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Enhancing Child Self-Confidence Of Occupational Performance Through The Use Of A Movement Program

Emily Coleman
Eastern Kentucky University

ENHANCING CHILD SELF-CONFIDENCE OF OCCUPATIONAL PERFORMANCE THROUGH THE USE OF A MOVEMENT PROGRAM

By

Emily Nicole Coleman

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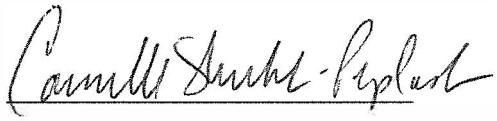

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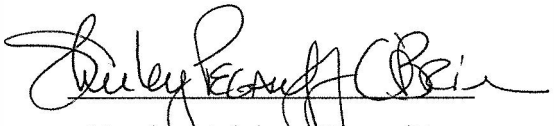

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By
Emily Coleman
Bachelors of Science
Eastern Kentucky University
Richmond, Kentucky
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ABSTRACT

Sensorimotor deficits are a result of a child's difficulties processing sensory input in combination with motor incoordination. This can lead to many difficulties for children's occupational performance, which in turn, can lead to a decrease in self-confidence for those children. This mixed-method study, through pre and post test results combined with parent reported data, sought to determine if a movement program that combines motor, sensory, and self-awareness components is an effective means of increasing the self-confidence of children with sensorimotor deficits. The results of this study demonstrate an increase in self-confidence in the ability to complete activities of daily living, socially participate, and increase participation in leisure. This study will help guide future research in the development of therapeutic programs to increase the self-confidence of children with sensorimotor impairments.

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CHAPTER 1

Introduction

Two of the most important factors of successful occupational participation are feeling successful and doing and being with others, according to a study by Heah, Case, McGuire, and Law (2007) that looked at the perceptions of children living with disabilities. It is important to incorporate opportunities that allow children to feel successful and be with peers within the children's regular activity schedule. However, this can become a challenge for some children (Heah, Case, McGuire, & Law, 2007). Sensory processing difficulties are impacted by a child's body being unable to or having difficulties with interpreting varying sensory information they are receiving from the environment (Miller, Coll, & Schoen, 2007). This inability to interpret their environment can cause adverse responses because they have difficulty understanding their body's experience and are often unsure how to express this difficulty. Sensorimotor difficulties are a result of the combination of the sensory processing difficulties combined with an inability to move appropriately within an environment leading to excessive clumsiness and the inability to mimic movements (Miller, Anzalone, Lane, Cermak, & Osten, 2007). The sensorimotor difficulties also affect the children's ability to process what is going on around them and leave them with issues of motor incoordination. This often leads to difficulty in the children's ability to perform daily living activities because "skills that most children attain rather easily can be excessively challenging" for children with sensorimotor deficits (Miller et al, 2007; Parham & Mailloux, 2015, p. 272)

The aforementioned significance of promoting success and social participation holds especially true with children with sensorimotor difficulties because these are often

areas of challenge for these children (Heah, Case, McGuire, & Law, 2007). The purpose of this study was to examine the effects of the participation in a movement program that combines aspects of dance, motor learning and sensory integration in the context of a leisure-based social program to promote self-confidence of the children's occupational performance with sensorimotor difficulties. This study will help guide the further development of future leisure-based movement programs to increase self-confidence related to occupational performance.

Sensorimotor Difficulties Related to Occupational Participation

The four types of sensory processing difficulties are problems with: sensory modulation, sensory discrimination and perception, vestibular-bilateral functional issues, and praxis (Parham & Mailloux, 2015). Though each of these difficulties come with a variety of problems, modifications can be made to help the child be successful. Depending on the category of sensorimotor response the child exhibits, adaptation can be made to help children regulate themselves.

Ayres defines sensory modulation as "the process of increasing or reducing neural activity to keep that activity in harmony with all the other functions of the nervous system…[the] brain's regulation of its own activity" (Ayres, 1979, p. 70; Ayres, 1979, p. 182). Sensory modulation problems can display in varying ways. Whether the child is over-responsive or under-responsive to stimuli, these children have difficulties responding appropriately to incoming sensory information (Dunn, 1997; Parham & Mailloux, 2015). For instance, these children may be over-responsive to vestibular input which may result in them being fearful of their feet leaving the ground. This fear can result in decreased self-confidence on the playground or at the park as many typical

occupations in this context encourage children to have their feet leave the ground through activities such as swinging and climbing. Helping the child adapt to these sensory modulation issues can result in the child being more successful in all tasks which will increase their self-confidence in those tasks.

Sensory discrimination and perception problems most commonly present in the form of poor tactile perception leading to tactile discrimination issues. Their ability to perceive the tactile issues can affect the hand-eye coordination as well as the development of fine motor skills of the child (Parham & Mailloux, 2015). These issues can also carry over to proprioceptive perception issues as the children often appear to be clumsy and have difficulties understanding body schema and personal space (Parham & Mailloux, 2015). These difficulties, likely more than any other sensorimotor related difficulty, can decrease the self-confidence of these children across all areas of occupational participation. Because having hand-eye coordination skills in conjunction with an understanding of body schema is related to almost all occupations, this category of sensorimotor difficulty can have the most detrimental effect. As a result, it is important to intervene to decrease the prevalence of sensorimotor difficulties and increase their self-confidence (Parham & Mailloux, 2015).

