

## Troubles Experienced in Childhood by Adults with Sensory Abnormalities

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### I . Causes of the problem and purpose of the study

It has been pointed out that many people with developmental disorders tend to have sensory abnormalities, such as hypersensitivity or insensitivity to the senses. For example, Kawasaki et al. (2003) clarified that 95% of people with tendency of developmental disorders have some kinds of sensory abnormality such as auditory hypersensitivity and tactile hypersensitivity. In a study by Bromley, Hare, Davison & Emerson (2004), it was also confirmed that 71% of people with autism spectrum disorder have auditory sensitivity, 52% have tactile sensitivity, and 41% have olfactory sensitivity. In a survey conducted by Takahashi & Masubuchi (2008), it was clarified that people with tendency of developmental disorders were 20.4 times more likely to have visual abnormalities (hypersensitivity or insensitivity), 19.8 times more likely to have olfactory abnormalities, and 10.5 times more likely to have tactile abnormalities than people with regular development. Furthermore, Takahashi & Masubuchi (2008) confirmed that people with tendency of developmental disorders are more likely to feel "uncomfortable" than people with developmental disorder, and that they have unique uncomfortable or unpleasant sensations (such as "very uncomfortable when others approach more than a certain degree") that are not often felt by people with regular development.

Even in early childhood children, sensory abnormalities can be background factors in many difficulties in life. Specifically, it has been observed that they "do not like tight clothing," "do not like clothing tags touching their bodies," "do not like sticky things such as glue," "want to change clothes even if they are slightly wet," "notice noises that other people do not notice," "are glared at even by a little light," "cover their ears when they go to a noisy place," and "do not like certain sounds such as hair dryers and vacuum cleaners" (Nishimura et al., 2017). On the other hand, they may also show insensibility feeling much pain when injured, or acting as if they do not hear loud noises. Furthermore, many children with tendency of developmental disorders have been found to have extremely unbalanced diets (Mizuno et al., 2014; Schreck, Williams & Smith, 2004), and it has been confirmed that sensory abnormalities are related to this background (Mizuno, Nishimura, Nishidate, Mizuno & Tokuda, 2017).

It is said that the sensory abnormalities that children with tendency of

developmental disorders have can be stronger or weaker depending on the environment they are placed in (Komatsu, Kitajima, Takeda & Konno, 2005). Lane, Harpster & Heathcock (2012), through observations of children with autism spectrum tendencies and ADHD tendencies, found that hyper-sensitivity reactions were stronger in environments where children were more anxious. For young children with tendency of developmental disorders, especially in group life in kindergartens and nursery schools, it is difficult to have a clear vision of the future, they cannot understand the instructions of caregivers, and likely to become more anxious due to trouble with friends around him/her, and the sense of difficulty in daily life due to sensory abnormalities may become even stronger.

And, even adults with tendency of developmental disorders are not able to compare their own senses with those of others, and often consider their unique senses as normal, which makes it difficult for them to realize that sensory abnormalities are related to factors that make it difficult for them to live their daily lives. Younger children, furthermore, do not understand what makes them feel uncomfortable or distressed. Also, even if they feel uncomfortable with a certain situation, it is difficult to explain what and how they don't like. For this reason, it is difficult for people around them to understand them, and they are often misunderstood as "selfish. If children are left in this situation, they will have low self-affirmation, which may cause secondary disability.

We are planning a series of research projects with the ultimate goal of clarifying the mechanisms of problematic behavior in children with tendency of developmental disorders based on sensory abnormalities as a background factors, and developing a support program for parents and caregivers based on the results. In this study, we conducted interviews with adults with sensory abnormalities in order to obtain fundamental Materials for this purpose, and hoped to clarify what kind of problems they faced due to sensory abnormalities in their childhood.

## **II. Methods**

### **(1) Target Subjects of the Study**

35 adults who are aware of having sensory abnormalities.

