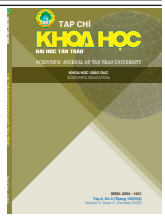
TẠP CHÍ KHOA HỌC ĐẠI HỌC TÂN TRÀO
ISSN: 2354 - 1431
http://tckh.daihoctantrao.edu.vn/



USING A SHORT SENSORY PROFILE TO SCREEN SENSORY PROCESSING DISORDERS IN CHILDREN WITH DISABILITIES

Tran Thanh Toan
Special Education Faculty, The National College of Education Ho Chi Minh City
Head of Research and Education Center for Children with Special Needs (REACH)
Email address: toantranthanh@ncehcm.edu.vn
DOI: https://doi.org/10.51453/2354-1431/2022/759

Article info

Received: 05/08/2022
Revised: 10/9/2022
Accepted: 25/10/2022

Keywords:

Sensory Profile, Screening, Early Detection, Sensory Processing dissorders

Abstract:

Today, Early detection and screening of children with disabilities with Sensory Processing Disorders by official tools have been limited. This makes it difficult to care for, teach, intervene and support children with disabilities in learning and daily activities. The authors adaptived and used the Short Sensory Profile for 40 children with disability from 3 to 6 years old to early detection of the sensory Disorder in these children. The result shows that a short sensory profile will be a helpful tool to help parents, teachers, and professionals accurately identify which sensory systems of children are having difficulty and take timely measures to support children.

TẠP CHÍ KHOA HỌC ĐẠI HỌC TÂN TRÀO
ISSN: 2354 - 1431
http://tckh.daihoctantrao.edu.vn/

ỨNG DỤNG CÔNG CỤ HỒ SƠ GIÁC QUAN RÚT GỌN ĐỂ SÀNG LỌC TRẺ KHUYẾT TẬT CÓ RỐI LOẠN NHẬN THỨC CẢM TÍNH

Trần Thanh Toàn
Trung tâm nghiên cứu và giáo dục trẻ có nhu cầu đặc biệt-REACH
Trường Cao đẳng sư phạm trung ương Thành phố Hồ Chí Minh, Việt Nam
Địa chỉ email: toantranthanh@ncehcm.edu.vn
DOI: https://doi.org/10.51453/2354-1431/2022/759

Thông tin bài viết

Ngày nhận bài: 05/08/2022
Ngày sửa bài: 25/08/2022
Ngày duyệt đăng:25/10/2022

Từ khóa:

Hồ sơ giác quan, sàng lọc, phát hiện sớm, rối loạn nhận thức cảm tính

Tóm tắt

Phát hiện sớm, sàng lọc trẻ khuyết tật có rối loạn nhận thức bằng công cụ chính thức hiện nay không có nhiều. Điều này gây khó khăn cho công tác chăm sóc, giáo dục, can thiệp, hỗ trợ trẻ khuyết tật trong học tập cũng như sinh hoạt hằng ngày. Tác giả đã thích ứng và thử nghiệm công cụ Hồ sơ giác quan rút gọn trên 40 trẻ khuyết tật độ tuổi từ 3 - 6 tuổi nhằm phát hiện sớm rối loạn nhận thức ở trẻ. Kết quả cho thấy Hồ sơ giác quan rút gọn sẽ là một công cụ hữu ích giúp phụ huynh, giáo viên và các nhà chuyên môn xác định chính xác hệ giác quan nào của trẻ đang gặp khó khăn, từ đó có các biện pháp hỗ trợ trẻ kịp thời.

1. Raise the matter

Children with Sensory processing disorders face difficulties in processing sensory information from their surroundings or their own bodies. Children may receive more or less sensory information than others, which affects their interactivity in different environments, and their ability in learning and implement daily activities. As a result, children almost suffer from educational, emotional, and social problems such as difficulty in making friends or fitting in groups, poor confidence, poor academic performance, and they are considered clumsy, uncooperative, aggressive, disruptive or "rebellious", anxious, stress, hot-tempered, together with other behavioral problems [5]

Sensory processing disorder is a condition in which the sensory system and brain are hard to: *Receiving sensory information --- Organizing (decrypt) this information ---- Effectively applying it in daily activities.*

Research by Ahn, Miller, Milberger, McIntosh (2004) indicates that 1 out of every 20 people are affected by sensory processing disorder. According to research by May-Benson, Koomar and Teasdale (2006), rate of high-risk groups with sensory processing disorder is 73% of boys; 5-13% at the age of preschool-elementary school.

