Enhancing Caregiver Perceptions Using Center-Based Sensory Processing Playgroups: Understanding and Efficacy

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The aim of this pilot study was to determine perceived efficacy of center-based sensory processing groups among caregivers of children receiving early intervention services. Using a test–retest design, 10 caregivers and their children participated in an 8-session playgroup. The findings indicated that the caregivers’ perception related to their understanding of sensory processing principles and the efficacy of sensory processing activities increased. Limited statistical significance was found; however, medium and large effect sizes were demonstrated. Furthermore, the caregivers’ perceptions of their child’s response to sensory stimuli remained unchanged. Further research is warranted regarding the efficacy of center-based group interventions among early intervention populations.

Keywords Early intervention, sensory processing interventions, parent training, group-based interventions

Introduction

Sensory processing dysfunction is a growing concern among therapists, educators, and parents. This dysfunction impacts all areas of a child’s life, causing deficits in cognitive, physical, and social/emotional development (Ayres, 1989; Keitz & Dunn, 1997; Dunn, 1994). Although the ramifications of sensory processing dysfunction are readily identified, there is limited reimbursement for occupational therapy (OT) services that focus on sensory processing (Dunbar, 1999; Hinojosa & Foto, 2004). With limited reimbursement available, parents and therapists are forced to consider creative solutions to offer the much-needed sensory interventions. One such solution is a center-based playgroup (developmental and/or therapeutic) for young children that focuses on sensory processing and can be an alternative to traditional OT services.

Sensory Integration, Sensory Processing, and Sensory Processing Disorders

Sensory integration was originally identified by Ayres (1972) as “the neurological process that organizes sensation from one’s own body and from the environment and makes
Intervention with children who demonstrate SPD, regardless of age, has typically been completed by occupational therapists with advanced training and skills in sensory intervention. Research suggests that therapy should consist of 50- to 80-min sessions, typically two to three times per week for 6 to 9 months in order to see significant outcomes (May-Benson & Koomar, 2010; Parham & Mailloux, 2006).

Children receiving sensory-based treatment from an occupational therapist are typically treated within clinic-based settings (Hincjosa & Fito, 2003) and/or home and community-based settings (IDEA, 2004). Classic sensory integration intervention is hallmark by its individualization to the child’s needs, which allows the therapist to adjust the type of activity, its duration, and intensity from varying moments and glimpses of the child’s interests. Therapists attempt to tap into the child’s inner drive (interests, motivations, and values) to encourage active participation in therapeutic activities. Specialized equipment provides a sensory-rich environment and experiences to help facilitate engagement and exploration. When working with children using a sensory integration intervention approach, it is crucial for the therapist to strike a balance between session structure and child-directed activities to promote an environment that facilitates more complex levels of adaptive responses from the child (Parham & Mailloux, 2006).

Many children require, and positively respond to, the support of daily consistent sensory input, or what clinicians call a sensory diet. Sensory diets are activities that target a child’s specific sensory needs. A uniquely constructed sensory diet can assist families with reducing a child’s sensory defensive behaviors, providing supportive environmental modifications to reduce stress and anxiety, and promoting more engagement in previously avoided daily occupations (Wilbarger & Wilbarger, 2005).

Some clinicians working in EI and school-based settings utilize group therapy based on sensory processing principles. Sensory-based therapy groups often aid both therapists and parents in identifying functional behaviors in children that, more often than not, cannot be elicited in isolation, such as negative or limited social behaviors and/or tactile defensiveness (Parham & Mailloux, 2006). Not only have these groups been found to be beneficial for the children, researchers have also identified that the supportive nature of caregiver interactions with other caregivers offers support and validation to the experiences of raising a child with SPD (Kaiser & Hancock, 2003).

Indirectly, Cohn (2001a) reported that parents of children receiving care under the direction of an occupational therapist found support from other caregivers while interacting in a clinic waiting room during their child’s therapy sessions. Recognizing that others shared similar experiences with their children gave hope to caregivers regarding the future.

Conversely, with sensory group therapy intervention, outcomes are less optimal than those of individualized, structured sensory therapy. Group therapy lacks the flexibility and freedom for child-directed intervention and the exclusive utilization of sensory-rich equipment that may be child-specific. Sensory-rich equipment in a group setting typically would be shared with other children and therefore could not be used upon the spontaneity of the child’s desire or sensory need (Parham & Mailloux, 2006).

