

Research Article

Cultural Adaptation for Spain of the Spanish Version of the Short Sensory Profile using Cognitive Interviews

Beaudry-Bellefeuille I^{1*} and Lane SJ²¹Private Practice, Virginia Commonwealth University, USA²Department of Occupational Therapy, Virginia Commonwealth University, USA***Corresponding author:** Beaudry-Bellefeuille I, Beaudry-Bellefeuille Pediatric Occupational Therapy Clinic, C/ Marques de Santa Cruz, 7, 1^oE, 33005 Oviedo, Spain**Received:** September 22, 2014; **Accepted:** March 24, 2015; **Published:** March 26, 2015**Abstract**

Introduction: The published Spanish version of the short sensory profile was designed to be used with Spanish speaking individuals in the United States. Validation for Spain was needed before it could be used clinically and in research studies in this country. The objectives of the study were twofold: 1) examine the validity of the Spanish version of the short sensory profile for Spanish caregivers; 2) insure maximal cultural clarity in item wording to reflect local usage of the Spanish language.

Methods: Cognitive interviews, commonly used to examine comparability of survey questions in different languages, were the basis for evaluating comprehension and relevance of the Spanish version of the short sensory profile with 8 parents living in Spain. Clarification of wording was reviewed by an experienced linguistic consultant.

Results and Discussion: Parents did not experience major difficulties understanding the question content in the current Spanish version and overall found the items pertinent to their culture. However minor adjustments to 25 of the 38 items were made for improved cultural adequacy. Several Spanish regions have another co-official language. Therapists and researchers working in these areas may need to further refine the tool.

Conclusion: The revised version of the SSP-S provides researchers and clinicians working in Spain with a tool adapted to and validated on their population. Collecting norms in Spain would be needed for a thorough adaptation.

Keywords: Sensory function; Culture; Children; Spain

Abbreviations

ASI: Ayres Sensory Integration; SSP: Short Sensory Profile; SSP-S: Spanish Version of the Short Sensory Profile

Introduction

Correctly identifying and evaluating sensory processing difficulties provides a key contribution to the occupational therapy intervention process in children with suspected sensory issues [1-4]. While the theory and practice of Ayres Sensory Integration (ASI) was begun in the United States, it has been embraced globally. In recent years the number of occupational therapists using this approach to assessment and intervention has greatly increased in Spain [5]. The Spanish version of short sensory profile [6] is one of the only tools available to analyze sensory processing in the Spanish speaking population [7]. However, it was designed for Spanish speaking individuals in the United States and cultural validity in all Spanish speaking countries was unclear. Establishing culturally valid evaluation tools is a necessary first step in carrying out rigorous clinical practice and research [8-11].

The validity of the original Short Sensory Profile (SSP) is well established. As noted above, the published Spanish version of the SSP (SSP-S) was designed to be used with Spanish speaking individuals who live in the United States. According to Roman-Oyala and Reynolds [7], the SSP was translated into Spanish using

a back translation process. Using this process the questionnaire was translated from English to Spanish, and then translated back into English by a translator who had no knowledge of the original version. Finally, the original and back-translated versions were compared to verify for accuracy. This technique is widely accepted and has been used in the translation process of the Sensory Profile [12] into other languages and in the translation process of other English questionnaires into Spanish [13-15]. However, translation alone is insufficient to guarantee the geo-socio-cultural factors which deeply influence the use of a language. The same language is spoken differently in different countries and the use of the language is a reflection of a nation's culture [16]. Clinically, Spanish caregivers have not reported difficulties understanding the SSP-S, and overall appear to find it pertinent to their culture. However clinicians using the SSP-S are aware that some of the items include terms and expressions that are not typically used in Spain, and that some items could be improved from a cultural point of view. To address these issues this study sought to answer the following question: Do Spanish speaking parents living in Spain have any difficulties understanding the current Spanish version of the SSP and do they find the items pertinent to their culture?

Materials and Methods

This study took place in Oviedo, Spain. While Spanish caregivers had not expressed significant difficulties understanding the current

Table 1: Descriptive Statistics of Participants in Cognitive Interviews.