Research by Ben-Sasson, Carter, Briggs-Gowen (2009) indicates that 1 of 6 children with sensory modulation difficulties face difficulties affecting their

daily life [4]. Early detection of children with sensory processing disorders can prevent secondary problems from getting worse and improve the children's family life. The stress that families with a child with sensory processing disorder endure may be very terrible such as blaming each other for their child's behavior or conflict about discipline.

In current practice in Vietnam, the number of official and unofficial tools for children with disabilities with sensory processing disorders is limited. Therefore, the use of official screening tools for early detection of children with disabilities with sensory processing disorders is very critical and urgent before applying intervention and support for children with sensory modulation difficulties.

2. Research content

2.1. A number of concepts:

2.1.1. Sensory processing disorder

An American psychologist and therapist, founder of the theory of sensory integration, A. Jean Ayres first described sensory processing disorder in 1972 as an expression of difficulties in organizing, processing, and analyzing incoming sensory information (tactile, motor, proprioceptive, visual, auditory, gustatory, and olfactory)

Sensory processing disorder (SPD) is defined as an inability in receiving, detecting, or analyzing sensory information and difficulty in responding appropriately to stimuli. (Miller, Coll & Schoen, 2007).

Sensory Processing Disorder Foundation defined "Sensory processing disorder as a condition in which multisensory input is not adequately processed in order to provide appropriate responses". [3]

2.1.2. Early detection

In medicine, Early detection of a disease is the screening of that disease.

In special education, early detection is a rapid check to see if a child is at risk for a disability or has signs of growth slower than an age-based developmental milestones. Early detection will improve children's development.

2.1.3. Screening

The screening tool is used to make a decision about a child's development, whether he/she needs further assessment. The screening helps to determine whether child's development is normal or not. The screening tool is not designed to provide a detailed description of the development function or intervention strategy.

2.1.4. Classification of sensory processing disorders

Today, most experts agree with the classification of sensory processing disorder given by Miller. Miller et al., 2012 divided sensory processing disorders into 3 main types and many other subtypes [1].

Table 1. Classification of sensory processing disorders

Main type	Subtype	Explanation
1. Sensory processing disorders	Response beyond sensory threshold	Tendency to respond too much, too quick, or too long to sensory stimuli that are normal to people
	Response below sensory threshold	Tendency of inability of input stimuli reception, delay responses, non-responses, or poor responses compared to normal level.
	Sensation seeking	Seek common sensory stimuli, inability of processing stimuli satisfactorily, always seek more stimuli.
2. Movement disorders: Difficulty in balance, movement combination, skill expression, familiar/ unfamiliar movements	Postural syndrome	Difficulty in perceiving the position of body parts, poorly developed motor patterns depending on focus, thereby, showing weakness or low energy.
	Dyspraxia	Difficulty in thinking, planning and operating, especially in new movements
3. Sensory discrimination disorder: Difficulty in understanding/perceiving properties of other objects, places, or environments.	Auditory Discrimination Disorder	Difficulty in perceiving auditory sensitivity stimuli (also called auditory discrimination disorder)

Main type	Subtype	Explanation
	Visual Discrimination Disorder	Difficulty in identifying /perceiving visual sensitivity stimuli
	Tactile Discrimination Disorder	Difficulty in identifying/perceiving sensory stimuli, or high-level visual and distance features when touching
	Vestibular Discrimination Disorder	Difficulty in perceiving sensory stimuli experienced by body movements through space and gravity
	Proprioceptive Discrimination Disorder	Difficulty identifying/perceiving sensory stimuli through muscle and joint
	Gustatory Discrimination Disorder	Difficulty in identifying/perceiving sensory stimuli related to taste
	Olfactory Discrimination Disorder	Difficulty in identifying/perceiving sensory stimuli related to smell sensitivity
	Interoception Discrimination Disorder	Difficulty in identifying/perceiving interoception stimuli (hunger, thirst)

2.2. Short Sensory Profile:

2.2.1 Origin:

Short Sensory Profile is an English name introduced by Dr. Winnie Dunn (Activity Therapist) in 2001.