**Family-Centered Care and Sensory Processing**

EI mandates have facilitated the incorporation of family-centered care during assessment, goal setting, and treatment planning by many pediatric occupational therapists (Lawlor & Mattingly, 1998). Therapists should not only view the client as a child with occupational performance deficits but must recognize how these deficits impact the relationship between the child and the caregiver (Humphry, 1989; Lawlor & Mattingly, 1998).
improved their perceptions on the efficacy of sensory-based play. As the use of community-based sensory groups on young children has been only minimally investigated, it was determined that a small single-group pretest-posttest design would be beneficial as a starting point to determine perceived efficacy and the need for future research. This study received approval by the Institutional Review Board at D’Youville College in Buffalo, New York.

Sample

Four EI agencies in rural Utah were contacted to identify their interest in offering a group-based sensory processing program to their families. These sites provided services to low-to middle-class families in the region. Two sites agreed to participate. The sites gave the families information about the research study and the group and informed the caregivers that participation was strictly voluntary. Caregivers were also informed that participation or nonparticipation in the sensory processing playgroup would in no way impact their child’s services or placement in the agency. The opportunity to withdraw from the playgroup at any time was also made clear to caregivers prior to the start of the program.

A convenience sample of 10 caregivers consented to participate in the playgroup and in the pilot study of the sensory processing program. All 10 of the caregivers were stay-at-home mothers. All of the caregivers who participated had children in the EI program that ranged in age from 2 years to 2 years, 11 months in age. The children of the caregivers demonstrated varying levels of sensory processing difficulties and were enrolled in the study at the recommendation of their treating occupational therapist. Caregivers and their children began this program at varying levels of exposure and education regarding sensory processing. There were also varying degrees of therapeutic services within the participant’s home environments, with some participants receiving direct sensory integration services from an occupational therapist and/or receiving developmental interventions from other therapeutic professions (see Table 1). Specific information on how much programming each child was receiving was not available.

<table>
<thead>
<tr>
<th>Type of EI services for the child</th>
<th>OT</th>
<th>SLP</th>
<th>EI Specialist</th>
</tr>
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<tbody>
<tr>
<td>Caregiver 1</td>
<td></td>
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<td>✓</td>
</tr>
<tr>
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<td></td>
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</tr>
<tr>
<td>Caregiver 10</td>
<td>✓</td>
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<td>✓</td>
</tr>
</tbody>
</table>

Note. EI = early intervention; OT = occupational therapy; SLP = speech language pathology.
to caregiver, all participants’ names were removed and replaced with a number (1 to 10) to ensure confidentiality.

Data Analysis

The Statistical Package for the Social Sciences (SPSS-15) was used to analyze the data. Each section of the questionnaire was analyzed separately, using a series of t tests to determine differences in mean from pretest to posttest. The level of statistical significance was originally set at $p < 0.1$, which is an adequate level of significance with a small sample size. As data analysis required the use of multiple comparisons, a Bonferroni correction was utilized to control for family-wise error. The corrected statistical significance level was set at $p < .0125$.

Results

The caregivers’ perceived knowledge of sensory processing principles was evaluated using a 5-point scale, with 1 indicating no knowledge and 5 indicating significant knowledge. Each sensory system, sensory diets, and total scores were evaluated. Table 2 contains the outcomes. There were significant differences between pre and post responses on the caregivers’ perceived understanding of all individual sensory processing concepts. Statistically significant changes were demonstrated in the caregivers’ understanding of sensory processing ($t = -4.714, p < .001$), vestibular processing ($t = -4.714, p < .001$), tactile processing ($t = -8.573, p < .000$), auditory processing ($t = -4.392, p < .002$), proprioceptive processing ($t = -9.000, p < .000$), visual processing ($t = -3.857, p < .004$), and sensory diets ($t = -6.678, p < .000$). Total scores regarding caregivers’ understanding of sensory processing concepts also yielded statistically significant change from pre- to postevaluation ($t = -10.854, p < .000$).

