Article

Early motor skill interventions for children with autism; secondary effects on parents and families

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Abstract: Motor skill interventions can improve the motor proficiency of children with autism, however, the secondary effects associated with these interventions are not well understood. The aim of this study is to describe 1) parents' experiences with an early motor skill intervention for their children with autism, and 2) the secondary effects of the intervention on parents and families. Parents (n = 8) of four-year-old children with autism who participated in a 12-week motor skill intervention were invited to take part in a semi-structured interview to discuss their experiences. The study was grounded in descriptive phenomenology. Three themes emerged from the data. Theme 1: Parent Attendance - observing the motor skill intervention was essential in order for parents to benefit from the experience themselves (e.g., socializing with the other parents), Theme 2: Eye-Opening Experience - the intervention shed light on the children's capabilities and the importance of motor skill development, Theme 3: Positive Experience - parents expressed a desire for more opportunities like this within the community. These findings indicate that early motor skill interventions for children with autism can also benefit parents and families. In order to better meet the needs of families of children with autism, clinicians should educate parents on the importance of motor skill development early, and highlight opportunities for active engagement at home and in the community.

Keywords: autism spectrum disorder; parent experience; early intervention

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Introduction

Parents play a fundamental role in supporting the development of their children with autism. From identifying developmental concerns to seeking out and initiating interventions, caregivers are often tasked with many challenges as they attempt to facilitate their child's development and help them reach their full potential. Research has demonstrated that there is a general awareness of how common autism is today, as well as fairly accurate description of the strengths and challenges associated with autism (Dillenburger, et al., 2013). However, evidence indicates that there is also an overall lack of understanding of services available for families and the availability of these services in the general public (Dillenburger et al., 2013). This lack of understanding related to the challenges in accessing developmentally appropriate social services for their children with autism is hypothesized to contribute to the stresses experienced by parents of children with autism. Parents consistently report higher levels of stress and lower levels of family quality of life compared to parents of children without autism (Bonis, 2016; Gardiner & Iarocci, 2015; Hoefman et al., 2014; S. Jones et al., 2017; Parsons et al., 2020; Stuart & McGrew, 2009), indicating that their own needs are not adequately being met. In order for parents and clinicians to make informed decisions about which combinations of autism services will best address the family's unique needs, further investigation into the child- and parent-level benefits associated with interventions are required.

Parents report that the challenges associated with caring for their child with autism add additional strains in the first six months after their child's diagnosis (Stuart & McGrew, 2009). Certainly, wait times add to these stresses. Parents report delays in accessing services in the United States, Europe, Australia, and Canada (Bejarano-Martín et al., 2020; Gordon-Lipkin et al., 2016; S. Jones et al., 2017; Penner et al., 2018; Taylor et al., 2016). Past work has suggested that in Ontario (Canada), families of children with autism wait an average of 2.7 years from the time the child is diagnosed to the time they gained access to government-funded behavioural interventions (Piccininni & Penner, 2016). More recently, wait times increased due to the COVID-19 pandemic (Aishworiya & Kang, 2021). During this period, parents may be left in a state of uncertainty, where they may not have acquired the skills to effectively manage their child's challenging behaviours, nor the knowledge to promote the best developmental outcomes (S. Jones et al., 2017; Piccininni & Penner, 2016; Rivard et al., 2014). Interventions carried out between the time of diagnosis and service receipt provide a critical opportunity to address the well-being of the parents. There is a growing need for affordable, early interventions that contribute to parent and family outcomes, such as lowering parent stress and improving family quality of life (Lavelle et al., 2014).

Children with autism, experience significant delays in motor development and these delays can contribute to reduced ability to engage in social situations, for example, active play with peers, in early childhood (Lloyd et al., 2013; Ruggeri et al., 2020). A recent systematic review found that motor skill interventions for children with autism are effective at improving motor skills, but more research is needed into all the benefits beyond just the motor domain (Ruggeri et al., 2020). Early motor skill interventions encompass a host of movement-based therapies that require basic equipment (e.g., balls) and therefore tend to be less expensive than more intensive therapies requiring one-on-one time with highly trained clinicians (Rogge & Janssen, 2019; Tsiplova et al., 2019). Researchers who investigated the effects of motor skill interventions on young children with autism have highlighted a number of child-level benefits associated with them, including improvements with motor skills, social skills (e.g., listening skills and turn-taking skills) and transition skills (Bremer et al., 2015; Elliott et al., 2021; Ruggeri et al., 2020), however, the benefits of early motor skill interventions for the family unit are not well understood. Occupational therapy interventions, behaviourally based interventions, psychoeducation interventions, and mindfulness interventions encompass most of the research that has measured family outcomes, including changes in quality of life and parental stress, following children's participation in early interventions (Coogle et al., 2013; Da Paz & Wallander, 2017; Estes et al., 2019; Frantz et al., 2018; Kuhaneck et al., 2015). Though the children themselves are the primary targets of early autism interventions, these experiences also affect parents and families (Coogle et al., 2013). Understanding families' experiences with early intervention research can help to shed light on the positive and negative aspects of current programming and inform recommendations for future practice that ensure the needs of families are more adequately being addressed. This aims of this study are to describe 1) parents' experiences with an early motor skill intervention for their children with autism, and 2) the secondary effects of the intervention on parents and families.