Short sensory profile is a 38-item parent questionnaire designed based on a longer version of the Sense Profile introduced in 1999 [2]

2.2.2 *Purpose of use*

A screening tool (identifying children with sensory processing difficulties) is used to determine whether further in-depth sensory processing assessment is needed. Use for research purposes (research protocol-Dunn, 1999; McIntosh et al., 1999)

2.2.3. Usage

Short sensory profile measures children's bodily responses to environmental stimuli in a variety of ways:

(1) Tactile Sensitivity

(2) Taste/Smell Sensitivity

(3) Movement Sensitivity

(4) Underresponsiveness/Sensation-Seeking

(5) Auditory Filtering

(6) Low Energy/Weak

(7) Visual/Auditory Sensitivity

Parents rate the frequency of children's behaviors in the situations mentioned in the questionnaire on a scale of 1-5 score(s): 1 = Always; 2 = Frequently; 3 = Occasionally; 4 = Seldom; 5 = Never.

The examiner receives a certain score for each sense, and then the score of 7 senses is summed for Total Score. In Short sensory profile, a low score indicates more differences in sensory processing.

2.2.4. Implementation time and person in charge

Parents or caregivers take about 10 minutes to complete the questionnaire.

Professionals who are experienced in sensory integration need approximately 10-20 minutes to score and return results.

2.2.5. Internal consistency

Short sensory profile is recognized as effective and suitable for children aged 3 to 10 years.

Internal consistency of test items ranges from 70-90 scores (Dunn, 1999). The value correlation of test items ranges from 0.25-0.76 scores when $p<0.1$

Both the section raw and total score in short sensory profile were considered as independent variables. Total score is the most sensitive determinant of weakened sensory processing function.

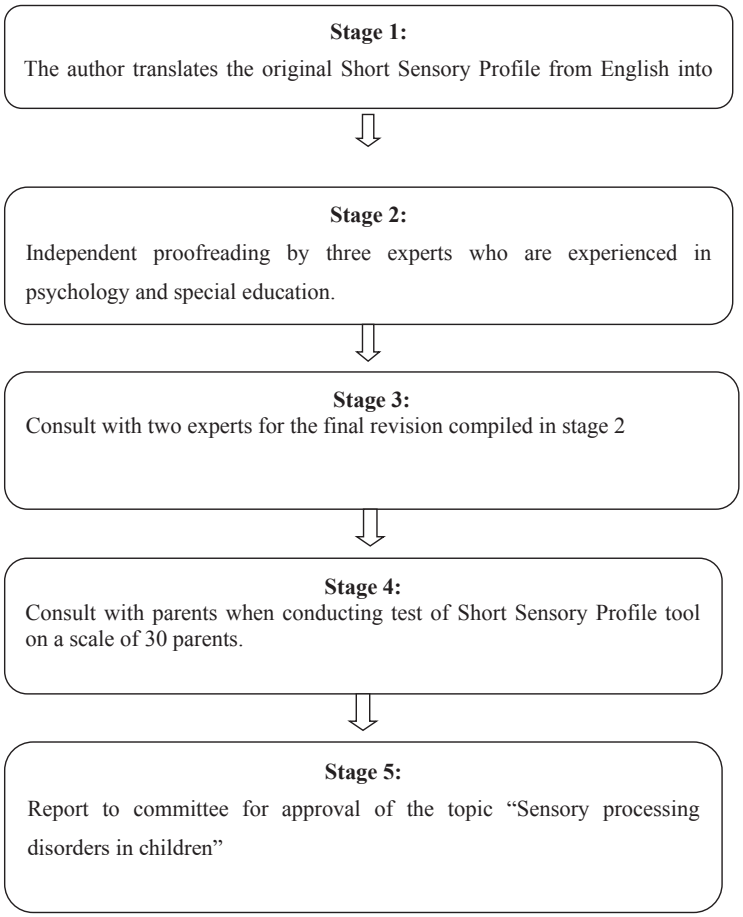
Value in discriminating children with/without sensory modulation difficulties of short sensory profiles is > 95% (McIntosh et al., 1999).

