

THE RELATIONSHIP BETWEEN SENSORY PROCESSING AND PARENT-CHILD  
PLAY PREFERENCES

BY

C2010  
Melissa Eileen Welters-Davis

Submitted to the graduate degree program in Occupational Therapy and the Graduate Faculty of the University of Kansas in partial fulfillment of the requirements for the degree of Master's of Science.

Lisa Mische-Lawson  
Chairperson

Committee members

Winnie Dunn

Eve-Lynn Nelson

Date defended: April 1, 2010

The Thesis Committee for Melissa Eileen Welters-Davis certifies that this is the approved version of the following thesis:

THE RELATIONSHIP BETWEEN SENSORY PROCESSING AND PARENT-CHILD  
PLAY PREFERENCES

Committee:

Lisa Mische-Lawson  
Chairperson

Winnie Dunn

Eve-Lynn Nelson

Date approved: April 13, 2010

## Acknowledgements

I would like to thank all of the parents who gave their valuable time to participate in this study. I would also like to thank my thesis committee and especially my thesis advisor, Lisa Mische Lawson for all of their wisdom and guidance. To my husband, Matt, for his continuous support and understanding throughout this process.

## Table of Contents

Acknowledgements	iii
Abstract	v
Thesis	1
<i>Introduction and Literature Review</i>	1
<i>Methods</i>	7
<i>Results</i>	14
<i>Discussion</i>	21
References	26
Appendix	30
<i>Appendix A: Comprehensive Literature Review</i>	30

## Abstract

**OBJECTIVE:** This study investigated the relationship between sensory processing and parent-child play preferences.

**METHOD:** This correlational study used survey design and participants were recruited via snowball sampling. Participants completed a demographic form, Sensory Profile, Adolescent/Adult Sensory Profile, and Parent-Child Play Scale.

**RESULTS:** Analysis revealed no relationships between parent sensory seeking scores and child sensory seeking scores. There was also no relationship between parent sensory sensitivity scores and pretend play. There were significant correlations between parent and child sensory sensitivity scores ( $r = -0.535, p = 0.01$ ) and parent seeking scores and responsive play ( $r = 0.352, p = 0.01$ ).

**CONCLUSIONS:** Results suggest there may be a relationship between some, but not all parent and child sensory processing patterns and between parents' sensory processing patterns and their play preferences with their children. Clinicians should take into consideration sensory processing during treatment planning and interventions for children and their families

# The Relationship between Sensory Processing and Parent-Child Play Preferences

## Introduction

Play is an occupation that occurs individually, between friends, between siblings, and also between a parent and a child. Parent-child play interactions are influenced by various factors including the abilities of the child, parent-child interactions, play preferences, and opportunities for play (Cress, Moskal & Hoffman, 2008; Clawson & Robila, 2001; Russell & Saebel, 1997; Chiarell, Huntington & Bundy, 2006; Kooij & Hurk, 1991; El-Ghorou & Romanczyk, 1999). The purpose of this study was to gain information about the relationship between sensory processing and parent-child play preferences.

### *Definition and Importance of Play*

Many disciplines have studied play including educators, psychologists, and occupational therapists suggesting interdisciplinary interest in how play influences children's development. Educators tend to view play as not only fun, but also an opportunity for learning (Rothlein & Brett, 1987). The Association for Childhood Education International (ACEI) provides a more specific definition of play as "...a dynamic, active, and constructive behavior - - an essential and integral part of all children's healthy growth, development, and learning across all ages, domains, and cultures" (Isenberg & Quisenberry, 2002, p.1).

Play from a psychological perspective is defined as, "...a pleasurable activity that is engaged in for its own sake" (Santrock, 1995, p. 251). Psychologists also view play as a means to assist with development. Notable psychologist Erik Erikson discussed play as a way a child can gain skills for life as well as being a means of recreation and self-cure

(Erikson, 1963).

Occupational therapists consider play as an area of occupation. Occupations are activities people participate in that contain both cognitive and physical skills. (Hinojosa & Kramer, 1997). The concept of play has been researched in the occupational therapy literature and also in clinical practice as one of the most important ways children occupy their time (Couch, et al., 1997; Parham & Fazio, 1997). For example, play has been found to contribute to the development and emotional well-being of children as well as a means to elicit motor, sensory, or psychosocial results (Couch, Deitz & Kanny, 1997; AOTA, 2008). Occupational therapy further defines play as, "... any organized or spontaneous activity that provides enjoyment, entertainment, amusement or diversion" (Parham & Fazio, 1997, p. 251-252). This definition of play has been chosen as it encompasses the diversity of play and does not place limitations on who experiences play nor how play is experienced. Occupational therapists view play as important to both children and adults and this study is examining play between children and parents.

#### *Parents and Children Influence Play Relationships*

The idea that parents have an impact on their child's development is well known (Treyvaud, Anderson, & Howard, et al., 2009; Guajardo, Snyder & Petersen, 2009). More specifically, parents also have an impact on their child's play styles and playfulness. Parent-child play style is one way to explain how a parent will play with their child. Parent-child play styles can be classified in three different categories: facilitator style, director style, and co-player style (Russell & Saebel, 1997). "Facilitator play" is when the parent is centered on the child and actively attempts to engage the child in play. The "director style of play" occurs when the parent is mostly in control of the

play, and “co-player play style” is when a parent and child are engaged in joint play. Not only is play influenced by how a parent plays with their child but also by the abilities of the child.

Evidence suggests a child’s physical abilities and sensory processing preferences affect how a child plays (Okimoto, Bundy & Hanzlik., 2000; Bundy, Shia, Qi & Miller, 2007). Physical disabilities affect how a child plays due to challenges with regards to mobility, obtaining the toy or object and manipulating the toy or object for play (Owen, 1998). For example, Okimoto, et al. (2000) examined the playfulness of children with and without disabilities, finding children with cerebral palsy and developmental delays to be less playful than children whom are typically developing. However, after intervention the playfulness of the children with disabilities improved suggesting their play may be influenced by physical challenges that can be mediated with therapy. Chiarello, Huntington & Bundy (2006) also found that a child’s playfulness is related to the child’s abilities. Children whom have physical abilities and have limited free play, “... may be acquiring secondary disabilities, including diminished motivation, imagination, and creativity; poorly developed social skills; and increased dependence” (Missiuna & Pollack, 1991, p. 886-887).

Sensory processing also has been shown to affect how a child plays. A study of preschool-aged children’s sensory processing patterns and play preferences support the notion that sensory information may impact play (Mische Lawson, 2006). Mische Lawson (2006) suggests there is an association between the toys a child prefers, how the child plays with the toys and how the child processes sensory information. Specifically, when a child is sensation avoiding they are less likely to vary their body position during a



play activity. Also, children with different sensation seeking scores prefer different toys. These results thus highlight the importance of taking into consideration what a child prefers to play with may be related to their sensory processing pattern.

### *Sensory Processing*

Sensory integration theory as developed by A. Jean Ayres (1979) provided the foundation for current sensory processing models and to further explain how sensory processing relates to everyday activities. Sensory processing is the manner in which the brain receives sensory information from the environment, processes the sensory information and then has a response. One of these current sensory processing models is Dunn's Model of Sensory Processing. According to Dunn (2001), the model of sensory processing has three primary features: (a) consideration of one's neurological thresholds (reactivity) (b) consideration of one's responding or self-regulation strategies, and (c) consideration of the interaction among thresholds and responding strategies. Further, the model contains four patterns with regards to sensory processing: (a) low registration, (b) sensory seeking, (c) sensory sensitivity, and (d) sensation avoiding. Figure 1 depicts Dunn's 2001 model. The four patterns of sensory processing are based upon the thresholds (reactivity) and response strategies of the adult/child.

*Low registration* is a combination of high threshold and passive response strategy. A person whom is in the category of low registration is also referred to as a bystander. A person whom is a bystander may not notice what is occurring in the environment.

*Sensation seeking* is a combination of high threshold and active response strategies. A person whom is in the category of sensation seeking is also referred to as a seeker. A seeker will find ways to obtain additional sensory information from his or her

Figure 1: Dunn's Model of Sensory Processing

	Self Regulation Strategies/ behavioral responses	
Neurological thresholds	Passive	Active
High threshold	Low Registration	Sensation Seeking
Low threshold	Sensory Sensitivity	Sensation Avoiding

Reprinted with permission from: Dunn, W. (1997). The impact of sensory processing abilities on the daily lives of young children and families: a conceptual model. *Infants and Young Children*, 9(4), 23-35.

environment or activities. *Sensory sensitivity* is the combination of low thresholds and passive response strategies. A person whom is in the category of sensation sensitivity is also referred to as a sensor. A sensor is easily distracted by the sensory information in the environment. *Sensation avoiding* is the combination of a low threshold and active response strategies. A person whom is in the category of sensation avoiding is also referred to as an avoider. An avoider may find a way to minimize exposure to certain sensory experiences (Dunn, 2001; Dunn, 2009).

Sensory processing affects daily life activities, including play (Baranek, Chin, Greiss Hess, Yankee, Hatton & Hooper, 2002; Bundy, et al., 2007; Mische Lawson, 2006; Barker Dunbar, 1999). The processing patterns of a child or an adult may thus affect the activities in which they choose to participate as well as how they participate in activities. If a child is a seeker and a parent is an avoider it may influence their play preferences and thus their parent-child play interactions.