Materials and Methods

These findings were part of a larger study examining the overall impact of an early motor skill intervention on children with autism (Bremer & Lloyd, 2021; Elliott et al., 2021). All procedures performed in studies involving human participants were in accordance with the ethical standards of the Ontario Tech University (Reference number: 15012). Written informed consent was obtained from all individual participants included in the study.

Recruitment of participants

Parents of four-year-old children with autism who had participated in a 12-week motor skill intervention were invited to participate in an interview session for this study. Six families were randomly selected and contacted via email, and all six families confirmed their desire to participate in this study. A total of eight parents participated, including two couples. Recommendations from previous literature were used to inform the sample size for this qualitative study (Creswell & Miller, 2000; Giorgi & Giorgi, 2008; Turpin et al., 1997). Interviews were conducted six to nine months after the motor skill intervention.

Motor Skill Intervention Description

The fundamental motor skill intervention included small groups of three- to five-year-old children with autism (Bremer & Lloyd, 2021; Elliott et al., 2021). Sessions ran twice per week for 12 weeks and each session lasted one hour. Staff to child ratios were between 1:1 or 1:2, and sessions were designed to follow the following structure: a short warm-up guided by music, a series of motor-based activities (individual and group-based), and 15 minutes of free play to finish. The motor-based activities targeted a specific motor skill (running, throwing, jumping, etc.) each week. Visual demonstrations and verbal instructions were provided for each activity. During the intervention, parents watched, encouraged, and sometimes assisted their children as the children attempted a variety of motor activities. For more detailed information about the design and delivery of the motor skill intervention, please refer to Bremer and Lloyd (2021).

Study Design

Phenomenology offers a research approach for exploring and understanding individuals and their lived experiences (Converse, 2012). The findings of phenomenological research are influenced in large part by researchers' philosophical assumptions and their specific approach to inquiry (Lopez & Willis, 2004). It is therefore important that we first outline our own. We view participants' experiences as objective truths that can be described. We also view participants' realities as existing independently of us, thus we did our best to neutralize our influence on the results of our study and depict participants' narratives as accurately as possible using bracketing (i.e., setting aside any preconceived assumptions about the topic of investigation). Another assumption is that there are commonalities shared by those who endure the same experience (e.g., those attending an early motor skill intervention for their children with autism). Thus, in describing participants' experiences we have highlighted many similarities in an effort to expose the universal essences of participants' experiences (inductive analysis). Given our ontological and epistemological assumptions, along with the aims of the study (descriptive), we chose to ground this study in descriptive phenomenology.

Colaizzi's (1978) seven-step method for descriptive phenomenology was used to guide this investigation. A defining characteristic of this idiographic mode of inquiry is its commitment to detailed descriptions of participants' lived experiences, and the commonalities among them, that can only realistically be achieved with small sample sizes (Creswell & Miller, 2000). Interview sessions were conducted by the primary author using a semi-structured interviewing technique to elicit a rich description of parents' experiences with the early motor skill intervention for their child(ren). Interviews lasted between 40-90 minutes and each session was audio-recorded. Particular attention was paid to the benefits of the intervention for the parents, and how those benefits influenced families. Since interview participants were parents of children with autism, the terms "parents" and "participants" will be used interchangeably for the remainder of this work.