### **(2) Survey Method**

The survey targets were requested using snowball sampling. The survey was conducted through individual semi-structured interviews, either online, by telephone, or in person. The survey took about 40 minutes per person. The survey asked the participants whether they had experienced any discomfort, uneasiness, or trouble in their early childhood or early elementary school years due to hyper-sensitivity or insensitivity to sight, hearing, smell, touch, or taste, and whether they had felt any difficulty due to the lack of understanding of those around them regarding sensory abnormalities. The study period was between September 2021

and December 2021.

This survey was conducted after obtaining the approval of the Ethics Committee of the University of Tsukuba Faculty of Medicine (Approval number: 1558).

### III. Results and Discussion

As a result of asking about childhood troubles due to sensory abnormalities (multiple counts), 60% (21) answered that they had abnormal senses of touch, 49% (17) auditory, 43% (15) visual, 34% (12) smell, and 31% (11) sense of taste. Seventeen percent (6) of the participants had abnormalities in all five senses. Also, 29% (10 people) had trouble with only one sense, and 70% of the respondents had trouble with more than one sense.

Table 1 shows examples of responses from people who had abnormal tactile senses. According to the table, answers A, B, and C, itching and pain caused by clothing such as sweaters, underwear, and jeans touching the skin, stood out prominently. Some respondents were also uncomfortable with sand on the soles of their feet, chlorine in the swimming pool, and food around their mouths, as in responses D, E, and F. Since there are many cases of children with regular development who are engaged in something without realizing that these things are on (or touching) their skin, it is likely that there are many adults who cannot imagine that there are children who are uncomfortable with these things.

Furthermore, some people felt pain when their hands were joined, as in response H. Generally, for younger children, adults will hold hands or touch their bodies for skin-ship and safety reasons. It is necessary for adults to recognize that some children feel pain in doing so, and that they do not necessarily dislike the person holding their hand.

Table 1. Responses to Problems Caused by Tactile Abnormalities

|   |  |
|---|--|
| A | I couldn't stand the stinging pain of the sweater.   |
| B | The tightening part of the rubber of underwear such as pants and socks was painful.                |
| C | Wearing jeans was uncomfortable because I felt as if my stomach was being held tightly against me. |
| D | It was painful for me to get sand on the soles of my feet when I was barefoot.                     |
| E | When I got into the swimming pool, my skin tingled and hurt from the chlorine.                     |
| F | I felt severe itching when I got eggs or other sticky stuff around my mouth.                       |
| G | After using the craft glue, I felt terribly uncomfortable until I washed my hands.                 |
| H | I didn't like when people held my hand because it hurt.  |

Table 2 shows examples of responses from people who had hearing abnormalities. As shown in responses I and J, there were cases where people were so distracted by the sounds of daily life, such as fluorescent lights, air conditioners, and buzzing noises that they were unable to do what they needed to do. There were also a few cases where the respondents had difficulty with certain sounds, such as answers L, M, and N.

Among those who, like respondent J, was uncomfortable with being talked to when things were noisy, there were cases where problems arose in their human relationships, such as "I didn't notice that my friends were talking to me, and as a result, I kept ignoring them, which led to my friends being mean to me, such as "I didn't understand what the other person was saying well enough to reply vaguely, and as a result, I got into trouble with my friend because of the discrepancy in conversation".

Table 3 shows examples of responses from people who had visual abnormalities. Several people were found to be sensitive to sunlight and fluorescent light, as shown in responses O and P. Also, as shown in answers Q and R, even wet tiles and clothing patterns, which are generally not particularly bothersome to see, were found to be terribly uncomfortable for the respondents themselves.

Furthermore, in places where there were many people coming and going, such as in response S, the mere sight of people moving in and out of the building made him feel tired, and if it continued, he would feel sick or get a headache.

Table 4 shows examples of responses from people who had an abnormal sense of smell. The person who responded with answer T said that around junior high school he knew that the cause of his nausea was the smell of the air before it rained, but at a young age he could not figure out what was making him nauseous and was terribly worried that he had some terrible disease. If the smell is not from a certain individual, such as clay or perfume, but from the unpleasant air that surrounds them, the child is unable to identify the cause of their illness and therefore unable to avoid it.