Vestibular-bilateral coordination issues are often identified at a much younger age (Parham & Mailloux, 2015). Children with vestibular-bilateral coordination issues often experience issues using both the left and the right extremities in coordination activities while maintaining postural control (Mailloux et al, 2011). These children with sensorimotor impairments tend to have difficulties with gross motor tasks such as running, dancing, and riding a bike. Having this type of sensorimotor difficulty can affect

the child's self-confidence in varying occupations. (Rimmer, Riley, Wang, Rauworth, & Jurkowski, 2004). For instance, a child with difficulties running and riding a bike may have decreased self-confidence in the social context of the playground at school or attending a friend's birthday party. The authors also suggest that the children do not want to fail at these tasks; they tend to simply not participate resulting in a negative effect on their self-confidence regarding occupational participation with leisure and social occupations, especially those involving physical activity.

Children with praxis problems are classified by having "dyspraxia or problems motor planning" (Parham & Mailloux, 2015, p. 272). The difficulties can arise in any of the phases of praxis: conceptualizing, planning, or executing motor tasks that are not typically performed (Mailloux et al, 2011). Children with this type of motor difficulty often have issues with transitional movements, moving their body from one position to another, and maneuvering their body to interact with objects in their space (Parham & Mailloux, 2015). For instance, the child may have difficulties understanding how to get themselves from the floor to the chair or using a slide on the playground. Further, the authors propose that with praxis difficulties, children may have decreased self-confidence regarding occupational participation in school. If a child is unable to plan for new motor tasks and transition from one position to another, school activities that require these movements, such as circle time or physical education class, may be difficult for the child. When children have difficulties performing these tasks it is likely that they may, in turn, have a decrease in their self-confidence. In order to reduce the prevalence of decreased self-confidence it is important to find outlets for these children to improve their motor skills to increase their self-confidence.

Alongside the sensory processing difficulties, often come an absence of typical motor patterns. This can be related to children's poor body scheme or the lack of motor experiences that result in difficulties processing sensory information. Children, who present with both sensory processing and motor difficulties, are said to have a sensorimotor disorder (Buitendag & Aronstam, 2010). This term is not one that is for diagnostic purposes; rather, it describes the experiences of the child. Children with these difficulties, like sensory processing disorder, can have difficulties performing daily tasks, resulting in a decrease in self-confidence. In order to help bridge the gap in occupational performance deficits and reverse the lack of self-confidence, it is important to give these children the opportunity to improve these skills.

Concepts of Sensory Integration

Though deficits in sensory processing can create many barriers, their presence can be diminished through the use of Sensory Integration interventions (SI). A pilot study was conducted to examine the effectiveness of SI in children with Autism Spectrum Disorder (Pfeiffer, Koenig, Kinnealey, Sheppard, & Henderson, 2011). For the purposes of this study SI interventions consisted of multiple strategies and adaptations and occurred at a summer therapeutic activities program. Compared to the control group, the intervention group showed a significant decrease in autism-associated behaviors (Pfeiffer et al., 2011).

Sensory modulation can be achieved by varying intervention types depending on the type of sensory input required by the child. Miller discusses introducing basic sensory integration interventions that research has shown to be effective with individuals with

sensory processing disorders and sensorimotor impairments (2006). These same principles of SI within a movement program may decrease sensorimotor challenges.

ADL Performance

Activities of Daily Living (ADL) are tasks that are crucial for children to be able to complete on their own to increase their independence (Mori, 2015). Bathing, dressing, and brushing teeth are tasks that typically developing children can often complete on their own. However, for children with sensorimotor deficits, these tasks can be much more taxing for varying reasons. For instance, when dressing, a shirt tag can become increasingly irritating for a child with a sensorimotor deficit, called tactile over responsiveness, yet he/she may not be able identify what is causing the stress. However, if the parent recognizes this as a stress trigger he/she may be able to remedy the problem before it begins or by buying no tag clothing or removing tags. Children who are challenged motorically due to their sensorimotor difficulties may also have trouble with tasks such as brushing teeth due to the inability to motor plan the task. Though the child has participated in the task repeatedly, they may not recognize the motor components required to bring the toothbrush to the mouth and brush with accuracy.

Deficits in sensorimotor skills create obstacles for completing ADLs (Mori, 2015). Regulating an individual's sensorimotor system by incorporating concepts of sensory integration into the movement program may yield improvement in ADL tasks. Performance is an issue associated with ADL occupations. Children with developmental coordination disorder (a disorder with similar motor symptoms as sensorimotor difficulties) had challenges learning to complete and participate in ADL tasks due to associated praxis issues (Linde, Netten, Otten, Postema, Geuze, &Schoemaker, 2015).

According to the authors, if a child is unable to learn how to carry-out a task, they will not achieve independence with the task (Linde, Netten, Otten, Postema, Geuze, &Schoemaker, 2015). Also, regulation achieved through the sensory integration concepts could promote motor learning, improve the child's ability to understand motor concepts, and in turn, lead to ADL independence. This promotion of motor learning could also create an increase in the child's confidence in his/her abilities to complete ADLs.