Procedures

After consent was obtained and demographic information forms had been filled out, the audio-recorders were turned on and the interview began. The interview consisted of eight main questions, some of which had multiple follow up questions. For example, "How would you describe your family's quality of life during an average week?" was followed by "If at all, how has your child's participation in the motor intervention influenced your family's quality of life?". Similarly, "How would you describe your stress during an average week?" was followed by "If at all, how has your child's participation in the motor intervention influenced your stress?". Parents were also asked to "Describe any benefits or challenges" that they or their family experienced as a result of their child's participation in the motor intervention. The semi-structured interviewing technique allowed the moderator to probe, based on the responses provided by the participants to the questions in the interview guide. As recommended by Creswell and Poth (2018), the interviewer took hand-written notes during and after each interview to begin the theme-identification prosses and to capture nuances that would not be picked up in audio-recordings. After each interview, the verbatim transcript was created and the member checking process began within one week of each interview (Mero-Jaffe, 2011). Participants were emailed the transcript from their session and given an opportunity to add, remove, or further clarify any of their statements in the document. Once all of the transcripts had been finalized, the primary author read and listened to them several times in order to become fully immersed in the data and continue with the theme-identification process and developing the coding framework. Concise phrases were formulated to encapsulate each emerging theme and each cluster of themes was then given a descriptive label. This resulted in a list of themes and subthemes, each with its own detailed description. The coding framework was entered electronically into NVivo 11 Pro and all six transcripts were uploaded for analysis.

Each transcript was coded by the primary author using the NVivo qualitative data analysis software. Next, a third person, who was not intimately involved in the development of the study, was taught how to code within NVivo using the coding framework to establish inter-rater reliability. After coding one transcript with the primary author to ensure the coding process was understood, the individual coded a different transcript in solitude. From the coding comparison, each node had over 95% in agreement.

Results

All of the participants' children who took part in the early motor skill intervention were described by their parents as verbal and able to participate in the motor-based activities. Three families included a single child with autism, two families included two children with autism, and one family included triplets with autism. Of these 10 children, nine participated in the motor skill intervention (one child did not qualify due to their age), seven were boys and two were girls. Detailed demographic information can be found in Table 1.

Table 1. Family Demographic Information

Participant		Sex of Child(ren) with Autism	Other Diagnoses	Other Difficulties
A	Mother	Male	None	Anxiety, Anger, Transitions
B	Father	Male	None	Transitions
C	Mother	Female	ADHD	None
D	Mother	Male	None	Transitions
E	Mother	Male	ADD, GAD	Anxiety, Anger, Transitions, Attention
F	Father			
G	Father	Female	None	Anxiety, Transitions
H	Mother	Male	DD	Transitions, Anxiety, Anger
		Male	DD, SPD	Transitions
		Male	DD	Transitions, Anxiety, Anger

*ADD: Attention Deficit Disorder; ADHD: Attention Deficit Hyperactivity Disorder; DD: Developmental Delay; GAD: Generalized Anxiety Disorder; SPD: Sensory Processing Disorder.

Participants reported several parent and child-level benefits associated with the early motor skill intervention for their children. For more detailed information about the "child-level benefits" of the intervention, please refer to Elliott and colleagues (2021). In this current paper, we focus on the parent-level benefits of the intervention. Researchers identified themes amongst parents' responses and grouped them into three major categories and several subcategories. The theme structure is outlined in Table 2.

Attendance Allowed for Important Observations and Experiences

Many parent-level benefits stemmed from parents attending and observing the motor intervention sessions for their child(ren). Parents were able to observe their child(ren) succeed, meet other children with autism and their parents, learn strategies to use with their child(ren) at home, and develop a better understanding of their child(ren).

Table 2. Parent-Level Benefits of the Early Motor Skill Intervention

Themes
Attendance Allowed for Important Observations and Experiences
Observing child(ren) succeed
More hopeful about the future/less worried
Meeting other children with autism
Gained perspective on child(ren)'s development in relation to others
Meeting other parents of children with autism
Opportunity to socialize/decrease feelings of isolation
Parent learning
Led to more frequent family outings
Eye-Opening Experience for Parents
Importance of motor skills, play, and fun for child development
Incorporating more active play in daily life
Child(ren)'s strengths and challenges
Changed perspective of their child(ren)
Shifted family dynamic
Positive Experience
Parents valued the experience and children enjoyed the intervention

Observing Child(ren) Succeed

Observing success was an important factor that contributed to positive feelings among parents. Parents frequently described the children's success as "amazing".

