et al., 2019; Jung & Sainato, 2015; Skaines et al., 2006), little work has been done to translate this knowledge into practical models describing the play of children with autism (Hancock, 2020). As a result, the complex play behaviours of this population are not being fully recognized and represented in the literature. By incorporating not only children's play skills, but also their behaviours, individual, and environmental factors, *Cooper's Model of Children's Play* (2000) enables researchers to explore the complexities of the play of children with autism.

**Figure 5**

*Cooper's Model of Children's Play*




In his model, Cooper (2000) posits that children's emergent play behaviours are affected not only by their own developmental capacities (e.g., cognitive, physical and social play skills) and individual play styles (e.g., internal control, freedom to suspend reality,

and intrinsic motivation) but also their social, physical, and cultural environments as well. The current study is novel as the researchers were able to control for confounding variables (e.g., age, diagnosis, access to toys, etc.) affecting the active play of the twins and triplets in the study. In the context of *Cooper's model* (2000), this means that we were able to take a closer look at the individual-level factors affecting play (e.g., developmental capacity and play preferences) because environmental-level factors (e.g., physical, social and cultural environments) were the same for both/all children in each family. This approach was particularly important as it captured the diverse play skills and preferences of the children whereas, in the context of autism research, children are commonly painted with the same brush, grouped together depending on whether they are 'high functioning' or 'low functioning' and described in ways that may or may not fully represent them (Anderson-Chavarria, 2021). The results of our study revealed the many different ways that twin and triplet siblings with autism engaged in active play; despite all their similarities in family values and environment, their differences in preferences personality and skillsets still impacted the way they interacted with their environments and therefore impacted their emergent play behaviours.

The descriptions given by parents of twins' and triplets' play were organized into three main themes (active play, social play and active play as a window into a child's world) that correlate with the six sections highlighted in *Cooper's model* (2000): cognitive play skills, physical play skills, social play skills, internal control, freedom to suspend reality, and intrinsic motivation. In the model, cognitive play skills are included as part of a child's developmental capacity to play, that is their ability to problem solve and think logically during play (Cooper, 2000). Parents in the current study discussed varying cognitive skills

in their children. Some children were described as needing support in problem solving while others were described as showing determination when figuring out how to accomplish a task (e.g., getting to the top of a rock-climbing wall) or being creative in incorporating features of their environment into their play. While previous research has highlighted the difficulty that children with autism have in adapting and elaborating on their play in different situations (Williams et al., 2001), the current study proposes that these difficulties may not be shared in the same way by all children with autism. Rather, these results suggest that children with autism may exhibit differences in cognitive play skills, despite having an autism diagnosis. In fact, parents discussed the value they placed on active play for the opportunity it afforded them to better understand the different strengths and weaknesses each of their children had in play. These findings highlighting the differences between multiples with autism indicate that, similar to children who are neurotypical, play behaviours may be a function of individual characteristics, not necessarily a direct function of having an autism diagnosis.

Similarly, Cooper highlights the role of physical play skills in conceptualizing a child's developmental capacity for play (2000). During interviews, parents described varying levels of motor skills that their children exhibited; these differences were observed within twin and triplet dyads (e.g., one having stronger gross motor skills, another having stronger fine motor skills) and well as between the dyads and triads. Parents often talked about their children seeking opportunities for physical challenges, oftentimes repeating an activity over and over again out of a desire to master that particular movement (e.g., keeping balance while scootering down a hill) or an enjoyment for the feeling of that particular movement. Despite its repetitive and structured nature, this type of active play is

not all that different from that which is encouraged for children with typical development (Engelen et al., 2013; Hulteen et al., 2018). It is important to note, that while the parents in the current study valued the opportunity to better understand their twins and triplets by observing their determination to incorporate aspects of structure and repetition in their active play, it is possible that some parents of children with autism may find these attributes of play to be so strong that they become detrimental to the overall benefits of play. Nevertheless, descriptions of children having fun engaging in a variety of physical movements during active play must be included when discussing the play behaviours of children with autism, even if they appear to be repetitive and restricted, as these are critical to developing a more comprehensive understanding of the active play of children with autism. It is possible that the differences that children with autism exhibit in play may not always interfere with their overall development, rather in some cases may be beneficial to their development of play skills. Future research should seek to investigate how the active play preferences of children with autism may be used to facilitate the development of a broader range of active play skills.

In *Cooper's Model of Children's Play*, the category of social play skills incorporates both a child's communication skills and social awareness (Cooper, 2000). Parents in our study described their children as being built-in play partners for one another, providing ample opportunity for each child to practice playing in social settings with their same-age sibling(s). Some parents described their children as playing well together because of their similarities, in some cases playing together so frequently that the parents felt it appropriate to split these siblings up in larger social contexts so each could practice play skills they might normally rely on their sibling for (e.g., coming up with ideas for play

rather than following along). These findings corroborate previous research findings indicating that children with autism may enjoy play with playmates when both children are familiar with one another and playing in a familiar environment (Conn & Drew, 2017). Other parents described their children as being quite different, so much so that the children had difficulty playing well together. In these cases, parents discussed their decisions to facilitate play between their twins and triplets in order to provide them opportunity to practice play skills which they eventually saw their children generalizing to larger social contexts. It is possible that children with autism may benefit from regular active play experiences with playmates who are the same age and have the same diagnosis. Such play experiences may not only be particularly enjoyable for children with autism because of the opportunity to play with another child who is familiar with their autistic thinking (Conn & Drew, 2017), but as parents in our study discussed, such experiences are also valuable as they serve as helpful contexts for each child to learn new play skills that can be generalized into larger social contexts.

Beyond social behaviours, play can also serve as a form of communication in which children express their language skills and sense of self (Cooper, 2000). Parents in our study talked about the value they placed on active play because of the variety of ways that each of their twins and triplets communicated with them as parents during such play experiences. Some parents described their children as being very talkative while other children were described as communicating primarily or completely non-verbally. In both cases, parents discussed how observing their children engaging in active play was beneficial as it provided them opportunities to connect with their children by watching them express their personalities and joy through play and getting a sense of how their children saw the world.

This parent-child connection through active play is particularly important considering research showing that parents of singletons with autism experience higher stress levels related to difficulties connecting with their children who show social communication and behavioural differences (Guo et al., 2017). The findings of the current study indicate that twins' and triplets' active play may be valuable for parents because it can serve as a gateway for them to become more attuned to their children's non-verbal communication styles, which may in turn facilitate an increased quality of connection between parents and children. Furthermore, it may be possible that this effect will be seen more strongly in parents of singletons with autism given that they are focusing on one child rather than two or three.

Internal control, as described in *Cooper's model* (2000) describes a child's ability to make their own decisions in play. While many parents in the current study described their children as freely choosing their play, there were some who needed direction to be able to make choices and understand all their play options. In these cases, parents valued the opportunity to take strengths-based approaches by using their children's strengths and interests as starting points from which to build on such decision-making skills. For example, one mother set up play stations of a variety of activities she knew her daughter would enjoy. She kept these stations up for a length of time, providing her daughter with opportunities to practice choosing between familiar and enjoyable options. Research indicates that children with autism experience greater overall developmental gains when their strengths are both validated and encouraged in this way (Clark & Adams, 2020). Our findings suggest that parents of twins and triplets with autism are already taking this approach when facilitating active play experiences for their children in their homes. Parents

in our study discussed a variety of ways they saw their children learning new play skills, including for some, an ability to make choices and understand their preferences; it is possible that this development of play skills is due in part to this strengths-based approach.