Play is an occupation for children and adults which contain opportunities to experience sensory information in a variety of ways and at various levels of intensity. One could conclude if a child or an adult has strong sensory preferences, they will be more likely to avoid or to seek out certain activities thus impacting their play preferences. Because play impacts the motor, sensory, social and cognitive experiences of a child (Couch, et al, 1997; Ginsburg, 2007) it is critical to know why children and adults avoid or seek out certain play activities.

There is evidence to guide understanding of how sensory processing patterns and preferences influence children's play (Bundy, et al, 2007; Mische-Lawson, 2006; Muys, et al., 2006) and information on how a parent may participate in play and interact with

their children (Clawson, et al., 2001; Cress, et al., 2008; El-Ghoroury & Romanczyk, 1999). However, information regarding how the sensory processing patterns of parents and children may impact the parent-child interaction is lacking. Because play is critical to a child's development (Isenberg & Quisenberry, 2002; Ginsburg, 2007; Erikson, 1963) and parent-child interactions influence play (Chiarello, et al., 2006; Kooij & Hurk, 1991) future research needs to examine the impact of both the children's sensory processing patterns and parent's sensory processing patterns in relation to play between a parent and child.

This study investigated the possible relationship between sensory processing patterns and play preferences of parents and their children. Specifically, this study was designed to answer the following questions: (a) Do parents and their children share similar sensory processing patterns based upon results from the Sensory Profile? (b) Is there a relationship between a parent's play preference and their sensory processing patterns?

## Method

### *Participants*

Participants for this research study included parents (mothers and/or fathers) of typically developing children whom were three or four years of age. Participants for this study were limited to parents and children who shared a primary residence. For this study, children were considered typically developing if they did not have a medical diagnosis or were not receiving ongoing medical or therapy services. Because speech and language delays are common in young children, children with only this delay were

considered typically developing and were included in this study (Simms, M.D. & Schum, R.L, 2000). Refer to Table 1 for summary of demographic information.

### *Design*

This study used survey design because self-administered questionnaires were the most efficient and cost effective way to simultaneously measure multiple variables and multiple participants as compared to gathering information via telephone survey or face to face interview (Nardi, 2006). Questionnaires allow participants to give their responses without time constraint as well as answer honestly because their identifiers are unknown. Additionally, questionnaires allow participants to report their typical behavior over a period of time rather than provide a momentary sample of behavior as an observational study does. Self-administered standardized questionnaires decrease the chance of possible influence from communication with an interviewer (Portney & Watkins, 2000).

Self-administered questionnaires were used to obtain information regarding demographics, sensory processing, and play preference for this study. I used the Sensory Profile, Adolescent/Adult Sensory Profile, and Parent Child Play Scale questionnaires because their validity and reliability were well established. With all of these questionnaires, the parents report for either themselves or their child. Parent report has been shown to be a valid and useful way of gathering information for child development and interventions in areas such as vocabulary and gross motor development and detecting change during treatment of Attention-Deficit Hyperactivity Disorder symptoms (Biederman, Farone, Monuteaux & Grossbard, 2004; Bodnarchuk & Eaton, 2004; Miller, Sedey & Miolo, 1995). Parent report questionnaires were also deemed appropriate and valid in assessing play preferences and sensory processing for this study.

Table 1

*Summary of Demographic Information*

---

Gender of Parent	Female <i>n</i> = 68	Male <i>n</i> = 2	
Age of Parent	22 – 29 years <i>n</i> = 12	30-37 years <i>n</i> = 51	38 – 45 years <i>n</i> = 7
Education Level of Parent	High School <i>n</i> = 2	Assoc. Degree <i>n</i> = 3	Bachelor/Graduate Degree <i>n</i> = 65
Work Outside of Home	Yes <i>n</i> = 52	No <i>n</i> = 18	
Race of Parents	Caucasian <i>n</i> = 68	Other <i>n</i> = 2	
Gender of Children	Female <i>n</i> = 32	Male <i>n</i> = 38	
Age of Children	Three years <i>n</i> = 46	Four years <i>n</i> = 24	
Preschool Attendance	Yes <i>n</i> = 46	No <i>n</i> = 24	

---

## Measures

### *Demographics*

I created a demographic form specifically for this study. The form included questions about gender of parent and child, age of parent and child, education level of parent, preschool attendance, the number of children in the family, birth order, and brief questions about favorite, least favorite and most frequently played activities. The form prompted parents to report any medical diagnoses or medical or therapy services the child was receiving as well as if their child was a biological child or adoptive child.

### *Scales*

The Parent Child Play Scale (PCP) is 24 item questionnaire completed by the parent. The 24 items are divided into six categories that follow developmental stages from children whom are two to three months to children four years of age. The six categories are as follows: (a) responsive games, (b) lap games, (c) mastery play, (d) pretend play, (e) verbal play, and (f) discovery play. The scale yielded the following information: (a) total number of games played, (b) frequency of games played, (c) total number of games played in each category, and (d) the frequency of games played within each category. Reliability and validity of the scale was examined in a study of 96 mothers of children with disabilities or were developmentally at risk. The coefficient alphas for the average correlation of the 24 scale items and the 24 items with the total scale were 0.89 and 0.96 respectively. The stability coefficient for short-term test-retest reliability was completed and the stability coefficient was 0.87 ( $p < 0.001$ ) for the total scale scores and 0.73 ( $p < 0.001$ ) for individual items (Dunst, 1986).

The Adolescent/Adult Sensory Profile (AASP) is a self-report questionnaire that measures, "...behavioral responses to everyday sensory experiences" (Brown & Dunn, p.1, 2008). The AASP measures sensory preferences of persons from age 11 to over 65 years old. The 60 item questionnaire is divided into six separate sections addressing the areas of: (a) taste/smell, (b) movement, (c) visual (d) touch, (e) auditory sensory processing, and (f) activity level. A quadrant score (low registration, sensory seeking, sensory avoiding, or sensory sensitivity) is obtained from the frequency in which the behaviors are preformed. The reliability of the AASP was determined with the coefficient alpha with quadrant scores ranging from .639 to .775 (Brown & Dunn, 2008).

The Sensory Profile (SP) is an evaluation tool that gathers information on the sensory processing preferences of children between the ages of three and ten years (separate cut scores are used for three and four year olds). The profile is composed of 125 items that are grouped into three sections: sensory processing, modulation, and behavioral/emotional responses. The reliability of the SP was determined with the coefficient alpha with scores ranging from .47 to .91 for the different sections (Dunn, 2008).

### Procedures

Prior to study activities I obtained approval through the University of Kansas Medical Center Human Subjects Committee to conduct the research. Completion of the questionnaires served as consent to participate in the study. An information letter was included in the packet that explained the purpose of the study, described the questionnaires, and provided the contact information for the researchers.



I used snowball sampling to recruit participants for this study. Snowball sampling is a form of non-probability sampling in which each participant "...is asked to suggest additional knowledgeable people for interviewing" (Rossi, Lipsey, & Freeman, 2004, p.132). Snowball sampling is used when a specific population is needed for a study (Nardi, 2006). In this study the age group of the children was limited and I wanted to obtain information from more than one location and one group of children. Participants for this study were identified by friends, family, and colleagues with children or had contact with persons with children were three to four years of age. The participants for this study were recruited via email, personal contact via phone, or in-person.

I delivered packets containing an informational letter, demographic form, the Sensory Profile, the Adolescent/Adult Sensory Profile, the Parent Child Play Scale, and a pre-paid self-addressed return envelope to participants identified as meeting the inclusion criteria of the study via postal mail or in-person. I coded the questionnaires with numbers and asked participants not to provide identifying information on the questionnaires in order to ensure confidentiality. I included space on the demographic form for participants to identify other families the researcher may contact to participate in the study. Participants returned the completed questionnaires via mail, using a pre-paid self-addressed envelope. Total estimated time for completion of questionnaires and demographic information was 40-50 minutes. I sent out eighty-two packets over a four week time period and sixty packets were returned within six weeks. At this time, I sent out a reminder letter to the twenty-two participants whom had not yet returned the packets along with four additional packets. After, three weeks fourteen additional packets were returned. A total of 74 packets were returned giving a return rate of 86%.

However, four of the 74 packets had incomplete data and could not be included in the data set, resulting in a sample size of 70.

### Data Analysis

Based upon previous sensory processing and play literature and the exploratory nature of this study, I anticipated a medium effect size for this study (Mische-Lawson, 2006; Portney & Watkins, 2000). With an alpha of .05 and power of .70, a sample of 72 parent/child pairs was sufficient to find a medium effect to run four correlations. The sample size of 70 was two less than the needed sample size to meet the parameters of the correlation coefficient established for this study. I used descriptive statistics (frequencies, means, and percentages) to analyze the demographic information. Because the data obtained from the SP, AASP, and PCP was ordinal and the sample size for this study was small I used Spearman's rank correlation coefficient to analyze the four correlations of this study (Portney & Watkins, 2000) using PASW 18.0 (Predictive Analytics Software) formerly known as Statistical Packages for Social Sciences version 18.0. In order to determine if parents and children have similar sensory processing patterns I ran Spearman Rank correlations using the seeking scores and sensitivity scores from the SP and AASP. To determine if there is a relationship between sensory processing patterns and play preferences for parents and children I ran Spearman Rank correlations using the seeking and sensitivity scores from the AASP and the scores from Category I and Category IV of the PCP. The four correlations I analyzed were: (a) sensory seeking scores from the SP and AASP, (b) sensory sensitivity scores from the SP and AASP, (c) sensory seeking scores from AASP and Category I (responsive play)

scores from the PCP, and (d) sensory sensitivity scores from AASP and Category IV (pretend play) scores from the PCP.

