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A Survey Study on the Current Situation of Sensory Development of Children Aged 3-6

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Abstract: The age of 3-6 years is a critical period for children's development. In this study, children aged 3-6 years were selected to conduct a survey study on the current state of sensory development, which is beneficial to understand the current state of development of sensory abilities in children aged 3-6 years. It was found that most of them had mild sensory disorders, with the main category being proprioceptive disorders. To improve the development of young children's sensory integration skills, we can work together with families, kindergartens, and communities: families as the lead, paying attention to and supporting the development of young children's sensory integration skills in their lives; kindergartens as the cooperation, developing young children's sensory integration skills by combining the five domains and providing parents with guidance on sensory integration training; and communities as the support: creating a community environment conducive to the development of young children's sensory integration aged 3-6 years.

Keywords: children aged 3-6 years; sensory integration; research study

1. Problem formulation

With the deepening of China's new curriculum reform and the increased investment in quality education, China is paying more and more attention to the health management of children aged 3-6 and strengthening early childhood services (Ding et al., 2021), the issue of sensory education for children aged 3-6 years has received increasing attention from society. 2020 data released by the National Center for Physical Fitness Monitoring showed that the physical fitness of young children in China has decreased compared to 2014, and the physical development of young children in China is not good. Combined a variety of current research shows that the rate of sensory disorders among children in China is high, ranging from 10%-30% in young children aged 3-13 years old, with a significantly higher incidence in boys than in girls. Sensory disorders can cause poor balance, dislike of touch, dyslexia, poor expression, and inattention, and are mainly classified as tactile disorders, proprioceptive disorders, vestibular balance disorders, language disorders, and spatial and auditory disorders. These disorders are very detrimental to the healthy development of the individual child and are prone to lasting and widespread adverse effects (Lin, 2019). 3-6 years old is a critical period for individual development. Investigation and research on the level of sensory integration development of children aged 3-6 years can help to understand the current level of development of sensory integration ability of children aged 3-6 years, can intervene early in the development of sensory integration ability of children, provide effective strategies for kindergarten and family sensory integration training for children, help children develop sensory integration ability, promote their large muscle motor ability and motor planning ability through sensory integration training and correct behavioral guidance Through sensory integration training and correct behavioral guidance, we can promote the enhancement of their large muscle motor ability and motor planning ability, improve their emotional and social interaction ability, enhance their mental function development, and improve their

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social adaptation ability, to minimize the obstacles in learning and life (Lin, 2019).

2. Research design

2.1 Study population

In this study, 114 scales were distributed to parents in Changsha City, and 114 scales were returned with an efficiency rate of 100%.

2.2 Research methods

（1） Measurement method

In this study, the "Sensory Integration Scale for Children" developed by Cheng Hsin-Hsiung in Taiwan was used to assess the sensory integration ability of children aged 3-6. This scale was measured and evaluated with good reliability and validity.

（2）Scale content

The scale is divided into two parts: the first part is the basic information, and the second part is the main part, which is the measurement content. The content of the scale is divided into vestibular, tactile, proprioceptive, learning ability, and special questions for older adults. Each item is rated on a 5-point scale from "never" to "always," corresponding to a "5-1" score. If one item was below 40, it was rated as a mild disorder, and below 30, it was rated as a severe disorder.

3. Results and Analysis

3.1 Distribution of the degree and types of sensory integration disorders among children aged 3-6 years

Among the 114 children, 30 children were detected with mild sensory system disorder, accounting for 26.32%, and did not have severe sensory system Among the energy regions, the detection rate of proprioceptive imbalance was the highest, and the detection rate of tactile dysfunction was This is limited by the small sample size.

Sensory integration type	Mild disorders	Total (percentage)
Proprioception	20	20（17.54%）
Vestibular sense	10	10（8.77%）

3.2 Basic information on the types of sensory integration in children aged 3-6 years

（1）Vestibular sensation

Scores of each item in the vestibular sensory dimension (x±s, n=114)

project	maximum	minimum	Mean ± standard deviation
Especially love to play with chairs or rides that will spin without dizziness	5	1	3.82±1.09
Likes to spin or run in circles without getting dizzy or getting tired	5	1	3.98±1.06
Although I saw it, I still often collided with tables and chairs, people, pillars, and door walls	5	1	3.81±1.06
Move, eat, beat drums, draw with poor hand coordination, often forget the other side	5	1	3.90±1.02
The hands and feet are clumsy, easy to fall, and still appear bulky when pulling him	5	1	3.93±1.05
Prone on the floor and bed, head, neck, chest cannot be raised.	5	1	4.12±0.96
Climb up and down, run in and out, and do not listen to dissuasion	5	1	3.94±1.03
Stirring restlessly, fumbling, not listening to dissuasion, the punishment is ineffective	5	1	3.77±1.07
Likes to mess with people, trick-or-treating, mischievous.	5	1	3.82±1.04
Talk to yourself a lot, repeat others' words, and like to memorize advertising language	5	1	3.83±1.02
On the surface, left-handed, in fact, both left and right hands are used, and there is no fixed	5	1	4.11±1.02

use of which hand			
It is not clear to distinguish the left and right directions, and shoes and clothes are often worn in reverse	5	1	4.12±0.99
For elevators or stairs in unfamiliar places, dare not sit or move slowly	5	1	4.01±0.97
Poor organization, often messes things up, does not like to tidy up their environment	5	1	4.00±1.07

