INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact factor: 4.295
(Volume 5, Issue 1)
Available online at: www.ijariit.com

Prevalence of sensory behaviours in normal Indian children with short sensory profile

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ABSTRACT

The purpose of the study was to investigate the performance of normal Indian children on Short Sensory Profile (SSP) belong to various Age-groups (3 years, 4 years and 5-10 years), it will be useful to understand their behaviour with the help of the parents/caregivers of the children. 50 normal Indian children were approached on different platforms and incorporated in the study on the basis of the inclusion and exclusion criteria of the study. The sample does not represent the entire population of normal Indian children; therefore the study can be done with a larger sample size. The therapist used a 5-point Likert scale to report the percentage of time their children engaged in each behavior. Based on SSP scores, 50 children showed 40% (20) typical performance, 28% (14) were found to be in the probable difference range, and 32% (16) are in the definite difference range. Forty (40%) children fall in typical performance. The most prevalent sensory processing dysfunctions involved the Tactile sensitivity (46%), Underresponsive/seek sensation (48%), and Movement sensitivity (58%), Auditory Filtering (70%), Low Energy/ weak (72%), Visual/Auditory sensitivity (62%) domains. 32% of children fall into definite difference and 28% of children fall in the range of probable difference. Tactile sensitivity (38%), Taste/Smell sensitivity (20%), Movement sensitivity (26%) and Underresponsive/seek sensation (30%) domains. The researcher has studied that the scores of all items, sections and total are different than other studies but the result is the same. This variation in the scores it might be due to the different cultures in the world, it creates a need to assess the expectation, perceptions and views of caregivers from different cultures.

Keywords—*Definite Difference, Probable Difference, Typical Performance, SSP- Short Sensory Profile*

1. INTRODUCTION

The experience of being human is embedded in sensory events of everyday life.[1][2] "The organization of sensation for use" stating that integration of sensory information is necessary for a child to interact effectively with his or her world.[3] Sensory exposure is very important for our lives. It gives a base for appropriate occupational behavior which terminates in various activities of daily living. Thus, sensory integration is very important to do various day to day activities. Learning disabilities could lead to difficulties in the acquisition of perceptual skills, language development, sensory integration, and emotional expression. Sensory processing disorders affect the performance of daily lives like an academic performance of school going children.[4] Studies have been found that there is a relation between atypical sensory processing and behavioral and emotional problems. A positive correlation has been seen between sensory overreactivity and anxiety too.[5] The most common sensory processing and integrative dysfunctions are the child's inefficiency in registering, modulating and discriminating different sensory inputs. Sensory processing disorders are classified into three broad categories: sensory modulation disorder, sensory based motor disorders and sensory discrimination disorders.[6] Any insult to the brain in the context of sensory integration creates an impact on routine activities. Sensory integration approach helps those children in improving themselves.

1.1 The need for the Study To assesses the performance of normal Indian children on each section of SSP that can be useful to differentiate children with disabilities.

2. METHODOLOGY

2.1 Study Design

Quantitative observational study.

2.2 Target Population

Normal Indian Children.

2.3 Study Setting
Ahmedabad

2.4 Sample Size
50

2.5 Sampling method
Quota Sampling

2.6 Codes of Ethics
- Permission was taken before filling up the form and written consent was taken in the form.
- Any personal information of the children and parents will not be disclosed.

2.7 Inclusion criteria
- Age within the specific range (3-10 years)
- The absence of a diagnosed medical condition that might compromise the development of children (e.g; Mental Retardation, Learning Disabilities, Down syndrome, Cerebral palsy, ADHD)
- No children with Preterm birth (Preterm birth required gestation age of 34 weeks or less and birth weight under 2500 gms) [4]
- No genetic history with any disabilities[5]

2.8 Exclusion criteria:
- Uncooperative/ Unresponsive caregivers (Parents and family members)
- The children below the age of 3 years and above 10 years.
- The caregivers who do not understand the English language
- Caregivers (Parents and family members) who do not spend a minimum 12 hours (except sleeping hours) a day with the child.
- The children who are on medications for any condition
- The children who have any other disability

2.9 Methods
Phase-1
Ahmedabad is divided into 5 zones. 1) East zone 2) West zone 3) North zone 4) South zone 5) Central zone. The data of 10 children were collected from each zone. In this way, the data of 50 children were collected from the whole Ahmedabad.