While reviewing the validity of The Assessment of Motor and Process Skills (AMPS) researchers found a high prevalence of ADL performance issues in individuals with mild disabilities (developmental coordination disorder, disorders of attention, learning disabilities, and sensory integration dysfunctions) (Gantschnig, Page, Nilsson, & Fisher, 2013). The authors further reflect on the ages of the participants that had these difficulties, ADL performance issues are not likely to resolve on their own and may follow the child through adolescents and even adulthood without proper sensorimotor intervention. It is crucial to better understand these issues and whether or not a program incorporating sensory integration can contribute to improving ADL skills by improving sensory regulation and motor skills.

Social and Leisure Participation

Social participation is important for individuals across the lifespan (Reis, Collins & Berscheid, 2000). However, for children, it is particularly important (Meltzoff, Kuhl, Movellan, Sejnowski, 2009). Children learn much of what they know by watching and interacting with children around them. Imaginative play repertoires develop by interacting with other children of similar age, refining and practicing various cognitive, sensorimotor, and social emotional skills (Meltzoff, Kuhl, Movellan, Sejnowski, 2009).

The previously mentioned authors also assert typically developing children and children with developmental delays or disabilities, such as sensorimotor deficits, have significantly different social participation experiences which do not include imaginative play. Consequently, they are unaware of how to engage in imaginative play, this resulting in a decrease in use of imaginative play, as this has not yet been modeled.

Social participation difficulties relate closely with the leisure participation deficits. One study looked at children with and without disabilities and completed interviews to determine what they felt it meant to successfully participate in an occupation, whether it be social, leisure, or productive. The children overall felt that doing things for themselves, feeling successful, having fun, and doing and being with others is what leads to a feeling of success regardless of the occupation participated in (Heah, Case, McGuire, & Law, 2007). Beyond the meaning of successful participation, the researchers also looked at the environmental supports and barriers of success. For example, social and physical supports, structure of the community programs, and parent's values, vigilance, and preferences also play a role in the feeling of success in the children's participation. The children also identified that their ability to keep up with their peers was also a factor in the feeling of successful participation (Heah, Case, McGuire, & Law, 2007).

All of the factors, doing things for themselves, feeling successful, having fun, and doing and being with others, were found to be important to the feeling of success in occupational participation. Social and leisure occupations can be further altered by the presence of sensorimotor difficulties (Heah, Case, McGuire, & Law, 2007). Children who have sensorimotor difficulties, may have deficits with motor learning as well, which

could make it difficult for them to complete tasks independently. This can become more complicated if the task is new and has not yet been practiced by the child. This may also have an impact on their ability to keep up with their peers in leisure and social occupations. To encourage integration of the children's sensorimotor deficits, the sensory integration techniques can be integrated into a movement program in order to increase the children's self-confidence in their social interaction abilities.

Challenges of Decreased Self-Confidence

A child's perception of him/herself can be a direct result of the attention they receive from their occupational performance (Scheck, 2009). Children who do not perform well or perceive themselves as being incompetent have a decreased self-image (Schneck, 2009). Children with sensorimotor difficulties are often not praised for their performance because they are clumsy and do not always participate as well as other children. The performance of these tasks plays a large role in the development of a child's self-worth, which in turn directly affects their self-perception, or self-confidence (Bunker, 1991).

Research suggests that a child's self-confidence regarding social competency can be related to a negative experience in his/her physical development (Bolognini, Plancherel, Bettschart & Halfon, 1996). These findings suggest that children who have physical difficulties (motor incoordination), were more likely to have decreased self-confidence in peer interactions Additionally, this same study found a significant correlation between a low level of self-confidence and present or future issues with anxiety and/or depression. Because anxiety and depression can negatively impact these children throughout their lives, it is important to take steps to decrease this risk.

Increasing the children's self-confidence can decrease their likelihood of anxiety and depression and increase the odds of them developing self-determination skills later in life (Bolognini, Plancherel, Bettschart, & Halfon, 1996; Ryan & Deci, 2000).

Ryan and Deci's self-determination theory focuses on self-motivation and general, healthy psychological development, or self-confidence, as a means of reaching a point of self-determination (2000). The three pillars that they view as critical for achieving self-determination are intrinsic motivation, self-regulation, and general well-being (Ryan & Dechi, 2000). As these children continue to develop self-confidence, through the development of the three aforementioned pillars, they move closer to being able to achieve self-determination, or the ability to have control over their own life—a critical skill to lead independent lives at a later stage. Typically, self-confidence is being developed at this age in order to increase the likelihood of these children reaching a point of self-determination.

Significance of Varying Perceptions

When visiting the pediatrician's office, it is often the parent or caregiver who answers questions for children. The doctor may sometimes feel that children are not well-developed enough cognitively or linguistically to express themselves in a manner that would truly reflect their situation (Eiser & Morse, 2001). While it is important to take into account the perceptions of the adult whom is responsible, it is also important to hear and respect the perceptions of the children who are actually being affected by the illness or situation. Though parents are most often able to give the most accurate information regarding external symptoms such as behavioral changes, children are typically able to

give the most accurate information regarding social and emotional implications and how they feel they are performing (Achenbach, McConaughy, & Howell, 1987).