Descriptive Variables	Frequency (N=8)
Cognitive Interview Participants	
Fathers	1
Mothers	7
Children	
Boys	2
Girls	6
Age of Children	
3	3
4	3
5	2
School	
Public	4
Subsidized Private	3
Fully Private	1
Annual Family Income	
More than 5000 Euros / member	5
Less than 5000 Euros / member	3
Education Level of caregivers	
Primary School	1
Superior Level High School	2
University	5

Spanish version, and items overall appeared to be culturally relevant, clinicians and researchers were in need of verification. Cognitive interviews and linguistic review were conducted to confirm these impressions.

Study design

Cognitive interviewing is a common method for evaluating the comparability of survey questions in different languages [17]. This technique allows researchers to examine the manner in which targeted audiences understand, mentally process, and respond to questions presented to them [18]. The insight gained through this process guides the researcher in the modification of the questions to enhance comprehension and clarity [18]. Sample sizes used in cognitive interviewing are small, generally between 5 and 15 [7,15,18]. Subject recruitment usually depends on quota sampling in an effort to obtain subject variation across a range of characteristics [18]. Interviews are conducted individually and it is recommended that audio or video recording be used to attend to subtle issues that may be missed during the live interview [18].

In the current study cognitive interviews were conducted with eight caregivers of children aged 3 to 5 years, using the methodology described by Roman-Oyala and Reynolds [7]. Other authors describe similar approaches in the study of surveys and questionnaires [19-21]. As an extension of the cognitive interviews, wording of all items was carefully examined by a linguistic consultant to insure contextual meaning.

Caregivers were asked to complete the SSP-S for their own child, and were asked a series of open ended questions concerning

each item of the SSP-S. The questions were posed to the caregiver following completion of each section of the SSP-S. During the interview, participants were asked to communicate questions or doubts concerning the SSP-S. They were also encouraged to share suggestions on how to make the SSP-S more understandable. Interviews were conducted individually and audio-recorded.

After completing each one of the SSP-S sections, parents were asked the following probe questions:

- 1) How do you interpret what the item is asking?
- 2) What are some examples of your child's behavior that made you choose that answer?
- 3) What changes, if any, would you make to the item to improve its understanding? [7].

Other spontaneous questions and comments made by the respondents were taken into account. Questions that were unclear to two or more of the interviewed parents were revised for clarity. Questions that were substantially revised were posed to four parents for affirmation; two who had initially identified the questions as unclear and two additional parents. The same probe questions were used to verify the revised questions. All items, both the revised and unchanged items, were reviewed by an experienced linguistic consultant to ensure grammatical and cultural (Spain) accuracy.

Participants

Participants in cognitive interviews were recruited from among the families who attend the private OT clinic of the first author using a quota sampling method. A sample of eight caregivers was recruited based on a heterogeneous representation of the following characteristics: private vs public school, parent education, and family income. To avoid asking directly for family income, a cultural taboo in Spain, income level was determined based on eligibility of the family to receive governmental scholarships for school supplies and lunch at school. At the time the study took place, families were eligible for scholarships when the total annual income of the family was less than €5000 per member. Participant demographics are presented in Table 1.

Results and Discussion

As expected, no major issues with comprehension were raised by participants; 34 of the 38 items were correctly understood and interpreted by all of the parents. One item was difficult for the majority of parents to understand, and three other items were difficult for one or two parents to understand. Probe questions proved useful in clarifying comprehension challenges.

Questions 1 (How do you interpret what the item is asking?) and 2 (What are some examples of your child's behavior that made you choose that answer?) were especially useful to determine comprehension of the items by our participants. Question 3 (What changes, if any, would you make to the item to improve its understanding?) Provided the investigator with suggestions to rephrase the questions in order to improve understanding and cultural adequacy.

Several minor wording changes were made reflecting suggestions

Table 2: Modifications for items of the SSP-S that were understood but adapted.