Miller et al. (2001) assert that short sensory profile is a valuable measure of sensory processing in researching on the relation between the sensory processing disorder scores and the abnormal physical-psychological responses related to sensory stimuli [6]

2.2.6. Adaption to the Short Sensory Profile screening tool

The adaptation process occurs with 5 stages according to the following diagram:

Diagram 1. Stages of adaptation to the Short Sensory Profile tool



Detailed content of Short Sensory Profile tool is presented by author in the appendix.

2.3. Selection of testing samples

40 children with disabilities aged from 3 to 6 years who are studying at specialized schools, early intervention centers and inclusive preschools in Ho Chi Minh City.

The scale of children is larger than initial plan in order to test the sensitivity (early detection) of children with sensory processing disorders.

2.4. Test result:

The effectiveness of early detection and screening tool for preschool-aged children with disabilities with sensory processing disorders is reflected in two aspects:

2.4.1 Regarding qualitative aspect:

The attitude of teachers and parents have changed after using early detection and screening tools for children at the age of preschool with disabilities with sensory processing disorders. It is expressed through understanding children's difficulties in daily life and learning, especially behavior-related problems.

2.4.2 Regarding quantitative aspect:

The ratio of normal children, children at risk of sensory processing disorders and children with sensory processing disorders

Through a survey of 40 children at specialized schools, early intervention centers, and inclusive preschools in Ho Chi Minh City. HCM, it can be seen that about 50% of surveyed children (equivalent to 20 children) suffered from sensory processing disorders. The number of children at risk of sensory processing disorder is 8 (accounting for 20%) while a number of children without sign of sensory processing disorder account for 30%.

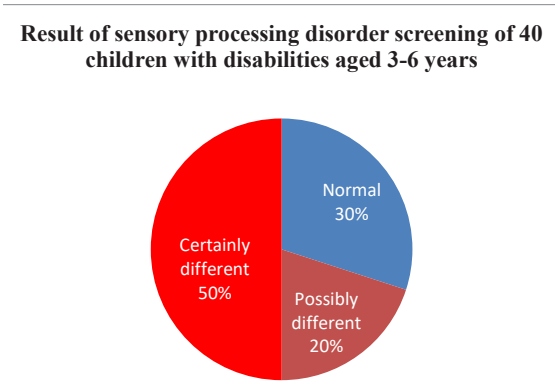


Chart 1. Result for sensory processing disorders of 40 children

In general, the short sensory profile tool reflects sensitivity in early detection of children with sensory processing disorders. These results are consistent with the previous doubts and concerns of parents and teachers during their interviews with the author.

Details of sensory difficulties faced by children based on 7 body reactions through screening with short sensory profile tool

