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The Relationship Among Sensory Preferences, Play Preferences, Motivation, and Mastery in Guiding Children's Play: A Review of the Literature, Part 2

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Currently, the emphasis throughout health care is on providing evidence-based practice. Occupational therapy practitioners are involved in critical examination of the profession's assumptions and beliefs and are conducting research that supports its theoretical underpinnings. In many areas of practice, practitioners have created bodies of literature to support interventions; and in other areas, we rely on literature from fields outside of the profession. Pediatric occupational therapy is no exception. Although exciting research is currently under way, existing research from outside the profession supports many of our methods and beliefs. A review of the literature found evidence from both inside and outside the profession that supports the following beliefs of pediatric occupational therapy practitioners: (a) children have individual patterns of processing sensation, and these patterns may affect their behaviors and choices of activities; (b) children have preferred activities, and these preferences vary; and (c) a relationship exists among sensory preferences, play preferences, intrinsic motivation, play performance, and mastery. This article discusses some of this literature and its relevance to occupational therapy practice.

Children Have Individual Patterns of Sensory Processing That Affect Behavior

Research in sensory processing confirms the long-held belief that individuals have different patterns of processing sensations that can be observed behaviorally and neurophysiologically (Brown, Tollefson, Dunn, Cromwell, & Filioii, 2001; Dunn, 2001; Ecker & Parham, 2000; Schaaf, Miller, Sewell, & O'Keefe, 2003). Further, there is evidence that observable behaviors believed to reflect dysfunction in sensory processing and praxis can reliably discriminate between children with specific disabling conditions and children who are typically developing (Dunn & Brown, 1997; Dunn, Myles, & Orr, 2002; Kientz & Dunn, 1997; Mangeot et al., 2001; Miller, Reisman, McIntosh, & Simon, 2001). The literature suggests that gender differences may also play a role in processing some sensations (Ge, Arendt-Neilson, Farina, & Madeleine, 2005; Kemp, Silberstein, Armstrong, & Nathan, 2004; Royet, Plailly, Delon-Martin, Karekan, & Segebarth, 2003) and that these differences may have behavioral implications in terms of gender differences in reactions to pain, unpleasant odors, and motivation for food. Another extensive body of research outside of occupational therapy suggests that sensory preferences affect behavior in terms of choices for products as diverse as food, drinks, lotions, and perfumes (Mennella, Pepino, & Reed, 2005; Moskowitz, & Krieger, 1995; Westenhoefer, 2005).

A number of researchers have studied the relationships between sensory processing and preference for novelty and arousal, early reactions to stimuli, and later adult behaviors. Wentworth and Witryol (2003) found that children who are typically developing seek out novelty, that curiosity or novelty seeking is related to exploration of the environment or toy objects, and that preference for novelty is related to scholastic achievement. They suggested that individual differences in the preference for novelty, particularly for materials and toys, are correlated with later intellectual functioning and achievement in school. Research also has demonstrated relationships between early reactivity to stimuli and adult behavior patterns (Aron, Aron, & Davies, 2005; Fox, 2004).

Children Have Preferred Activities That Are Meaningful to Them

A large body of work has established that children, even very young children and infants, have definite preferences for certain types of play that vary by gender, age, and ability. One of the most studied variables affecting play preferences is gender (Caldera, Huston, & O'Brien, 1989; Fein, 1981; O'Brien & Huston, 1985; Pellegrini, 1995; Pellegrini & Bjorklund, 2004), with most research finding gender differences in play preferences. Age also has been well established as a factor influencing play preferences (Benjamin, 1932; Cole & LaVoie, 1985; Lowe, 1975). Lastly, some research suggests that children with disabilities play differently than their peers who are typically developing (Brown & Gordon, 1987; Gowen, Johnson-Martin, Goldman, & Hussey, 1992; Howard, 1996; Missiuiia & Pollock, 1991; Pollock et al., 1997), although it is difficult to determine whether children with disabilities play differently because of differences in preference or because of inability to access or participate in certain choices.

Few published studies exist on the meaning of play for children. Spitzer (2003) examined the meaning of occupations in children with autism, and many of the occupations she observed were play occupations. She found that even in children unable to verbalize their meanings, their choices about their occupations and their use of time demonstrated the meaningful nature of their activities. Oremland (1988) studied the meaning of play experiences to children during hospitalizations. She found that play activities often represented an effort to have mastery over feelings and anxieties associated with development and illness. She suggested that the ability of a child to enact and manipulate an experience within free play enables an increased sense of control.

