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TO TRANSLATE AND FIND VALIDITY OF MARATHI VERSION OF INFANT SENSORY PROFILE-2

[1]Dr Swati Nandeshwar, [2] Dr Pallavi chicholikar

[1] BPTh, Late Shree Fakirbhai Pansare Education Foundation College of Physiotherapy, Nigdi, Pune, Maharashtra, India.

[2] Professor, HOD of cardiovascular Physiotherapy Department, Late Shree Fakirbhai Pansare Education Foundation College of Physiotherapy, Nigdi, Pune, Maharashtra, India.

Abstract: The present study was conducted to translate the original English version of the infant sensory profile 2 scale into Marathi language. The purpose of this study is to evaluate validity of the Marathi translated version of the scale. An observational study was conducted on 10 healthy individuals. The study was conducted in two parts, first including the translation of the English version of the infant sensory profile 2 scale into Marathi language. Second is validation of the Marathi version of infant sensory profile scale was carried out. Then Pearson's correlation coefficient was calculated between subjective and objective measures. The result of the study showed that the concurrent validation of Marathi translated version of I/T sensory profile scale was constituted by Karl Pearson's Correlation coefficient (0.98), This study Shows high degree of correlation between English version score and Marathi version score.

Index Terms - Marathi, infant sensory profile, validity

Correspondence – swati s. nandeshwar ; swati2snand@gmail.com

I. INTRODUCTION

Sensory processing is the ability to receive, organize, and interpret sensory stimuli, including oral, visual, vestibular, and auditory stimulus. Sensory processing disorder (SPD, formerly known as sensory integration dysfunction) is a condition in which multisensory input is not adequately processed in order to provide appropriate responses to the demands of the environment.

Sensory processing disorder is present in many people with autism spectrum disorder and attention deficit hyperactivity disorder. Individuals with SPD may inadequately process visual ,auditory, olfactory (smell), gustatory (taste), tactile (touch), vestibular (balance), proprioception (body awareness), and interoception (internal body senses) sensory stimuli.

Current estimates indicate that 5% to 16.5% of the general population [1,2] have symptoms associated with sensory processing challenges and these estimates are higher for clinical populations such as autism spectrum disorder (ASD) [3] and attention deficit hyperactivity disorder (ADHD) [4]

Prevalence estimates of sensory processing disorders among school going children without disabilities in North Eastern India have ranged from 5% to 10%. Also another study suggested that the prevalence of SPD is 5% to 16% in children between age group of 4-6 years. Estimated rates of sensory processing disorders for children with various disabilities have been derived from reliable and valid survey results and were reported to be as high as 40–88 [5,6]

One Study conducted on Sensory over-responsively (SOR) in elementary school: "Prevalence and social emotional correlates" done in the year 2009 concluded that early investigation of elevated SOR and assessment of social-emotional status are important to minimize their impact on social adaptive behaviour at school age. [7]

A healthy sensory development occur especially in the age group 3-7. After 8 years the sensory system is almost matured as it will ever be. [8][9]

One of the best tools to evaluate the sensory symptoms in the children is The Infant/Toddler Sensory Profile (ITSP) (Dunn, 2002) [10][11] The Sensory Profile 2 is a revision of the original Sensory Profile assessments. It is a standardized method of documenting children's sensory processing patterns, helping to identify the effects sensory processing has on functional participation across different environments including home, school, and community. This is an evidence-based method of confirming sensory hypotheses or behaviours that may be happening and impacting participation in daily activities. The profile is designed with a caregiver or teacher questionnaire that reports a child's responses based on various sensory stimuli. This helps identify a child's sensory processing patterns.

There are five different forms of sensory profiles based on age:

Sr. no	Name of different forms	Age group
01.	Infant sensory profile -	2 Birth to 6 months
02	Toddler sensory profile	7 to 35 months
03	Child sensory profile-2	3 to 15 years
04	Short sensory profile 2	3 to 15 years
05	School companion sensory profile 2	3 to 15 years.

Table 1: showing different form of sensory profile based on age.