Along with statistical significance, effect sizes were determined to evaluate the clinical relevance of any potential changes from pre- to postevaluation. Effect sizes for caregivers’ self-perceived knowledge of sensory processing concepts ranged from large effects to minimal effects. The effect sizes for caregivers’ self-perceived knowledge of tactile processing and visual processing were large (.88 and .82, respectively). Caregivers perceived that they had a greater understanding of tactile processing and visual processing toward the end of

<table>
<thead>
<tr>
<th>Type of stimulation</th>
<th>Pre mean</th>
<th>Post mean</th>
<th>$SD$</th>
<th>$t$ value</th>
<th>$df$</th>
<th>$p^*$</th>
<th>Effect size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensory processing</td>
<td>3.0</td>
<td>4.1</td>
<td>0.738</td>
<td>-4.714</td>
<td>9</td>
<td>.001*</td>
<td>.36</td>
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<td>Vestibular</td>
<td>3.1</td>
<td>4.2</td>
<td>0.738</td>
<td>-4.714</td>
<td>9</td>
<td>.001*</td>
<td>.36</td>
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<td>Tactile</td>
<td>2.6</td>
<td>4.0</td>
<td>0.516</td>
<td>-8.573</td>
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<td>.88</td>
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<td>Auditory</td>
<td>2.4</td>
<td>3.9</td>
<td>1.080</td>
<td>-4.392</td>
<td>9</td>
<td>.002*</td>
<td>.42</td>
</tr>
<tr>
<td>Proprioceptive</td>
<td>2.6</td>
<td>4.1</td>
<td>0.527</td>
<td>-9.000</td>
<td>9</td>
<td>.000*</td>
<td>.35</td>
</tr>
<tr>
<td>Visual</td>
<td>2.6</td>
<td>3.5</td>
<td>0.738</td>
<td>-3.857</td>
<td>9</td>
<td>.004*</td>
<td>.82</td>
</tr>
<tr>
<td>Sensory diet</td>
<td>1.8</td>
<td>3.9</td>
<td>0.994</td>
<td>-6.678</td>
<td>9</td>
<td>.000*</td>
<td>.47</td>
</tr>
<tr>
<td>Total</td>
<td>18.1</td>
<td>27.7</td>
<td>2.797</td>
<td>-10.854</td>
<td>0</td>
<td>.000*</td>
<td>.29</td>
</tr>
</tbody>
</table>

$^*p =$ significance level (significant at .0125).

$^*$ = statistical significance.
The caregivers' perception of sensory processing activities efficacy was the final aspect evaluated using a 5-point scale, with 1 indicating no effectiveness and 5 indicating significant effectiveness. Each sensory system and the combined total scores were evaluated. Table 4 contains the outcomes. There were three areas noted in relation to the effectiveness of sensory diet activities that demonstrated statistical significance: heavy work (an average increase of 1.2 points; \( t = -4.129, p < .003 \)), deep pressure (an average increase of 0.8 points; \( t = -3.207, p < .011 \)), and the total perception of effectiveness of sensory diet activities (an average increase of 3.8 points; \( t = -4.321, p < .002 \)). While there was no statistical significance, tactile, vestibular, and total scores demonstrated medium effect sizes. This means that while the caregivers' perceptions did not significantly change, small positive changes in their perception of the effectiveness of sensory activities were clinically relevant.

The effect size for the caregivers' perceptions of sensory processing activities efficacy, specifically heavy work \((-0.55\)), deep pressure \((-0.45\)), vestibular \((-0.36\)), and total score \((-0.56\)) were medium. This may be an indicator that caregivers had personally observed the effectiveness of some sensory processing activities with their child.

**Discussion**

Within any setting, skilled sensory integration (SI) services from an occupational therapist should be used as a foundational path when addressing sensory needs of children. However, with decreased funding for EI services (Dunbar, 1999; Hinojosa & Foto, 2004), sensory-based interventions in a group setting may afford caregivers with an opportunity to receive services that will benefit their child. Additionally, the group setting allows caregivers to observe and take part in play and socialization, both with their child and other caregivers, that is often not available in traditional one-to-one therapy models (Parham & Mailloux, 2006).