In addition, the parents' perceptions cannot be neglected as often they differ from the children and are needed to combine with the children's perception in order to get a more holistic view of the situation (O'Brien, Bergeron, Duprey, Olver, & St. Onge, 2009). Because children can develop a sense of learned helplessness, they convince themselves that they can't do something well enough, so they don't do it at all. It is important to gain a perspective that is from someone who may know his/her more realistic abilities (Fincham & Cain, 1986). They may perceive this learned helplessness as a loss of control. Due to this they can halt participation, convincing themselves they are unable to do the task (Fincham & Cain, 1986).

Because of the risk of issues developing later in life, it is important to teach children with sensorimotor impairments how to regulate their sensory systems in an effort to increase confidence in ADLs and social and leisure occupations (Bolognini, Plancherel, Bettschart & Halfon, 1996). The movement program offered in this study combines sensory, motor, social, and leisure concepts into one comprehensive program to promote an increase in self-confidence to help these children be successful.

CHAPTER 2

Introduction

Two of the most important factors of successful occupational participation are feeling successful and doing and being with others, according to a study by Heah, Case, McGuire, and Law that looked at the perceptions of children living with disabilities (2007). It is important to incorporate opportunities that allow children to feel successful and be with peers within the child's regular activity schedule. However, when children present with sensorimotor difficulties, this becomes a challenge (Heah, Case, McGuire, & Law, 2007).

Sensory processing difficulties are caused by a child's body being unable to or having difficulties with interpreting varying sensory information they are receiving from the environment (Miller, Coll, & Schoen, 207). This inability to interpret their environment can cause adverse responses because they have difficulty understanding their body's experience and are often unsure how to express this difficulty. Sensorimotor difficulties are a result of the combination of the sensory processing difficulties combined with an inability to move appropriately within an environment leading to excessive clumsiness and an inability to mimic movements (Miller, Anzalone, Lane, Cermak, & Osten, 2007). The sensorimotor difficulties also affect the child's ability to process what is going on around them and results in motor incoordination leading to difficulties performing daily living activities (Miller et al, 2007; Parham & Mailloux, 2015).

The aforementioned significance of promoting success and social participation holds especially true with children with sensorimotor difficulties because these are often areas of challenge for these children (Heah, Case, McGuire, & Law, 2007). The purpose

of this study was to examine the results of the participation in a movement program that combines aspects of dance, motor learning and sensory integration in the context of a leisure-based social program to promote an increase in self-confidence of the children with sensorimotor difficulties. This study will help guide the further development of future leisure-based movement programs to increase self-confidence related to occupational performance.

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modulation issues can result in the child being more successful in all tasks which will increase their self-confidence in those tasks.

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Methods

A mixed method approach was used to understand the impact of a movement program on occupational performance and satisfaction of children with sensorimotor deficits. This study used a pre/post-test design, one week before and one week after with the children participating in a 4-week intensive movement program, meeting twice per week for 60 minutes. The outcome measures were the Pediatric Evaluation of Disability Inventory and the Child Occupational Self-Assessment. These measure were used to examine the satisfaction of ADL performance, social participation, and leisure performance, as a result of the movement program. In addition, qualitative parental data was collected and analyzed in conjunction with the pre and post assessments to examine

the parent perceptions of their child's self-confidence regarding social and leisure participation. Journaling was used to gather qualitative data from the co-primary investigators who were also the co-primary movement instructors.

Potential Participants

Purposeful sampling was used to select the six participants for this study who were concurrently receiving therapy services for sensorimotor difficulties at an outpatient clinic in the Eastern United States. Flyers were posted in the clinic outlining the study and requesting that participants' parents contact their therapist if they were interested in the study. To be eligible for this study, the child was required to present with sensorimotor impairments and be able to follow directions. A child was excluded from this study if he/she had a diagnosis of an intellectual disability or a neurological impairment.

Outcome Measures

Pediatric Evaluation of Disability Inventory

The first assessment used in this study was the Pediatric Evaluation of Disability Inventory (PEDI). The PEDI is as assessment that looks at self-care, mobility, and social function of children ages 6 months to 7 and a half years old, based upon his/her parent's report via a semi-structured interview (Haley, 2002; Knox & Usen, 2000). These areas are ranked on three separate measurement scales: functional skills, caregiver assistance, and modifications (Knox & Usen, 2000). These scales are used to determine the level of independence a child has regarding the areas of assessment. This assessment was proven an effective measure though numerous rounds of evaluation with inter-rater reliability,

intra-rater reliability, and inter-respondent reliability (Berg, Jahnsen, Froslie, & Hussain, 2004).

Child Occupational Self-Assessment

The Child Occupational Self-Assessment (COSA) was also used as an outcome measure in this study (Kramer, 2014). This COSA assessment tool uses two Likert scales to evaluate the child's perception of their competence to complete daily activities and the perceived value of each activity (Keller, Kafkes, Keilhofner, 2005). This was used as a method to determine whether or not the children believe that their competence has improved in these areas due to their participation in the movement program. The COSA assessment was used in conjunction with the parent's report to examine the self-confidence of the children's participation in the movement program.

