

Cultural Adaptation and Translation of the Short Sensory Profile 2 into Malayalam: A Study on Sensory Processing Disorder Screening in Kerala

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Abstract: Sensory processing disorder is a heterogeneous condition in which individuals have difficulty responding to, processing, and organizing sensory information, affecting their ability to participate in functioning daily living routines and activities. The Short Sensory Profile 2 is a 34-item caregiver questionnaire for children ages 3-14:11 years. It provides quick information for screening and research purposes. The study aimed to translate the English version of Short Sensory Profile 2 to Malayalam language and to culturally adapt it in Kerala and ensure maximum cultural clarity in item wording. The study was conducted in two phases. In phases 1 and 2, Translation followed by back-translation and focus group discussion were carried out with nine Occupational Therapists and two groups of caregivers, each group with three caregivers. The participants were selected based on the selection criteria. During cultural adaptation, a few grammatical corrections and modifications to the items were made. Occupational Therapists and the caregivers who participated mentioned that translating the questionnaire into the Malayalam language helped them better understand the items. The study conducted showed that the Malayalam version of Short Sensory Profile 2 can be used as a screening tool of sensory processing among children aged 3-14.11 years in Kerala.

Keywords: Sensory Processing Disorder, Short Sensory Profile 2, Cultural adaptation, Translation, Malayalam

1. Introduction

Sensory processing refers to the interface between the neurological function and the environment of the individual. Multiple models are available to describe the sensory processing patterns. Dunn's sensory processing framework focuses on the better comprehension of the sensory processing in various contexts such as home, school, and community. [1]

Dunn's Sensory Processing Framework divides sensory processing along two continua and describes four unique subtypes of sensory processing. The first continuum "neurological threshold" describes an individual's ability to detect sensory information, and the second continuum "self-regulation" refers to the way an individual responds to the sensory stimuli. The threshold ranges from low (quick) to high (slow) detection of sensory information, where a low-threshold individual would be considered as hypersensitive, and a high-threshold individual would be considered as hyposensitive. The second continuum, self-regulation, range from passive to active responses in regulating sensory information; where a passive self-regulation strategy would allow sensory stimuli to happen without interference, and an active self-regulation strategy would include engaging in behaviors to manage sensory needs. [2]

Sensory processing disorder is a heterogeneous condition in which people have impaired responses to, processing of, and/or organization of sensory information that affects their participation in functional daily life routines and activities. [3]

The prevalence of sensory processing issues is reported to be around 1 in 20 to 1 in 6.25 children in the US general population and a recent study in Finland found the prevalence of sensory abnormalities to be around 8.3% in an epidemiological population of 8-year-old children. Children with either SPD can have difficulties with processing the sensation from tactile, auditory, visual, gustatory, olfactory, proprioceptive, and/or vestibular systems. These deficits can affect a child's adaptive behavior, learning, coordinated movements, active playfulness, reading, and arithmetic skills. [4]

The Short Sensory Profile 2 is a short version of Child Sensory Profile 2. It is a 34-item caregiver questionnaire for children of 3-14:11 years. It provides quick information of screening and research purposes.

According to the 2011 Census, 10.6% of the population of India can speak English and only 20.1% of the population of Kerala can speak English. No studies were found related to understanding abilities and readability of the English language among Indians. [5]

To meet the needs of the different language speaking populations in India, it is necessary to translate it into different regional languages of India in order to assess sensory modulation deficits in the non-English speaking population. Though translation of tools is necessary for assessing the needs of non-English-speaking caregivers, it is essential that the information and intention of the tool are adequately maintained during the translation process.

There have been no published studies found on translation of Short Sensory Profile 2 into Indian regional languages, hence the study aimed to translate the Short Sensory Profile 2 into Malayalam language and culturally adapt it. The objectives are to translate the English version of Short Sensory Profile 2 into Malayalam language and to culturally adapt it in Kerala and to ensure maximum cultural clarity in item wording.