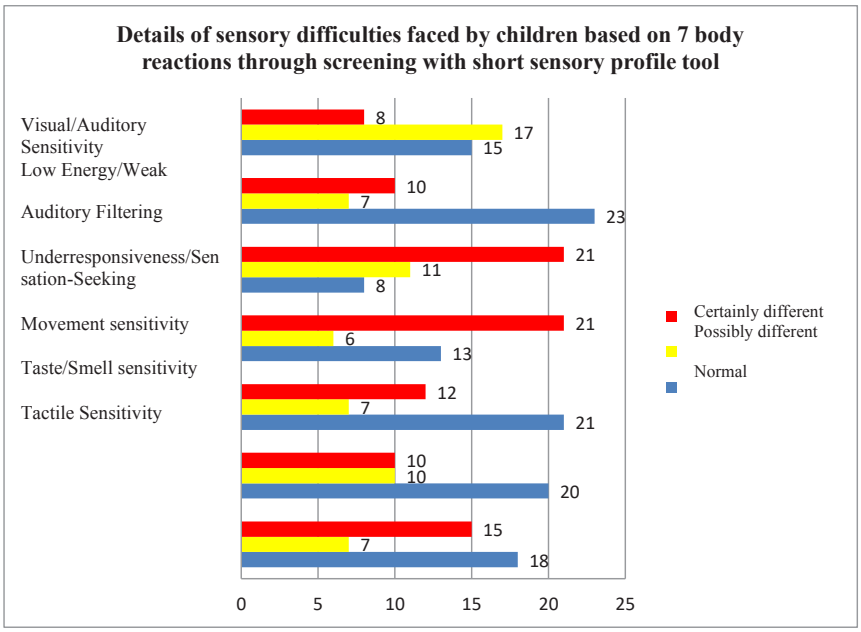


Chart 2. List of sensory processing disorder types

The groups of sensory problems with the highest frequency are:

Underresponsiveness/Sensation-Seeking and Auditory Filtering

- *Underresponsiveness/Sensation-Seeking: 52.5%*
- *Auditory Filtering: 52.5%*

Second rank in types of sensory processing disorders

- *Tactile Sensitivity: 37.5%*

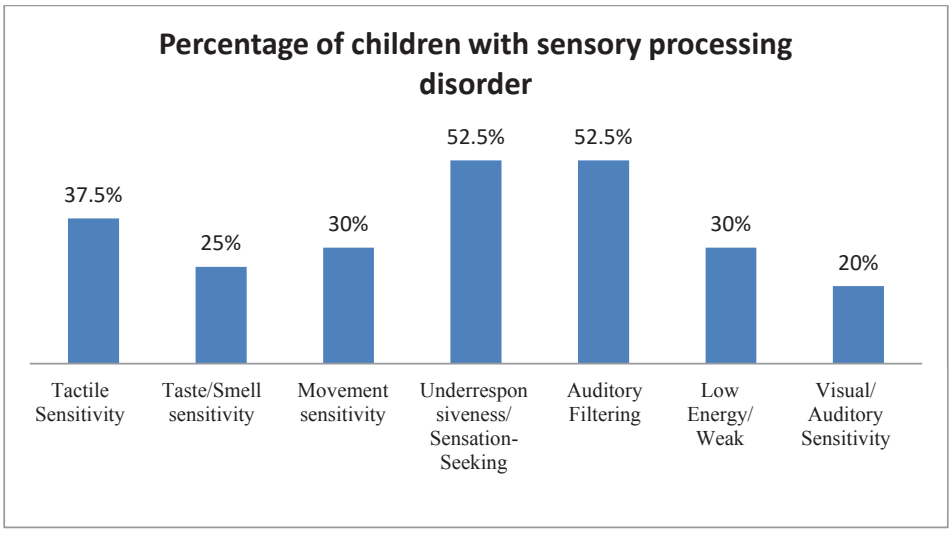


Chart 3. Percentage of children with certain sensory processing disorder

The group with the highest risk of sensory processing disorders: *Visual/Auditory Sensitivity: 42.5%.* Followed in the second and third rank by Taste/ Smell Sensitivity (30%), Auditory Filtering (27.5%).