On the vestibular sensory dimension, 114 children had good vestibular sensory development, all of them were at the "sometimes" level and above. Ten children had a total score of 40 or less, with a minimum score of 34 (8.77%). Most of the children did not have vestibular disorders.

（2）Tactile sensation

A score of an entry in the tactile dimension (x±s, n=114)

project	maximum	minimum	Mean ± standard deviation
Inaudible, excessively quiet, with an indifferent expression and a laugh for no reason	5	1	4.02±1.01

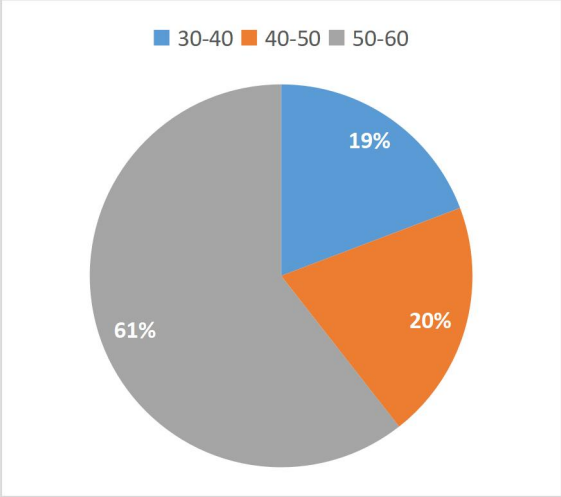
The 114 children surveyed did not have any tactile disorders in this category.

（3）Proprioception

project	maximum	minimum	Mean ± standard deviation
Wear strip pants, buttons, zippers, tie shoelaces slowly	5	1	3.99±0.97
Stubborn, paranoid, unsociable, withdrawn	5	1	4.20±0.92
Rice grains are often dropped during meals, and saliva cannot be controlled	5	1	4.02±1.01
Slurred language, poor pronunciation, slow development of language skills	5	1	4.05±0.95
Willful, slow to act, inefficient in doing things	5	1	4.04±0.95
Don't like to turn over, roll, climb high	5	1	4.14±0.95
In kindergarten, I still can't wash my hands, wipe my face, cut paper, and wipe my butt	5	1	4.12±0.89
In kindergarten (major/middle) still cannot use chopsticks, hold a pen, climb or swing	5	1	4.01±1.03
Particularly sensitive to minor injuries and dependent on others for overcare	5	1	4.00±0.95
Not good at playing blocks, combining things, lining up, pitching	5	1	4.14±0.99
Afraid of climbing high, refuse to take the balance beam	5	1	4.19±0.91
It's easy to get lost in a new, unfamiliar environment	5	1	4.13±0.93

Scores of each item in the proprioceptive dimension (x±s, n=114)

In terms of proprioception, 20 of the 114 children surveyed (17.54%) had mild sensorimotor disorders in this category, but the mean scores of each item were higher, indicating that there were large differences between individuals within the group.



Distribution of scores among 114 children in proprioception

4. Discussion

4.1Basic information on sensory integration disorder in children aged 3-6 years

The study showed that among 114 children, 30 children were measured to have mild sensory integration disorder, accounting for 26.32%, and there was no moderate or severe sensory integration disorder, which is somewhat similar to previous studies: it is consistent with the rate of children's sensory integration disorder of 10%-30% reported abroad; in China, Shen Xi (2017) concluded that the rate of sensory integration disorder was 38.28% in a study of preschool children in Chengdu. Among them, the detection rate of mild disorder was 29.96% and the detection rate of severe disorder was 8.32% (Shen , 2017); Shanghai Zhu GW et al. (2014) reported a detection rate of 24.06% for mild dysregulation and 7.32% for severe dysregulation (Zhu et al., 2014) . Compared with children's sensory integration ability, there is a certain improvement and no particularly obvious problems appear.

It is evident that in our current country, there is an improvement in the sensory integration skills of children aged 3-6 years since parents are paying more and more attention to the development of sensory integration skills of their children and are promptly contending with the problems that arise in their children and seeking help from kindergartens, hospitals, and related institutions.