Parents also talked about their children's abilities to engage in pretend play when playing, a feature of play behaviour that is also included in *Cooper's model* (Cooper, 2000). While not all children were imaginative in their play, parents did describe some children as frequently incorporating aspects of pretend in their active play. This finding is meaningful as it differs from what is generally seen in the literature regarding the need for children with autism to participate in interventions teaching them to use their imaginations in play (Hobson et al., 2013; Kasari et al., 2013). While this may be true for some children with autism, our findings indicate that this may not apply across the board. Some parents in our study described instances where one child who tended to engage in more pretend play, would draw their less-imaginative sibling into their play, giving that sibling experience using their imagination in play. It is possible that twins and triplets with autism may benefit from each other's strengths in play as they have the opportunity to observe and participate in play, such as pretend play, that they might not initiate on their own. For those children who are in need of extra support facilitating imaginative play, our findings indicate that playmates who are the same age and have the same diagnosis may serve as effective peer models.

Finally, as highlighted in *Cooper's model* (2000), parents discussed the opportunity that active play afforded them to perceive a variety of their children's intrinsic motivations for play . While much of autism research tends to highlight the motivations that children with autism have towards play that makes them feel calm (Lidstone et al., 2014; Rodgers

et al., 2012; Spiker et al., 2012), our findings indicate that children with autism are motivated to play for many more reasons than these. These findings are particularly meaningful as they suggest that the intrinsic motivations of children with autism for play may be very similar to those of children who are neurotypical, that is, both groups of children want to experience enjoyment, challenge, and excitement in what they are playing. Beyond revealing the diverse motivations that children with autism have for play, these findings also indicate that parents place value on their children's active play because it provides an opportunity for them to observe and distinguish between their twins' and triplets' different intrinsic motivations for play. It is important that parents, teachers and service providers are aware of the intrinsic motivations of each child in their care because children show marked increases in overall development when they are encouraged to engage in play activities that they are particularly interested in (Kryzak et al., 2013; Winter-Messiers, 2007).

There is some indication in the literature that many children with autism may enjoy physical movements during play because they are drawn towards the sensory affordances of both their bodily movements and their environments rather than the social affordances (Conn, 2015). Some parents in the current study described their twins and triplets seeking out opportunities to move their bodies in a variety of ways regardless of the environment they were in, running laps in the house or climbing a tree. Research has found that singletons with autism experience a similar enjoyment of feeling their body spinning, swinging, and running during play (Conn, 2015), and may even be motivated to engage in some rough and tumble play for similar sensory affordances (Dickie et al., 2009). These motivations are both similar and different to those expressed by children with typical

development who have expressed that active play is not only fun when it provides an opportunity to run around and be active but also when it allows them to work together with other children (Miller & Kuhaneck, 2008). The subjective fulfillment that an individual finds through participation in active play is important to consider when seeking to understand the overall quality of their personal experience in play (Martin Ginis et al., 2016). However, most research on the play of children with autism focuses only on quantifiable characteristics of their play that can be used to better understand how to help children with autism reach their developmental goals (Chester et al., 2019; Harper et al., 2007; Holmes & Willoughby, 2005).

## Conclusions

Based on the descriptions provided by parents, it seems likely that many children with autism may be meeting the criteria for active play laid out in the definition that is, play that is fun, unstructured, child-led, involving total body movements (Truelove et al., 2017). While many parents described their children displaying elements of restricted and repetitive patterns of behaviours and interests, a core diagnostic criterion for autism, it is possible that they some children with autism may be exhibiting such behaviours while at the same time fully engaging in the fun, unstructured, and child-led aspects of active play. Our study provides evidence supporting this claim as parents described their children having fun, a key aspect of active play, during a variety of active play experiences, expressing their enjoyment through verbal and non-verbal communication means. Furthermore, while some children did have trouble in unstructured play environments, parents also described some of their children freely engaging in play in such environments, moving from activity to activity, using total body movements to explore and experience all

that the environment had to offer. While some children did show signs of repetition in their play, parents often described this repetition as being a result of the child's desire to accomplish a physical task or to experience an activity that brought them joy. Parents often described the value they placed on this type of play for their children as it gave them an opportunity to better understand their children's strengths, preferences and motivations in play In other words, it may be time for parents, educators, and intervention specialists to rethink what play in children with autism looks like; it's different from children who are neurotypical but is it so different that it is not active play at all? Based on the descriptions provided by parents of twins and triplets with autism, it seems likely that many children with autism may be engaging in active play, albeit in unique ways.

Parents in the current study described their children's active play as repetitive and sensory seeking but they also described it as being intrinsically motivated, evolving, fun, and reflective of each child's individual characteristics. Furthermore, while parents did frame their children's play as unique as compared to what they might expect from children who are neurotypical, they often spoke about such play behaviours as being intriguing rather than concerning because of the window it provided them into their children's inner world. This perspective emphasizes the value that parents place on active play as an outlet for their children to express their preferences and motivations in play. Such aspects of the play of children with autism should be regarded more highly, especially considering research highlighting the importance of free play as an opportunity for children to express themselves (Yogman et al., 2018). Research suggests that children with autism experience societal barriers to their overall development when they are misunderstood by others and their strengths go unacknowledged (Clark & Adams, 2020). Our findings suggest that

parents may value active play for their children because it allows them to better understand their children. The findings of the current study come with implications for parents, community service providers, teachers, and intervention specialists in how each may support the optimal development of children with autism by providing space for and encouraging these children to express themselves through active free play.

## Future Research Recommendations

The current study provides some key recommendations for future research, in part because of the inclusion of twins and triplets with autism, rather than singletons. The findings revealed many differences in the active play behaviours of twins and triplets with autism, raising the question of whether play characteristics are tied more closely to individual characteristics (e.g., personality, preferences, etc.) or one's diagnosis of autism. Future research should seek to investigate the ways that twins and triplets exhibit play behaviours in specific domains of play in order to better understand what the origin of such differences may be.

This study also revealed important findings regarding the positive impact that playmates who are the same age and have the same diagnosis can have on the development of play skills for children with autism. There has been much research exploring the utility of peer models who are neurotypical in supporting children with autism (Castorina & Negri, 2010; Harper et al., 2007; Jung & Sainato, 2015), however there is a need for future research to explore how singletons with autism may benefit from regular play experiences with a playmate who is a similar age and also has a diagnosis of autism. This direction for future research is particularly important given the indications that children with autism may enjoy play experiences with playmates who understand their autistic thinking. However,

our study findings indicated that children with autism may also benefit from play with children with autism who have different play-related strengths and weaknesses to them. Future research should also explore how similarities and differences between such playmates may facilitate social play development over time for each child. Furthermore, while our research indicated that active play experiences may be beneficial for the development of play skills in children with autism, we also found that active play also provided children with an opportunity to express themselves both verbally and non-verbally. Future research should also explore how active play between peers might facilitate attunement of playmates towards one another's non-verbal communication styles, i.e., how might active play facilitate both verbal and non-verbal communication.