2. Methods

2.1 Instrument Used:

The Short Sensory Profile 2

The Short Sensory Profile, 2nd edition is a part of the Sensory Profile, 2nd edition family of questionnaires. The Short Sensory Profile 2 evaluates children ages from 3 to 14 years. This 34-item questionnaire is completed by the child's caregivers. It assesses the frequency (severity) of a given issue on a 5-point scale, where

- 5 = Almost always
- 4 = Frequently
- 3 = Half the time
- 2 = Occasionally
- 1 = Almost Never
- 0 = Does not apply

Scores are calculated for the Sensory Processing (Sensory) and Behavioral responses associated with Sensory Processing (Behavior) scales. Comments related to Sensory Processing and Behavioral responses can be included. The scores are calculated for the four quadrants such as seeking, avoiding, sensitivity, and registration. Each quadrant's total raw score and sensory and behavioral sections raw score are calculated and then plotted by marking an X in the appropriate classification column such as Just Like Majority of Others, Less Than Others, Much Less Than Others, More Than Others, and Much More Than Others.

The Normal Curve and Sensory Profile 2 Classification System:-

Scores one standard deviation or more from the mean are expressed as More Than Others or Less Than Others, respectively. Scores two standard deviations or more from the mean are expressed as Much More Than Others or Much Less Than Others, respectively. [6]

2.2 Phases of the study

The study was conducted at Prayatna Centre for Child Development, Cochin, Kerala. Permission was obtained from the Centre head. The methodological steps involved in the study consisted of two phases based on the steps shown in the schematic diagram presented in figure 1:-

Step 1: Translation of Short Sensory Profile 2 from the original English version to the target language Malayalam.



Step 2: Back translation of Short Sensory Profile 2 from the target language Malayalam to the English language.



Step 3: Comparison of the original version and translated version



Step 4: Focus Group Discussion with a panel of Occupational Therapists.



Step 5: Focus Group Discussion with the parents of children with Sensory issues who know both Malayalam and English language.



Step 6: Focus Group Discussion with the parents of children with Sensory issues who know only Malayalam language.

Figure 1: Schematic diagram representation of the steps involved in the study

Phase 1- Translation Phase

Phase 2- Focus Group Discussion Phase

2.2.1 Phase 1 – Translation Phase

The original English version of Short Sensory Profile 2 was forward translated to the Malayalam language by a team of two bilingual translators, a translator whose native language is Malayalam and who knows English; and had no related background or exposure to the original English version, and a bilingual Occupational Therapist. The translations were done by preserving the structural equivalence of the protocol including the layout, as well as item content, the grammatical structure of questions, difficulty of terms, and lexical similarity of questions [7].

Each translator worked independently and sent their translation of the client profile, instructions for use, items, and response options to the researcher, who compiled them and prepared the first draft of the questionnaire. Amendments, where necessary, were made by the researcher after the mutual agreement.

The translated Malayalam version was then backward translated into English by two new bilingual translators, a translator who had no related background or exposure to the original English version and a bilingual Occupational Therapist. When both translations were finished, the researcher compared the original version and back translations to analyse linguistic and semantic concordance and to detect any changes during the translation process.

2.2.2 Phase 2 – Focus Group Discussion

Focus group discussion is a qualitative research method. Participants were selected using convenience sampling. Focus group discussion was conducted with a panel of Occupational Therapists. Nine Occupational Therapists were included. Participants met the following inclusion criteria including bilingual Occupational Therapists with qualification of Master of Occupational Therapy or Bachelor of Occupational Therapy, minimum experience of 1 year in a paediatric setup, and previous experience of administering

Short Sensory Profile 2 Caregiver questionnaire. The discussion began with a general introduction about Short Sensory Profile 2.

The aim and objectives, and need for the study were explained to them by the primary investigator. A moderator was present in the discussion. A non-professional was present to note down the suggestions and comments given by the therapist. The whole discussion was audio recorded for further use. A written consent was taken from each therapist. The discussion lasted for 57-58 minutes. The English and translated Malayalam version of Short Sensory Profile 2 was distributed among them. Each therapist was requested to go through both versions of the questionnaire and provide their opinion on comprehension, paraphrase the item in their own words, provide suitable examples, and propose changes if any, to improve the translated version.