Procedure

Following pre testing, the children participated in an intensive, structured movement program that combined aspects of motor learning, ballet, social dances, tap, and sensory integration, that was led by the co-primary investigators. The co-primary investigators developed and implemented the program. Each session, with the exception of the 8th, followed a structure that incorporated three parts: warm-up, ballet, and tap. During the warm-up portion, the participants engaged in stretches that worked to integrate primitive reflexes and increase flexibility. Social, group dances that the child will likely see in school or school dances were also practiced during the warm-up portion of the class. During the ballet portion of the class, participants learned ballet positions and steps. In addition, concepts such as sequencing, modeling, and praxis were incorporated. During the tap portion of the session, participants learned basic tap steps

which incorporated heavy proprioceptive input. Sensory integration and motor learning concepts were incorporated into all portions of the movement program. For instance, children were offered engine changers, tools to regulate their sensory system, as a result of their sensory assessment, as part of implementing the Alert Program (Williams & Shellenberger, 1996).

Each participant was paired with a *buddy,* an occupational therapy student possessing pediatric knowledge about sensory integration and development, for the duration of the intervention. The buddy aided the researchers in assuring each participant had appropriate grading for tasks and could participate fully. The buddy helped the participant understand his/her body's sensory system through the use of the Alert Program, which was used as an intervention to help the children achieve sensory regulation. The program was designed to encourage the children to understand how their engines are running, if their bodies were too high, too low, or just right (Williams & Shellenberger, 1996). The Alert Program then guides the child to choose an engine changer, or some other input, to help them better regulate their sensory system in order to promote better attention, focus, and performance (Williams & Shellenberger, 1996). Throughout the course of the sessions, the Alert Program was used as a tool to encourage self-awareness and self-regulation (Williams & Shellenberger, 1996).

The participants took part in the study on a voluntary basis and were not given any monetary compensation for their participation. Institutional Review Board approval was obtained prior to initiation of the study. Informed consent and child assent forms were signed providing the methods, perceived risks, possible benefits, and purpose of the study to consent the participants to the study.

Data Analysis

Using the Minitab statistical software (Minitab, Inc.), a paired t-test was used to analyze the PEDI data. The qualitative data gathered from the interview was analyzed using in vivo coding. An a priori approach was used to guide the coding and theming of the data (Miles & Huberman, 1986). The data from the COSA was used as a method of triangulation when combined with qualitative interview data. To ensure trustworthiness, triangulation, peer debriefing, and member checks were used to validate the data gathered through this research.

Results

The six children participants in the study ranged in ages between 5 and 8 years old. Two of the participants were male and four participants were female. Though the exclusion criteria were designed to exclude participants with disabilities other than sensorimotor deficits, one participant had a diagnosis of attention deficit and hyperactivity disorder (ADHD) and autism spectrum disorder (ASD) that was not disclosed until the middle of the study. This participant was an outlier in all aspects of pre and post testing. Pseudonyms were assigned to each child to preserve their confidentiality. Demographic information representing the participants is represented in Table 1.

Table 1: Demographic Information

Name	Age	Gender
Eli	5 years, 5 months	Male
Amelia	6 years, 10 months	Female
Cody	8 years, 4 months	Male
Abby	5 years, 6 months	Female
Kristen	8 years, 0 months	Female
Tara	6 years, 11 months	Female

Pediatric Evaluation of Disability Inventory Findings

The pre and post testing results were analyzed using a paired t-Test. At the 0.05 significance level, there is insufficient evidence to conclude that the mean post total score of all children with sensorimotor deficits on the PEDI assessment was significantly different from the mean pre total score. Subtest scores were analyzed and also failed to show any significant difference in the pre and post-test mean scores using a 0.05 significance level. The aforementioned outlier (child with ADHD and ASD) was removed to determine if without those results the findings would be significant. Even without the outlier included in the calculation, results are consistent with the above report.

Child Occupational Self-Assessment Results

Because the COSA does not produce numerical results, this outcome measure is analyzed on a case by case basis in an effort to understand the changes for each participant. The COSA items are divided into 5 general categories for analysis purposes: self-care, social, leisure, academic, and motor. The following analyses reports the child's improvement, regression, or lack of change for each of the aforementioned categories. This assessment measures the individual's self-confidence, or perception of how well they think they complete the task. Table 2 illustrates the outcomes gathered from the COSA:

Table 2: COSA Results

Participant Name	Improvement	Regression	No Change
Eli	Social, leisure, academic	N/A	Self-care, motor
Amelia	Social, leisure, academic, self-care, motor	N/A	N/A
Cody	Motor tasks	Self-Care	Academic, Social, leisure
Abby	Self-care, leisure, social, motor, academic	N/A	N/A
Kristen	Social	Self-care	Leisure, motor, academic
Tara	Self-care	Motor	Academic, social, leisure

Overall, there were no categories of assessment items on the COSA that changed consistently for all participants.