Finally, parents in our study indicated that they were very aware of their children's strengths, weaknesses and intrinsic motivations in play. They also discussed their use of strengths-based approaches to teach their children new play skills. Not only did such approaches facilitate learning opportunities for their children, but they provided parents with opportunities to connect with their children by coming to better understand their preferences and motivations in play. While parents are capable of taking such approaches in facilitating play for their children, future research should explore how parents and community recreation providers can work together to develop strengths-based interventions for children with autism, where children can learn new skills while being encouraged and given opportunities to use their strengths in play. Specifically, these findings point to the importance of including parents and guardians in goal development, assisting program leads in understanding what will make a participation experience meaningful for their child as well as informing the development of a schedule of

appropriate activities for both community-based and therapeutic recreation programs. Finally, while parents are able to provide descriptions of their children engaging in active play, future research should prioritize asking children and youth with autism about their own intrinsic motivations, strengths and challenges in active play as they are able to provide the most accurate descriptions of their own play experiences.

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# Chapter 6. Appendices

## Appendix 1: Letter of Approval from Ontario Tech University Research Ethics Board

*Date:* *November 01, 2021*
*To:* *Meghann Lloyd*
*From:* *Paul Yielder, REB Vice-Chair*
*File # & Title:* *16537 - Parent Perceptions of Active Play Behaviours of their 4–11-Year-Old Autistic Multiples*
***Status:*** ***APPROVED***
***REB Expiry Date:*** ***November 01, 2022***
***Documents Approved:***

| Document Type | Document Name | Version Date |
|---|---|---|
| Data Collection Materials | Appendix 2: Online Demographic Form Updated to Include Correct Version Date | 2021/10/21 |
| Recruitment Materials | Appendix 6: Updated Social Media Posts | 2021/11/01 |
| Recruitment Materials | Appendix 3: Updated Recruitment Poster | 2021/11/01 |
| Confidentiality Agreements | UPDATED Appendix 11: Research Assistant Confidentiality Form | 2021/10/20 |
| Recruitment Materials | UPDATED Appendix 4: Participant Recruitment Letter | 2021/10/20 |
| Consent Letter | UPDATED Appendix 9:Participant Consent Form | 2021/10/21 |
| Participant Materials/Handouts | Appendix 10 Support and Services Handout | 2021/07/30 |
| Communication | Appendix 12 Member Checking Email | 2021/07/30 |
| Communication | Appendix 8 Thank you letter for participant | 2021/07/30 |
| Recruitment Materials | Appendix 7: Participant Email Reminder | 2021/07/30 |
| Recruitment Materials | Appendix 5: P.I. Recruitment Email | 2021/07/30 |
| Recruitment Materials | Appendix 6 Sample Social Media Post | 2021/07/30 |
| Data Collection Materials | Appendix 1 Interview Guide | 2021/07/30 |

Notwithstanding this approval, you are required to obtain/submit, to Ontario Tech Research Ethics Board, any relevant approvals/permissions required, prior to commencement of this project.

The Ontario Tech Research Ethics Board (REB) has reviewed and approved the research study named above to ensure compliance with the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2 2018), the Ontario Tech Research Ethics Policy and Procedures and associated regulations. As the Principal Investigator (PI), you are required to adhere to the research protocol described in the REB application as last reviewed and approved by the REB. In addition, you are responsible for obtaining any further approvals that might be required to complete your project.

Under the TCPS2 2018, the PI is responsible for complying with the continuing research ethics reviews requirements listed below:

**Renewal Request Form:** All approved projects are subject to an annual renewal process. Projects must be renewed or closed by the expiry date indicated above ("Current Expiry"). Projects not renewed 30 days post expiry date will be automatically suspended by the REB; projects not renewed 60 days post expiry date will be automatically closed by the REB. Once your file has been formally closed, a new submission will be required to open a new file.

**Change Request Form:** If the research plan, methods, and/or recruitment methods should change, please submit a change request application to the REB for review and approval prior to implementing the changes.

**Adverse or Unexpected Events Form:** Events must be reported to the REB within 72 hours after the event occurred with an indication of how these events affect (in the view of the Principal Investigator) the safety of the participants and the continuation of the protocol (i.e. un-anticipated or un-mitigated physical, social or psychological harm to a participant).

**Research Project Completion Form:** This form must be completed when the research study is concluded.

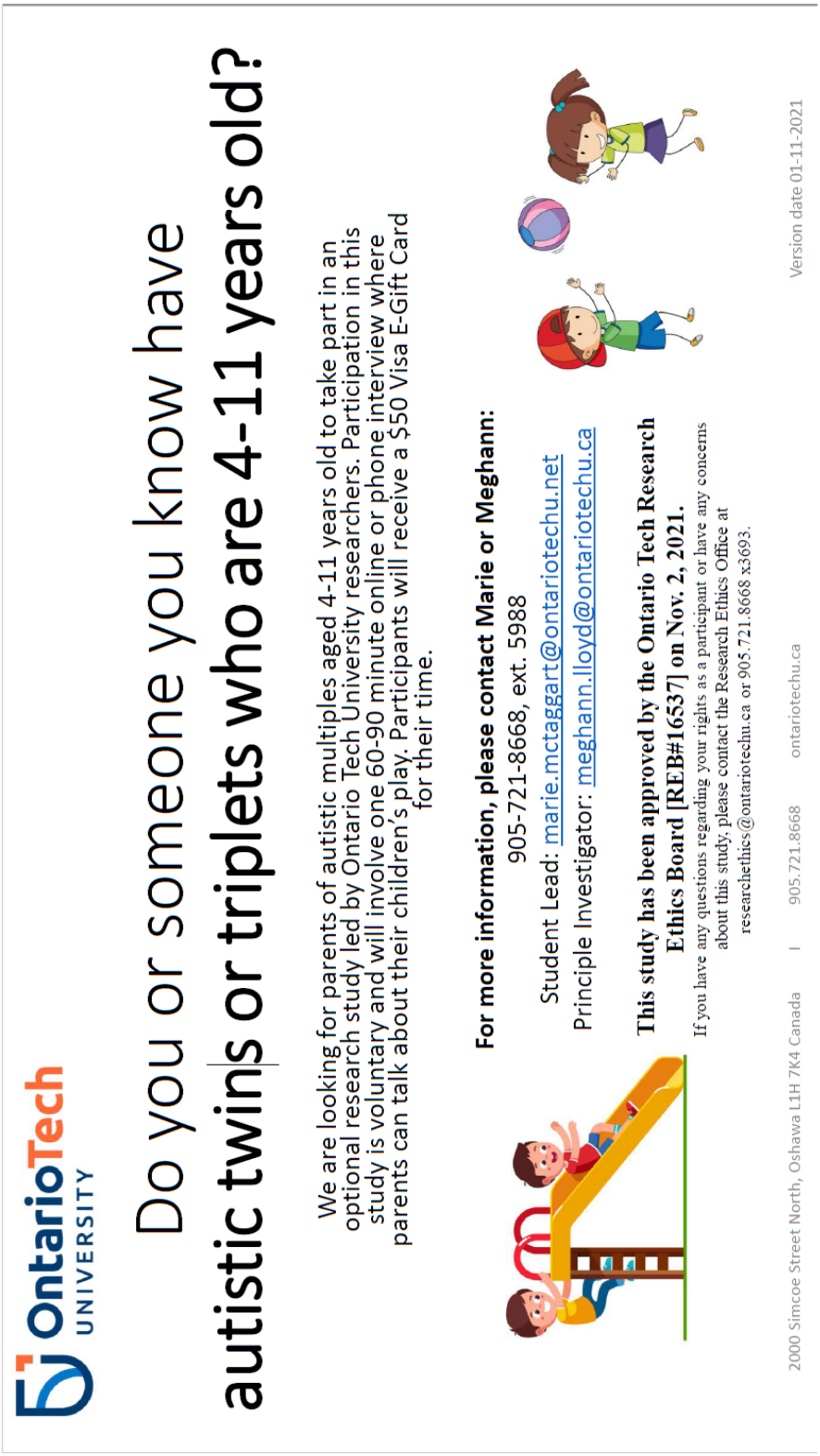
Always quote your REB file number (**16537**) on future correspondence. We wish you success with your study.