Item	English version/ Published Spanish version / Revised (Spain) Spanish version
1	Expresses distress during grooming (for example, fights or cries during haircutting, face washing, fingernail cutting).
	Expresa angustia cuando se le cortan el pelo y unas, o se le lava la cara (por ejemplo, llora o lucha).
	Expresa angustia cuando se le cortan el pelo y las uñas, o se le lava la cara (por ejemplo, llora o lucha).
3	Avoids going barefoot, especially in sand or grass.
	Evita ir descalzo, especialmente en arena o pasto.
	Evita ir descalzo, especialmente en arena o hierba.
4	Reacts emotionally or aggressively to touch.
	Reacciona emocional o agresivamente al ser tocado.
	Reacciona emocional o agresivamente cuando lo tocan.
5	Withdraws from splashing water.
	Se retira de agua que le pueda salpicar.
	Se aleja del agua que le puede salpicar.
8	Avoids certain tastes or food smells that are typically part of children's diets.
	Evita ciertos sabores u olores que típicamente forman parte de las dietas de los niños.
	Evita ciertos sabores u olores que habitualmente forman parte de las dietas de los niños.
11	Picky eater, especially regarding food textures.
	Es exigente en cuanto a lo que come, especialmente con referencia a las texturas de los alimentos.
	Es exigente con lo que come, especialmente en lo que se refiere a las texturas de los alimentos.
12	Becomes anxious or distressed when feet leave the ground.
	Se vuelve ansioso o desesperado cuando sus pies dejan el suelo.
	Se vuelve ansioso o angustiado cuando sus pies se separan del suelo.
15	Enjoys strange noises/ seeks to make noise for noise's sake.
	Disfruta de ruidos extraños/trata de hacer ruido sólo para hacer ruido.
	Disfruta de ruidos extraños/trata de hacer ruido sólo por hacer ruido.
17	Becomes overly excitable during movement activities.
	Se emociona demasiado con las actividades móviles.
	Se emociona demasiado con las actividades de movimiento.
18	Touches people and objects.
	Toca a gente y objetos.
	Toca excesivamente a gente y objetos.
20	Jumps from one activity to another so that it interferes with play.
	Brinca de una actividad a otra al punto de interferir con el juego.
	Pasa de una actividad a otra al punto de interferir con el juego.
21	Leaves clothes twisted on body.
	Se deja la ropa que viste retorcida.
	No le molesta tener la ropa torcida.
23	Appears to not hear what you say (for example, does not "tune in" to what you say, appears to ignore you).
	Parece no oír lo que usted le diga (por ejemplo, parece no hacerle caso).
	Parece no oír lo que se le dice (por ejemplo, parece no hacer caso).
24	Can't work with background noise (for example, fan, refrigerator).
	No puede trabajar si hay ruido ambiental (por ejemplo, ventilador, refrigerador).
	No puede trabajar si hay ruido ambiental (por ejemplo, de un ventilador, de un refrigerador).
25	Has trouble completing tasks when radio is on.
	Tiene dificultades para completar las tareas cuando está puesto el radio.
	Tiene dificultades para completar las tareas cuando está puesta la radio.
26	Doesn't respond when name is called but you know the child's hearing is OK.
	No responde cuando llaman a su nombre, pero usted sabe que su hijo puede oír bien.
	No responde cuando lo llaman, pero usted sabe que su hijo oye bien.
29	Tires easily, especially when standing or holding particular body position.
	Se cansa fácilmente, especialmente cuando está de pie o sosteniendo alguna posición en especial.
	Se cansa fácilmente, especialmente cuando está de pie o manteniendo alguna posición determinada.
30	Has a weak grasp.
	Aprieta débilmente.
	Aprieta débilmente, como si le faltará fuerza para su edad.

31	Can't lift heavy objects (for example, weak in comparison to same age children).
	No puede levantar objetos pesados (por ejemplo, parece más débil que otros niños de la misma edad).
	No puede levantar objetos pesados (parece más débil que otros niños de la misma edad).
32	Props to support self (even during activities).
	Siempre se apoya (aún durante actividades).
	Siempre está buscando apoyarse en muebles, personas, etc. (incluso cuando está haciendo algo).
33	Poor endurance / tires easily.
	Poco aguante/se agota fácilmente.
	Tiene poco aguante/Se agota fácilmente.
36	Is bothered by bright lights after others have adapted to the light.
	Le molesta la luz brillante aún cuando otras personas se hayan acostumbrado a la luz.
	Le molesta la luz brillante a la que otras personas se acostumbran.

made by parents and the linguistic consultant, with a goal of maximal wording clarity. As such, modifications were made to 25 items, and 13 items remained completely unchanged.

Items that posed comprehension issues

Items 9, 10 and 19 caused some confusion for one or two parents. Only item 14 contained words or expressions that were poorly understood by a majority of parents.