Based upon clinical experience and judgment I hypothesized sensory seeking activities would be related to activities that were found in the responsive play category (gymnastics, dancing, tickling, and blowing raspberries) as these activities involved a higher level of sensory information. I also hypothesized the sensory sensitivity scores from the AASP would be related to activities that were found in pretend play category (make believe play, pretend phone conversations, telling the child a story, and playing with puppets) as these activities involved a low level of sensory information. Because the PCP is based upon parent report I theorized that the parent was the one that was initiating and sustaining the play interaction with his or her child, thus data analysis was limited to the parent's sensory processing scores and the scores from the PCP. I also hypothesized that sensory avoiders may be less likely to play with others preferring more solitary play rather than parent-child play thus I did not analyze data from the sensory avoiding quadrant.

## Results

In examining the relationship between parent and child sensory preference, analysis revealed no relationship between parent seeking scores on the AASP and child seeking scores on the SP ( $p = 0.964$ ). However, there was a significant correlation between parent sensitivity scores from the AASP and child sensitivity scores from the SP ( $r = -0.535, p = 0.01$ ). Preferences on the AASP are indicated with a scale of one to five where one is “almost never” and five is “almost always”, while the scale on the SP is scored in the opposite direction where one is “always” and five is “never”. Thus, a

negative correlation reflects that as a parent shows greater sensory sensitivity so does the child. In examining the relationship between sensory preferences and play preferences there was no relationship between parent sensitivity scores from the AASP and scores from the pretend play category of the PCP ( $p = 0.776$ ). However, there was a significant correlation between parent seeking scores and the responsive play category of the PCP ( $r = 0.352, p = 0.01$ ). Refer to Table 2. Further exploration of the data revealed there were also significant correlations between parent and child sensory avoiding scores ( $r = -0.367, p = 0.01$ ) as well as between parent and child registration scores ( $r = -0.414, p = 0.01$ ). Refer to Table 3.

Analysis of write-in information from the demographic form provided additional insight into parent child play. On this form, parents were asked to write in their favorite and least favorite activities to play with their child. These activities were then grouped into 32 play categories (see Table 4). The first five favorite activities listed were used for analysis. I interpreted the write-in activities to be of equal preference regardless of the order they were listed. Some of the activities were listed more than once by families. For example, a parent wrote down baseball and soccer as favorite play activities and both of these activities were categorized as group sports. To determine preference, I calculated the frequency and percentage of the categories listed. The categories listed most often as favorite play activities were: (a) pretend play, (b) reading and books, (c) coloring and drawing, (d) puzzles, and (e) group sports. Table 5 provides details about the overall preferences for the play categories, while Table 6 shows the preferences by family. While the categories listed most often as least favorite play activities were: (a) coloring and drawing (b) pretend play, and (c) computer and video games.

Table 2

*Summary of Four Correlations for Proposed Thesis*

Correlation	<i>r</i>	<i>p</i>
Parent and child seeking scores	- 0.006	0.964
Parent and child sensitivity scores	- 0.535	0.01*
Parent seeking scores and responsive play	0.352	0.01*
Parent sensitivity scores and pretend play	- 0.043	0.776

\* Correlation is significant at the 0.01 level (two-tailed).

Table 3

*Summary of Four Quadrants from Sensory Profile*

Correlation	<i>r</i>	<i>p</i>
Parent and child avoiding scores	- 0.367	0.01*
Parent and child registration scores	- 0.414	0.01*
Parent and child seeking scores	- 0.006	0.964
Parent and child sensitivity scores	- 0.535	0.01*

\* Correlation is significant at the 0.01 level (two-tailed).

Table 4

*Play Categories*

---

Action Figures	Dancing	Outdoor Play
Arts and Crafts	Dolls	“Play-Dough”/”Moonsand”
Ball	Electronics	Pretend Play
Bicycles/Tricycles	Games (non-specified)	Puzzles
Board Games	Going to Library	Rough and Tumble Play
Books/Reading	Going to Park	Sandbox Play
Card Games	Group Sports (e.g. soccer)	Sign Language
Cars/Tractors	Household Chores	Swimming
Coloring/Drawing	Messy Play	Television/Movies
Constructive Toys	Movement Games	Trains
Conversations/Talking	Music/Singing	

---

Table 5

*Top Five Play Categories*

Activity	Frequency*	Percentage %
Pretend Play	33	24.4
Reading/books	32	23.7
Coloring/drawing	27	20.0
Puzzles	22	16.3
Group Sports	21	15.6

*\* Frequency indicates the number of times out of a possible 135 that parents listed the category as a favorite activity.*



Table 6

*Parent's Favorite Play Activities*

Activity	Frequency*	Percentage %
Reading/books	32	46
Pretend play	22	31
Coloring/drawing	21	30
Puzzles	17	24
Group sports	12	17
Arts and Crafts	12	17

*\* Frequency indicates the number of parents out of 70 that listed the activity at least once as a favorite.*

Parents' satisfaction with parent-child play was examined via Likert scale and results showed 80.0% of parents were satisfied or highly satisfied with their parent-child play. Parents were also given the opportunity to write in additional comments with the most parents indicating they wished they had more time for play and/or they did not have enough time for play with their child (15.7%).

## Discussion

### *Interpretation of data*

The purpose of this study was to gain information about the relationship between sensory processing and parent-child play preferences. Study results suggest there may be a relationship between parents' and children's sensory processing preferences and that sensory preferences may effect what they play together, however the results are not conclusive. While, there was no relationship between parents' and children's seeking scores there was a relationship between parent and child sensitivity scores. Also, additional analyses revealed relationships between parents' and children's registration and avoiding scores, indicating there were relationships between parents' and children's preferences on three of the four quadrants on the Sensory Profile and the Adult Adolescent Sensory Profile. These findings suggest that parents and children have similar sensory processing preferences with the exception of a preference for seeking. Perhaps young children are naturally more seeking than adults and the seeking preference decreases over time.

Results regarding the relationship between parents' sensory preferences and play preferences with their child were also inconclusive. This study found a relationship between parent seeking scores and responsive play activities; however, there was no

relationship between parent sensitivity scores and pretend play. The responsive play category (gymnastics, dancing with child, tickling child, and blowing raspberries) included not only highly stimulating activities but also popular play activities. Thus it is likely these activities were preferred by many of the parents. In contrast, the pretend play category included play with puppets, which was not a popular activity for parents. Perhaps, the low preference for play with puppets affected the results.

In addition to providing valuable information about the relationship between parents' and children's sensory processing and their play preferences, this study also provides information about which play activities parents prefer engaging in with their preschool-aged children. Almost 50% of all parents (32 out of 70) in this study listed reading as a favorite activity, second only to pretend play as an overall favorite play activity. The high prevalence of reading within the demographics of my study (college educated Caucasian mothers) is consistent with other surveys. In 2007, 73.7% of college educated mothers read to their children on a daily basis, where as only 39.4% of mothers whose highest level of education completed was high school read to their child on a daily basis. Also, persons whom are white read to their child more often on a daily basis (67.4%) than any other ethnicities (Asian or Pacific Islander, 60.4%, Hispanic, 37.3%, Black, 34.6%) (U.S Department of Education). While findings from my study indicate reading as a preferred play activity, the percentage of mothers listing reading as a favorite play activity are much lower than earlier reports by the U.S. Department of Education. Perhaps mothers read to their child because they know that reading is an important factor in the education and development of children but do not consider reading as a favorite

play activity. Reading could be an activity that has dual meaning for this demographic as it encompasses learning and play in one activity.

### *Limitations*

This preliminary study was exploratory and descriptive in nature but could lead to additional and more focused research. Limitations in this study were found in the areas of: (a) sampling method, (b) limited demographics, and (c) usage of Parent-Child Play Scale. Because snowball sampling is a non-probability sampling method it may not be representative of a larger population and results cannot be generalized. The convenience sample also produced limited demographics with the majority of the participants being female, Caucasian, and highly educated.

While the Parent-Child Play Scale was a valid and reliable method for gathering parent report of play, the scale was problematic for this study. For example, few respondents (47 out of 70) answered section A of the scale requesting parents to circle the number of the games they had played with their child during the past several months. This may have been due to unclear directions and design of the scale. Additionally, each of the categories of play included both popular and unpopular activities which may have made this scale inadequate for this study. For example, “play with puppets” which was listed as one of the activities in Category IV (pretend play) was chosen very few times. Thus, this could have lowered the preference for the pretend play category producing no correlation between Category IV (pretend play) and parent sensory sensitivity scores on the AASP.

### *Implications*

Though results are not conclusive, this study suggests there is a relationship between sensory processing and parent child play preferences. All play activities involve some form of sensory information. Thus, sensory information needs to be taken into consideration when assessing parent-child play. For example, if a parent does not like to participate in movement activities and the child seeks out movement activities there is possible chance for conflict. In contrast, if a parent is a sensor and so is the child they may enjoy more play activities together and thus have higher play satisfaction. Parents will be more likely to play with their child if they themselves enjoy the play activity.