Previous studies have shown that the prevalence of vestibular balance is high, but the present study showed that the detection rate of proprioceptive imbalance was higher in the sensory integration areas. Therefore, we must pay attention to the development of proprioception in young children.

The main causes of the shift from vestibular to proprioceptive sensory imbalance in the main categories of sensory integration in children aged 3-6 years are:

(1) The health of young children has been elevated to a national strategic level and the healthy development of children is of great concern. (Zhang, 2019) The primary job of kindergartens is to protect the lives of young children and promote their health (Ministry of Education of the People's Republic of China, 2001), focusing on the physical training and behavioral development of young children and providing them with certain training, such as training their sense of balance, attention, and responsibility;

(2) parents' attention to preschool education. With the improvement of parents' education and income, they gradually pay attention to the development of young children's sensory abilities. Parents mostly focus on vestibular sensory development, focus on vestibular disorders that account for a high percentage of sensory disorders in young children in previous studies, and focus on improving the development of young children in vestibular sensory;

(3) professional instructors are involved in the training and development of children with sensorimotor disorders, and the model and training system of sensorimotor training has been gradually improved (Wang, 2010) However, the institutions of sensory training also mostly strive to focus on the vestibular awareness and learning ability aspects of young children, which is the popular training model.

Based on this, we need to make a goal shift to focus on the development of proprioception in young children, both in response to the 14th Five-Year Plan and the outline of the 2035 vision in China, which emphasize the need to comprehensively promote the

construction of a healthy China, to put the protection of people's health in a strategic position of priority development, to adhere to the policy of prevention as the main focus, and to thoroughly implement the actions of a healthy China (Liu et al., 2021); it is also an important way to meet the educational needs of our parents and pay attention to the physical health development of young children.

4.2 Sensory training should focus on normal children aged 3-6 years

The subjects of this study were mainly normal children in two kindergartens in Changsha City. It can be seen that sensorimotor disorders do not appear in special groups. However, at present, targeted sensory training for children with sensory disorders mostly selects special children, and few focus on normal children.

The present study broke this deadlock by focusing on normal children as the study subjects. It was found that 26.09% of normal children had mild sensory integration disorder. It can be seen that children with sensory integration disorders are not special children, such as children with ADHD, children with autism, or children with sensory integration problems that are visible to the large naked eye. They mostly focus on mild disorders of proprioception, such as slow movements in tying shoelaces, buttoning, etc., and often dropping rice grains during meals, which are mainly problems in body movement coordination and subsequently motor disorders. In response to this phenomenon, we must pay attention to the development of the sensory ability of normal children aged 3-6 years old. 3-6 years old is the golden period for the development of sensory training, and we should seize this period to conduct sensory training for children to help them stay away from the problem of sensory disorders, promote the development of young children, enhance their learning ability and improve their personality quality.

5. Suggestions

There are two main reasons for children's sensory disorders, one is physiological reason, and the other is the environmental and human reasons. Young children with sensorimotor disorders do not show obvious performance before school age, and during school age, they will show learning ability, personality, behavior, and even psychological and conduct disorders (Yu , 2021). When conducting sensory training for children aged 3-6 years, we can use the power of multiple parties to jointly promote the development of young children's sensory abilities.

5.1 Family as the lead: paying attention to and supporting the development of young children's sensory integration skills in their lives

Sensory integration disorders are related to the family environment, and a poor family environment can hinder the development of sensory integration and motor coordination in young children (Hua et al., 2008). Parents should act as the leading force in creating a good home environment for children aged 3-6 years old, helping them to do some exercises at home and providing them with opportunities to do things by hand, such as putting on their shoelaces and eating, etc. At the same time, parents, as the main companions and caregivers of their children, lead them to get more in touch with nature, experience the joy of movement, and improve various abilities.

5.2 Kindergarten as a compliment: Combine the five major areas to develop children's sensory abilities and provide parents with guidance on sensory training

Kindergartens can take advantage of the fact that children aged 3-6 spend a lot of time in school, train professional teachers, provide children with appropriate sensory training, and create new curricula to support the development of children's sensory abilities in conjunction with the five major areas so that they can achieve a certain level of training and avoid sensory disorders. In addition, kindergartens should offer more family education guidance courses to help parents establish a correct understanding of sensory integration, and carry out parent-child activities to provide some guidance and help for family sensory training.

5.3 Community support: Creating a community environment conducive to the development of sensory integration for 3-6-year-olds

Sensory integration training for 3-6-year-olds requires a certain amount of space, space, and

facilities and equipment as support. The community should provide this resource for children and can create a base for sensory integration training in the community, providing venues and facilities, such as monopoly bridges, acupressure boards, yoga balls, trampolines, and other large equipment for children to practice, to help children's sensory integration ability to improve.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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