> I think for us as parents to see that he is succeeding outside the nest, umm, was a huge thing... I think that took a lot of stress away, a lot of pressure. It was just like okay, relax, chill, it's okay. So I don't have the stress like I did before. (Parent D)

As parents observed their children succeed several times over the course of the intervention, they began feeling more hopeful about the future and reported a diminished sense of worry. For example, parent B said "he can succeed at things without me... I don't have to worry about him for the rest of my life" and later added, "to have that, you know, to have that confidence in his future... kind of so we don't have to worry too much". Another parent expressed how their child's progress meant to them:

> Plus to see him succeed in things like at first he couldn't catch a ball. He barely even kicked the ball. But to see him... balance on one leg... see him like gaining the ability to do it and getting self-confidence and being happy that he's succeeding, and sharing that joy with all the other people that were there. That was amazing. (Parent A)

Meeting Other Children with Autism

Many of the participants' children were newly diagnosed and they had yet to meet another child with autism.

> I think for us going to that intervention and seeing those other kids, and seeing the struggles or imagining the struggles that they have to go through, you know, it put it in a little bit of perspective for our situation. (Parent E)

Meeting other children with autism allowed parents to compare their child(ren)'s level of development to others and gain some perspective on their abilities.

> ... it was good for us too, just as much as it was for [him] because this is one of our first... exposures to the world of autism and being on the spectrum and there was other children here that were different than [him]. So some were higher functioning, some lower functioning... so that kind of gave us an idea of where we needed to work with [him] too. (Parent E)

Meeting Other Parents of Children with Autism

This intervention was also some parents' first exposure to other parents of children with autism. Parents perceived these interactions as a benefit for multiple reasons including observing how parents handled certain situations, "You got to see other parents and sort of how they interact with their children and it sort of gave us some tools and some things to think about" (G). Parents also expressed that they felt less isolated in their experiences by meeting other parents in a similar situation:

> So it's pretty cool to see that you're in the same situation... because my husband's always saying "Oh, it's just us it's just us" and when my husband came, he's like, "no, it's not just us, I actually see it now". (Parent C)

Parents explained that when their child(ren) made friends with other children provided an opportunity to spend time with other parents:

> In the process, you know, like meeting other parents, for sure there have been benefits to it. [She] has built some friendships with some of the other kids and we've built some relationships with some of the other parents where we do see

> them outside sometimes... those are definitely some benefits that we did not expect. (Parent G)

Parent Learning

Parents reported that they were able to learn strategies that they could use at home with their children as a result of being present during the intervention.

> Especially like the whole concept of sharing like one of the key phrases here is they'll say a child's name and then “turn” like “Ashley’s tuurrrrnnnn” or like “Johnny's tuuuurrrnnnn”. So when we do that with her and her brother, we’ll say “Ashley’s tuuurrrrnnnn... okay, now it's Johnny’s tuuurrrnnnn” so she gets, she gets it like “okay I have to wait my turn” instead of thinking like “oh this is getting taken away from me”. (Parent G)

Parents felt that their own learning had a positive effect on their family unit. “[We] have a better understanding of how to deal with him in certain situations now.” (Parent F). Participants were also able to learn about their own capabilities, as parents, throughout the experience.

> I was afraid of initially like oh my god the thought of having to go in the evening... twice a week... it's like, it might look like a big thing, it might look like it's going to be a lot of struggle, but once it gets going, it’s a good thing. So it's a little bit like... don't not do it because it might be a struggle. Just go for it. You can do it. You’re going to be fine. (Parent D)

Learning helped parents to feel more able to go out as a family.

> I think for me it comes down to... some of it is the relief of some of my anxiety. Being able to take her out and sort of like I've learned how to manage certain meltdowns or how to prevent some meltdowns. (Parent G)

Parents described feeling a sense of comfort from learning how to better predict and/or prevent and manage their child(ren)’s challenging behaviours. For example, parent B said, “I tend to take them places a bit more. And, you know, like I said, the stress level is not there, umm sort of getting out of the car, that they're going to have a meltdown” and parent A added, “it has helped... we’re not as apprehensive to take them to new environments.”

Eye Opening Intervention

A second major theme that emerged from the data were parents’ descriptions of the experience as “eye opening” or “a wake-up call”.

> There is nothing anyone tells you about the physical, you know, even as a parent at home we constantly do speech sessions, you do behaviour things, like you repeat things. And, you know, you drill them that way. Throwing a ball at home then isn’t important anymore. So that goes a little bit into the background... you don't think about “hmm your son can’t catch the ball, maybe you should work on that”... no, you’re focusing on all the other aspects. (Parent D)

Some used these terms because they felt they had developed “tunnel vision” in terms of what they were focusing on with their children at home, prior to the intervention.

