



STANDARDIZATION OF TAMIL VERSION OF SHORT SENSORY PROFILE

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ABSTRACT

The objective of this study was to standardize Tamil Version of Short Sensory Profile (SSP). Two hundred and fifty (n=250) Typically Developing Children (TDC) and hundred (n=100) Sensory Processing Disorder (SPD) children, aged 3 to 8 years were included through convenience sampling. SSP was administered individually to assess sensory processing abilities in children. The internal reliability of Tamil version of SSP was adequate and it discriminates typically developing children from SPD at .0001 level. The SSP has good internal reliability & discriminant ability. It can be used for screening the children with SPD.

KEY WORDS: Short Sensory Profile, Tamil version, Standardization.



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INTRODUCTION

We all receive information from our senses through touch, body position, movement, sight, hearing, taste, and smell. These senses work together, each sense works with the others to form a composite picture of which we are physically, where we are, and what is going on around us. The dynamic interactions of the various sensory systems forms a complete picture of self and environment which enables people to remain correctly oriented and to respond to task demands in an appropriate way. The term sensory integration was first used by Ayres in 1963, this complex process of organizing sensation from the body and the environment for sensory integration occurs in the central nervous system and is generally thought to take place in the mid-brain and brainstem levels in complex interactions of the portions of the brain responsible for such things as coordination, attention, arousal levels, autonomic functioning, emotions, memory, and higher level cognitive functions. The following five sensory systems are essential for sensory integration. These are

1. Tactile or somatosensory system- sense of touch
2. Visual system- sense of sight
3. Auditory system- sense of hearing
4. Gustatory system- sense of taste
5. Olfactory system- sense of smell
6. Vestibular system– sense of balance
7. Proprioception system- sense of body Position.

Sensory Processing Disorder (SPD)

Sensory Processing Disorder (SPD) is the impairment in detecting, modulating, interpreting, or responding to sensory stimuli. Children with sensory-processing impairments has a wide range of neurobehavioral difficulties, including problems with motor coordination, language, visual-perceptual skills, behavior, attention, learning, and emotional regulation (Ayres, 1972, 1979). Some of the documented manifestations of sensory processing deficits include hyperactivity, distractibility, social difficulties, learning difficulties, poor organizational skills, and

behavioral difficulties (Ayres, 1979). Children with SPD may have difficulty in playing. Bundy (1987) found that boys with SPD engaged in less social play out-doors and that their Preschool Play Scale (PPS) (Bledsoe & Shepherd, 1982; Knox, 1997) scores were lower than that of boys who were typically developing. Moreover, school environments contain physical and social stimuli that frequently cause these children significant distress (Bundy, 2002; Burleigh, McIntosh, & Thompson, 2002). While Parents may struggle with issues long before children enters school, problems stemming from sensory processing may become more apparent once a child enters a day-care or school environment. Sensory problems may persist into adulthood, with related social and emotional difficulties (Kinnealey, Oliver, & Wilbarger, 1995). Research found that sensory processing disorder children has following five functional impairments; 1. decreased social skills and participation in play occupation; 2. decreased frequency, duration or complexity of adaptive responses; 3. Impaired self-confidence or self-esteem or both; 4. Deficient adaptive or daily life skills; 5. Diminished fine, gross, and sensory-motor skill development. The lack of ability to play successfully with peers is proposed to be related to a lack of full participation in sensory and motor play from which cognitive and social skills emerge and develop (Parham and Mailloux, 2001). The fear, anxiety, or discomfort that accompanies everyday situations may significantly disrupt daily routines in the home environment. There is a relation between sensory processing disorders and atypical behaviors ranging from mild disruptions in infant self-regulation (Reeves, 2001; Schaaf & Anzalone, 2001) to severe behavior problems associated with Pervasive Developmental Disorders such as Fragile X Syndrome (Hickman, 2001), Cerebral Palsy (Blanche & Nakasuji, 2001), and Autism Spectrum Disorders (Mailloux, 2001).