#### *Future Research*

Future research could replicate this study with different populations thus strengthening the notion that there is a relationship between sensory processing patterns and parent-child play preferences. For example, is there a relationship between children of early grade-school age and their parents with regards to sensory processing patterns? Also, do additional factors such as age of the parent or the education level of the parent effect parent-child play preferences? Future research could examine which activities parents and children play together and how much time they spend engaging in different play activities.

#### Conclusion

The information obtained from this study will assist occupational therapists in treatment planning and interventions for children and their families from a sensory processing perspective. An occupational therapist will be able to educate parents about their own sensory preferences as well as their child's and the impact sensory processing has on play. For example, if a child is a seeker then the parent could incorporate

activities such as swinging and jumping into their child's day instead of limiting opportunities to sedentary activities such as coloring and watching television. Or if a young child is sensitive to movement, the parent may want to pick up the child and dance with them instead of placing the child on a swing and pushing them. Ultimately this information might be used to improve a child's developmental skills as well as parent-child interactions through play.

## References

- American Occupational Therapy Association (2008). Occupational therapy practice Framework: Domain & process (2<sup>nd</sup> ed.). *American Journal of Occupational Therapy*, 62, 625-683.
- Ayers, A. Jean (1979). *Sensory Integration and the Child*. Los Angeles, CA: Western Psychological Corporation.
- Biederman, J., Faraone, S. V., Monuteaux, M.C. & Grossbaird, J.R. (2004). How informative are parent reports of Attention-Deficit/Hyperactivity Disorder symptoms for assessing outcome in clinical trials of long-acting treatments? A pooled analysis of parents' and teachers' reports. *Pediatrics*, 113 (6), 1667-1671.
- Bodnarchuk, J.L. & Eaton, W. O. (2004). Can parent reports be trusted?: Validity of daily checklists of gross motor milestone attainment. *Journal of Applied Development Psychology*, 25 (4), 481-490.
- Brown, C. & Dunn, W. (2002). *Adolescent/Adult Sensory Profile*. San Antonio, TX: Psychological Corporation.
- Brown, C., & Dunn, W. (2008). *Technical Report – Adolescent/Adult Sensory Profile*. Retrieved on 04/22/09 from [http://pearsonassess.com/NR/rdonlyres/872AA341-41DE-4814-9617-CAC8B5A930E6/0/AD\\_Adult\\_SP\\_TR\\_Web.pdf](http://pearsonassess.com/NR/rdonlyres/872AA341-41DE-4814-9617-CAC8B5A930E6/0/AD_Adult_SP_TR_Web.pdf)
- Bundy, A.C., Shia, S., Qi, L., & Miller, L.J. (2007). How does sensory processing dysfunction affect play? *American Journal of Occupational Therapy*, 61, 201-208.
- Couch, K.J., Deitz, J.C. & Kanny, E.M. (1997). The role of play in pediatric occupational therapy. *American Journal of Occupational Therapy*, 52 (2), 111-117.

- Dunn, W. (1999). *The Sensory Profile*. San Antonio, TX: Psychological Corporation.
- Dunn, W. (2001). The sensations of everyday life: Empirical , theoretical, and pragmatic considerations. *American Journal of Occupational Therapy*, 55, 608-620.
- Dunn, W. (2007). Supporting children to participate successfully in everyday life by using sensory processing knowledge. *Infants & Young Children*, 20 (2), 84-101
- Dunn, W. (2008). *Technical Report – Sensory Profile*. Retrieved on 04/22/09 from [http://pearsonassess.com/NR/ronlyres/6AB47882-1271-4D6A-BB3D-1AF8692D67B9/0/SP\\_TR\\_Web.pdf](http://pearsonassess.com/NR/ronlyres/6AB47882-1271-4D6A-BB3D-1AF8692D67B9/0/SP_TR_Web.pdf)
- Dunn, W. (2009). *Living Sensationally*. Philadelphia, PA: Jessica Kingsley Publishers.
- Dunst, C. J. (1986). *Parent-Child Play Scale: A Rating Scale for Assessing Parent-Child Play Opportunities*. Asheville, NC: Winterberry Press.
- El-Ghoroury, N.H. & Romanczyk, R.G. (1999). Play interactions of family members towards children with autism. *Journal of Autism and Developmental Disorders*, 29 (3), 249-258.
- Ginsburg, K.R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics*, 119, 182-191.
- Guajardo, N.R., Snyder, G. & Petersen, R. (2009). Relationships among parenting practices, parental stress, child behaviour, and children’s social-cognitive development. *Infant & Child Development*, 18 (1), 37-60.
- Hinojosa, J., & Kramer, P. (1997). Fundamental concepts of occupational therapy: Occupation, purposeful activity, and function [Statement]. *American Journal of Occupational Therapy*, 51, 864-866.
- Miller, J.F., Sedey, A.L. & Miolo, G. (1995). Validity of parent report measures of



- vocabulary development for children with Down Syndrome. *Journal of Speech and Hearing Research*, 38, 1037-1044.
- Mische-Lawson, L. (2006). The relationship between sensory processing patterns and play preferences of young children. Doctoral dissertation, University of Kansas Medical Center.
- Nardi, P. (2006). *Doing survey research. A guide to quantitative methods*. Boston: Pearson Education, Inc.
- Okimoto, A.M., Bundy, A., & Hanslik, J. (2000). Playfulness in children with and without disability: Measurement and intervention. *American Journal of Occupational Therapy*, 54, 73-82.
- Parham, L.D. & Fazio, L.S. (1997). Play and occupational therapy. In L.D. Parahm & L.S. Fazio (Eds), *Play in Occupational Therapy for Children* (p.2-21). St Louis: Mosby.
- Portney, L.G. & Watkins, M.P. (2000). *Foundations of Clinical Research Applications to Practice – Second Edition*. New Jersey: Prentice Hall Health.
- Russell, A. & Saebel, J. (April 1997). *Individual differences in parent-child play styles: Their nature and possible consequences*. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Washington, DC.
- Simms, M.D. & Schum, R.L. (2000). Preschool children who have atypical patterns of Development. *Pediatrics in Review*, 21, (5), 147-158.
- Treyvaud, K., Anderson, V.A., Howard, K., Bear, M., Hunt, R.W., Doyle, L.W., Inder, T.E., Woodward, L., & Anderson, P.J. (2009). Parenting behavior is associated with the early neurobehavioral development of very preterm children. *Pediatrics*, 123(2), 555-561.

U.S Department of Education (2007). National Center for Education Statistics,  
National Household Education Surveys Program. Retrieved on 04/08/2010  
from <http://www.childstats.gov/americaschildren/tables/xls/ed1.xls>

## Appendix A: Comprehensive Literature Review

### The Relationship between Sensory Processing and Parent-Child Play Preferences

Melissa E. Welters-Davis  
University of Kansas Medical Center

## Impact of Sensory Processing on Parent-Child Play Interactions

Play is an occupation that can happen at any time or place and with people of all ages and abilities. Play can occur on an individual basis, between friends, between siblings, and also between a parent and a child. Parent-child play interactions can be influenced by various factors including one's abilities, parent-child interactions, play preferences, and opportunities for play (Cress, Moskal & Hoffman, 2008; Clawson & Robila, 2001; Russell & Saebel, 1997; Chiarell, Huntington & Bundy, 2006; Kooij & Hurk, 1991; El-Ghorou & Romanczyk, 1999). Could sensory processing also influence parent-child play interactions? This paper attempts to answer this question by reviewing the definition and importance of play, examining both the parent and child's influence on play, and discussing how sensory processing impacts play.

### Definition and Importance of Play

The word play is complex, as there are many definitions depending on who is defining it or the context in which it is used. Many disciplines have studied play including educators, psychologists, and occupational therapists suggesting interdisciplinary interest in how play influences children's development. The following section highlights definitions of play from professionals in the fields of education, psychology, and occupational therapy as well as parents and children.

Educators tend to view play as not only fun, but also an opportunity for learning (Rothlein & Brett, 1987). For example, Rothlein & Brett (1987) conducted a survey of preschool aged children, preschool teachers, and parents of preschoolers. Early childhood teachers defined play as opportunity for fun and social development, while parents of preschoolers defined play as an opportunity for fun and a type of amusement.

Although, the parents and teachers had different views regarding play and learning, there was a consensus with regards to favorite play activities. The favorite play activities as deemed by the parents, teachers and children included outdoor and dramatic play, blocks and art activities. Muys, Rodgers, & Bundy (2006) examined the playfulness of children with autism via the completion of the Child Playfulness Scale by the parents of the children as well as an occupational therapist. Findings from the study showed there was a statistical significant difference in the playfulness ratings by parents and therapists in regards to unstructured play. The parents rated their children as more playful in unstructured play as compared to the therapists. However, there was not a significant difference in the ratings of playfulness by the parents and therapists with regards to structured play (Muys et al, 2006). The perspectives of play and the play interactions by therapists and parents are most likely influenced by different factors. Thus, how a parent perceives their child's play may impact how the parent thus influences their child's play and how the parent may play with their child.