> It's like a wake-up call... I felt like once you have the autism diagnosis, you get drilled in a way with the information that you get from doctors, from internet forums, from everywhere, you know, that behaviour, and speech, and social things, that those are the three factors that you need to look for. So, you keep focusing on them. And, you know, it's like, you get tunnel vision in a way... for me, it was a little bit like hang on, stop. Again, there is more to this little boy. (Parent E)

For many parents, the intervention shed light on the importance of motor skills, play, and fun for children's development and also highlighted children's challenges and capabilities. Ultimately this "eye-opening" experience changed parents' perspectives of their children, which resulted in a shift in family dynamics.

Importance of Motor Skills, Play, and Fun for Children's Development

By witnessing the joy and success, along with the other benefits, that their children experienced during the motor intervention, parents developed a new appreciation of the motor domain as an important part of child development.

> Seeing how they interacted with the play therapy here, umm I think that it also kind of opened our eyes to a few different things, for me, now we take them to a few different parks around the area, we go to the waterfront and we throw rocks... (Parent B)

Many parents began making an effort to incorporate more motor-based activities into their children's daily lives. Several participants bought sports equipment, started taking their child(ren) to parks more often, and some even enrolled their child(ren) in a soccer program as a result of their experience.

> My husband built a treehouse in the backyard! It was for the kids to go out there and play and climb up the rock wall, and we have tee-ball set up out there, so now we're thinking of things to actually have them go like, activities for them to do. (Parent A)

Consequently, several parents also reported that their family's physical activity levels increased. Parent E said, "We've become more active to a degree" and parent F emphasized the added family component, saying, "It's a bit more family time. And it's good too because he's not staring in front of an iPad or a phone, right? We're playing a game, we're all together like interacting".

Children's Strengths and Challenges

Another "eye-opening" aspect of the intervention for parents involved their child(ren)'s challenges and capabilities. In some cases, parents weren't aware of certain circumstances (e.g., transitions) that would trigger challenging behaviours from their children. Parents viewed this enlightenment as a positive factor. For example, parent H said, "We did discover that they have difficulties with certain transitions. So, the good thing is that we discovered it... otherwise I don't think we would have discovered it until school... which then would have made school even tougher". Parent C added to this point and said, "The program has kind of like shed some light on some of the challenges, right? To make us understand some of the challenges. I mean all of the influence has been positive.".

More often than not however, instead of being surprised by challenging behaviours, parents were surprised by the abilities that their child(ren) demonstrated during the intervention.

> So it even opened our eyes when we would come here like "oh look wow look at him throw the basketball", "oh look at him stopping and listening and jumping and hopping", "oh we're so proud of him", "oh look what he can do". (Parent F)

Parents expressed that they were able to see their child perform skills they did not know he was able to do:

> He demonstrated ability and skill that we would have not known and we probably wouldn't have put him in soccer, or wouldn't have assumed that he could interact in a group with other kids that are on spectrum and not on the spectrum. (Parent E)

The experience of participating in the intervention helped parents recognize the potential in their child(ren).

> It's also given me the ability to recognize that she is capable of doing a lot more than I thought she was. Which is great because I, you know, now like looking back, it's just like, wow, I can't believe… it's not that she couldn't do it, I just didn't think she could do it. (Parent C)

As parents discovered that their children were capable of much more than they previously thought, their perspectives of their children and how they treated them changed.

> He is no longer so sheltered. We don't excuse him that much anymore so if he does wrong, he does wrong, and he gets the consequences for it… and now he's sitting on the naughty bench just like [sibling] is. (Parent D)

Parents started holding their children to higher standards at home and allowing them more opportunity to be independent.

> Now it's like no no he did it in the classroom, he can do it again. So I know what he's capable of. I know you can teach him, that he can do this stuff, so now we're at a different level. (Parent F)

One parent described how they have changed their approach to give their child the time to complete tasks independently.

> I have to remind myself to just give her that little bit of opportunity to do it herself because I'm also not doing her any favors by constantly doing it for her over and over again. And you know it's just like simple tasks of just getting ready. Like it's going to take her probably 10 minutes to get ready, but I've got to let her do it, and that's the expectation of where I'm at now with her is like, okay, like let's get ready for school 10 minutes earlier so then you can do this yourself. (Parent G)

Several participants experienced a shift in their family's dynamic as a result of their updated views of their child(ren)'s abilities.

> Ya, because we could step back, we could watch, we could observe him, we could see him interact with others and you know he's proven to us that he is okay. He is good. You know too, to have that confidence has shifted the dynamic in the house a little bit because before everything was about him. (Parent F)

Parents explained how this new confidence in their child(ren)'s abilities had an influence on their family unit as a whole.