Infant sensory profile-2 is a judgment-based caregiver questionnaire that characterizes a child's behaviours and performance in relation to sensory processing. It provides a standardized method to measure a child's sensory processing abilities and to profile the effect of sensory processing on functional performance in the daily life of a child aged from birth to 6 months. [12] Certain patterns of performance are indicative of difficulties with sensory processing and performance. When combined with other evaluations, observations, and reports, results of the Infant Sensory Profile-2 provide another perspective on the child's strengths and challenges for diagnostic and intervention planning. [12]

The Infant Sensory Profile-2 provides professionals way to capture the child's responses during the natural course of daily life, a task difficult or impossible to achieve with formal evaluations in unfamiliar settings. The profile is constructed so that professionals can engage in theory-based decision making during comprehensive assessment and intervention planning. It is easy to administer, score, and interpret and is applicable for children with all types of disabilities and severity levels [12]

Profile Components

- The Infant Sensory Profile-2 consists of a User's Manual, a combined Caregiver Questionnaire for children ages from birth to 6 months.
- The Caregiver Questionnaire is completed by the caregiver, who indicates the frequency of the child's responses (Almost Always, Frequently, Occasionally, Seldom, or Almost Never) to various sensory experiences. The questionnaire is available in both English and Spanish.
- The Summary Score Sheet contains an area to record demographic information, a quadrant grid to help summarize scores in designated groupings, and a quadrant summary to plot raw score totals into performance categories.

Reliability and Validity of Infant sensory profile-2.

The test-retest correlation coefficient for the sensory processing sections was .83 and for the quadrants was .74.
Validity is defined as 'The extent to which a concept is accurately measured in a quantitative study.' [13]

Type of validity	Description
Content validity	The extent to which a research instrument accurately measures all aspects of a construct
Construct validity	The extent to which a research instrument (or tool) measures the intended construct
Criterion validity	The extent to which a research instrument is related to other instruments that measure the same variable

There are two main types of criterion validity i,e concurrent validity and predictive validity.

A. Concurrent validity is determined by comparing tests scores of current employees to a measure of their job performance. Comparing test scores with current performance ratings demonstrates how correlated the test is for current employees in a particular position. Productivity

B. Predictive validity, however, is determined by seeing how likely it is that test scores predict future job performance. If an employer's selection testing program is truly job related, it follows that the results of its selection tests should accurately predict job performance.

The current population of India is 1,417,200,061 as of April 18, 2023, based on interpolation of the latest United Nations data. [14] India is home to several hundred languages. According to census 2011, Marathi speakers in India are 8,30,26,680 of the total population[15] It is the third most spoken native language after Hindi and Bengali. Native Marathi speakers form 6.86% of India's population.[15] Maharashtra is the second populous state in India according to population census, approximately 84,000,000 people claim Marathi as their mother tongue .[14]

The Infant Sensory Profile-2 provides a standard method to measure a child's sensory processing abilities and to profile the effect of sensory processing on functional performance in the child's daily life. The items are familiar to care givers living with infants who have sensory processing problems. Reading about their child's "idiosyncratic" behaviors during assessment provides validation that there is something real about their family's struggle and suggests that there may be ways to deal with it. Infant sensory profile -2 provides an early diagnosis so child with sensory problem can manage, before it gets worsened. Without intervention, children with SPD could not cope with demands on them and thus may fail to excel. At the same time, there has been evidence about the efficacy of physical therapy interventions in improving academic performance in children with SPD. [16]

Day by day cases of sensory disorder are increasing because of late diagnosis, so Infant sensory profile-2 will help for early diagnosis and for early intervention if we start evaluation from birth. Marathi is the most widely spoken and also the official language of Maharashtra. It is very difficult for patients for whom English is not their first language to fully understand and interpret The Infant Sensory Profile-2 since it is designed in English language and in a different population setting. It however might be difficult to use in an environment where Marathi is a major language. For those people who don't understand English it can be a barrier to interpret about sensory profile of their child.
Hence, there is a need to translate and validate the Marathi version of Infant Sensory Profile-2.

II. METHODOLOGY

II.A INCLUSION CRITERIA

- Parents of Children with age group from 0 to 6 months
- Parents who understand Marathi & English language.

II.B EXCLUSION CRITERIA

- Parents who are not cooperative.