The Association for Childhood Education International (ACEI) provides a more specific definition of play as "...a dynamic, active, and constructive behavior - - an essential and integral part of all children's healthy growth, development, and learning across all ages, domains, and cultures" (Isenberg & Quisenberry, 2002, p.1). In the field of education, play has been studied for hundreds of years by persons such as John Amos Comenius in the 17<sup>th</sup> century and Froebel in the 20<sup>th</sup> century (Rothlein & Brett, 1987). Play in the educational literature presents itself as an opportunity to improve social, cognitive, emotional, and physical skills. Play is different from other childhood activities and possesses certain unique qualities (Hurwitz, 2002). There are five qualities of play

emerging from education literature including: (a) it is a process, (b) play is child-initiated, (c) in play everything and anything can happen, (d) play becomes the arena for testing rules both logical and illogical, and (e) play is very much an activity of the mind (Hurwitz, 2002, p. 101). Play is thus looked upon as a fluid and dynamic activity that offers children the opportunity to improve social, cognitive, and physical skills.

A definition of play from the psychological perspective states that play, "...is a pleasurable activity that is engaged in for its own sake" (Santrock, 1995, p. 251).

Psychologists also view play as a means to assist with development. Notable psychologist Erik Erikson discussed that play is a one way in which a child can gain skills for life as well as being a means of recreation and self-cure (Erikson, 1963).

Additionally, Erikson discussed that, "...play is the infantile form of the human ability to deal with experience by creating model situations and to master reality by experiment and planning" (Erikson, 1963, p. 222). The works of psychologists, such as Sigmund Freud and Erik Erikson, have been used in the development and usage of play therapy (Santrock, 1995). Play therapy is used as a means for a child to relieve tensions in a manner that is more conducive for them. Play is one way in which children can relieve tensions (Santrock, 1995).

Occupational therapy defines play as, "... any organized or spontaneous activity that provides enjoyment, entertainment, amusement or diversion" (Parham & Fazio, 1997, p. 251-252). Similarly, in the occupational therapy literature, play has been found to contribute to the development and emotional well-being of children as well as a means to elicit motor, sensory, or psychosocial results (Couch, Deitz & Kanny, 1997; AOTA, 2008). Occupational therapists consider play as an area of occupation. Occupations are

“Activities that people engage in throughout their daily lives to fulfill their time and give life meaning. Occupations involve mental abilities and skills and may or may not have an observable physical dimension (Hinojosa & Kramer, 1997, p. 865). The concept of play has been researched in the occupational therapy literature and also in clinical practice as one of the most important occupations of children (Couch, et al., 1997; Parham & Fazio, 1997). During the early years children spend the majority of their time with their families while involved in play, self-care and learning activities. Thus, parents are an integral part of how and when a child plays and how a parent plays must also be assessed when examining how children play.

Because of the varied perspectives, there is no consensus on the definition, or the characteristics of play. For purposes of this paper, play is considered to be “any organized or spontaneous activity that provides enjoyment, entertainment, amusement or diversion” (Parham & Fazio, 1997, p. 252). This definition of play has been chosen as it encompasses the diversity of play and does not place limitations on who experiences play nor how play is experienced. Occupational therapists view play as important to both children and adults and this paper is examining play between children and parents.

#### Play Models and Theories

Play has been shown to have an impact on a child’s development (Isenberg & Quisenberry, 2002; Ginsburg, 2007; Erikson, 1963). When considering how play impacts development, it is important to understand how children play, why children play, and what children play. Theories and models in the occupational therapy and psychology literature can provide structure to understanding these aspects of play.

Recently occupational therapy literature reported a study by, Miller & Khuaneck (2008) who investigated how children perceive play and also children's reasoning for play choices. This investigation led to the creation of the Dynamic Model for Play Choice. In this model, mastery of a play activity is accomplished by the repetitive engagement in the activity by the child due to the enjoyment the child receives from participation in the activity (Miller & Khuaneck, 2008). In this dynamic model there is a relationship between four groups of characteristics and fun. These characteristics include: a) child characteristics b) activity characteristics c) relational characteristics and d) contextual characteristics. In the Dynamic Model for Play Choice, "fun" might be *why* a child participates in a particular activity. The model also suggests that as the child and context change so does the play choice. Additionally, one of the most important relationships found between the four characteristics was between the skill level of the child and the complexity level of the activity. Thus, this supports the concept that in providing an optimal learning environment for a child, there must be activities that are not too easy for the child or too difficult for the child.

This theory is very similar to the one developed by psychologist, Lev Vygotsky. Vygotsky suggests that one must take into consideration a child's needs and motives with regards to development (Vygotsky, 1966). Which thus has an impact on *what* a child plays or plays with depending upon his or her current skill level (Vygotsky, 1966). The concept of the relationship between what a child plays and their skill level also impacts the field of education. For example, Vygotsky's concept of the Zone of Proximal Development (ZPD) states that there are tasks that a child has not yet mastered independently but rather can accomplish with the help of an adult or other child (Berk,



1994). This concept suggests that learning takes place by having a child participate in activities that are challenging to his or her current skill level but not overwhelming. However, *how* a child plays is also important when examining the influence play has on development.

During the preschool years there is a progression of how children play (Santrock, 1995; Berk, 1994). Psychologist, Mildred Parten (1932) developed a classification of how play progresses during the pre-school years. This classification of play is divided into three categories: a) nonsocial activity b) parallel play and c) associative/cooperative play. The category of *nonsocial activities* is comprised of: a) unoccupied play b) solitary play and c) onlooker play. During these types of play the child is watching other children play or they are playing by themselves. During the stage of *parallel play*, children play near other children and may play with similar toys but with limited social interaction. The amount of social interaction between children increases with the onset of the third category of play, *associative/cooperative play*. The children will first exchange toys among themselves (associative play) and then progresses to cooperative play in which the children work together to complete an activity. Even though these types of play progressively develop during the play school years they are not exclusive of each other, rather they can occur simultaneously (Santrock, 1995; Berk, 1994). Examining *how* children play, *why* children play and *what* children play, offers further insight into how play impacts a child's development.

The importance of play in childhood has thus been supported by several professions as being a key element in development. However, children's time for free play is decreasing as children's schedules are increasingly filled with organized sports

and activities (Ginsburg, 2007). The next section discusses how lack of play may influence development.

### Lack of Play

Currently there is evidence that there is a lack of free play time, as well as, decreased time for children to play at home and at school due to the emphasis placed on academic success (Ginsburg, 2007; Zygmunt-Fillwalk & Evanko Bilello, 2005). Not only is there evidence about lack of time for play there is evidence suggesting that some parents see play and learning as a dichotomy (Rothleim & Brett, 1987). They may not see the benefits of having their child spend a lot of time playing while at preschool. Rothleim & Brett (1987) suggest two main reasons why parents support a specific amount of time for play during preschool: (a) children do not require a large amount of time for play and (b) play is needed as a reprieve from school work. Play is thus perceived as a separate entity from academics and not as an opportunity for learning. This information from parents supports the idea that parents place less value on play and more value on structured activities and school work, notably while the children are at school.

Not only is there a decrease in time for play, there has also been a shift in what and how children are playing. Children are now spending more and more time playing video games and participating in structured activities – such as organized sports and more academic based activities (Ginsburg, 2007; Wenner, 2009; Barros, Silber, & Stein, 2009). Video games consist of limited amounts of physical activity while having a great amount of auditory and visual stimulation. This form of play in video games does not create the opportunity for socialization as compared to dramatic and outdoor play. Additional,

disadvantages of children playing video games include an increase in aggression, a decrease in physical activity and a decrease in academic performance (Harris & Williams, 1985; Calvert, Jordan & Cocking, 2002; Media Development Authority, n.d.)

The decrease in play time is not only limited to the home environment but also may be found in the school environment. According to the National Association of Early Childhood Specialists in State Department of Education (n.d.) there is a movement towards elimination of recess in many school districts in the United States despite evidence that supports a need for recess. Barros et al. (2009) found that teachers rated classroom behavior of children who had no recess or only a minimal break lower than children with regular recess. Because it is difficult for children to learn in a disruptive classroom this suggests recess, or play, is important to achieving academic skills (Harrell & Hollins, 2009; Henninger & Cleman, 2008; Luiselli, Putnam, Handler & Feinberg, 2005).

Decreased academic skills are not the only negative outcome of a lack of play experience during the school day. During play, children are developing the skills they need to be successful in the classroom and in the community (Hurwitz, 2002). Play offers a child the opportunity to practice the social and psychosocial skills that will be needed as an adult as well as serve as a means to assist children in dealing with stress and anxiety (National Institute for Play, n.d.). Breaks during the school day can assist with cognitive, physical and social development (Zygmunt-Fillwalk & Evanko Bilello, 2005). Saunders, Sayer, & Goodale (1998) found a significant correlation between a child's level of playfulness and their coping skills. Additionally, girls and younger children were found to be more playful and had higher coping scores as compared to boys and older

children. The authors suggest that this evidence supported the idea that interventions addressing play would in turn influence a child's life skills.