The Relationship Between Sensory Preferences and Play Preferences, Intrinsic Motivation, and Mastery

Research supports the idea that play and leisure preferences may develop from an individual's preferred patterns of sensory processing (Blanche, 2001) and suggests that preferences may be altered because of an individual's patterns of sensory processing (Bamch, Panissal-Vieu, & Drake,

2004; Clifford & Bundy, 1989). Blanche (2001) found that adults use a variety of strategies to restore their feelings of well-being and that many of these strategies and choices regarding use of time were sensory in nature. Other research has suggested that perhaps persons without disabilities prefer sensory qualities they are able to process the best. In studies of tempo discrimination and preference, adults appeared to prefer what they were best able to process (Baruch et al., 2004). Clifford and Bundy (1989) studied boys with and without sensory integrative dysfunction and found that some altered their play preferences based on their skill deficits. Baranek et al. (2002) found that children with Fragile X syndrome are more likely to avoid novel toys and toys with certain sensory characteristics. These findings imply a relationship between sensory processing and the development or expression of preferences. However, more research is needed to fully support this belief.

The recent research on flow may support a relationship between sensory processing and achieving the flow state of the "just-right challenge." Adults who achieve a flow state report this match between their skills and the challenge (Wright, Sadlo, & Stew, 2006). Research suggests that unambiguous feedback and concentration on the task may be basic characteristics of the state of flow (Jackson, 1996; Sugiyama & Inomata, 2005; Tenenbaum, Fogarty, & Jackson, 1999). Unambiguous feedback may be difficult to obtain for a person with sensory processing difficulties. The psychological states that occur before flow may include being highly motivated, relaxed, and self-confident (Jackson, 1996; Sugiyama & Inomata, 2005; Tenenbaum et al., 1999). The necessary highly motivated state and feelings of confidence also may be made more unlikely by difficulties in sensory processing. Perhaps in order to achieve flow, one must have a history of successful performance that allows one to feel relaxed, confident, and motivated. Further research is needed to better examine these relationships.

There have also been investigations into mastery motivation during toy play. Similar to the concept of inner drive in sensory integration theory, Vlachou and Farrell (2000) conceptualized mastery motivation as a force that impels the child to engage in the process of the task in an effort to master it regardless of whether the task is completed. The results of this study suggest that on easier tasks, success leads to persistence; whereas on more difficult tasks, it is the challenge of the task that elicits persistence. Watkinson, Dwyer, and Nielson (2005) found that children considered the value and cost to participate in an activity as well as their own skills when deciding which free play recess activity to engage in. Some children who lacked skills for certain activities demonstrated low expectancy for success and high potential for psychological cost (e.g., embarrassment, teasing) and, therefore, were more likely to withdraw or exclude themselves from these activities. Other research on the concepts of mastery motivation and related indications of achievement and competence have shown that high levels of mastery motivation early in life (persistence and exploration) are related to later measures of IQ and cognitive competence in school (Jennings & Dietz, 2003). Children who are able to master their

environment also are believed to generate a feeling of self-efficacy (Jennings & Dietz, 2003); however, little research has been completed on these concepts past the preschool years. Further, multiple studies have examined the contributions of a variety of factors to a child's mastery motivation. The provision of scaffolding to enhance success relates to persistence. Genetics, parent-child relationships, and of particular importance to occupational therapists, the amount and type of stimulation in the home have all been related to mastery motivation (Jennings & Dietz, 2003).

Conclusion

Although Humphry (2002) argued that within pediatric occupational therapy, our over reliance on information from other fields limits our ability to express our unique focus and role in intervention with children, some areas of occupational therapy exist in which research from other fields is readily available and directly relevant to practice. Although we should consider prior research in terms of how it informs us about children as occupational beings, we must remember that models from other fields do not consider occupation at the core. Occupational therapists must move to examine more thoroughly the development of occupations in children and the way in which intrinsic motivation and preferences guide behavior and the development of mastery and self-competence. We also must begin to examine the meaning of play for children and firmly establish the importance of play for its own sake and for the health and well-being of all children.

Extensive literature establishes that children have preferences for various forms of play and that these preferences vary by gender, age, and perhaps capabilities. The literature also suggests that children have preferred patterns of sensory processing. Preferences for play and leisure do appear to be affected by sensory preferences. The literature on flow, arousal, and mastery motivation complements the notion in sensory integration theory of the "just-right challenge" and highlights the importance of the fit among a child's capabilities, preferences, and mastery. Our further contribution to the body of work on play could and should be to examine children's preferences for play and determine the meaning of these preferred forms of play from the child's perspective. Therapists should aim to better understand why play is meaningful to children and why children choose to play what they choose to play. Additionally, further investigation is needed of the way in which the meaning of play, the child's self-perception, and the child's perception of the task influence motivation and play preference. In sensory integration theory, therapists have long held that play choices are guided by a child's inner drive for mastery and patterns of sensory processing. This too is an area ripe for further research. Literature from outside the field suggests that children (and adults) may choose and prefer what they are good at and are able to do. This information has important implications for occupational therapists in terms of supporting our interventions to assist children in being able to do what they wish and

choose to do and guiding our collaboration with children during therapy. This information also points to the necessity of further investigation and consideration regarding the fit among person, task, and environment during play and how the "fit" might influence a child's feelings of self-efficacy, development of play preference, and later mastery in play. Occupational therapists using Ayres's sensory integration intervention who create opportunities for the just-right challenge may be able to assist children in achieving an expectancy for success and, thereby, allowing the child's true preferences to emerge.

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