Table 2. Responses to Trouble Caused by Hearing Problems

|   |   |
|---|---|
| I | Little noises around me, such as fluorescent lights and air conditioners, bothered me.              |
| J | I couldn't recognize him when he was talking to me when things were buzzing.                        |
| K | The rhythmic sound of my friends' footsteps around me was so loud that it made my headache.         |
| L | I disliked the music of a certain anime so much that just hearing a little of it made me feel sick. |
| M | I hated the sound of hair dryers, hand dryers, and vacuum cleaners.                                 |
| N | I hated the sound of cymbals, and it was painful to practice for the ensemble recital.              |

Table 3. Responses to Trouble Caused by Visual Abnormalities

|   |  |
|---|--|
| O | I couldn't keep my eyes open because of the excessive glare from the sun when I was outside doing activities.  |
| P | I couldn't concentrate because I was bothered by the flickering fluorescent light.   |
| Q | Seeing wet tiles made me nauseous, especially at the poolside of the indoor pool and in the restroom, so I had to walk around with my eyes squinted to avoid looking at the tiles. |
| R | I was terribly bothered and unsettled when I saw patterns on my T-shirts, sweatshirts, and other clothing.   |
| S | I felt uncomfortable being in a place where a lot of people were coming and going.   |

Table 4. Responses to Trouble Caused by Smell Abnormalities

|   |  |
|---|--|
| T | I couldn't stand the smell of damp air before it rained, I felt like throwing up.  |
| U | I hated the smell of clay, and I hated doing activities with clay in kindergarten.   |
| V | I hated the smell of a certain female teacher's makeup (or perfume) and ran away when she approached me.   |
| W | I didn't like the smell of the hospital, and even after I came home from the hospital, I felt as if the smell had permeated my body, and the discomfort continued until I took a bath. |
| X | I couldn't stand the smell of other people's houses and didn't want to go to my friends' houses to visit them.   |

And people with an abnormal sense of smell stated that they "felt the smell remained in the back of my nose" not only when they were smelling an unpleasant odor, but also after the odor was gone and there were cases where the discomfort persisted until they took a bath, as in response W. Generally speaking, people's sense of smell adapts within a few minutes (Kobayashi, 2005), but we must be aware that some children with tendency of developmental disorders may not be able to adapt.

Table 5 shows examples of the responses of those who had taste abnormalities. As shown in responses Y, Z, and a, there was a noticeable number of people who were uncomfortable with the foods, textures, and density served in school lunches.

In the case of school lunches, the children stated that school lunch time was often painful because caregivers and teachers often thought they were being selfish and instructed them to eat without leavings. Also, as shown in answer b, many respondents said they could not eat rice if it had side dishes or curry roux on top. He talked about how he had a hard time telling adults how uncomfortable it was to put food on top of rice and why he didn't like it, and was scolded for saying things like, "Don't be selfish".

When we asked the respondents if they had experienced any problems because people around them did not understand that they had sensory abnormalities, 63% (22 respondents) answered that they had. When those who had experienced problems were asked about the details of their experiences (Table 6, duplicate count), the largest number of respondents (59%) said that they were scolded because they thought they were lying to avoid something unpleasant. For example, those with taste sensitivities said that when they told their parents or caregivers that a particular food was "too sweet and disgusting" or "tasted like medicine," they were scolded badly or forced to eat it because they thought they were lying and trying to avoid the food they disliked.

In addition, there were some respondents who said that they were considered by their caregivers to be telling lies simply because they did not want to participate in the activities, and that they were scolded in front of the children around them not only for telling lies, but also for being called liars by the children around them, which was terribly painful.

Furthermore, some people (41%) were told by their parents or caregivers that they were distracted by stimuli due to a lack of motivation when they were unable to do the activity at hand or listen to what was being said because they were bothered by casual sounds, smells, etc. in their daily lives. Some of them were compared by their parents to their friends around them and were continuously scolded for being distracted because they were not as motivated as others and as a result, until they became adults and learned about the characteristics of sensory abnormalities, they said, "Even though I tried very hard to avoid distractions, I was always worried about the slightest noise and couldn't concentrate on what was in front of me". I thought I was unmotivated, incapable, and a bad person," one respondent said. Respondents themselves do not understand that there is a difference between others and their own senses, so they think that the reason for their inability to concentrate is due to their own motivation or ability as the adults scolded them. In other words, if parents do not understand that sensory abnormalities are behind the reason for the inability to concentrate, and continue to blame the child, the child will end up with additional secondary problems.