Phase-2
5 Normal schools of 5 regions were approached for data collection purpose and 85 data of children were received. From those 85 children, 35 children were excluded as they were meeting the exclusion criteria (7 children were on medication, 15 children were out of age-specific range, 3 caregivers of children do not understand English language and 10 children had uncooperative/ unresponsive or they did not show interest in responding properly) and only the data of 50 children were collected.

Purpose of the study was explained to the caregivers and written informed consent was taken. Detailed information of the children was taken from the caregivers. SSP and 5 points Likert Scale were explained to the caregivers well in advance before filling up the SSP. The caregivers marked each question and fill up the form.

3. FINDINGS AND DISCUSSION

Table 1: Data Distribution

Gender	3 Years	4 Years	5-10 Years
Boys	4 (8%)	3(6%)	29 (58%)
Girls	2 (4%)	2 (4%)	10 (20%)
Total	6 (12%)	5 (10%)	39 (78%)

Table 2: Performance classification of normal Indian children

Sections	Definite Difference	Probable Difference	Typical Probable
Tactile Sensitivity	38%(19)	16%(8)	46%(23)
Taste/Smell Sensitivity	20%(10)	36%(18)	44%(22)
Movement Sensitivity	26%(13)	16%(8)	58%(29)
Underresponsive/Seeks Sensation	30%(15)	22%(11)	48%(24)
Auditory Filtering	6%(3)	24%(12)	70%(35)
Low energy/ Weak	18%(9)	10%(5)	72%(36)
Visual/Auditory Sensitivity	18%(9)	20%(10)	62%(31)
Total	32%(16)	28%(14)	40%(20)

4. DISCUSSION AND CONCLUSION
Based on SSP scores, 50 children showed 40% (20) typical performance, 28% (14) were found to be in the probable difference range, and 32% (16) are in the definite difference range.

4.1 Typical Performance

Forty (40%) children fall in typical performance. The most prevalent sensory processing dysfunctions involved the Tactile sensitivity (46%), Underresponsive/seek sensation (48%), and Movement sensitivity (58%), Auditory Filtering (70%), Low Energy/ weak (72%), Visual/Auditory sensitivity (62%) domains.

Tomchek & Dunn concluded the children without Autism demonstrated typical sensory functions; the most prevalent sensory processing dysfunctions involved the Tactile sensitivity (75.6%), Taste/Smell Sensitivity (84.5%), Underresponsive/seek sensation (74.9%), and Movement sensitivity (71.6%), Low Energy/weak (86.5%) and Visual/Auditory sensitivity (77.3%) domains. [7]

Al-Heizan et al. found 66.66% of children without Autism demonstrated typical sensory functions; the most prevalent sensory processing dysfunctions involved the Tactile sensitivity (36.60%), Underresponsive/seek sensation (63.30%) Movement sensitivity (76.70%), Low Energy/weak (83.30%), Taste/Smell sensitivity and Visual/Auditory Sensitivity (80%).[8]

Engle-Yeger found 65% of Israeli children fall in the category of the typical performance range. [9]

4.2 Definite difference and probable difference

32% of children fall into definite difference and 28% of children fall in the range of probable difference. Tactile sensitivity (38%), Taste/Smell sensitivity (20%), Movement sensitivity (26%) and Underresponsive/seek sensation (30%) domains.

Tomchek and Dunn found the children without Autism demonstrated definite sensory functions; the most prevalent sensory processing dysfunctions involved the Tactile sensitivity (8.9%), Taste/Smell sensitivity and Movement sensitivity (6.8%) and Underresponsive/seek sensation (6%) domains. [7]

Al-Heizan et al. found 66.66% children without Autism demonstrated definite sensory functions; the most prevalent sensory processing dysfunctions involved the Tactile sensitivity (33.30%), Movement sensitivity (20%), Underresponsive/seek sensation, (23.30%), and Auditory Filtering (13.30%).[8]

Engle-Yeger found 20% Israeli children fall in the category of probable difference range and 15% Israeli children indefinite difference range. [9]

This probable and definite difference might be due to three reasons:

- One is the children actually suffer from some kind of sensory processing issues. [9]
- The second one can be it has been observed by the researcher the caregivers marked in the occasional category if they got confused with the frequency of their children's behavior if the child does that behaviour frequently (75%)/occasionally (50%) or occasionally (50%)/Seldom (25%).
- Third might be it has been noticed during collecting the data of children, few caregivers scored low on SSP as they may relate their children's behavior with the academic performance. Caregivers make their close observations on the children and become more attentive towards their academic performance.
- The parents' observations may depend on their implicit theories – the personal constructions about a particular phenomenon that reside in the minds of individuals.[10] Parents' implicit theories about the personality and behavior of children may be consequently expressed in what is considered a disorder. Therefore, their responses vary according to children's caregivers' thinking. [11]

Together, this kind of responses makes the child fall into the probable and definite difference range instead of the typical performance. The same result has been found in children in the applicability of the SSP for screening sensory processing difficulties by Tomchek & Dunn, Al-Heizan et al. and Engle-Yeger. The children who fall in definite difference range may compromise their sensory abilities at a few extend but it may not hamper their routine activities so these kinds of sensory inabilities cannot be identified on the first eye.

4.3 Culture perspective

The researcher has studied that the scores of all items, sections and total are different than other studies but the result is the same. The researchers did studies in different cultures like Rogers et al. and Tomchek & Dunn in the USA, Al-Heizan et in Saudi Arabia, Shah et al. in India, Engel-Yeger in Israel. This variation in the scores is might be due to the different cultures in the world, it creates a need to assess the expectation, perceptions and views of caregivers from different cultures.

However, the involvement of other factors, such as culture, child-rearing style, and social experiences, may also play roles in sensory experiences and sensory integration and processing abilities. Children from different geographical areas or different cultures may exhibit differences in their performance, as each culture has its own distinctive pattern of child-learning practices, variable attitudes toward and expectations from children, and different concepts of the behaviors and skills that are to be encouraged in their development.[12] Further studies can be done with children from different cultures.

It assumes that children exhibit some degree of sensory dysfunction which is greater in children with disabilities than typical or normal children. Similar results have been reported by many researchers in different cultured populations.[7][9][13][14][15][16][17][18] However, the prevalence of sensory processing dysfunction has ranged from 5 to 10 % for children.[21] Therefore; further studies can be done for the screening of sensory processing dysfunctions in children to avoid/minimize the SPD complications. Therefore,

occupational therapists should use caution not to assume a diagnosis when a child demonstrates a pattern of sensory behaviors similar to those identified for the children with sensory issues. The therapist should not rely on the SSP only and go for clinical observations, behavior during the standardized assessment, structured play observations and follow up assessments.

Sensory processing is an important area for the normal development of the children. This finding also supports using the SSP to identify the sensory behaviors of these age groups. The children with disabilities also had scores that tended to spread further across the possible score ranges than the scores of the children, suggesting that this group may not be homogenous.

Sensory symptoms may also impede adaptive behaviors, as well as social skills stated by Pfeiffer et al. in 2005.[20] For example, some authors have suggested that sensation avoiding leads to resisting social interactions whereas sensation seeking leads to initiating unconventional or inappropriate interactions stated by Kern et al. in 2007. [21]

However, there are few advantages of using parent questionnaires to study sensory behaviors involves the ability to gather cumulative information on a relatively low-frequency behavior across place and time from an observer with great familiarity with the child. However, the use of parent questionnaires for studying sensory symptoms raises several questions. A caution that parent responses to questionnaires can be powerfully influenced by the symptoms they know to be associated with their children's diagnosis. [22]

Retrospective parent- or caregiver- reports are subject to recollection bias and inaccurate responses. Direct clinician-administered observational assessments of sensory reactivity may provide greater objectivity and improved sensitivity and specificity.

4.4 Limitations of the study

- The sample does not represent the entire population of normal Indian children, the small sample within each group is not indicative of all children in 3 to 10 year Age- groups.
- All samples were taken from the urban area of Ahmedabad that represents only one region of the country.
- Different sample size in the gender groups. The number of Boys is more than girls in the same age groups.

5. RECOMMENDATION

- The study can be done with a large sample size
- Comparison studies can be done between children with and without other disabilities in the Indian population on SSP from different cultures and communities
- The study can be done to investigate the relevance of sensory processing aspects on the variable developmental presentation and occupational performance of children in Indian Population
- Studies can be done to investigate Inter-rater Reliability and Validity studies of SSP in typical Indian children
- Factor analysis of SSP based on Indian children with a large Sample size

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