Sincerely,

Dr. Paul Yielder, REB Vice-Chair
paul.yielder@ontariotechu.ca

Janice Moseley, Research Ethics Officer
researchethics@ontariotechu.ca

## Appendix 2: Recruitment Poster



## Appendix 3: Recruitment Letter from Principle Investigator

**Date to be sent:** November 2, 2021

**Sender:** Meghann Lloyd

**Target audience:** Parents of autistic multiples who previously participated in a 2017-2020 intervention at Ontario Tech University and gave consent to be contacted for future research studies.

**Subject line: Optional Research Study:** Parent Perceptions of the Active Play Behaviours of their 4–11-year-old autistic multiples
**Header:** Research study for parents of autistic twins or triplets aged 4-11 years old

**Body:**

Hello [potential participant name],

I noticed that you indicated on your consent form that you would like to be contacted about future research opportunities. I thought I would let you know that one of my master's students is conducting a study that you qualify for.

Her name is Marie, and she is interviewing parents of autistic twins and triplets who are 4-11 years old. The purpose of the study is to improve our understanding The purpose of this research study is to improve our understanding of how autistic children play by asking you to describe how your autistic multiples (twins, triplets, etc.) play when they are playing actively (e.g., in your backyard, at the park, etc.).

Participation is entirely **voluntary** and there is no obligation nor need to participate if you do not want to do so. If you decide to participate you would be required to attend a single online video call, or phone interview to talk about your autistic children's play. The interview will last approximately 60-90 minutes and be conducted either by phone or on an online video call; whichever is easier for you.

I've attached a description of the study as well as a poster to this email. If you are interested in taking part in this voluntary study, please contact Marie by phone (905-721-8668 ext.5988) or email (marie.mctaggart@ontariotechu.net).

Any questions regarding your rights as a participant, complaints or adverse events may be addressed to Research Ethics Board through the Research Ethics Office – researchethics@ontariotechu.ca or 905.8668 x. 3693.

Thank you for your time,

Meghann Lloyd

## Appendix 4: Participant Recruitment Letter

**Date to be sent:** November 2, 2021

**Sender:** Marie Abu Itham

**Target audience:** Parents of autistic multiples initially contacted by Meghann Lloyd because they previously participated in a 2017-2020 intervention at Ontario Tech University and gave consent to be contacted for future research studies AND parents who responded to social media advertisements AND parents who responded to word of mouth (snowball) recruitment

**Subject line: Optional Research Study:** Parent Perceptions of the Active Play Behaviours of their 4–11-year-old autistic multiples
**Header:** Research study for parents of autistic twins or triplets aged 4-11 years old

**Body:**

Hello **[potential participant name]**,

Thank you for your interest in our study! Below you will find a short overview of this virtual study and attached you will find the consent form as well as a flyer with some more information. This form is included to provide you with additional information about this **optional** study, you are not required to print or fill out the consent form at this time.

You are invited to participate in an online video call, or phone interview to talk about how your autistic multiples play during physically active play. The interview will last approximately 60-90 minutes and be conducted either by phone or on an online video call; whichever is easier for you.

Active play is any kind of play where kids use their whole body in their play. When they are playing actively, they are using their energy in a way that is fun and something they are choosing to do, so it is not a type of play that is very structured. Physically active play is important for all aspects of children's development. Unfortunately, there is not a lot of research exploring how autistic children play when they are playing in this physically active way. We are interested in hearing the "voice" of parents of autistic multiples to better understand their perceptions of their children's play during physically active play. This information may help to inform better community programming and provide direction for future research surrounding autistic children and play.

The purpose of this research study is to ask you to describe how your autistic multiples (twins, triplets, etc.) play when they are playing actively (e.g., in your backyard, at the park, etc.).

To participate in this study, we will ask you to set up an interview time for an online Google Meets video conferencing call or a telephone interview. You will be compensated for your time with an $50 Visa E-Gift Card which will be sent to your email address.

Participation in this study is completely voluntary. You may withdraw from the study at any time by telling the researchers, and you are not required to provide a reason for doing so.

If you have any questions about this study, please contact Marie Abu Itham at 905-721-8668, ext. 5988 or marie.mctaggart@ontariotechu.net or my supervisor Dr. Meghann Lloyd at Meghann.lloyd@ontariotechu.ca or 905-721-8668 5308. This study has been approved by the Ontario Tech University Research Ethics Board REB [REB#16537] on November 2, 2021. The Ontario Tech University Research Ethics Board is a committee of the university whose goal is to ensure the protection of the rights and welfare of people participating in research. The Board's work is not intended to replace a parent/guardian judgement about what decisions and choices are best for you.

Any questions regarding your rights as a participant, complaints or adverse events may be addressed to Research Ethics Board through the Research Ethics Office – researchethics@uoit.ca or 905.8668 x. 3693.

Thank you,

Marie Abu Itham
Ontario Tech University
marie.mctaggart@ontariotechu.net

905-721-8668, ext. 5988

## Appendix 5: Participant Consent Form

**Title of Research Study:**
Parent Perceptions of Active Play Behaviours of their 4–11-Year-Old Autistic Multiples

**Name of Principal Investigator (PI):** Meghann Lloyd, PhD

**Contact Information:** Email:meghann.lloyd@ontariotechu.ca

Phone: 905-721-8668 ext. 5308 (office)

**Name of Student Lead:** Marie Abu Itham (McTaggart)

**Contact Information:** Email: marie.mctaggart@ontariotechu.net

Phone: 905-721-8668 ext. 5988 (lab)

**Departmental and institutional affiliation(s):**

Kinesiology, Faculty of Health Sciences, Ontario Tech University

### Introduction

You are invited to participate in a research study entitled *Parent Perceptions of Active Play Behaviours of their 4–11-Year-Old Autistic Multiples*. **To be eligible for this research study, you must have children who are multiples (i.e.., twins, triplets, etc.) and have a diagnosis of Autism Spectrum Disorder.** You are being asked to take part in a research study. Please read the information about the study presented in this form. The form includes details on study's procedures, risks and benefits that you should know before you decide if you would like to take part. You should take as much time as you need to make your decision. You should ask the Principal Investigator (PI) or study team to explain anything that you do not understand and make sure that all of your questions have been answered before signing this consent form. Before you make your decision, feel free to talk about this study with anyone you wish including your friends and family. Participation in this study is voluntary.