Table 5. Responses to Problems Caused by Taste Abnormalities

|   |   |
|---|---|
| Y | I always left school lunches behind because I hated the taste of cold rice in the lunch box.  |
| Z | I couldn't eat the canned fruit in the school lunch because it tasted like medicine.  |
| a | The taste (density) of the milk in the bottles served at school lunches was not constant from day to day, and sometimes the taste was too light or too rich to drink.                                 |
| b | When side dishes and rice were served separately, I could eat them, but when the rice was placed on top of the side dishes as a bowl, the texture of the rice was unpleasant, and I could not eat it. |
| c | Anything with a sticky texture made me feel nauseous the moment it entered my mouth.  |

Table 6. Experiences of Suffering Due to the Lack of Understanding of Adults around you

|   | n=22 |     |
|---|------|-----|
|   | n    | %   |
| I was scolded because they thought I was lying to avoid something unpleasant. | 13   | 59% |
| They said I was distracted by stimuli due to lack of motivation.              | 9    | 41% |
| I was scolded for not to speak selfishly.                                     | 8    | 36% |
| They wouldn't take it as a sign that I was just exaggerating.                 | 5    | 23% |
| Others  | 3    | 14% |

Even when they complained of discomfort or pain due to sensory abnormalities, there were cases (36%) where they were thought to be being selfish, and cases (23%) where they were not taken seriously as just exaggerating. The characteristics of sensory abnormalities are not something that can be improved by the individual's efforts, nor are they selfish. It is necessary for the adults around them to know how children with sensory abnormalities feel and to learn how to respond to them.

#### IV. Conclusion

From the results of this study, it was confirmed that children with tendency of developmental disorders were troubled by stimuli that were not particularly bothering to people with regular development, and that in some cases they were unable to explain to adults what stimuli were unpleasant in their childhood because

they themselves did not know what was unpleasant. It was also revealed that more than 60% of the respondents have had a painful experience of being scolded or told that it was due to a lack of motivation because their parents, caregivers or teachers did not understand these sensory abnormalities. When the survey subjects of this study were young, the concept of developmental disorders was not generally known, and there was a background of adults not knowing that there were children with sensory abnormalities. Today, as the concept of developmental disorders has become more widespread, it is essential for adults to understand children's difficulties caused by sensory abnormalities, and for the adults around them to take appropriate measures from early childhood in order to make it easier for children to lead their daily lives and to prevent new secondary disabilities from occurring.

However, different children have different difficulties with different stimuli depending on the characteristics of their sensory abnormalities, which in turn causes different difficulties in their daily lives. Parents, caregivers, and teachers should know the stimuli that children with tendency of developmental disorders may have difficulty with, and should consider the possibility that there is a stimulus that the child has difficulty within the background if the child is experiencing difficulty in daily life.

From now on, I would like to clarify what kind of stimuli children with developmental tendencies of developmental disorders have trouble with and how they respond to them by targeting parents and caregivers of young children with tendencies of developmental disorders.

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## **Troubles Experienced in Childhood by Adults with Sensory Abnormalities**

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The aim of this study is to clarify what kind of problems persons who are aware of having sensory abnormalities faced in their childhood. The target Subjects of the Study were 35 adults who are aware of having sensory abnormalities. The survey was conducted through individual semi-structured interviews, either online, by telephone, or in person.

From the results of this study, it was confirmed that children with tendency of developmental disorders were troubled by stimuli that were not particularly bothering to people with regular development, and that in some cases they were unable to explain to adults what stimuli were unpleasant in their childhood because they themselves did not know what was unpleasant. It was also revealed that more than 60% of the respondents have had a painful experience of being scolded or told that it was due to a lack of motivation because their parents, caregivers or teachers did not understand these sensory abnormalities.