Parent Reported Data

Through a priori data analysis, self-care, leisure, and social concepts were coded as concepts that arose as a result of the parent interviews. Within these codes, five themes arose from the parents of the movement program participants. The themes are as follows: sensory motor deficits impact on self-care, occupational deprivation, increased sense of participation, social difficulties, and increased socialization.

Sensory Motor Deficit Impact on Self Care

All of the parent dyads discussed the implications their child's decreased self-care abilities had on varying occupations the children currently participate in, such as academic, social, and leisure occupations. During the interview process parents reported that self-care deficits impacted their children academically. Because children cannot progress to Kindergarten, in some schools, without being potty trained, these children

may not be with their same age peers in school, even though they are academically prepared.

Self-care habits also negatively impacted social development. Children are measured and compared against one another based upon many characteristics, including their appearance (self-care habits). If the self-care habits of a child look differently than those of other children, that child may be negatively judged, placing a negative social stigma on that child. Several parents commented about how self-care skills limited their children's engagement with others due to the aforementioned judgements. In addition, the parents were fearful that their children would be perceived as different as a result of their self-care habits involving inappropriate dress. The parents' reports are as follows:

> "So, we had to delay potty training…she couldn't move up classes until she was potty trained…that really inhibited her skills."
>
> "She has little concept that she has food all over her face, and when she eats…she has no concept of getting the fork or spoon in her mouth."
>
> "Like you know, in the middle of winter and he doesn't want to wear socks."

Occupational Deprivation of Leisure Occupations as a Result of Sensorimotor Deficits

Leisure occupations are a cultural expectation for engagement in the United States. However, children with sensorimotor challenges often shy away from engagement in leisure based occupations due to negative experiences and/or frustration tolerance. Not only does the reported lack of participation effect the child, it directly affects the family as well. The parents report the presence of occupational deprivation as a result of the children quitting, or not becoming involved in, valued occupations, such as

extracurricular activities and social gatherings, due to their lack of skills to complete the occupations successfully. The following quotes represent the reports of the parents:

> "She did dance for many years…it came to where she couldn't handle it anymore due to the skill…she would get very frustrated because she couldn't do it like the teacher did it…this is the first year we haven't done that."
>
> "Anytime that we'd go to like a birthday party, uh family gatherings, cookouts, anything that had noise and people and movement, she would just meltdown."

Increased Sense of Participation

Participation changes were noted by parents of children participating in the study. The therapeutic nature of the movement program, guided by the occupational therapy principles, appeared to positively impact the children's desire to participate. The same parent that discussed the prior negative connotation with dance reported that this study's movement program class had created a positive change in participation for her child. Not only did this revive prior occupations, it also inspired the start of new ones. There was also a sense of excitement for the parents associated with participation, something not previously expressed by her child.

> "Dance class is a positive experience for her now... But I feel like now, especially after this program, that she has the self-esteem to maybe push herself a little further. So I think we will probably be trying dance again."
>
> "Now he wants to play flag football."

> "'Do I have dance today, do I have dance today, do I have dance today?' it's something else for her to think about. It's a break from her routine in a positive light that she hasn't reacted negatively to."

Social Difficulties

Friends are an important aspect of the life of children as many of their interactions occur with peers during the school day. Unfortunately, children with sensory motor difficulties have difficulty making and maintaining friendships. Parents attribute this decrease in socialization to an inability to participate in occupations typical of their peers and an inability to process sensory information making it appear offensive. These social difficulties also impact the family, as social gatherings are difficult for these children.

> "Her [trouble] is keeping friends because she misses a lot of the social cues…We were at the roller skating rink the other day and she made some new friends and every time they would fall she would stop and ask them how they were if they were okay or if she could help them, but when she fell and they didn't do the same thing, she was hysterical…they really didn't like her after all, they weren't her friend."

> "He would freeze when it was his turn to bat because he sees everyone behind it."

> "he has some physical outburst [in a social setting] where he'll push another kid or something cuz he wants to be left alone."

Increased Socialization Related to the Study

Like with leisure participation, parents also saw an improvement in the socialization of their children as a result of the study. Friendships were gained with other

participants in the movement program and the participant's buddies. These friendships are some of the first identified by some of the participants. The identification of these friendships not only effect the child, but the families as well. The parents do not often hear their child identify friendships so this was reassuring for the parents. The following are parent reports about the increase in their child's socialization:

> "She says she likes her new friends…she really likes [her buddy]…She's so excited to be with her peers doing what she loves."
>
> "And then she's making friends and she's like I want to invite all of these people to my birthday. I mean it's just it's a different side of her I don't get to see a lot."

Observation Data

Observations of children's performance were made by the co-primary investigator (co-teacher) throughout the course of the study. During the class each student was responsible to change from their ballet shoes to their tap shoes in a brief time period, with the guidance of their buddy. The child would retrieve their tap shoes and begin donning them. Initially the children required hand-over-hand assist with help to line up their tap shoes. Throughout the course of the program, the children refined their donning and doffing skills, and the amount of time and verbal and physical cues required to change the shoes decreased; by the end of the study changing shoes was a smooth 30 second process.