This study has been reviewed by the University of Ontario Institute of Technology (Ontario Tech University) Research Ethics Board [REB#16537] on November 2, 2021. Please read this consent form carefully and feel free to ask the researcher any questions that you might have about the study. Any questions regarding your rights as a participant, complaints or adverse events may be addressed to the Research Ethics Board through the Research Ethics Office – researchethics@ontariotechu.ca or 905-721-8668 x. 3693

### Purpose and Procedure:

*Purpose:*

Active play is any kind of play where kids use their whole body in their play. When they are playing actively, they are using their energy in a way that is fun and something they are choosing to do, so it is not a type of play that is very structured. Physically active play is

important for all aspects of children's development. Unfortunately, there is not a lot of research exploring how autistic children play when they are playing in this physically active way. The purpose of this research study is to ask you to describe how your autistic multiples (twins, triplets, etc.) play when they are playing actively (e.g., in your backyard, at the park, etc.). You have been invited to participate in this study because you are a parent or primary caregiver to autistic multiples between the ages of 4-11 years old.

*Procedures:*

We are recruiting 4-10 parents of autistic multiples aged 4-11 years of age. You will be interviewed during a single online video conferencing call or telephone call with the interview lasting approximately 60 -90 minutes. Questions will be centered on each participant's perceptions of their autistic multiple's play behaviours during active play. The interview will take place over Google Meet or on the phone and the researcher will be in a private, secure location. You will also be asked to fill out a demographic form to provide us with information about you and your family, including some personal health information (eg., child's diagnosis), for context.

Interviews will involve questions about your perceptions of your autistic multiple's active play. Interviews will be audio-recorded so they can later be accurately typed out word-for-word. These transcripts will be the main form of data used in data analysis. This interview data will give detailed reflection on autistic multiple's active play behaviours and add to the literature on the active play behaviours of autistic children.

**Potential Benefits:**

You and your family may not benefit directly from participating in this study. However, this study may help us, and autism service providers, to better understand the way that autistic children play. This information may help to inform better community programming and provide direction for future research surrounding autistic children and play.

**Potential Risk or Discomforts:**

There is a chance that strong memories or feelings may be recalled during the interview process. There is a slight probability that these memories may cause emotional or psychological discomfort. Participants are free to end, or pause, the interview session at any time, without providing a reason for doing so. Participants may also choose not to answer any questions they do not want to answer. The researcher will provide a list of local physical activity groups for autistic children in the Durham Region should a participant demonstrate or indicate a need for support.

**Use and Storage of Data:**

The interview will be audio recorded and transcribed word for word. Interview audio-recordings and transcriptions will be anonymized (participant names removed), encrypted and stored on Ontario Tech University's private google drive. This google drive has restricted access to only Marie Abu Itham and Dr. Meghann Lloyd. Both individuals

require their own personal account and password to access the google drive. All information will be securely stored throughout the duration of the study, and all the data will be deleted, and any paper files will be shredded after 7 years following publication. All information collected during this study, including participant personal information, will be kept confidential and will not be shared with anyone outside the study unless required by law. You will not be named in any reports, publications, or presentations that may come from this study.

**Confidentiality:**

This research study involves the disclosure of personal information from the research participants. To protect participant's right to confidentiality, all personally identifying information will be removed from quotes included in any published work, and all participants will be given pseudonyms to identify them during each stage of data analysis after the initial interview is complete. Due to the specific focus of this study and the relatively small number of potential participants, please know that there is a small risk that you and your family may still be identifiable in a published document, even when personally identifying information has been removed. This research study includes the collection of demographic data which will be aggregated (not individually presented) in an effort to protect your anonymity. Despite best efforts it is possible that your identity can be determined even when data is aggregated. All data collected will be stored on a secure online server, and only necessary personal information will be collected. All information will only be accessed by the primary research team. Throughout the research process, your privacy will be respected. No information about participant identity will be shared or published without your permission, unless required by law. Confidentiality will be provided to the fullest extent possible by law. Following the interview, participants will be emailed a copy of the transcribed interview. In addition, participants will also be emailed a report of the findings before they are published. These emails will be sent to participants using an Ontario Tech institutional email. It is important to note that information sent via the internet cannot be guaranteed to be secure.

**Voluntary Participation:**

Your participation in this study is voluntary and you may partake in only those aspects of the study in which you feel comfortable. You may also decide not to be in this study, or to be in the study now, and then change your mind later. You may leave the study at any time without affecting your access to services or programs. You will be given information that is relevant to your decision to continue or withdraw from participation. Such information will need to be subsequently provided. You may refuse to answer any question you do not want to answer, or not answer an interview question by saying, 'pass'.

**Right to Withdraw:**

If you withdraw from the research project at any time, any data that you have contributed will be removed from the study and you do not need to offer any reason for making this

request. Additionally, the decision to withdraw will have no effect on compensation that you are to receive for taking part in the study. The information that is shared will be held in strict confidence and discussed only with the research team. You will be given information that is relevant to your decision to continue or withdraw from participation. If you decide you do not want to fill out the demographic form, you are still eligible to participate in the interviews. You may exit the web browser tab at any point before pressing 'submit' without any of your demographic data being collected.

**Conflict of Interest:**

Researchers have an interest in completing this study. Their interests should not influence your decision for you to participate. No members of the research team have any conflicts of interest that may influence the completion of this study.

**Compensation, Reimbursement, Incentives:**

Participants will not be directly compensated for expenses associated with their participation but will receive a $50 Visa E-Gift card as a token of appreciation.

**Debriefing and Dissemination of Results:**

Upon completion of data analysis, a report of the findings will be written for publication. We will notify you via email or phone of the completion of this report and send a copy to you to read.

**Participant Rights and Concerns:**

Please read this consent form carefully and feel free to ask the researcher any questions that you might have about the study. If you have any questions about your rights as a participant in this study, complaints, or adverse events, please contact the Research Ethics Office at (905) 721-8668 ext. 3693 or at researchethics@uoit.ca. If you have any questions concerning the research study or experience any discomfort related to the study, please contact the researcher Marie Abu Itham at 905-721-8668 ext. 5988 (lab) or marie.mctaggart@ontariotechu.net or the faculty supervisor of this project Dr. Meghann Lloyd at 905-721-8668 ext. 5308 or meghann.lloyd@ontariotechu.ca.
By signing this form, you do not give up any of your legal rights against the investigators, sponsor or involved institutions for compensation, nor does this form relieve the investigators, sponsor or involved institutions of their legal and professional responsibilities

**Consent to Participate:** ***Parent Perceptions of Active Play Behaviours of their 4–11-Year-Old Autistic Multiples***

**Online consent to participate in this research study**

To participate in this research study, you will need to consent to each of the following statements by clicking each box (statement 7 is optional).

1. ☐ I have read the consent form and understand the study being described.

2. ☐ I have had an opportunity to ask questions and my questions have been answered. I am free to ask questions about the study in the future.

3. ☐ I freely consent to participate in the research study, understanding that I may discontinue participation at any time without penalty. A copy of this Consent Form has been made available to me.

4. ☐ I give consent for my **phone** interview to be **audio-recorded** as part of the study

**OR**

5. ☐ I give consent for my **online** interview to be **audio-recorded** as part of the study (if participating in online video interviews)

6. ☐ I am willing to receive further information regarding future research studies that my child may be eligible for **(Optional)**

   If you are willing to receive information regarding future research studies, please provide your email address: _____

Once you have selected the boxes, please email this document back to marie.mctaggart@ontariotechu.net to confirm your informed consent to participate in this research study. Please note that communication via e-mail is not absolutely secure. Thus, please do not communicate personal sensitive information via e-mail.