Limited research exists regarding outcomes related to sensory-based interventions delivered in a group setting. Furthermore, the assessment of caregivers' understanding of sensory processing concepts also has been lacking in the literature (Parham & Mailloux, 2006). This study utilized a sensory-based playgroup as a means to not only provide an intervention for preschool children as an alternative to one-to-one therapy but to educate
to sensory stimuli, and sensory activity efficacy following participation in a sensory-based play group. This is a topic with no documented research or exploration. As identified in Table 3, statistically significant scores are demonstrated in all of the sensory processing topics presented to the caregivers, meaning that there was change in caregivers perception from pretest to posttest. As the caregivers were presented with lessons that focused on sensory processing topics (sensory processing, vestibular, tactile, auditory, visual, proprioceptive sensory processing, and sensory diets), they were better able to observe their children’s participating in the playgroup activities and interacting within the playgroup context. It may be reasoned that the caregivers emerged upon a greater understanding of sensory processing principles, causing a change in the caregivers’ perceptions of their children’s abilities, daily occupational patterns, and routines and challenges within their social and physical environments.

The caregivers’ increased understanding of sensory processing principles may result in a better understanding of sensory-based therapeutic activities. Ultimately, this improvement in understanding could lead to an empowering connection between the caregiver and child, as the caregiver will be better able to recognize their children’s sensory needs and meet them appropriately.

Not only did the caregivers’ understanding of sensory processing principles increase, but as identified in Table 4, their perception of the efficacy of sensory processing activities (heavy work, deep pressure, and the total score of efficacy) also increased. Caregivers perceived that heavy work, deep pressure, and sensory activities in all have value. This is critically important from a functional and social standpoint. If caregivers are able to recognize that certain sensory activities help to regulate their children, they will be more likely to incorporate those types of activities into the daily routine. Likewise, these same caregivers may be less likely to chastise their children for rough play if they are able to recognize that the child is using that type of play to meet his or her sensory needs. There were also sensory activities that were viewed as less effective (dim lighting, soft music/white noise, and wet textures) by caregivers. These activities tend to act upon the body in a more peripheral way when compared to heavy work and deep pressure, which tend to be more centrally situated and practical.

General topics of sensory diet activities were discussed and completed during every session. These targeted vestibular stimulation, deep pressure, heavy work, dry textures, wet textures, calming music/white noise, and dim lighting. Positive statistical outcomes were associated with heavy work, vestibular, and deep pressure in the study. This significant outcome may be due to several factors, including what treatment is most popular, what influences arousal level, and what equipment is used.

The first factor influencing caregivers’ perception of activity efficacy is how often the activity is used. Proprioceptive activities (heavy work and deep pressure) tend to be the cornerstone of intervention strategies utilized in OT and SI, both within the clinic setting and within the home (Blanche & Schaaf, 2001). These activities tend to be easy to implement and will often show immediate response from the child as they help to organize the child’s sensory system. In addition to the ease of implementing, the topics of proprioception may have been easier for caregivers to understand and generalize to other aspects of the child daily routines, as these were the areas where the caregivers reported an increase of knowledge. Sensory diet activities that are given in home carryover programs almost always incorporate heavy work and deep pressure activities. Second in popularity in a sensory diet are vestibular activities, primarily swinging, hopping, and jumping. These activities are also easy to implement and carry out in the clinic, at school, and at home. Because proprioceptive and vestibular activities are almost always incorporated
Conclusions

The concept of using a group setting to disseminate SP concepts and work with families and their children with SPD is a positive alternative if intensive OT and SI are not physically or fiscally available. Occupational therapists in EI are always seeking ways to enhance occupational performance in children, particularly in underserved or rural areas. This pilot study shows that supported playgroups that educate caregivers and give structured sensory input are fairly inexpensive and can be readily available. These sensory-based playgroups can be held in any community setting, from a preschool to a fire hall to a home daycare. Because they are easy to carry out and implement, sensory-based playgroups could potentially be a valid way to link these children with needed service, offering engaging play activities that promote social and sensory development.

Based upon results of this pilot study, the use of a sensory processing playgroup with a caregiver educational component is an effective alternate approach to SI service delivery. Traditional SI can be a costly endeavor, both in terms of therapist time and equipment. Offering the opportunity to work within a sensory-based playgroup can expand OT services by teaming with parents and preschool educators. Once educated on sensory systems and ways to support these systems, these caregivers and educators can take a greater role in the development of sensory processing skills with OT oversight.

This study was by no means exhaustive, but it does illuminate a potential venue for service outside of the traditional clinic. Giving caregivers the opportunity to educate themselves and be part of therapeutic services in the form of a playgroup is a strategy that warrants further investigation, particularly following the positive results of this pilot study.

References