III. PROCEDURE

The procedure of study is divided into 3 phases;

1st part: Translation Process: 1, 2 following steps were undertaken for cross-cultural adaptation of the scale.

Step 1: Forward translation: Two independent translators whose mother tongue was the desired target language of the instrument, i.e., Marathi forward translated the instrument from the source language (English) to target language (marathi). Both the translators were bilingual (fluent in both English and marathi). First translator had knowledge about medical terminologies and the content of the instrument, i.e., Infant sensory profile-2 scale thus he became the "informed" translator.

Second or the "uninformed" translator neither had any medical or clinical background nor had any knowledge about the construct or use of Infant sensory profile -2 scale. This approach generated two translated versions that covered both medical and layman terms with its cultural nuances.

Step 2: Synthesis of the translation: Working from the original scale as well as the first translator's and the second translator's versions, a synthesis of these translations were conducted producing one common translation.

Step 3: Back translation: Two translators who were totally blind to the original version, then translated the scale back into the original language, i.e., English. Their mother tongue was the source language (English). The first translator had knowledge about health care terminology but had no clue of the instrument being back translated. The second translator neither had knowledge regarding any medical terminology nor the construct or use of the Infant sensory profile-2 scale. This was done to avoid information bias and to elicit unexpected meanings of words in the translated version.

Step 4: Expert Committee: It comprised of 1 healthcare professional, 1 language professional, and the all translators (two forward and two back translators) involved in the translation process. The expert committee consolidated all the versions of the scale, resolved discrepancies, and developed a pre-final version of the scale for pilot testing.

2nd part

Pilot testing: Pilot testing was done to use the pre-final version of the Marathi translated version of the Infant sensory profile-2 scale in subjects from the target setting. A sample of 10 parents whose children were in age group 0 to 6 months who gave consent to participate were selected. Each participant was asked to use a Marathi version of infant sensory profile-2 to rate the items of the scale. Some individuals who took part in the pilot study claimed that it was difficult to understand the wording used in a few of the scale's elements. Those items were discussed with the panel of people who are experts in language and necessary corrections were made. and Questions of Marathi version were shuffled and after changes, scale was given to the new Parents for testing.

3rd part: Validation of the Marathi translated version of Infant sensory profile-2 Scale.

10 parents who fulfilled the inclusion criteria were selected for the study. The procedure was explained to them and informed consent was taken. First the English version of Infant Sensory Profile 2 was given to them and they were asked to rate the behaviour of daily living of their child. After a gap of 1 week the Marathi version of of Infant sensory profile-2 was given to same parents. Before giving the scale to parents the questions were shuffled to minimize the bias. Final results

was compared by co-relation study.



STATISTICAL ANALYSIS AND RESULTS

Table 2: shows the marks of English version of Infant Sensory profile 2 vs Marathi version of Infant sensory profile 2(ISP2)

Scores of English version of ISP2	Scores of Marathi version of ISP2
48	48
57	56
59	60
52	52
60	61
57	57
58	57
53	53
48	48
57	58
Mean=49.77	=49.78

Table 3: shows the numbers of individuals who participated in study according to gender distribution

Gender	Frequency	Percentage
Male	5	50.00%
Female	5	50.00%
TOTAL	10	100%

Table 4: shows the numbers of individuals who participated in study according to age.

Age	frequency	percentage
3 months	3	30.00%
4 months	2	20.00%
5 months	2	20.00%
6 months	3	30.00%
Total	10	100.00%

Table 5 : shows that, Karl Pearson's Correlation coefficient 0.988 and P-Value is less than 0.001. Shows high degree of correlation between English version score and Marathi version score. Hence can be concluded that, the validity is significantly attained.