## Appendix 6: Online Demographic Form

**Link to online demographic information form:**

https://docs.google.com/forms/d/e/1FAIpQLSdt0E6NhJRtqpycitUWbPwG-GzRyJCTgKblrWVJgz8ynSWnPQ/viewform?usp=sf_link

**Demographic Information Form Questions:**

**Preamble:**

This form is a part of an Ontario Tech University research study (REB#16537) entitled: Parent Perceptions of Active Play Behaviours of their 4–11-Year-Old Autistic Multiples. This demographic form includes questions about your child that will help to describe the information we learn through this study and identify factors that may help us to better understand families of autistic children. Please feel free to ask questions if you would like further clarification. All questions are optional.

Version date: 21-10-2021

**Question 1:**

How old are your twins/triplets right now?

**Question 2:**

At what age did your children receive their diagnosis?

**Question 3:**

Please self-declare your child's ethnicity using the options below: (consistent with Statistics Canada, 2011)

Indigenous
Chinese
Korean
Southeast Asian
Arab/West Indian
Filipino
Latin American
White
Black
Japanese
South Asian
Undeclared
Bi-Racial
Other:

If other, please identify

**Question 4:**

Does your family have any children other than your multiples? If yes, how old are they?

**Question 5:**

Please indicate the highest level of education completed by each parent -parent 1

highschool
college
university
postgraduate

**Question 6:**

Please indicate the highest level of education completed by each parent -parent 2

highschool
college
university
postgraduate

**Question 7:**
There seem to be different opinions in the autism community on whether identity first (e.g., autistic children) or person first (e.g. child with autism) language is best when talking about children with autism. Do you have a preference for whether your children are referred to as 'autistic children' or 'children with autism'? Our reason for asking is that we would like to write our research publication, using the language that best represents the preferences of all the participants in this study.

## Appendix 7: Code Book

| Name | Description |
|---|---|
| Active Play | Any description a parent gives of their children's active play behaviours. Active play refers to the gross motor or total body movements that young children use to expend energy in a way that is freely chosen, fun, and unstructured (Truelove et al., 2017). |
| Descriptions of Active Play Characteristics | Any description given by parents that describe the way their children engage in active play (e.g., more likely to be risky in play or tend to play in a repetitive way) |
| Freedom to Suspend Reality | Any description of a twin or triplet using their imagination, creativity and self-expression to bring non-literal elements into their physically active play. (Cooper, 2000) |
| Internal Control of Active Play | Any descriptions of twin or triplet being in control of their actions and choices during active play; they are able to determine for themselves what will happen, how they will play and with whom they will play rather than these choices being dictated by externally imposed rules. (Cooper, 2000) |
| Moving around a play space | Any description of a twin or triplet moving around a space in a physically active way, trying new things and 'checking things out' in a play setting. |
| need to know what will happen in play | Any description of a child behaving in a certain way during an active play experience because they prefer or need active play to be predictable. |
| non-active play characteristics | Any description of a child's non-active play. Specifically, when their non-active play behaviours are NOT being compared to that of their twin or triplet (there is another code for that) |
| repetitive active play behaviours | Any description of a child engaging in repetitive behaviours during active play. |
| Rigid Mindset During Play | Any description of a twin or triplet having a rigid mindset during active play by themselves or with others. Ie. highly focused on a particular activity, not trying different things or adding new ideas into their play, being stubborn about wanting to do one particular thing. |
| Risky Play | Any description a parent gives of their children making a choice to begin engaging in an activity the parent and/or child considers to be risky OR any description a parent gives of their child choosing not to even begin engaging in an activity because they perceive it to be risky. |
| Indoor Play | Active Play that twins and triplets are engaging in indoors, whether at home or at another indoor facility. |

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| active play involving technology | Any description of a twin or triplet using technology to enhance or guide their active play experience. (e.g., music, YouTube videos) |
| At home | Any description of a twin or triplet's active play inside their home |
| ball or foam pit play | Any description of a twin or triplet playing in a ball pit OR a foam pit |
| Indoor and away from home | Any description of a child's play in an indoor setting, away from home (e.g., indoor play place) |
| Organized play | Any description of a child participating in an active play experience that is facilitated by a community recreation provider (e.g., swimming lessons, cheerleading, gymnastics). This includes both physically active recreation opportunities that are highly structured and those that are not (i.e., those that have been adapted for individuals with needs) |
| bowling | participation in a game of bowling at a bowling centre. |
| cheerleading | Participation in an organized cheerleading program |
| circus | Participation in an organized circus program |
| dance | Participation in an organized dance program regardless of type of dance. Also including dance class at school. |
| equestrian | Participation in an organized equestrian program |
| gymnastics | Participation in a gymnastics program |
| hockey | Participation in an organized hockey program |
| ringette | Participation in an organized ringette program |
| rock climbing | Participation in an organized rock-climbing program |
| soccer | Participation in an organized soccer program |
| swimming | Participation in swimming lessons |
| Outdoor Play | Any description of active play that twins and triplets are engaging in outdoors. |
| Outdoor and away from home | Any description a twin or triplet's play outdoors and away from home (e.g., park) |
| Outdoor, unspecified location | Any description of outdoor active play where it is not specified if the play is in the yard at home or away from home. |
| playing with animals | Any description of a twin or triplet playing actively with an animal (e.g., chasing a dog) |
| Toys with Wheels | Active play including anything with wheels (e.g., ride on toys, pushing strollers etc.) |
| Yard Play | Any description of a child's play outdoors, at home. Can be in the yard or on the driveway or in the road or sidewalk in front of the house. |
| Sensory Play | Any description a parent gives of their child engaging in active play as a way to meet their sensory needs. Either |

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| | regulating themselves through the play action (e.g., being in water makes them more engaged or spinning and feeling better after spinning) or engaging in the play action because of the way that it feels to them (e.g., the feeling of running, the feeling of being in water). |
| Being in a constant state of motion | Any description of a twin or triplet who is always moving their body during physically active play. |
| climbing play | Any description of a twin or triplet climbing. This can also include balancing at a height. |
| interacting with nature | Any description of a twin or triplet engaging with nature in a physically active way. Could include playing in the dirt, digging in the sand, touching nature while on a hike, etc. |
| jumping play | Any description of a twin or triplet engaged in active play that involves jumping, either on a trampoline or not. |
| Sensory regulating through active play | Any description of a child going from a state of dysregulated (over or under stimulated) to regulated through active play. In other words, they are engaging a particular active play behaviour in order to regulate themselves. |
| sliding play | Any active play that a twin or triplet engages in that involves the action of sliding |
| spinning | Any description of a twin or triplet actively spinning themselves or a toy. |
| swinging play | Any description of a twin or triplet engaging in physically active play involving swinging |
| Water Play | Any description of twin or triplet playing in water |
| Active Play as a Window into Child's World | Descriptions or explanations of a twin or triplet's play that show how active play can serve as a window into the child's world, giving the parent access to a better understanding of who their child is. |
| Active Play Experiences as a Medium for Parent Child Communication | Any time a parent talks about a way that observing their child's active play behaviours made it possible to communicate more effectively with their child. Active play serving as a catalyst for enhanced communication, both verbally and non-verbally. |
| Being willing to persist in active play | Any description of a child who has already begun participating in an activity and then chooses to continue playing it even in the face of adverse conditions or barriers (e.g., temperature, social conditions, risk etc.) I.e., communicating their boundaries |
| Dislikes | Any perspective a parent provides on certain physically active play activities or behaviours that their twin or triplet does not like. |
| Experiences of fear or anxiety | Any description a parent gives of a twin or triplet expressing fear or anxiety during an active play experience. |