Item 9: “Come sólo algunas comidas de ciertos sabores-Will only eat certain tastes”. Only one participant misunderstood this item. She interpreted *Come sólo* to mean *eats by herself*. In Spanish the word *sólo* means *only*. The word *solo*, without a diacritic mark also means *only* but can also mean *by oneself*. Once the meaning of the item was explained, the participant suggested we use the word *solamente* instead of *sólo*. The linguistic consultant agreed that the use of the word *sólo* could easily lead to confusion given that many people are not aware of the differentiating nuance implied in the use of the diacritic mark. He agreed that using the word *solamente*, a synonym of the word *sólo*, improved the clarity of the item. The revised item, “Come solamente algunas comidas de ciertos sabores”, was retained.

Item 10: “Se limita él sólo a comer nada más comidas de cierta textura/temperatura- Limits self to particular food textures/temperatures”. This item created confusion similar to that of item 9 in two participants, one being the participant who had misunderstood item 9. *Sólo*, *solamente* and *nada más* can be considered synonymous and mean *only*. *Solo* means *only* or *by oneself*. Parents were not clear on whether the item was referring to the child eating by himself or limiting himself. The two participants who were confused about the meaning of the item, as well as two other participants, all made similar suggestions to clarify the item. The linguistic consultant agreed with the proposed changes and the revised item, “Se limita a comer solamente comidas de cierta textura/temperatura”, was considered to better reflect the intent of the query “Limits self to particular food textures/temperatures”.

Item 14: “No le gustan las actividades en las cuales se queda boca abajo (por ejemplo, marometas, juegos rudos)-Dislikes activities where head is upside down (for example, somersaults, roughhousing)”. This item contained words and expressions that confused most parents. Five parents questioned the meaning of the word *marometas* (somersaults). In Spain the word *volteretas* is used to describe this sort of movement and all parents as well as the linguistic consultant suggested using this word.

The expression *boca abajo*, which literally translates to *mouth downward*, was also confusing to two of the participants. It is used in this item to mean *upside down* but it can also be understood to describe the prone position. The participants who were not clear on the intended meaning of this expression suggested changing it to *con la cabeza hacia abajo*, which translates literally to *with the head in a downward direction*. The linguistic consultant considered that this modification improved clarity.

Although understood by all, one parent and the linguistic consultant questioned the use of the expression *juegos rudos* as a translation of *roughhousing*. The word *juegos* translates to games. The word *rudo* means *rough* but it also means *coarse*, and is mostly used to express this concept in Spain. To express rough, such as in the expression *roughhousing*, both the linguistic consultant and parent suggested the word *brusco*. Used in combination with the word *juegos*, it is a better description of roughhousing or boisterous play.

Although various changes were made to this item, the overall intent and structure of the statement was not modified. The revised item, “No le gustan las actividades en las cuales se queda con la cabeza hacia abajo (por ejemplo, volteretas, juegos bruscos)”, was retained.

Item 19: “No parece notar cuándo tiene la cara y las manos sucias-Doesn't seem to notice when face and hands are messy”. Two parents commented that this item was somewhat confusing due to the fact that it is a negative statement. Neither the parents nor the linguistic consultant could come up with alternative statements and therefore the item was unchanged. However therapists and researchers are encouraged to forewarn caregivers to be vigilant of the items presented in negative statements as they are found to be confusing by some parents.

Items that were understood but have been adapted

Although comprehension of most items was not an issue, many minor adjustments were recommended both by parents and the linguistic consultant to improve clarity, adapt the items to typical usage of the Spanish language in Spain and/or improve grammatical aspects of the original SSP-S. These modifications affected items 1, 3, 4, 5, 8, 11, 12, 15, 17, 20, 21, 23, 24, 25, 26, 29, 30, 31, 32, 33 and 36. Items 21 and 32 were presented again to two of the original participants as well as two new parents since the structure of the statements changed substantially in the process of improving clarity and grammatical aspects.

One item (18): “Toca a gente y objetos-Touches people and

Table 3: Translation of Spanish terms and justification of changes to the SSP-S.