Then, Focus Group Discussion was conducted with the two groups of parents/caregivers of children with Sensory issues. Each group consisted of three caregivers. One group included bilingual caregivers (mothers) and the other group included caregivers (two mothers and one grandfather) who can read and understand only Malayalam language.

In the first group of caregivers, participants met the following inclusion criteria including bilingual caregivers of children with sensory issues in the age range of 3-14.11 years and who live with the child or spend quality time and know the child well. Caregivers who are illiterate or have any cognitive deficits/mental illness/visual impairment or have children with deafness, blindness or low vision, or motor disorders were excluded. Participants were three mothers. Two parents had children diagnosed with Autism Spectrum Disorder and the other parent had a child diagnosed with at risk of Autism Spectrum Disorder.

In the second group of caregivers, participants met the following inclusion criteria including caregiver of a child with sensory issues in the age range of 3-14.11 years, who live with the child or spends quality time and knows the child well, and can read and understand only Malayalam language. Caregiver with any cognitive deficits or mental illness or visual impairment or have children with deafness, blindness or low vision, or motor disorders were excluded. Participants were one grandfather and two mothers. The diagnosis of one child was Attention Deficit Hyperactivity Disorder (Sub type – Inattentive) with Social Communication Disorder, and the other two were diagnosed with Autism Spectrum Disorder.

Diagnoses of children in both groups were already done by a Clinical Psychologist at the centre. The discussion began with a general introduction to Short Sensory Profile 2. The purpose, aim and objectives, and need for the study were explained to them. A moderator was present in the discussion. A non-professional was present to note down the suggestions and comments given by the caregivers. The whole discussion was audio recorded for further use. Informed consent, Patient Information sheet and Demographic sheet were collected. In the first group, the discussion lasted for 25:21 minutes, whereas in the second group, the discussion lasted for 17:25 minutes. The English

and translated Malayalam version of Short Sensory Profile 2 was distributed among the caregivers in the first group and translated Malayalam version of Short Sensory Profile 2 was distributed among the caregivers in the second group. The moderator used probe after the participants read each item and sections of the questionnaires. For each item, they were asked to give their opinion on comprehension, provide suitable examples and propose modifications to the items to improve comprehension.

3. Results

3.1 Translation and cross-cultural adaptations

3.1.1 Forward translation

The results of the forward translation showed that of the 34 items in Short Sensory Profile 2, a few items needed spelling and grammatical correction. The researcher brought together the forward translations carried out by the translators and made small adjustments in the content accordingly.

3.1.2 Backward translation

The results of the backward translation showed that of the 34 items in Short Sensory Profile 2, a few items required minor grammatical changes. The researcher made small changes in the vocabulary and the content of items for better item comprehension.

3.1.3 Focus Group Discussion:

Occupational Therapists

Nine Occupational Therapists participated in the focus group discussion. All the Occupational Therapists mentioned that it was easy for them to understand the items in Malayalam. They found it user-friendly. They mentioned that it will be easy for them to make the caregivers understand each item while administering the questionnaire. Earlier, they used to find difficulty in finding appropriate Malayalam words for certain words in the English version in the interview. The focus group discussions allowed the participants in the groups to confirm and elaborate on each other's suggestions. Some are as follows:

One therapist reported:

"I find difficulty in understanding the Malayalam translated word for "Almost Never".

Another therapist suggested:

"I find difficulty in understanding the Malayalam translation of item 15, as it means to me as "Does my child usually get into road accidents or serious mishaps". So, I think a modification to that item will help to avoid misinterpretations."

Caregivers who can understand English and Malayalam language

Three caregivers participated in the focus group discussion. One caregiver mentioned that the Malayalam version gave better clarity of items compared to the English version. Another caregiver mentioned that the examples in certain items helped her to understand the item in a better way. A caregiver mentioned that children are occasionally accompanied by their grandparents for the therapies; hence a

questionnaire in the Malayalam language can enable them to respond easily to each item.