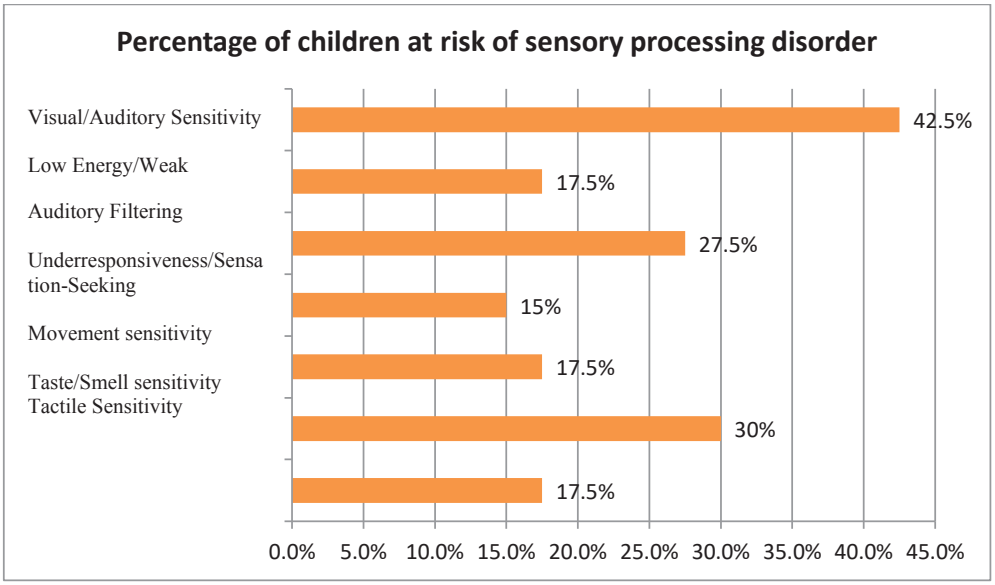


Chart 4. Percentage of children at risk of sensory processing disorder

The groups with the highest frequency of normal expression in children: *Movement and physical fitness*

Once experts identify the type of sensory processing disorders the children suffered from, they will assist teachers and parents in considering and choosing appropriate methods to care for and educate children at school and home as well.

3. Conclusion

Signs of sensory processing disorder and others often overlap and link with each other related to attentional, emotional, or medical diagnosis (SPD Foundation, 2010).

Experts in mental health need knowledge and time to assess sensory processing disorder, then compare it with any other possible disorder using various diagnoses to give an accurate diagnosis.

Sensory processing disorder has not yet been recognized as a psychological disorder in medical manuals like ICD-11 or DSM-5. Until Sensory processing disorder is officially recognized, it is said to be "identified" or "recognized" rather than "diagnosed" in the written reports.

In comparison with the sensitivity percentage in the English original, the Vietnamese version of the Short sensory profile tool shows a very high sensitivity. The obtained results are consistent with the information about children's sensory characteristics provided by their teachers and parents through screening with a short sensory profile tool.

The independence between score raw and total scores is similar to the original.

The correlation of this tool in the detection of children with sensory processing disorders with the type and degree of disability needs more research time and a larger number of samples.

In the above context, an official screening tool like Short Sensory Profile for early detection of children with disabilities with sensory processing disorders is very necessary and urgent for parents, teachers, and experts. When the percentage of children with disabilities with sensory processing disorders tends to increase, this Short Sensory Profile tool is very critical for parents and experts in the early detection and intervention of children with sensory processing disorders.

REFERENCES

[1] Dean, E. E., Little, L., Tomchek, S., & Dunn, W. (2018), *"Sensory processing in the general population: Adaptability, resiliency, and challenging behavior"*. American Journal of Occupational Therapy, 72, 7201195060. https://doi.org/ 10.5014/ ajot.2018.019919.

[2] Janine van der Linde, Denise Franzsen, Paula Barnard-Ashton (2013) *"The sensory profile: Comparative analysis of children with Specific Language Impairment, ADHD and autism"*. Article in South African Journal of Occupational Therapy.

[3] Kojovic N, Ben Hadid L, Franchini M, Schaer M. (2019) *"Sensory Processing Issues and Their Association with Social Difficulties in Children with Autism Spectrum Disorders"*. *Journal of Clinical Medicine*; 8(10):1508. https://doi.org/10.3390/ jcm8101508

[4] Lucy Jane Miller, PhD, OTR, (2014), "from Sensational Kids: Hope and Help for Children With Sensory Processing Disorder", PerigeeBooks, USA.

[5] Miller L.J., Anzalone, M.E., Lane, S.J., Cermak, S.A. and Osten, E.T., (2007). "Concept Evolution in SI: A Proposed Nosology for Diagnosis". American Journal of Occupational Therapy 61(2), pp. 135-140.

[6] *Sara Jorquera-Cabrera, Dulce Romero-Ayuso, Gemma Rodriguez-Gil and Jose-Matfas Trivino-Juarez. (2014). "Assessment of Sensory Processing Characteristics in Children between 3 and 11 Years Old: A Systematic Review". Madrid Health Service, Madrid, Spain.*