Research by Dr. Stuart Brown supports the idea that lack of play can result in negative social outcomes (Wenner, 2009). Dr. Brown is a psychologist whom has interviewed 26 convicted Texas murderers and was also a member of the committee whom examined the life of mass murderer, Charles Whitman. In 1966, at the University of Texas, Whitman killed 17 people and wounded 41. "The committee investigating Charles Whitman's life and motives unanimously identified his lifelong lack of play as a key factor in his homicidal actions" (Brown, 2009, p.1). Dr. Brown has found commonalities among the convicted murderers. These commonalities include that the convicted murderers were from an abusive household and they did not play when they were children (Wenner, 2009). In contrast, parents who do provide children with creative materials and confidence influence "... creativity and playfulness in their children (Smith, 1995, p.21). The next section will discuss the influence parents have on their child's play as well as how the child influences the play between themselves and their parents.

#### Parents and Children Influence Play Relationships

The idea that parents have an impact on their child's development is well known (Treyvaud, Anderson, & Howard, et al., 2009; Guajardo, Snyder & Petersen, 2009). More specifically, parents also have an impact on their child's play styles and playfulness. Just as parents can negatively influence play with abuse or neglect, parents can also positively influence imaginative, pretend and fantasy play through parent-child interactions (Smith, 1995). Parent-child play style is one approach that explains how a

parent will play with their child. Parent-child play styles can be classified in three different categories: facilitator style, director style, and co-player style (Russell & Saebel, 1997). “Facilitator play” is when the parent is centered on the child and actively attempts to engage the child in play. The “director style of play” occurs when the parent is mostly in control of the play, and “co-player play style” is when a parent and child are engaged in joint play. Not only is play influenced by how a parent plays with their child but also by the abilities of the child.

Evidence suggests a child’s physical abilities and sensory processing preferences impact how a child plays (Okimoto, Bundy & Hanzlik., 2000; Bundy, Shia, Qi & Miller, 2007). Physical disabilities impact how a child plays due to challenges with regards to mobility, obtaining the toy or object and manipulating the toy or object for play (Owen, 1998). For example, Okimoto, et al. (2000) conducted a study in which playfulness of children with and without disabilities was examined. Children with cerebral palsy and developmental delays were found to be less playful than children whom are typically developing. However, after intervention the playfulness of the children with disabilities improved suggesting their play may be influenced by physical challenges that can be mediated with therapy. Chiarello, Huntington & Bundy (2006) also found that a child’s playfulness is related to the child’s abilities. Children whom have physical abilities and have limited free play, “... may be acquiring secondary disabilities, including diminished motivation, imagination, and creativity; poorly developed social skills; and increased dependence” (Missiuna & Pollack, 1991, p. 886-887). The importance of physical disability and its impact on how a child plays is relevant to intervention by professionals as well as to parents.

Sensory processing also has been shown to impact how a child plays. A study of preschool-aged children's sensory processing patterns and play preferences support the notion that sensory information may impact play (Mische Lawson, 2006). Mische Lawson (2006) suggests there is an association between the toys a child prefers, how the child plays with the toys and how the child processes sensory information. Specifically, when a child is sensation avoiding they are less likely to vary their body position during a play activity. Also, children with different sensation seeking scores prefer different toys. These results thus highlight the importance of taking into consideration what a child prefers to play with may be related to their sensory processing pattern. The next section further discusses the topic of sensory processing as well as the impact sensory processing has on play.

### Sensory Processing

Sensory processing is the manner in which the brain receives sensory information from the environment, processes the sensory information and then has a response. According to Dunn (2001), the model of sensory processing has three primary features: (a) consideration of one's neurological thresholds (reactivity) (b) consideration of one's responding or self-regulation strategies, and (c) consideration of the interaction among thresholds and responding strategies. Further, the model contains four patterns with regards to sensory processing: (a) low registration, (b) sensory seeking, (c) sensory sensitivity, and (d) sensation avoiding (Dunn, 2001). Figure 1 depicts Dunn's 2001 model. The four patterns of sensory processing are based upon the thresholds (reactivity) and response strategies of the adult/child.

*Low registration* is a combination of high threshold and passive response strategy.

Figure 1: Dunn's Model of Sensory Processing

	Self Regulation Strategies/ behavioral responses	
Neurological thresholds	Passive	Active
High threshold	Low Registration	Sensation Seeking
Low threshold	Sensory Sensitivity	Sensation Avoiding

Reprinted with permission from: Dunn, W. (1997). The impact of sensory processing abilities on the daily lives of young children and families: a conceptual model. *Infants and Young Children*, 9(4), 23-35.

A person whom is in the category of low registration is also referred to as a bystander. A person whom is a bystander may not notice what is occurring in the environment. For example, he or she may not as readily notice the smell of flowers in a room or the beeping of a pager. *Sensation seeking* is a combination of high threshold and active response strategies. A person whom is in the category of sensation seeking is also referred to as a seeker. A seeker will find ways to obtain additional sensory information from his or her environment or activities. For example, this person will want to swing higher or go faster on a carnival ride in order to receive more vestibular information. *Sensory sensitivity* is the combination of low thresholds and passive response strategies. A person whom is in the category of sensation sensitivity is also referred to as a sensor. A sensor is easily distracted by the sensory information in the environment. For example, he or she may notice the humming of computer or the ticking of a clock. *Sensation avoiding* is the combination of a low threshold and active response strategies. A person whom is in the category of sensation avoider is also referred to as an avoider. An avoider may find a way to minimize exposure to certain sensory experiences. For example, he or she may choose to always sit on the end of a row in order to avoid having people sitting on both sides of them (Dunn, 2001; Dunn, 2009).

Sensory processing impacts daily life activities, including play (Baranek, Chin, Greiss Hess, Yankee, Hatton & Hooper, 2002; Bundy, et al., 2007; Mische Lawson, 2006; Barker Dunbar, 1999). The Test of Playfulness (ToP) was used as the measurement tool in a study by Bundy, et al. (2007) whose purpose was to assess how sensory processing dysfunction affected play. The ToP was administered pre and post intervention to children whom had been identified with Sensory Processing Disorder



(SPD). The study concluded that the children whom received intervention did not have an increase in their ToP scores. However, the ToP scores did show that children whom were identified with SPD had lower ToP scores as compared to children whom were typically developing (Bundy, et al., 2007). The processing patterns of a child or an adult may thus impact the activities in which they choose to participate in as well as how they participate in activities. If a child is a seeker and a parent is an avoider it may impact their play preferences and thus their parent-child interactions.

Play is an occupation for children and adults containing opportunities to experience sensory information in a variety of ways and at various levels of intensity. For example, there are persons whom avoid activities involving getting their hands dirty while others seek out opportunities for tactile input. There are persons whom enjoy roller coaster rides while others easily become car sick (Dunn, 2009). One could conclude if a child or an adult has strong sensory preferences, they will be more likely to avoid or to seek out certain activities thus impacting their play preferences. Because play impacts the motor, sensory, social and cognitive experiences of a child (Couch, et al, 1997; Ginsburg, 2007) it is critical to know why children and adults avoid or seek out certain play activities. When teachers, parents, and health care providers have a better understanding of why a child or an adult is not participating in an activity, then modifications to the activity or creation of an alternate activity can be initiated. Additionally, when a caregiver has knowledge about their own sensory processing needs they can then adjust their own sensory needs with the sensory needs of the children they are caring for (Dunn, 2007).

There is evidence to guide understanding of how sensory processing patterns and

preferences influence children's play (Bundy, et al, 2007; Mische-Lawson, 2006 & Muys, et al., 2006) and information on how a parent may participate in play and interact with their children (Clawson, et al., 2001; Cress, et al., 2008; El-Ghoroury & Romanczyk, 1999). However, information regarding how the sensory processing patterns of parents and children may impact the parent-child interaction is lacking. Because play is critical to a child's development (Isenberg & Quisenberry, 2002; Ginsburg, 2007; Erikson, 1963) and parent-child interactions influence play (Chiarello, et al., 2006; Kooij & Hurk, 1991) future research needs to examine the impact of both the children's sensory processing patterns and parent's sensory processing patterns in relation to play between a parent and child. In order to gain insight into how a parent and child play, one must look at how to measure play. The following section will compare as well as briefly describe several assessments that examine the play and playfulness of children and adults.

### Measuring Play

There are many scales and assessments that measure playfulness or leisure interests of children and adults. Examples of the child assessments include: (a) Child Playfulness Scale, (b) Test of Playfulness, and (c) The Play History. This literature review will be limited to the above stated scales and assessments because they examine the populations and characteristics of play that are discussed in this literature review. Additionally, these reviewed scales including the Test of Playfulness (ToP), Child Playfulness Scale (CPS), and The Play History have been successfully used in occupational therapy research literature (Muys, et al., 2006; Takata, 1969; Bundy, et al., 2007).

*The Child Playfulness Scale (CPS)* is used for preschool and toddler-aged children as an assessment of playfulness. The assessment consists of a questionnaire that is to be completed by an adult whom has experience with young children and has also observed the child for a minimum of 30 hours in a variety of situations and environments. The questionnaire is divided into five categories: physical spontaneity, social spontaneity, cognitive spontaneity, manifest joy and sense of humor. The raters then use a 5 point Likert scale to rate the children in each of the areas (Asher, 1996). The CPS has been used in studies assessing a child's playfulness and has been proven to have acceptable inter rater reliability (Muys, et al., 2006).