Another observation made during the course of the program was the development of the relationships between the participants and their buddies. Initially the participants did not initiate conversation but answered questions from their buddies. In time the participants displayed an increase in comfort with their buddies, excitement when their

buddies picked them up from their parents, and a reluctance to leave at the conclusion of each session and the program. After the first few sessions the participants immediately would find their buddy and start conversing.

Discussion

Though not all parent-dyads discussed the self-care habits of their children, those that did felt they were given an extra burden because their child could not or did not assist in these activities to the appropriate capacity. They also reported that the level of participation their children did have, did not align with that of their typically developing peers or siblings. Self-care is a crucial piece of independence for children and when they are not developing these skills, the entire family can be burdened. Not only do the ADL difficulties create a more significant family burden, they also created difficulties with other areas of occupational participation, such as academics, because children are unable to begin or progress in school appropriately due to issues such as difficulty with potty training, as noted in this study.

In addition, children dealt with social ramifications of difficulties with ADLs. Children who were not dressing appropriately for the weather due to an over responsive tactile system or who were returning to class from lunch with a dirty face because their under responsive tactile system did not alert their body that their face is dirty, may receive criticism from their peers due to their differences. This peer criticism can relate to a decrease in self-confidence because they feel they are being isolated from their peers.

Many of the parent-dyads discussed the lack of leisure occupational participation of their children due to their sensorimotor deficits. Whether this lack of participation came from failure in previous experience or fear, the parents felt it was negatively

impacting the lives of their children, which can be considered occupational deprivation (Whiteford, 2000). Occupational deprivation is a result of the children not participating in their valued occupations due to inadequate opportunities to participate as a result of their sensory motor difficulties. (Whiteford, 2000). This occupational deprivation is a result of the children not having the appropriate sensory or motor skills to participate in valued occupations; these difficulties are out of their control because, at the time, they did not have the resources to manage them (Whiteford, 2000).

This occupational deprivation, as Whiteford (2000) discusses, can be a result of many factors. The child could suffer from occupational deprivation as a result of feeling as if they do not fit in with their friends, being unable to participate in the occupations their friends participate in, or being unable to participate due to their deficits in supporting occupations. For instance, a child may be unable to go to a sleepover, a common function of children this age, because, as a result of their sensorimotor difficulties, they have difficulties bathing or dressing themselves. Regardless of the reason for this experience, it can greatly affect the life of this child as occupational deprivation can lead to the development of future mental health implications (Bologini, Plancherel, Bettschart, & Halfon, 1996).

Negative experiences with previous leisure participation, such as participation in a dance class that resulted in frustration and a feeling of failure, created a negative connotation for the child. This, in turn, reaffirmed their existing beliefs that they aren't good enough to participate which leads to further occupational deprivation because they stop participating.

Parents expressed, through their description of their experience at social gatherings, that a lack of leisure participation also impacted their lives as parents. When a child is unable to tolerate social gatherings, it reduces the number of social gatherings the parents can attend, which decreases the child's social interactions as well. While they may not experience occupational deprivation in the same way as their children, their and their other children's social interactions are still greatly limited. This decreased participation in leisure activities can also affect their school performance. If a child cannot participate in a task such as jumping rope, something children often do for fun, this also effects their participation in gym class, which decreases self-confidence (Bunker, 1991).

Though many of the parents recognized the occupational deprivation their children were experiencing regarding leisure occupations, they also reported improvements in the leisure participation and how their children felt during this new leisure activity (movement program), re-affirming the increased self-confidence expressed by the children. The children were no longer feeling such strong negative connotations regarding previous experiences in dance classes, because the movement program demonstrated to them that they were capable of dancing. Parents reported that this program had encouraged the child to retry failed past experiences or try completely new experiences because now they had confidence to believe they could do it. Because one of the participants tried "dance" again, she now doesn't feel too intimidated to participate in another class. This, in turn, provides the opportunity for increased social and leisure participation. In addition, the increased participation, created a sense of belonging. One child began asking their parents if they were going to dance (movement

program) each day. The child recognized that they were doing something fun and they were good at it so they wanted to come back and participate once again.

With the lack of leisure occupations, comes a sense of social difficulties. If these children are not participating in extracurricular school activities, or other activities with peers that they think are fun, their self-confidence related to their ability to have friends, decreases. Whether friendships are not successful due to a lack of social understanding, inappropriate responses, or fear, a sense of social isolation is created. Parents expressed that oftentimes even when their children could make friends, they were unable to keep them. This difficulty came from a need of a stronger sense of acceptance than the children were offering; she didn't understand why the responses were not reciprocated. In addition to the difficulty maintaining friendships there was a general fear of social interactions. One parent reported that her son was terrified of crowds—this created a difficulty for him to participate in activities he enjoyed with his friends. This continued to heighten that risk of occupational deprivation because her son couldn't do things such as go to the park, the pool, or parties with his friends due to his fear of being in large crowds. The social isolation created by this fear of being around crowds can lead to further difficulties for the child. Psychological health, family connectedness, and school connectedness can all be effected by this lack of social interaction (Hall-Lande, Eisenberg, Christensen, & Neumark-Sztainer, 2007).