> I think this intervention as well has helped us a little bit like grow together in a way. To see like okay we don't have to shelter him so much. He can be just a normal part of our family… and gaining that confidence has changed a lot in our family. (Parent D)

Positive Experience

The third and final major theme involved parents' positive opinions about the intervention. Several parents stated that they would do it again and that they wished the intervention would continue. Two parents said that they feel motor skill interventions should be provided to all children with autism in conjunction with traditional therapy.

> In my personal opinion, I think this should be a mandate, I think this should be part of therapy in the mainstream… this is, to me, very effective for children on the spectrum at all levels because it gets their blood flowing, it gets them moving, it gets them interacting… having a child who, who's autistic and

> usually wants to sit by themselves, or is in their own world, now they're interacting, that's one foot in the right direction, to get them to a place where they're going to be able to exist in this world long term. So, I think it's really good. (Parent E)

Not only did parents value the intervention, but they felt their children also greatly enjoyed the experience, “I think a positive is just her being able to enjoy coming somewhere and not, and not want to dispute coming here” (Parent C). The fact that children enjoyed the program made it easier for parents to commit to the intervention twice a week for 12 weeks.

> Just the excitement that they had coming here. This was actually one of the easier times for us to say hey we're going somewhere, put on your shoes, let's go to the door, let's get in the car, you know, there was no oh well one person doesn’t want to go, because everybody wanted to go. (Parent H)

Parents struggled to identify negative outcomes or challenges that their family experienced as a result of their child’s participation in the motor skill intervention. A few parents made mention of the fact that the ending was the most challenging part of the intervention because their children were disappointed that they couldn’t come back.

Discussion

The purpose of this study was to describe parents’ perspectives of the parent-level benefits associated with an early motor skill intervention for their 4-year-olds with autism, and also describe how those benefits influenced the family unit overall. Though the participants in our sample differed in their education levels, it is worth noting that most did complete some postsecondary education and all had the time and resources necessary to attend and observe the motor skill intervention for their child(ren). The results of this study likely would have been different if the sample was comprised of parents who were unable to observe the intervention.

Parents of children with autism often witness their children struggle with activities on a daily basis (Weiss et al., 2012); as one participant put it, “it’s never easy”. By virtue of regularly observing the motor skill intervention, parents were able to witness their children succeed on a regular basis. For example, throwing a beanbag into a hula hoop, kicking a ball into a net, and maneuvering through an obstacle course. These seemingly small achievements had a positive impact on parents. After describing children’s accomplishments during the intervention, many parents mentioned how it made them feel. Parents often wrapped up their stories with phrases such as “that made me happy”, “it was amazing to see”, and “we were so proud”. Feelings of pride are consistent with what other parents reported after they watched their children with autism participate in an equine assisted intervention (Tan & Simmonds, 2018). Sandler and Mistretta (1998) explain that the stage beyond parent’s acceptance of the child’s diagnosis involves the development of an appreciation for the positive aspects of life with their child, such as feelings of pride when the child learns a new skill or succeeds at a task. Early motor skill interventions may therefore promote the process of adjusting to life as a parent of a child with a disability by providing parents with opportunities to witness success and foster feelings of pride.

Similar to how parents were delighted to witness their child(ren) succeed as they developed, and used, their motor skills, they were also pleasantly surprised by the additional abilities their child(ren) demonstrated. Prior to the intervention many parents had not seen their child participate in a group setting, and parents went into the intervention not knowing how their child would respond. In addition to debuting their interests in motor-based activities, many children also demonstrated, for the first time, the ability to wait their turn, listen to instructions, and establish relationships with other children. Although children had difficult moments at times during the intervention, what stood out to parents was their strengths and capabilities. Climie and Mastoras (2015) emphasized the benefits of a strengths-based perspective (i.e., positive psychology) in which clinicians and caregivers pay equal attention to children's strengths and successes, as they do to their challenges. When children's strengths and success are highlighted via an intervention, it can result in more balanced support from caregivers, enhance family wellbeing, and increased resilience in the whole family (Climie & Mastoras, 2015); important components of families' quality of life (Bandura et al., 2011; Lee et al., 2012). In the current study, parents often described their realizations that their children were capable of much more than they previously thought, and how this realization changed their home life. One parent explained "he is no longer so sheltered" while many others stated that they now have higher expectations for their children at home and refrain from using the autism diagnosis as an "excuse" for challenging behaviour. These findings further support the notion that the experience of an early motor skill intervention may help parents to better understand their child's abilities, elevate their expectations, and lead to a shift in their parenting behaviours to better suit their child. These changes may positively affect the developmental trajectory of the child with autism.