Need for the study

The sensory processes are foundational to learning, perception, and action (Kandel,

Schwartz, & Jessell, 2000; Shepherd, 1994). Impairments can occur in some or all sensory systems including tactile, auditory, visual, gustatory, olfactory, proprioceptive, and vestibular systems (Bundy & Murray, 2002; Kandel et al., Reeves, 2001). These sensory disorders can negatively affect development and functional abilities in behavioral, emotional, motoric, and cognitive domains (Kandel et al.; Shepherd, 1994). Among children, prevalence estimates of sensory processing disorders based on clinical experience have ranged from 5% to 10% for children without disabilities (Ayres, 1989). Estimated rates of sensory processing disorders for children with various disabilities have been derived from reliable and valid survey results and are reported to be as high as 40-88% (Adrien et al., 1993; Dahlgren & Gillberg, 1989; Kientz & Dunn, 1997; Ornitz, Guthrie, & Farley, 1977; Talay-Ongan & Wood, 2000). Dunn developed Short Sensory Profile in 1999 to measure the sensory processing abilities of children 3 to 8 years old and to profile the effects of sensory processing on functional performance in the children's daily lives. Cultural influence has been reported in literature (Neuman, 2006). Hence, the current study was carried out to develop Tamil version of Short Sensory Profile in order to avert cultural influence. The purpose of this study was to standardise Tamil version of Short Sensory Profile.

METHODOLOGY

Ethical clearance was obtained from Ethical committee, SRM college of Occupational Therapy, SRM University, to carry out this research.

Research design

Quantitative research design, cross sectional study.

Sample

Two hundred and fifty (n=250) parents of typically developing children and hundred (n=100) parents of children with sensory processing disorder, matched by sex and age with typically developing children were included through the convenience sampling procedure.

Screening criteria

Parents of children with age of 3 years to 10 years of typically developing children with good comprehension skills in Tamil and English language were included in the study. Children with motor problem were excluded from the study.

Instruments used

Short Sensory Profile (SSP)

Short Sensory Profile (McIntosh et al., 1999), a standardized self-report questionnaire assessing parents' perceptions of behavioral responsiveness of children to sensation. It is a 38-item parent-rated screening instrument that evaluates functional behaviors related to sensory processing disorders (McIntosh et al., 1999). The Short Sensory Profile was developed from extensive research and development of the Sensory Profile (Dunn, 1999). It is a 5-point scale ranging from "always" to "never". The items are categorized as typical, probably different, or definitely different. The Short Sensory Profile can be completed by the caregiver in 10 minutes and it is widely used in clinics and school-based settings. The SSP is comprised of seven subtests, four evaluating parent perceptions of sensory over-responsivity in touch, vision/sound, taste/smell, and movement, one evaluating auditory filtering, one evaluating under-responsivity, called "low energy/weak", and one evaluating sensory seeking.

Scoring procedure

This frequency is determined from a 5-point Likert scale where

- 1=Always, Child Responds in the manner every time or 100% of the time.
- 2= Frequently, or at least 75% of time.
- 3=Occasionally, or 50% of time.
- 4=Seldom, or 25% of time.
- 5=Never, or 0% of time.

Reliability and validity of SSP

The reliability and validity of Short Sensory Profile tool is excellent. Internal reliability of SSP total test is >.95 for a sample of children with and without disabilities (Cronbach's alpha) and subscales reliability range from .70 to .90 across three samples (McIntosh et al., 1999). Inter-scale correlation of SSP was

moderate. The discriminant validity has been demonstrated by comparing children with sensory processing disorders and an age and gender matched typically developing group (n =38). The group with sensory processing disorders scored significantly lower (more abnormal) than typically developing group. Convergent validity was determined by comparing the Short Sensory Profile scores to physiological evidence of sensory processing disorders.