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| during active play | |
| Experiences of frustration during active play | Any description a parent gives of a twin or triplet expressing frustration during an active play experience. |
| Experiences of joy during play | Any description that a parent gives of a twin or triplet expressing joy during an active play experience. This can be expressed through laughing, smiling or other physical expressions. Also included can a parent's observation that a twin or triplet "loves" to do a particular play activity ("love" here is taken to be an expression of joy) |
| Not being willing to persist in active play | Any description of a child choosing to stop engaging in an active play because of conditions that the parent perceives as being barriers to physical activity for them (e.g., temperature, social conditions, etc.). This specifically pertains to activities they had already begun playing (i.e., different from choosing from the very beginning not to play because it was risky) I.e., Communicating their boundaries |
| Preferences | Any perspective a parent provides on their twin or triplet's preferences for physically active play activities or behaviours. |
| Sensory regulating during active play | Any description of a twin or triplet engaging in self stimulatory behaviours in order to sensory regulate during an active play experience. Their parent might attribute their stimming to being over or under stimulated by their environment |
| Parent Perceiving Child's Intrinsic Motivations for Active Play | Any description of physically active play that a twin or triplet is motivated to engage in because it is inherently enjoyable; play that is not outcome-oriented or ruled by social expectations or rewards. |
| Competitive | Any description of a twin or triplet being motivated to engage in a physically active play activity because they are competitive either with another child or themselves. |
| creativity | Any description a parent gives of their child engaging in physically active play as an outlet for their creativity. |
| curiosity | Any description of a twin or triplet engaging in active play because they are curious either about the active play itself or about their environment. |
| mischievous play | Any active play that a twin or triplet engages in because they know it is against the rules or may be 'on the line' of against the rules. |
| movement | Any description of a child engaging in physically active play because of the feeling of the movement itself rather than any outcome of the movement. |

| | |
|---|---|
| music | Any description of a twin or triplet being motivated to engage in active play because it involves music or singing |
| people | Any description a parent gives of their child engaging in physically active play because they like to play with or be around other people. |
| Performance | Any description a parent gives of their twin or triplet engaging in physically active play because they want to showcase certain play actions to another person. |
| special interest | Any description of a twin or triplet who is motivated to engage in active play because the play activity involves a theme or object that they are particularly drawn towards. |
| textures | Any description a parent gives of their child engaging in physically active play because they like feeling the texture of whatever material they are engaging with during that play. |
| Parent Perceiving Child's Strengths and Weaknesses in Active Play | Any description that a parent gives of their understanding their child's strengths and weaknesses in play (skills, ability to engage with environment or build on previous play ideas, etc.) |
| Cognitive Skills During Play | Any description of a child using OR not using problem solving or logical reasoning skills during active play to adapt or elaborate on their play with an object or within a particular environment. (Cooper, 2000) |
| Strength of Motor Skills | Any description of a twin or triplet's motor skills during physically active play. This can include descriptions of strong, weak or absent motor skills. |
| Talents | Parent describing special talents they've seen in their children because of their active play behaviours. |
| Weaknesses | Any description of an active play skill that a parent has seen their child struggle with, that may hold them back from engaging in active play or enjoying their engagement in active play. |
| Parents Facilitating Active Play Experiences | Descriptions of parents facilitating their child's active play experiences at some level. Either by playing directly with the child or facilitating a certain play experience by introducing or manipulating level of structure, tasks involved, environmental factors. Any description of a parent suggesting or modifying a play experience for their child (setting, task, structure) based on what they know about their child and what will enhance the play experience for their child, enabling the child to engage in act |
| Difficulty making active play choices | Any description of a child not knowing what to do during an active play opportunity or needing guidance from an adult. Including parent's descriptions of their children zeroing in on one particular activity and being resistant to choose a new activity. |

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| Parent meeting twin or triplet play needs | Includes instances where the parent is seeking to meet one child's needs AND instances where they are balancing the needs of multiple at the same time. (e.g., preferences, safety, learning new skill). Parent creating specific opportunities within active play experiences because they know that one or more of their twins or triplets will enjoy it or will benefit from it in some way. |
| Parents Guiding Active Play During Co-Play | Descriptions of parents joining in the active play with their child and guiding it in some way. (e.g., taking turns jumping in the leaves). |
| Predictable play settings | Any description of child playing in a setting that they are familiar with and may feel like they can predict what may happen during play because of how familiar they are with that setting OR descriptions of children wanting to be able to predict what might happen in play in circumstances where they are not able to. |
| Settings with play options | Any description of a twin or triplet engaging with multiple play options (i.e., moving around to different activities) in a flexible active play setting OR descriptions of a child wanting play options in an environment where there are none or few. Including |
| Structured Play Setting | Any time a parent reflects on their child playing actively in a structured play environment (e.g., school, community rec program) OR any time a parent describes a play environment that they themselves have structured in a particular way. |
| Parent's interpretations of Active Play Behaviours | Any time a parent is attributing an aspect of a child's active play behaviour to another factor (e.g., interpreting their behaviour as being a result of some environmental barrier to play, or interpreting their behaviour as being a result of practice or development over time) |
| Barriers Effecting Active Play Behaviours | Any social, environmental, temporal or other factor that parents describe as inhibiting active play for their twins or triplets. |
| Expanding repertoire of active play skills | Any description of a child adding a new active play skill, activity or ability to their repertoire of physically active play. This goes beyond simply the description of the play behaviour, but the parent is highlighting the process behind the emergence of this new play behaviour. Can include examples of children learning to make choices in play. |
| Facilitators Promoting Active Play Behaviours | Any social, environmental, temporal or any other factor that parents describe as promoting active play for their twins or triplets. |