While the CPS assesses playfulness through spontaneity and sense of humor measures, the Test of Playfulness (ToP) is an observation-based behavior rating scale that assesses a child's playfulness. Children between the ages of 15 months and 10 years are observed for 15 minutes by a trained rater in a familiar free play setting and are scored in four different elements of playfulness. The four areas include: (a) intrinsic motivation, (b) internal control, (c) disengagement from constraints of reality, and (d) framing. The 1995 pilot study demonstrated 96% of children and 94% of the items fit the Rasch model as well as 100% of trained raters fit the Rasch model in regards to interrater reliability (Asher, 1996).

The CPS and ToP both assess playfulness, whereas The Play History is a questionnaire used to gather information on a child's play opportunities and experiences. The questionnaire has two sections. The first section gathers information on the qualitative aspects of the child's play and the second focuses on the quantitative aspects of the child's play. The questionnaire is completed through parent interview (Takata,

1969). The Play History was deemed as a reliable and valid assessment tool in a study by Behnke & Fetkovich (1984). In addition to assessments for playfulness of children there are also adult assessments and scales that have been developed to assess an adult's playfulness and interests. The review of the adult assessments is also advantageous when looking at parent and child play interactions. The following adult scales of playfulness and leisure were chosen based upon a multi-disciplinary literature search due to the limited number of applicable adult scales available in the occupational therapy literature. Examples of the assessments in the occupational therapy literature include: (a) Occupational behavior and Life Satisfaction among Retirees, (b) Activity Patterns and Leisure Concepts among the Elderly, and (c) National Institutes of Health Activity Record (Asher, 1996). However, the above stated assessments do not assess the specific adult population that is addressed in this literature review. The following assessments: (a) Adult Playfulness Scale, (b) Modified Interest Checklist, and (c) Leisure Diagnostic Battery more closely address the populations and characteristics of the adult/parent population.

The Adult Playfulness Scale (APS) was developed by M.A. Glynn and J. Webster and measures the playfulness of adults in a work environment and is not limited to an adult choosing an area of interest. The scale is comprised of a six point scale which is placed between two descriptive adjectives. The respondent places a mark nearest the adjective that describes them most accurately. For example, the adjectives *adventurous* and *purposeful*. The respondent would make a mark closest to the adjective that more closely describes them. Glynn & Webster (1992) found that playfulness does correspond to cognitive spontaneity and creativity. This information gives insight into how an adult

may view him or herself and may lend information to why an adult chooses to participate in one activity versus another.

Whereas, The Modified Interest Checklist gathers information from the respondent from 68 activities in regards to their level of interest in the past, present and future for certain activities. An example would be the activity of *exercise*. The respondent would then describe their level of interest in the activity of *exercise* in the past ten years, in the past year, if they currently participate in this activity, or would like to participate in this activity in the future (Model of Human Occupation Clearinghouse, 2008). This assessment tool would be beneficial to see if there was any correlation between a change in preferred activities and the child-rearing years.

An additional adult assessment is the The Leisure Diagnostic Battery (LDB). The LDB is used to assess how an adult perceives his or her leisure experiences (Leisure Diagnostic Battery Scorer, 2005). This battery is completed by the individual and is comprised of eight different components: (a) perceived leisure competency scale, (b) perceived leisure control scale, (c) leisure needs scale, (d) depth of involvement in leisure scale, (e) playfulness scale, (f) perceived freedom in leisure, (g) barriers to leisure involvement scale, (h) knowledge of leisure opportunities test, and (i) leisure preference inventory. The battery can be quickly scored via computer software (Leisure Diagnostic Battery Scorer, 2005).

The above described assessments and checklists look at adults and children separately with regards to playfulness and interests. There are also assessments that examine parent-child interactions, relationships and play. Examples of these include: (a) The Parent-Child Early Relational Assessment, (b) Marschack Interaction Method

(MIM), (c) The Parent-Child Interaction Assessment II (PCIA-II), and (d) The Parent-Child Play Scale (PCP). The Parent-Child Early Relational Assessment focuses only on behavior in parent child interactions and the MIM examines the relationship between a parent/adult and child more globally (Clark, 1999; Martin, Snow & Sullivan, 2008). Because the focus of this paper is the play interactions between the parent and child this literature review will specifically examine the PCIA-II and the PCP which specifically focus on parent-child play (Holigrocki, Kaminski & Frieswyk, 1999; Dunst, 1986).

The Parent-Child Interaction Assessment II (PCIA-II) is comprised of video-taping a session between the parent and child (between 4-10 years of age) as they are playing an imaginary game of going to the zoo. The parent and the child are then shown the video tape and then are interviewed by the raters. This assessment examines how a parent and child play together as well as examines aspects of their relationship (Holigrocki, et al., 1999). Holigrocki (2008) reported concurrent validity and the interrater reliability of code scores were good to excellent. The PCIA-II looks specifically at the relationship of a parent and child but does not assess what type of games parents and children spontaneously play together.

The PCP developed by Carl J. Dunst, obtains information on the type and frequency of games that parents play with their preschool aged children. The questionnaire is completed by the parent and consists of 24 items that are divided into six categories of play. Games include activities such as: (a) get child to sing song, (b) have pretend phone conversations with your child, (c) and tell your child story or nursery rhymes (Dunst, 1986). The coefficient alpha from the average correlation among the 24 scale items was 0.89 and the coefficient alpha from the average correlation of the 24

items with the total scale score was 0.96. Additionally, the stability coefficient was 0.87 ( $p < 0.001$ ) for the total scale scores (Dunst, 1986). The PCP is the most applicable parent-child play assessment to this literature review and study as it provides the type and frequency of activities parents and children are playing together. This information can then be applied in assessing a possible relationship between sensory processing and play preferences of a parent and child. Refer to Table 1 for summary of assessments and scales.

### Conclusion

Play is a dynamic occupation and has been supported by many disciplines as an integral part of childhood. Skills and relationships are developed through play. Play can be positively or negatively impacted by many factors including the player's abilities, parent-child interactions, play preferences, opportunities for play and sensory processing.

Occupational therapists, pediatric professionals and parents thus need to take into consideration the implications sensory processing may have on play between a parent and child. Additional research is needed in exploration of how sensory processing influences play and interactions, most notably between parent and child. Two possible research questions to explore this topic would focus on the following: a) Do parents and their children share similar sensory processing patterns based upon results from the Sensory Profile? b) Is there a relationship between a parent's play preference and their sensory processing patterns? This information would greatly benefit both parents and professionals. Parents would be able to acquire information about themselves and their children that they may not have been aware of before. This information could then be used to make adaptations to their play interactions with their child thus resulting in

Table 1

*Summary of Assessments and Checklists*

Title	Author	Description
Child Playfulness Scale	Lieberman, J.	Questionnaire completed by an adult whom has observed the child during play in a variety of environments; assesses playfulness.
Test of Playfulness	Bundy	An observation-based behavior rating scale completed by trained rater in a familiar free playsetting.
Adult Playfulness Scale	Glynn & Webster	Respondents complete questionnaire involving selection of self descriptive adjectives.
Modified Interest Checklist	Model of Human Occupation Clearing House	Self-administered questionnaire and interview regarding interest patterns/characteristics.
Leisure Diagnostic	Witt & Ellis	Self-administered questionnaire involving perception of leisure activities.
Parent-Child Play	Dunst	Parent completed questionnaire for type/frequency of games played with children
Parent-Child Interaction Assessment	Holigrocki, R. Kaminski, P. & Frieswyk	Video taped play session and interview assessing parent-child relationship.



improved relationships and opportunities for learning through play. Professionals of multiple disciplines would also benefit. The information would be serving as another integral piece of the puzzle in planning comprehensive interventions in which to better assist a family, whether the goals may be to improve motor, social, or cognitive skills.

## References

- American Occupational Therapy Association. (2008). Occupational therapy practice framework: Domain & process (2<sup>nd</sup> ed.). *American Journal of Occupational Therapy*, 62, 625-683.
- American Occupational Therapy Associations (2008). AOTA's societal statement on play. *American Journal of Occupational Therapy*, 62, 707-708.
- American Psychological Association (2001). *Publication manual of the American Psychological Association* (5<sup>th</sup> ed.). Washington, D.C.: American Psychological Association.
- Anderson, C.A. (2002). Violent video games and aggressive thoughts, feelings, and behaviors. In Calvert, S.L., Jordan, A.B., & Cocking, R.R.. *Children in the digital age. Influences of electronic media on development* (pp.101-119). Connecticut: Praeger.
- Asher, I.E. (1996). *Occupational therapy assessment tools: An annotated index – Second edition*. Bethesda, MD: The American Occupational Therapy Association.
- Baranek, G.T., Chin, Y.H., Greiss Hess, L.M., Yankee, J.G., Hatton, D.D., & Hooper, S.R. (2002). Sensory processing correlates of occupational performance in children with Fragile X Syndrome: Preliminary findings. *American Journal of Occupational Therapy*, 56, 538-546.
- Barros, R. M., Silber, E.J., & Stein, R.E. (2009). School recess and group classroom behavior. *Pediatrics*, 123, 431-436.
- Beck, L. (1994). *Child Development*, (3<sup>rd</sup> ed.). Needham Heights, MA: Allyn and Bacon.