Data collection procedure

Short Sensory Profile was translated to Tamil language by using bilingual method of translation. The purpose of the study was explained to the parents of typically developing children & SPD children and consent form was obtained. Tamil and English version of short SSP was given to the parents and filled questionnaire was collected for data analysis.

Data Analysis

Data was analysed by using SPSS 21.0 version. Cronbach Alpha was used to find out internal consistency of test items and Independent "t" test was used to determine discriminant ability of Tamil version of ShortSensory Profile.

RESULTS AND DISCUSSION

Short Sensory Profile (SSP) is a standardized measure used to document the presence of SPD in children with age of 3-8 years. The SSP was designed to be completed by a child's caregiver and includes items related to the behavioral manifestations of underlying sensory processing abilities, such as

sensitivity to light and response to movement activities. This scale was translated and standardized in Hebrew (Neuman, Greenberg, Labovitz & Suzuki, 2006) and Chinese language (Chow, 2005). The purpose of present study was to standardize Tamil version of SSP.

Reliability of Tamil version of Short Sensory Profile (SSP)

Reliability refers to the consistency of a measure (Churchill, G.A., 1979). Internal consistency estimates reliability by grouping questions in a questionnaire that measures the same concept. One common way of computing correlation among the questions on the instrument is by using cronbach's alpha (Sci-Tech dictionary). The present findings revealed (table 1) that internal consistency of the test items and item – item correlation matrix for SSP is good. This result is consistent with previous research findings (Neuman, Greenberg, Labovitz & Suzuki, 2006; Chow, 2005).

Discriminant ability of Short Sensory Profile (SSP)

The typically developing children scores were compared with Sensory Processing Disorder children. The results (table 2) indicated that Tamil Version of Short Sensory Profile correctly discriminate typically developing children from SPD children at 0.001 level. The findings of this study were supported by Brown, Leo & Austin, 2008; Dunn & Bennett, 2002. Tamil version of SSP can be used to screen the children with sensory processing disorder for early identification and early intervention.

Table 1
Internal reliability of Tamil version of Short Sensory Profile

Sl.No.	Sections	Cronbach's Alpha	Item-item correlation
1	Tactile Sensitivity	.884	.793
2	Taste/Smell Sensitivity	.884	.796
3	Movement Sensitivity	.849	.741
4	Under response/Seek Sensation	.927	.865
5	Auditory Filtering	.930	.869
6	Low Energy/ Week	.936	.879
7	Visual/Auditory Sensitivity	.956	.916
Total Score		.522	.445

Cronbach's Alpha and item-item correlation matrix was computed to identify reliability of the test items. The results revealed that internal reliability of Tamil version of SSP was adequate.

Table 2
The discriminant ability of Tamil version of Short Sensory Profile

Sl.No.	Sections	Typically developing children (n=50)		SPD (n=50)		't' value	Level significance	of
		Mean	S.D	Mean	S.D			
1	Tactile Sensitivity	29.62	4.342	12.32	3.582	-21.732	.000	
2	Taste/Smell Sensitivity	15.14	2.703	11.24	3.783	-5.932	.000	
3	Movement Sensitivity	12.96	1.726	10.24	2.200	-6.879	.000	
4	Under Response/ Seek Sensation	30.60	3.051	18.50	4.577	-15.555	.000	
5	Auditory Filtering	26.12	1.955	16.98	3.236	-17.096	.000	
6	Low Energy/Week	27.70	1.594	17.38	3.822	-17.622	.000	
7	Visual/Auditory Sensitivity	22.20	2.157	11.18	3.205	-20.169	.000	
Total Score		165.50	7.332	134.02	8.800	-19.433	.000	

Independent 't' test was used to compute the discriminant ability of Tamil version of Short Sensory Profile. Results indicated that it discriminate TDC from SPD at .0001 level.

CONCLUSION

The present study concluded that Tamil version of Short Sensory Profile (SSP) has good reliability and discriminant ability to determine typically developing children from SPD. This tool can be translated into other Indian languages in order to avoid influence of cultural factors.

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