One caregiver reported:

"I find difficulty in understanding the Malayalam translation of item 12, "moves stiffly". I would like to suggest to add an example to make it clearer.

Another caregiver suggested:

"In item 27, "misses eye contact with me during everyday interactions", it would be better if a simpler word is used for "everyday interactions"

Caregivers who can read and understand only Malayalam language

Three caregivers participated in the focus group discussion. One caregiver mentioned that it helped her to understand each item in a better way and could relate to sensory features in her child. One caregiver suggested that providing a questionnaire in Malayalam language was helpful as he could read and write in Malayalam language only. Hence, he felt more confident in choosing the appropriate response for each items.

One caregiver reported:

"I find difficulty in understanding the term "Service Provider's Name" in the Malayalam translation of "Examiner/Service Provider's Name"

Another caregiver reported:

"I find difficulty in understanding the Malayalam translation of "challenging situations", item 19 and if an example can be added, it would be helpful.

Based on the focus group discussion conducted, the following and additional modifications were done in the final draft of the questionnaire. The Malayalam word for "Almost Never" was changed for better understanding. Improvisations were done in the items 15 and 27 in order to convey an appropriate meaning of items and avoid linguistic and cultural issues. The Malayalam word for "Service Provider's Name" was removed, however Malayalam word for "Examiner's Name" was preserved. Examples were included in the items 12 and 19 for better item clarity. Hence, it can be said that the modifications to the instructions, response options, and the items that caused problems in the focus group discussion were made to adapt to the Malayalam language.

The results of this study have the following implications for Occupational Therapy practice: The Malayalam version of the Short Sensory Profile 2 provides Occupational Therapy practitioners with the first sensory processing screening tool for children, which is culturally adapted to the Kerala population. In addition, the Malayalam version of the Short Sensory Profile 2 makes it easy for caregivers who can read and understand only Malayalam language to fill in the item responses in the questionnaire. The limitations of the present study are the recruitment of subjects from one centre may limit the generalization of the findings and children with various disabilities such as developmental delay, Down syndrome, learning disabilities, and others were not included.

4. Discussion

This work represents the first tool for sensory processing in the Kerala population especially for those who can read and understand only the Malayalam language. Short Sensory Profile 2 is a tool used internationally in clinical and research practice. Making Short Sensory Profile 2 available in the local language in Kerala will help the caregivers to fill in the responses of items with a better understanding of each item in it. Caregivers who are unable to read and understand the English language found it difficult to fill in the responses to each item and they were dependent on the examiner who usually translates it into Malayalam language. This may lead to bias in administering and scoring it.

A detailed forward and backward translation by bilingual professionals was conducted. A focus group was conducted among Occupational Therapists and two groups of caregivers. The less number of participants in each group allowed them to make sure their suggestions were heard and lead to good group dynamics. The credibility of this qualitative study was strengthened by the fact that the moderator used a predetermined set of questions to make sure that the different perspectives on the topic were discussed and asked follow up questions to confirm the participants' statements had been understood clearly. The moderator and researcher met after each focus group to make sure they had analysed the discussions in the same way. The credibility of the study was strengthened by the another fact of inclusion of Occupational Therapists who had experience in administering and scoring Short Sensory Profile 2, and caregivers with experience in handling children with sensory processing difficulties. Participants may interpret the questions asked by the moderator in different ways or they wanted to give the correct answers, hence, it was mentioned by the moderator in each group at the beginning that there were no right or wrong answers and that all the experiences were equally important.[8]

5. Conclusion

The study successfully translated and culturally adapted the Short Sensory Profile 2 into Malayalam, making it a viable tool for screening sensory processing disorders among children aged 3-14.11 years in Kerala. This adaptation will facilitate better understanding and response from caregivers who primarily speak and understand Malayalam. Future research should focus on validating the psychometric properties of this translated tool, translating the Short Sensory Profile 2 into other Indian languages, and standardizing these versions.

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