- Benke, C.J. & Fetkovich, M.M. (1984). Examining the reliability and validity of the Play History. *American Journal of Occupational Therapy*, 38 (2), 94-100.
- Brown, S. (2009). Play deprived life – Devastating result. *The National Institute for Play*. Retrieved August 8, 2009, from <http://www.nifplay.org/whitman.html>
- Bundy, A.C., Shia, S., Qi, L., & Miller, L.J. (2007). How does sensory processing dysfunction affect play? *American Journal of Occupational Therapy*, 61, 201-208.
- Chiarello, L.A., Huntington, A., & Bundy, A. (2006). A comparison of motor behaviors, interaction, and playfulness during mother-child and father-child play with children with motor delay. *Physical & Occupational Therapy in Pediatrics*, 26(1/2), 129-151.
- Clark, R. (1999). The parent-child early relational assessment: A factorial validity study. *Educational and Psychological Measurement*, 59 (5), 821-846.
- Clawson, M.A. & Robila, M. (2001). Relations between parenting style and children's play behavior. *Journal of Early Education and Family Review*, 8(3), 13-19.
- Couch, K.J, Deitz, J.C. & Kanny, E.M. (1997). The role of play in pediatric occupational therapy. *American Journal of Occupational Therapy*, 52 (2), 111-117.
- Cress, C.J., Moskal, L., & Hoffman, A. (2008). Parent directiveness in free play with young children with physical impairments. *Communication Disorders Quarterly*, 29(2), 99-108.
- Dunbar, S. B. (1999). Case Report - A child's occupational performance: Considerations of sensory processing and family context. *American Journal of Occupational Therapy*, 53, 231-235.

- Dunn, W. (1999). *The Sensory Profile*. San Antonio, TX: Psychological Corporation.
- Dunn, W. (2001). The sensations of everyday life: Empirical , theoretical, and pragmatic considerations. *American Journal of Occupational Therapy*, 55, 608-620.
- Dunn, W. (2007). Supporting children to participate successfully in everyday life by using sensory processing knowledge. *Infants & Young Children*, 20 (2), 84-101
- Dunn, W. (2009). *Living Sensationally*. Philadelphia, PA: Jessica Kingsley Publishers.
- Dunst, C. J. (1986). *Parent-Child Play Scale: A Rating Scale for Assessing Parent-Child Play Opportunities*. Asheville, NC: Winterberry Press.
- El-Ghoroury, N.H. & Romanczyk, R.G. (1999). Play interactions of family members towards children with autism. *Journal of Autism and Developmental Disorders*, 29(3), 249-258.
- Erikson, E.H. (1963). *Childhood and Society – Second Edition*. New York, NY: W.W. Norton & Company.
- Glynn, M.A. & Webster, A. (1992). The adult playfulness scale: An initial assessment. *Psychological Reports*, 71, 83-103.
- Ginsburg, K.R. (2007). The importance of play in promoting healthy child development and maintaining strong parent-child bonds. *Pediatrics*, 119, 182-191.
- Guajardo, N.R., Snyder, G. & Petersen, R. (2009). Relationships among parenting practices, parental stress, child behaviour, and children’s social-cognitive development. *Infant & Child Development*, 18 (1), 37-60.
- Harris, M.B. & Williams, R. (1985). Video games and school performance. *Education*, 105 (3), 306-309.
- Harrell, I.L. & Hollins, T.N. (2009). Working with disruptive students. *Inquiry*, 14(1),

69-75.

Henninger, M. & Coleman, M. (2008). De-Escalation: How to take back control in your urban physical education classes. *Strategies: A Journal for Physical and Sport Educators*, 21 (3), 11-14.

Hinojosa, J., & Kramer, P. (1997). Fundamental concepts of occupational therapy: Occupation, purposeful activity, and function [Statement]. *American Journal of Occupational Therapy*, 51, 864-866.

Holigrocki, R.J., Kaminski, P.L., & Frieswyk, S.H. (1999). Introduction to the parent-child interaction assessment. *Bulletin of the Menninger Clinic*, 63 (3), 413-428.

Holigrocki, R.J. (2008). *Parent-Child Interaction Assessment II (PCIA-II): Psychometric properties and the application of coding systems*. Manuscript submitted for publication.

Hurwitz, S.C. (2002). To be successful – let them play. *Childhood Education*, Winter 2002/03, 101-102.

Isenberg, J. P. & Quisenberry, N. (2002). Play: Essential for all children. *A position paper of the Association for Childhood Education International*. Retrieved February 4, 2009, from <http://www.acei.org/playpaper.htm>.

Kooij, R. & Hurk, W.S. (1991). Relations between parental opinions and attitudes about child rearing and play. *Play & Culture*, 4, 108-123.

*Leisure Diagnostic Battery Scorer* (2005). Retrieved August 5, 2009, from <http://www.computr.net/supportldbs.htm>

Luiselli, J.K., Putnam, R.F., Handler, M. & Feinberg, A. (2005). Whole-School positive behaviour support: Effects on student discipline problems and academic

- performance. *Educational Psychology*, 25 (2-3), 183-198.
- Martin, E., Snow, M.S., & Sullivan, K. (2008). Patterns of relating between mothers and preschool aged children using the Marschak Interaction Method Rating. *Early Child Development and Care*, 178 (3), 305-314.
- Media Development Authority. (n.d.). *Video Games and their Effects on Children*.  
retrieved July 26, 2009, from  
[www.mda.gov.sg/wms.file/mobj/mobj.579.parents\\_vid-effects.pdf](http://www.mda.gov.sg/wms.file/mobj/mobj.579.parents_vid-effects.pdf)
- Miller, E. & Kuhaneck, H. (2008). Children's perceptions of play experiences and the development of play preferences: A qualitative study. *American Journal of Occupational Therapy*, 62, 407-415.
- Mische-Lawson, L. (2006). *The relationship between sensory processing patterns and play preferences of young children*. Unpublished doctoral dissertation, University of Kansas Medical Center.
- Missinuna, C. & Pollock, N. (1991). Play deprivation in children with physical disabilities: The role of the occupational therapist in preventing secondary disability. *American Journal of Occupational Therapy*, 45(10), 882-888.
- Model of Human Occupation Clearinghouse – Modified Interest Checklist (n.d.).  
Retrieved March 11, 2009, from  
<http://www.moho.uic.edu/mohorelatedrscsc.html>
- Muys, V., Rodgers, S., & Bundy, A. (2006). Assessment of playfulness in children with autistic disorder: A comparison of the Children's Playfulness Scale and the Test of Playfulness. *OTRJ: Occupation, Participation and Health*, 26(4), 159-170.
- National Association of Early Childhood Specialists in State Departments of Education

- (n.d.). *Recess and the importance of play: A position statement on young children and recess*. Retrieved August 2, 2009 from <http://naecs.crc.uiuc.edu/position/recessplay.html>
- National Institute for Play (n.d). *Play deprived life – Devastating result*. Retrieved June 3, 2009, from <http://www.nifplay.org/whitman.html>
- Okimoto, A.M., Bundy, A., & Hanzlik, J. (2000). Playfulness in children with and without disability: Measurement and intervention. *American Journal of Occupational Therapy, 54*, 73-82.
- Owen, M. (1998). *The effect of disabilities on play*. Retrieved August 5, 2009, from <http://www.pediatricservices.com/parents/pc-28.htm>.
- Parham, L.D. & Fazio, L.S. (1997). *Play in occupational therapy for children*. St. Louis, MO: Mosby.
- Parten, M. (1932). Social play among preschool children. *Journal of Abnormal and Social Psychology, 27*, 243-269.
- Rothlein, L. & Brett, A. (1987). Children's, teachers', and parents' perceptions of play. *Early Childhood Research Quarterly, 2*, 45-53.
- Russell, A. & Saebel, J. (April 1997). *Individual differences in parent-child play styles: Their nature and possible consequences*. Paper presented at the Biennial Meeting of the Society for Research in Child Development, Washington, DC.
- Santrock, J.W. (1995). *Life-Span Development*. Madison, WI: Brown & Benchmark Publishers
- Saunders, I., Sayer, M. & Goodale, A. (1998). The relationship between playfulness and Coping in preschool children: A pilot study. *The American Journal of*

- Occupational Therapy*, 53, 221-226.
- Smith, D. (1995). How Play Influences Children's Development at Home and School. *Journal of Physical Education, Recreation and Dance*, 66(8), 19-23.
- Takata, N. (1969). The play history. *The American Journal of Occupational Therapy*, 23(4), 314-318.
- Treyvaud, K., Anderson, V.A., Howard, K., Bear, M., Hunt, R.W., Doyle, L.W., Inder, T.E., Woodward, L, & Anderson, P.J. (2009). Parenting behavior is associated with the early neurobehavioral development of very preterm children. *Pediatrics*, 123(2), 555-561.
- Vygotsky, L. (1966). Play and its role in the mental development of the child. *Voprosy psikhologii*, 6. Retrieved October 28, 2009, from <http://www.marxists.org/acrchilve/vygosky/works/1933/play.htm>.
- Wenner, M. (2009). The serious need for play. *Scientific American*. Retrieved February 4, 2009, from <http://www.sciam.com/article.cfm?id=the-serious-need-for-play&print=true>.
- Zygmunt-Fillwalk, E. & Evanko Biellow, T. (2005). Parents' Victory in Reclaiming Recess for Their Children. *Childhood Education*, 82,(1), 19-23.