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| Learning new play skills by playing separately | Any time a parent talks about a twin or triplet learning a new play skill or showing a different play behaviour as a result of playing separately from their twin or triplet sibling(s). This goes beyond simply the description of the play behaviour, but the parent is interpreting the reason behind the emergent play behaviour. |
| Learning new play skills through play together | Any description of a twin or triplet being pushed out of their comfort zone by their twin or triplet sibling during active or non-active play. (e.g., learning new motor skills, social communication skills, etc.) This goes beyond simply the description of the play behaviour but the parent is interpreting the reason behind the emergent play behaviour. |
| typical or expected play behaviours | Any time a parent describes their twins or triplets as playing actively in a way they perceive as being typical for their age, or similar to how "typical" children play. |
| unique play behaviours | Any description given by a parent of their child playing in diverse ways they've never seen before or that they identify as being different. This includes both positive and negative parent perspectives. |
| General Child and Family Characteristics | Any description of twins or triplets and their families that describes the sample. (e.g., age, experiences, values, etc.) |
| Child Characteristics | Any characteristics or descriptions of twins and triplets that are useful to describe the sample (e.g., age, access to services, communication level, etc.) |
| age | age of twins and triplets |
| Communication | Parents describing the way that their child communicates verbally or non-verbally |
| Co-occurring diagnoses or conditions related to ASD | Any diagnosis that a twin or triplet has, co-occurring with ASD, or condition related to their ASD diagnosis (e.g., sleep). Including premature birth. |
| gender | The genders of the twins and triplets |
| General Autistic Traits | A twin or triplet's characteristics that are NOT directly related to personality, communication, play, or a co-occurring diagnoses, but are related to autism. (e.g., sensory, parents explaining how their brain works etc.) |
| Differences in General Autistic Traits | Any description that a parent gives of their children being different from each other in terms of general autistic traits (e.g., diagnosis, tendencies, etc.) |
| Similarities in General Autistic Traits | Any description that a parent gives of their children being different from each other in terms of general autistic traits (e.g., diagnosis, tendencies etc.) |
| identical or fraternal | Whether the twins or triplets are identical or fraternal |

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| Personality | Any description of a twin or triplet's personality including traits like intelligence. |
| Personality Differences | Any description of a difference between the twins and triplets that is related to their personalities and not specifically related to play. |
| Personality Similarities | Any description of a similarity between the twins and triplets that is related to their personalities and not specifically related to play |
| schooling, therapy or social programs | Descriptions of the academic, therapeutic and community-based services the twins and triplets have had access to in the past and currently. (e.g., girl scouts) NOT including physically active recreation opportunities like swimming or soccer |
| Family Characteristics | Any description of family characteristics that help to describe the home and family setting the twins and triplets are being raised in, and that help to describe the participants themselves. |
| parental presence in the home | Any information about parents that helps develop an understanding of the role they play in the child's environment (e.g., presence of mom and dad at home, parent roles in the home, 'day in the life' descriptions of parent's preferences or decisions that can impact physical activity or active play opportunities, parents reflecting on knowing or not knowing something about child's play either because they actively seek out the information or because they don't see it because it may happen at school) |
| siblings | Any description of a sibling in the family. Includes information collected from demographic form and any anecdotal information collected from interviews. |
| Social Play | Any description of a twin or triplet playing (active or non-active) with another person (twin/triplet, sibling, other child, parent, adult, etc.) |
| Play Alone in a Social Setting | Any description of a twin or triplet playing by themselves or withdrawing from play with others for some reason in order to play by themselves |
| Choosing not to play with twin or triplet | Any description of twin or triplet intentionally choosing not to play with twin or triplet siblings |
| in 'own little world' during play with others | Any description of a child doing their own thing during active play when there are other childrenaround. i.e., not reacting to other children in the play space and just going with their own play ideas rather than showing any curiosity of other children in that play space. |
| Not being willing to compromise in | Any description of a twin or triplet not being willing to meet in the middle to play with their sibling. |

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| play with twin or triplet | |
| Playing actively alone | Any description of a twin or triplet playing actively by themselves (running, jumping, etc.) This includes chasing games with animals where there are no other children involved. |
| Withdrawing from play opportunity with other children | Any description of a child leaving a play opportunity with other children that they had previously been involved in. Also including instances where a child does not choose to engage in a play opportunity with other children even though it is happening in front of them or close by. |
| Play with Others | Any description of a twin or triplet playing with another person including children outside their twin/triplet sibling group and adults. |
| ball play | Any description of a twin or triplet playing with a ball, by themselves or with others. |
| chasing play | Any type of play involving chasing or playing chasing games with other children. NOT including chasing animals. |
| Directing play with other children | Any description of a twin or triplet taking on the role of 'director' in active or non-active play with other children. Can include siblings who are not part of the multiple group, but not including instances where play is happening within the dyad or triad (different code for that). |
| Fighting with other children during play | Any description of a twin or triplet fighting with other children (including non-multiple group siblings) during group active play. NOT including fighting within dyad/triad group (there is another code for that). |
| Flexible Play Behaviours | Any description of a twin or triplet being flexible in active play with other children, including following other children's play ideas, being patient with other children, etc. |
| Gravitating towards older or younger children in play | Any description of a twin or triplet gravitating to play partners who are significantly older or younger than them (5+years) than them. |
| Group Play | Any description of a child's play in a group of people. This includes with siblings who are not a part of the twin or triplet set. |
| play 'wrestling' with an adult | Any description of a twin or triplet playing 'rough and tumble' with an adult. Also including instances where child keeps coming back to adult, so they will do a wrestling type move on the child. (e.g., throwing them onto the bed) |
| rough and tumble play | Any physically active play that is particularly uncontrollably exuberant or boisterous. (e.g., wrestling). Including with twin or triplet sibling or with a person outside their dyad/triad group. |

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| showing curiosity of others during play | Any description of a twin or triplet observing another person playing in a physically active way. This includes instances where the child eventually joins in the play and instances where the child does not choose to join in. |
| Social play behaviours with an adult | Any description of a child engaging in active play with an adult, where that active play is NOT rough and tumble or wrestling. This includes activities where the adult is guiding and those where the child is guiding. The focus is on the child's willingness to engage with an adult in this way. |
| Social Play Behaviours with other children | Any description of a child's social behaviours during active play with other children outside their dyad/triad (including other siblings). |
| Turn taking | Any description of twins or triplets taking turns in play. |
| Play with Twin or Triplet | Any description of twins or triplets playing together. Active or Not Active. The focus is on how they play together. |
| Active Play with Twin or Triplet | Any description of twins or triplets playing together in physically active play. NOT referring to parallel play. |
| Active Play Differences between twins or triplets | Any descriptions of how twins/triplets are different from each other in the way they engage in active play. |
| Active Play Similarities between twins or triplets | Any descriptions of ways in which twins/triplets are similar to each other in the way they engage in active play. |
| Choosing to play with twin or triplet | any description of twins or triplets intentionally choosing to play together (active or non-active play) |
| Compromising to play with twin or triplet | Descriptions of twins or triplets 'meeting in the middle' in order to play together in active or non-active ways. |
| Fighting during play with twin or triplet | Any description of twins or triplets fighting during active or non-active play. |
| following play ideas | Any description of a twin or triplet following their twin or triplet sibling's ideas during active or non-active play. |

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| Non-Active Play with Twin or Triplet | Any descriptions of twins or triplets playing together, not physically active play. |
| Non-active play differences between twins or triplets | Any descriptions of how twins/triplets are different from each other in the way they engage in play that is not active. |
| Non-active play similarities between twins or triplets | Any descriptions of how twins/triplets are similar to each other in the way they engage in play that is not active. |
| nonverbal interactions during play with twin or triplet | Any description of twins or triplets looking at each other or holding hands during active or nonactive play and reacting to each other's presence. |
| One twin or triplet directing play | Any description of one twin or triplet taking on the role of 'director' in active or non-active play with other twin or triplets |
| Parallel Play with Twin or Triplet | Any description of twins or triplets playing parallel to each other, either active or non-active. |
| unique play style with twin or triplet sibling | Any description of a twin or triplet playing with their twin or triplet sibling(s) in different ways than they play with other children (including any other siblings). |
| Verbal communication during play together | Any description of twins or triplets verbally communicating with each other during active or non-active play together. |