		Marathi version
English version	Pearson correlation	0.988
	p-value	<0.001
	N	10

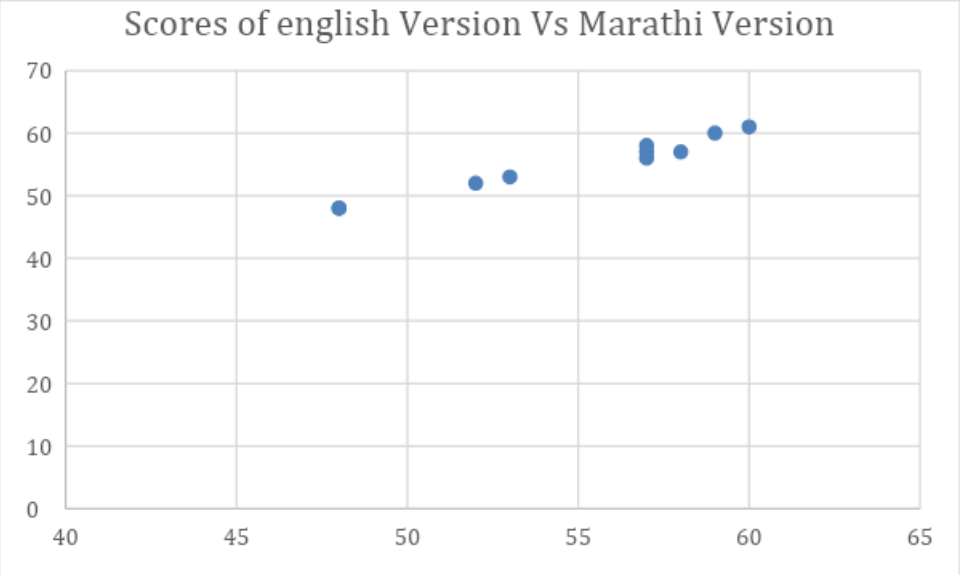

Figure 1 shows the scores of English vs Marathi version of infant sensory profile.

III. DISCUSSION

Sensory processing is the process of detecting, registering, interpreting, responding to internal and external sensory information with an adaptive outcome.

The infant sensory profile-2 uses a sensory processing and neuroscience frame of reference and supports a family centered care philosophy by involving the caregivers in the date gathering process. It provides the necessary link between performance in daily life and theory to facilitate theory-based decision making. It evaluates possible sensory processing patterns that support and / or interfere with a child's daily functional performance.

It helps to identify which specific sensory system or systems are contributing to dysfunctional behavior. It also provides information about the child's level of responsivity (hyper responsive or hypo responsive).

During the process of translating the original English version of Infant sensory profile-2 into Marathi language, the meaning of all the items was retained in the back translation and an integrated version from all the translated versions were formed. All the subjects involved in the study reported no difficulty in the clarity of language and ease of understanding of all the items after corrections . Once the scale has been translated in the source language, it is necessary to establish its validation.

A systematic review of cross-cultural adaptation and validation of Infant sensory profile 2 scale utilized concurrent validity which is subtype of criterion validity, It indicates the amount of agreement between two different assessments, one assessment is new while the other is well established and has already been proven to be valid. In the study done by sana M N Abu-Dahab et al 'The validity and reliability of the Arabic Infant/Toddler Sensory Profile' shows that Intraclass correlation coefficients (ICC) between scores on the Arabic and English versions reported by parents who were bilingual were >.90 supporting bilingual validity. [17]

In the present study, the concurrent validation of Marathi translated version of I/T sensory profile scale was constituted by Karl Pearson's Correlation coefficient (0.98), This study Shows high degree of correlation between English version score and Marathi version score.

CONCLUSION

This study shows high degree of correlation between English version score and Marathi version score of Infant Sensory Profile2. Hence, it can be concluded that, the Marathi version of infant sensory profile-2 is a valid tool (validity .98) to assess sensory dysfunction.

CLINICAL IMPLICATIONS

The clinical implication of this study involves screening for sensory integration dysfunction in various rural and urban setups where Marathi is 1st language of the parents. Using these scale the therapist could screen for the problem of sensory integration dysfunction. It will help for early diagnosis along with paediatric assessment.

For the effective strategy, the therapist could design treatment according to different level of difficulties. It also provides information about which system of the child is more involved. Parents can rate their child's behaviour in ease way and examiner also gets an idea about general condition of the child.

LIMITATIONS

This study did not evaluate the reliability of the Infant Sensory Profile 2.

FUTURE SCOPE OF STUDY.

1.Further studies should be undertaken to test the reliability of Marathi version of Infant Sensory profile -2

2. Studies should be done to translate and validate Marathi version of different forms of sensory profiles.

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