However, similar to the leisure participation, parent dyads also recognized an increase in socialization, as well as social skills, demonstrated by their children as a result of this movement program. Being around peers, as well as older buddies, created an opportunity for the children to make friends. The combination of social interactions with

others who are accepting, along with participation in something they enjoy and were successful at increases the excitement of the social interactions and makes them less intimidating (Heah, Case, McGuire, & Law, 2005).

The parent observations of increased socialization as a result of interactions with the buddies is similar to the observation made by the co-primary researcher. The interactions between the participants and their buddies continued to develop over the course of the program. The participants expressed excitement when the buddies picked them up from the waiting room, their joy of working on their one-on-one dance portion with their buddy, as well as their reluctance to leave at the conclusion of the final class, demonstrated this relationship between the participants and their buddies that the parents mention. These observations support the observations that the parent dyads expressed in the interview. One parent reported that her child now wants to invite other children in the program to her birthday party as a result of the movement program because she feels that she has developed real friends. These improvements in social skills also benefited some parent dyads by allowing them to see something they haven't experienced with their child before—a sense of normalcy.

The Child Occupational Self-Assessment results are supported by the parent interviews because, though the parent dyads did not all report the same improvements for their children as a result of the program, they all reported some improvement, similar to what was observed through the COSA. The COSA results demonstrated an increase in social skills and leisure participation for almost all of the participants which is consistent with the reports of the parents.

Though no changes were observed based on the results of the PEDI due to the sensitivity of the assessment, observations of the participants' ability to change and tie their shoes since being involved in the program in comparison to the beginning of the program, demonstrated an increase in self-care skills related to dressing. The improvement of this self-care skill promotes independence which promotes an increase in self-confidence of the child and a decrease in burden of care of the parent.

Typically, as children progress towards independence, they also move closer to developing self-determination, or the ability to make decisions for one's own self (Deci & Ryan, 2000). As mentioned previously, the three pillars of self-determination are intrinsic motivation, self-regulation, and general well-being (Deci & Ryan, 2000). Moving the participants through the development of these pillars is crucial in an effort to move them to being able to make decisions and independence. Intrinsic motivation was developed among the participants through their motivation to participate. The children were externally motivated to participate by the performance at the end of the program as well as their peers. This encouraged intrinsic motivation amongst the participants. The continued development of this first pillar is crucial to moving towards self-determination. Self-regulation was greatly encouraged throughout this program through the use of the Alert Program. As the participants developed the ability to self-regulate their sensory systems, they moved towards self-determination in relation to the second pillar defined by Deci and Ryan. This self-determination will result from their ability to regulate themselves during the process of making decisions. The ability to achieve this self-regulation is crucial for future independence. The final pillar, general well-being was also developed throughout the course of the program. As children moved away from social

isolation and occupational deprivation they were moved toward better mental health. Also, the development of the skills needed to practice more independent self-care, allowed the participants to also move towards a concept of general well-being. While self-determination was not an outcome of the program, the development of self-confidence, as well as the authors other aforementioned pillars, progress towards the development of self-determination.

Limitations

Some limitations of the study must be considered amidst the interpretation of the results. Though assessments were chosen with careful consideration, there were aspects of the assessment process that create limitations within the study that could not have been avoided. Pre and post tests were intended to be completed by the same rater. One participant, however, had a different assessor for the pre-test and the post-test due to unforeseeable scheduling circumstances. In addition, the PEDI was completed by different parents for one participant, as well. The participant's mother completed the first assessment and his father the second which could result in differing perspectives; therefore reducing the reliability of this assessment for this child. In relation to the pre and post data for all of the participants, the post test data may have been skewed due to the fact that during post testing, the participants were more familiar with the assessor and the assessment.

In addition, the small sample size makes it more difficult to generalize the results of this study to a broader population. However, the small number of participants allowed more focused attention on each participant, resulting in more individualized attention.

Within the small sample size, there was one participant included that did not meet the inclusion criteria (ADHD and ASD).

Finally, the short intervention time created a decreased opportunity to see change as a result of the intervention. However, this short intervention time was compensated by the intensity of the program. Because the participants met twice per week for one hour, the intervention period was strengthened.

Implications for Practice

The results of this study indicate important factors for consideration for practice.

- Instilling self-confidence is crucial when encouraging the development of independence. Self-confidence can be increased through creating positive experiences, promoting social interactions, and encouraging participation in leisure occupations for children.
- Placing a focus on reshaping views that are a result of negative past experiences decreases negative connotations of the occupations the child may enjoy. Changing these views can encourage increased participation which can, in turn, promote an increased in self-confidence.
- Creating a sense of self-confidence can help develop the more advanced skill of self-determination. The child's ability to practice self-determination is crucial in the further development of independence; the child may be better able to make their own decisions.
- Designing therapeutic groups that intentionally foster participation adds to the therapeutic experience by reducing the chance of repeated failure and encouraging maximum participation.

Conclusion

The results of this preliminary study support the use of a movement program to improve self-confidence regarding ADL performance, social participation, and leisure participation as shown by the study outcomes. Overall, more research is needed to fully support this type of program. Results of this study suggest the significance of instilling self-confidence in children in order to support their independence and progression towards self-determination, as well as the value of fostering participation through the use of intentionally planned therapeutic groups.

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