Parents in the current study reported feeling more hopeful about the future and less stressed and worried after observing their children succeed and demonstrate their abilities during the intervention. More hope is associated with several positive health and psychosocial outcomes, including: resiliency, adaptive coping, life satisfaction, and lower levels of depression and anxiety in parents (Faso et al., 2013; Ogston et al., 2011; Snyder, 2002). On the other hand, excessive worry can serve as an obstacle for parents when responding to the needs of their children (with and without disabilities), their marriage, and themselves (Ogston et al., 2011). Therefore, increasing hope and decreasing worry among parents could have significant implications for the well-being and quality of life of families of children with autism – especially during the early years. Future research should investigate the efficacy of different types of early interventions for accomplishing these outcomes.

Parents of children with autism have reported that their friendships often become compromised due to the fact that they do not have time for traditional social activities, and experience isolation from parents of children without disabilities (Altiere & von Kluge, 2009). Researchers have demonstrated the powerful buffering effects of meeting other parents who have children with the same disability (Kerr & McIntosh, 2000). Similarly, participants in the current study reported several benefits associated with meeting the other parents at the motor skill intervention. Socializing with one another, developing friendships, and witnessing how others interact with their children with autism were identified as enjoyable and impactful experiences. Parents reported a reduction in their feelings of isolation after receiving social support from the other parents during the intervention. Another participant described how this parent-level benefit extended to his whole family as they engaged in social activities with some of the families they met. A lack of social support has been identified as a strong and consistent predictor of caregiver distress among parents of children with autism, and most families report especially high levels of distress following their child's diagnosis (Galpin et al., 2017; Stuart & McGrew, 2009). For parents, not knowing any other children with ASD can also make it difficult to gauge the developmental level of their child(ren) and has been shown to contribute to feelings of uncertainty about the future (Glascoe & MacLean, 1990). The findings of this study suggest that early motor skill interventions may be a feasible method for reducing distress between the time of the child's diagnosis and their access to government-funded services, by strengthening parents' social networks and reducing feelings of isolation.

The opportunity for parents to meet other children with autism was also viewed as a beneficial component of the intervention. Many described engaging in a process of comparison while watching the motor skill intervention in order to gain perspective on their own child(ren)'s abilities; a phenomenon described by Festinger (1954) as social comparison. One parent explained how some children were more advanced in their development and skill level than her son, while others were not, and how seeing this put her journey with her son into perspective. Opportunities for comparison have previously been identified as an important process in order for parents to accurately appraise their child's development; and, accurate appraisals are necessary for parents to be able to identify their child's strengths and weaknesses and subsequently target the areas of development that require attention (Glascoe & MacLean, 1990). Comments made by parents in the current study suggest that they may not have fully understood their children's abilities prior to the intervention.

Many parents feel unsure about how to best support their children with autism, especially in public, and they often feel judged by others (Divan et al., 2012). Parents in the current study described instances of strangers interfering with parenting choices after the parents gave the child what they wanted (e.g., chocolate) to prevent, or stop, a meltdown in a public place. Although the issue here is the stranger's actions, the fact remains that these types of interactions can be uncomfortable and upsetting for parents. Behaviour management was not the primary focus of the intervention, yet parents reported learning effective strategies to better support their children by observing the trained instructors and other parents during the intervention. Clinicians and researchers should consider the important learning effects that early interventions can have for parents, and make every effort to include the parents in the experience when possible.

One of the reasons parents explained their experience with the intervention as "eye-opening" was because prior to the intervention, many did not view the motor domain as an important aspect of their child's development. This finding highlights a gap in the information being provided to parents in terms of the motor delays that are often experienced by children with autism and the importance of motor skill development (Lloyd et al., 2013; Rosenbaum, 2005; Ruggeri et al., 2020). Parents may be able to assist in the development of their child's motor skills earlier, and contribute to better outcomes, if they are made aware that the development of these skills are critical in order for children to fully participate in active play and experience the many physical and psychosocial benefits of doing so (Lloyd et al., 2013; Lubans et al., 2010; Payne & Isaacs, 2017). As parents began to value the importance of motor skills, they reported buying sports equipment for their children to play with at home (t-ball, soccer ball, basketball, etc.), enrolling their children in sports programs (soccer and swimming), and engaging them in more types of active play (treehouse/climbing wall in backyard, exploring new parks, skipping rocks at the waterfront, etc.). As a result, many parents stated that their family's physical activity level increased as well. Not surprisingly, more frequent engagement in family-oriented recreation, is associated with greater quality of life amongst families who have children with autism (S. Jones et al., 2017).