Item	Published SSP-S	Revised SSP-S (Spain)	Translation/Justification
1	el	las	the*
3	pasto	hierba	grass**
4	al ser tocado	cuando lo tocan	when touched*
8	típicamente	habitualmente	typically**
11	exigente en cuanto a	exigente con	picky*
12	dejan el suelo	se separan del suelo	leave the ground**
15	Para	por	for*
17	actividades móviles	actividades de movimiento	movement activities**
18	el	excesivamente	excessively**
20	brinca	pasa	jumps/moves**
21	se deja que viste retorcida	no le molesta tener torcida	leaves/is not bothered by** wear/have* twisted**
23	usted le diga hacerle	se le dice hacer	say* do*
24	el	de un	of*
25	el	la	the*
26	llaman a su nombre puede oír sosteniendo en especial	lo llaman oye manteniendo determinada	call by name* hear* holding** particular**
30	el	como si le faltará fuerza para su edad	as if he/she lacked strength for his/her age***
31	por ejemplo	el	for example*
32	el se apoya aún durante actividades	en muebles, personas, etc. está buscando apoyarse incluso cuando está haciendo algo	on furniture, people, etc.*** props to support self*** even during activities**
33	el	tiene	has*
36	aún cuando se hayan acostumbrado	a la que se acostumbran	even though/which* have become accustomed*

*Changes made by the linguistic consultant to improve grammatical aspects of the item.

**Suggestions made by parents/linguistic consultant to adjust the items to the usage of the Spanish language in Spain and/or to the local culture

***Additions made by parents to clarify the item.

objects”) was adjusted to reflect Spanish culture. It is seen as normal that people touch when speaking to each other or pick up objects when looking at them. Therefore adding the word *excesivamente* (excessively) to the statement was recommended, as several parents commented that this behavior was common in everyone. All of the modifications are summarized in Table 2. The bold font indicates words that were changed or added during the adaptation process. Translation of Spanish terms and justification of modifications are presented in Table 3.

Conclusion

Establishing culturally valid evaluation tools is a necessary first step in carrying out research in different ethnic groups [10,11]. Culturally valid evaluation tools are also a fundamental part of rigorous evidenced based clinical practice [8,9]. This study, in addition to using widely accepted methods for the cultural adaptation of surveys, has included review by a seasoned linguistic consultant in order to insure maximum grammatical accuracy.

As expected, the published Spanish version of the SSP did not pose any major comprehension issues. However both the linguistic consultant and the parents who participated in the cognitive interviews suggested many minor adjustments so that the statements of the SSP

better reflect local culture and the usage of the Spanish language in Spain. Optimal assessment depends on culturally appropriate tools. Disorders of sensory processing are highly prevalent among children with autism [22] and attention deficit hyperactivity disorder [23-25], and the Sensory Profile has enjoyed wide use both in English and Spanish speaking countries. However, our adapted SSP-S is appropriate for use in Spain, and better describes the behaviors of concern. It should be easier for caregivers to complete accurately. Application to other Spanish speaking countries will require additional validation.

Spain is a culturally diverse country. Several regions use other languages other than Spanish such as Basque, Catalan, or Galician. The gypsy population blends Calo, a variant of Romani, with modern Spanish. This group is also known to have low levels of literacy. Although almost all Spaniards speak Spanish, some sectors of the population consider it their second language. Therapists and researchers working with these sub-populations may need to further refine the tool.

This study focused on the cultural and linguistic adequacy of the items of the SSP-S and represents a first step in adapting the SSP for Spain. However, while we have made adjustments in the tool, and established initial validation of the adapted SSP-S, we

have not generated normative data. As such, Spanish therapists and researchers must continue to use the data collected from the original normative sample to identify disorders of sensory processing in their clinical and/or research populations. Collecting norms in Spain using the revised Spanish version of the SSP would be needed to provide a thoroughly adapted tool.

Acknowledgement

Many thanks to Miguel Sanz Ovies for his rigorous linguistic review. We would also like to thank of all the parents who kindly took the time to participate in this study.