The new types of physical activities that children engaged in, with and without their family members, are typically viewed as common childhood activities. S. Jones and colleagues (2017) hypothesized that children with autism may not regularly engage in physical and recreational activities due to the challenges associated with finding and accessing inclusive programming, a lack of understanding of the benefits of physical activity, and financial constraints. Several parents in the current study confirmed that they had not fully appreciated the importance of motor skill development prior to the intervention and several also alluded to the financial burden associated with autism interventions. Parents also identified several other barriers to their family's regular engagement in active play at home and in group settings. For one, many parents explained that they feared how their child would behave amongst a group of other children (e.g., fear that their child would accidentally hurt another child or have a tantrum that garnered negative attention from other parents). They also explained that their focus at home had been on developing their child's social skills and improving their behaviour (i.e., motor skills became less important). Lastly, they described how their children lacked motor skill proficiency prior to the intervention (i.e., they did not have the skills to participate successfully); this is consistent with the growing literature indicating poor motor skills contributing to lack of participation (Bremer et al., 2015; Lloyd et al., 2013; Pan, 2010). Future research should investigate the specific reasons why families of young children with autism often refrain from regular engagement in typical active childhood games (R. A. Jones et al., 2017; S. Jones et al., 2017). Researchers may also consider measuring the physical activity levels of all family members before and after an early motor skill intervention to further explore this relationship.

Implications

There is a need for interventions and services for children with autism to be designed in a way that is sensitive to the needs of the whole family (Gardiner & Iarocci, 2015; Tint & Weiss, 2016). This section includes recommendations for clinicians, community recreation programmers, and researchers to better inform practice or program delivery in order to better meet families' needs.

In addition to informing parents of traditional autism interventions (behaviour, speech, social skill development, etc.), clinicians should also educate parents on the importance of motor skill development early on and highlight opportunities for active engagement at home (e.g., playing soccer as a family in the backyard) and in the community (e.g., early motor skill interventions and inclusive youth sport programs).

Local community centres should consider offering fundamental motor skill programs for families of children with autism. This type of program requires a lead instructor with formal training and experience working with children with autism (e.g., kinesiology professionals, adapted physical activity professionals, physical education teachers) and helpers (e.g., high school and university students with a background in adapted physical activity). Parents can also be used as helpers where appropriate. Helper to child ratios should be dictated by the children's needs (we had a 1:1 or 1:2 ratio at all times). We recommend including a seating area in the activity room so that parents can observe the intervention, socialize, and participate with their child(ren) if and when they choose.

Since transitions tend to be difficult for many young children with autism, and the behaviours that often accompany change have been reported as stressful by parents, a tapering off schedule or program revisits following the conclusion of the official intervention may help to ease children and families through the transition. Revisits would allow children to engage in free play sessions with their peers and provide parents with time to once again socialize, share strategies, and watch their children succeed.

Limitations and Future Research

Although this study had several strengths, such as the inclusion of fathers as well as mothers (Braunstein et al., 2013), it also had some limitations. Parents appeared to have a difficult time verbally describing their family's quality of life. Despite the fact that it is a common practice within qualitative research to ask open-ended questions, so as to not limit participants potential responses (Creswell & Poth, 2018), when investigating multifaceted concepts such as family quality of life, more direct questions may be necessary. More specifically, probing questions related to the 10 domains of family quality of life (Poston et al., 2003) may help participants to describe their perceptions more fully, which we did not do in this study. Future research should consider investigating this relationship. Further investigation is also needed concerning the efficacy of different types of early interventions for inducing positive secondary outcomes. Researchers should investigate the reasons why children with autism often refrain from regular engagement in typical active childhood games.

Perspectives

The findings of this study have highlighted several parent-level benefits associated with an early motor skill intervention for children with autism. By watching their children participate in a motor skill intervention, parents were able to see their children succeed, meet other children with autism and their parents, learn strategies to use with their children at home, gain a better understanding of their children, and develop a new appreciation for the importance of motor skills, play, and fun, in relation to child development. Parents also explained several ways in which these parent-level benefits extended to the family unit. More research is needed to investigate the effects of all types of early interventions for children with autism so that parents and clinicians can make fully informed decisions about the types of services that will best suit each family's unique needs. Ensuring that children have a positive experience with early intervention as they wait to gain access to government-funded services, may be an important consideration for clinicians when designing treatment plans as it appears to potentially influence parents and families, in addition to the children themselves.

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