References

- Parham LD, Roley SS, May-Benson TA, Koomar J, Brett-Green B, Burke JP, et al. Development of a fidelity measure for research on the effectiveness of the Ayres Sensory integration intervention. *Am J Occup Ther.* 2011; 65: 133-142.
- Schaaf RC. Creating evidence for practice using Data-Driven Decision Making. *Am J Occup Ther.* 2015; 69: 6902360010.
- Schaaf RC, Benevides T, Mailloux Z, Faller P, Hunt J, Van Hooydonk E, et al. An intervention for sensory difficulties in children with autism: a randomized trial. *J Autism Dev Disord.* 2013; 44: 1983-1988.
- Schaaf RC, Blanche EI. Emerging as leaders in autism research and practice: using the data-driven intervention process. *Am J Occup Ther.* 2012; 66: 503-505.
- Asociacion Espanola de Integración Sensorial. Listado de terapeutas ocupacionales formados en integración sensorial [Listing of occupational therapists trained in sensory integration].
- McIntosh DN, Miller LJ, Shyu V, Dunn W. Overview of the Short Sensory Profile. Dunn W, editor. In: *The Sensory Profile: user's manual.* The Psychological Corporation. 1999.
- Roman-Oyala R, Reynolds SE. Validating the response process of the Spanish version of the short sensory profile: A pilot study using cognitive interviews. *J Occup Ther, Schools & Early Interv.* 2010; 3: 197-206.
- Beaton BD, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the process of cross-cultural adaptation of self-report measures. *Spine.* 2000; 25: 3186-3191.
- Bick D, Graham ID. The importance of addressing outcomes of evidence-based practice. Bick D, Graham ID. In: *Evaluating the Impact of Implementing Evidence-Based Practice.* Wiley-Blackwell. 2010.
- Harachi TW, Choi Y, Abbott RD, Catalano RF, Bliesner SL. Examining equivalence of concepts and measures in diverse samples. *Prev Sci.* 2006; 7: 359-368.
- Gierl MJ, ElAtia S. Book Review: Adapting educational and psychological tests for cross-cultural assessment. *Appl Psych Meas.* 2007; 31: 74-78.
- Dunn W. *Sensory Profile.* San Antonio TX: Pearson Education. 1999.
- Martinez G, Marin BV, Schoua-Glusberg A. Translating from English to Spanish: The 2002 national survey of family growth. *Hispanic J Behav Sci.* 2006; 28: 531-545.
- Neuman A, Greenberg DF, Labovitz DR, Suzuki LA. Cross-cultural adaptation of the sensory profile: establishing linguistic equivalency of the Hebrew version. *Occup Ther Int.* 2004; 11: 112-130.
- Wild D, Furtado T, Angalakuditi M. The translation and cultural adaptation of the Child Behavior Checklist for use in Israel (Hebrew), Korea, the US (Spanish), India (Malayalam and Kannada), and Spain. *Psychology Research and Behavior Management.* 2012; 5: 51-56.
- Geng X. Cultural Differences Influence on Language. *Rev Euro Stud.* 2010; 2: 219-222.
- Ridolfo H, Schoua-Glusberg A. Analyzing cognitive interview data using the constant comparative method of analysis to understand cross-cultural patterns in survey data. *Field Method.* 2011; 23: 420-438.
- Willis G. *Cognitive interviewing: A tool for improving questionnaire design.* Thousand Oaks CA: Sage Publication. 2005.
- Christodoulou C, Junghaenel DU, DeWalt DA, Rothrock N, Stone AA. Cognitive interviewing in the evaluation of fatigue items: results from the patient-reported outcomes measurement information system (PROMIS). *Qual Life Res.* 2008; 17: 1239-1246.
- Watt T, Rasmussen AK, Groenvold M, Bjorner JB, Watt SH, Bonnema SJ, et al. Improving a newly developed patient-reported outcome for thyroid patients, using cognitive interviewing. *Qual Life Res.* 2008; 17: 1009-1017.
- Yorkston KM, Baylor CR, Dietz J, Dudgeon BJ, Eadie T, Miller RM, et al. Developing a scale of communicative participation: a cognitive interviewing study. *Disabil Rehabil.* 2008; 30: 425-433.
- Tomchek SD, Dunn W. Sensory processing in children with and without autism: a comparative study using the Short Sensory Profile. *Am J Occup Ther.* 2007; 61: 190-200.
- Engel-Yeger B, Ziv-On D. The relationship between sensory processing difficulties and leisure activity preference of children with different types of ADHD. *Res Dev Disabil.* 2011; 32: 1154-1162.
- Mangeot SD, Miller LJ, McIntosh DN, Mc Grath-Clarke J, Hagerman RJ, Goldson E, et al. Sensory modulation dysfunction in children with attention deficit hyperactivity disorder. *Dev Med Child Neurol.* 2001; 43: 399-406.
- Dunn W, Bennett D. Patterns of sensory processing in with attention deficit hyperactivity disorder. *Occup Ther J Res.* 2002; 22: 4-15.