

Sociability of High School Students with Hearing Impairment

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Abstract: Previous studies related to the sociability of hearing-impaired children have pointed out that their sociability is less than that of hearing children. However, the actual status and details of the sociability of hearing-impaired children are not revealed. In addition, the relationship between the attributes and environmental factors of high school students with hearing impairment and their sociability has not been examined. It is guessed that information about the sociability of hearing-impaired children these days is necessary for future educational and social responses. The purpose of this study was to examine the status of sociability of high school students with hearing impairment. Social-Emotional Assessment Inventory for Deaf and Hearing-Impaired Students (Meadow, 1983) was translated into Japanese and administered to 68 high school students with hearing impairment enrolled in a school for special needs education. This study examined the scores of three factors: social adjustment, self-image and emotional adjustment. Students in this study scored higher than in previous studies. Overall, there were no major issues regarding the development of sociability, but the differences between students with high scores and those with low scores indicated that their development of sociability varies greatly between individuals, and some students' sociability may be delayed. As a result of this study, it is considered that main communication method most influence the development of their sociability. However, further consideration for other factors that may affect their development of sociability is needed.

Keywords: sociability, social adjustment, self-image, emotional adjustment, students with hearing impairment

INTRODUCTION

Hearing-impaired children have difficulty in communicating smoothly in spoken language, which causes impairment in communication. Therefore, they have difficulty acquiring language and voice information, and expressing their thoughts and emotions. It is often reported that it is difficult for children with hearing impairment to understand other's intentions and situations around them, causing troubles in interpersonal relationships and having problems with development of sociability (Yoshida & Murase, 2008). It is thought that problems such as limited communication between mother and child from infancy due to hearing impairment and lack of social experience have some influence on the process of acquiring sociability (Ichinomiya & Aizawa, 2014; Sawa, 1999). These days, the widespread use of newborn hearing screening has enabled early diagnosis and treatments of hearing-impaired children. One of the objectives of early diagnosis and treatments is to foster appropriate mother-child relationships by stabilizing mother-child communication and improving the treatment environment and it is an issue to prepare an environment for nurturing children with hearing impairment from an early stage (Nakamura,

2004). Studies related to the social adjustment of hearing-impaired children have shown that difficulties in communication may cause problems with friendships, and that they are less acceptable to children around them (Nunes, Pretzlik & Olsson, 2001; Wolters, Knoors, Cillessen & Verhoeven, 2011). On the other hand, it has been reported that social skills training has educational effects such as reducing problems with other children and stabilizing psychological state (Harada, 2013; Yoshida & Murase, 2008). In this way, although hearing-impaired children have problems of sociability, it is suggested that these problems may be improved by the educational environment and teaching methods, and that there is a strong relationship between academic ability and language skills and sociability.

In order to grasp the development of hearing-impaired children, it is important to observe them over a long period of time and gather information from parents and related persons. In addition, psychological tests and developmental tests are sometimes used to objectively assess the development of them. However, most tests conducted so far in Japan for hearing-impaired children are intended for hearing children, and it is pointed out that it is necessary to examine whether these tests can measure accurately their ability and development.

Meadow-Kendall social-emotional assessment inventory for deaf and hearing-impaired students (SEAI) is often used abroad to measure the sociability of hearing-impaired children. This test was developed for the assessment of hearing-impaired children. Different questions are set for preschool and school-age children, so they can be used according to the age and development of them.

In Japan, because there are no tests to measure the sociability of hearing-impaired children, several researchers have attempted to create a Japanese version of SEAI test. These tests are at the stage of drafting and need to be examined including their validity and reliability, but they are considered to contribute to the objective evaluation of hearing-impaired children's sociability and improvement of practical research (Motegi, 2018).

As mentioned above, the development of sociability of hearing-impaired children is a major issue, and it is thought that environmental improvement and assessment would become increasingly important for their social advancement and achievement. Previous studies have pointed out the delay in the sociability of hearing-impaired children, but the actual status of their sociability is not revealed. In addition, the relationship between attributes and environmental factors of high school students with hearing impairment and the development of their sociability has not been discussed. Since the environment surrounding hearing-impaired children has changed significantly, it is presumed that information about the actual state of their sociability is necessary for guidance and support in education for hearing-impaired children.

The purpose of this study was to examine the status of sociability of high school students with hearing impairment, and the relationship between the development of their sociability and student attributes.

METHOD

Participants

In this study, a questionnaire survey was conducted. Participants were 68 students enrolled in a school for special needs education (hearing impairment) and they consisted of high school students and students of an advanced course. Students with multiple disabilities were excluded. Table 1 shows their profile (gender, hearing loss, hearing aid or cochlear implant, educational background, main communication method).

Table 1 Student Profile

Gender	Male		Female		
	33 (48.5%)		35 (51.5%)		
Hearing level	Mild	Moderate	Severe	Profound	No answer
	1 (1.5%)	6 (8.8%)	8 (11.8%)	51 (75.0%)	2 (2.9%)
Hearing aid or cochlear implant	Only HA		CI	No answer	
	41 (60.3)		17 (25.0%)	10 (14.7%)	
Educational background	Public school		School for special needs education		
	17 (25.0%)		51 (75.0%)		
Main communication method	Sign language		Oral language		Others
	38 (55.9%)		27 (39.7%)		3 (4.4%)

Questionnaire

SEAI (Meadow, 1983) was translated into Japanese and completed by participants' homeroom teachers. SEAI is composed of three scale: social adjustment (23 items), self-image (23 items), emotional adjustment (13 items), and contains 59 items in total. Each item was rated on a five-point scale (4: very true, 3: true, 2: false, 1: very false, 0: cannot rate). On the cover of the questionnaire, a note was written as follows: "Read each item carefully and decide based on your past observations if it describes the behavior in this particular student. In deciding how to assess the student, use as your reference all children of the same age, whether they are hearing impaired or not. In responding to statements which are relevant only for students with hearing impairment, use all students with hearing impairment known to you as your reference, not just those in your present class."

Analysis

After completing the questionnaire, the answers in the questionnaire were converted into scores and analyzed as follows. First, the mean and standard deviation of each of the three scales were compared with those of previous studies (Ichinomiya & Aizawa, 2014; Meadow, 1983). In addition, the general tendency of the sociability of students with hearing impairment and the relationship between their attributes and the score of each scale were examined.

RESULTS

Table 2 Mean scores of each scale (SD)

		Scale 1 Social Adjustment	Scale 2 Self-Image	Scale 3 Emotional Adjustment
Meadow (1983)	Male	2.96 (.54)	2.97 (.48)	3.31 (.44)
	Female	3.12 (.46)	3.06 (.44)	
Ichinomiya & Aizawa (2014)	Male	2.99 (.46)	2.86 (.41)	3.64 (.64)
	Female	3.07 (.68)	2.78 (.51)	
This study	Male	3.68 (.34)	3.41 (.44)	3.79 (.37)
	Female	3.78 (.36)	3.43 (.49)	3.82 (.32)
	Total	3.73 (.35)	3.42 (.46)	3.81 (.35)

Table 2 shows mean scores (1= "low" and 4= "high") and standard deviations for each of the three scales obtained in this study along with these in previous studies. Although it is difficult to make a direct comparison because the participants were different, the scores of this study was higher than that of previous studies. Focusing on the scores of each scale, there was a common tendency that the score of Scale 3 (emotional adjustment) was higher than the other two scales. In Ichinomiya and Aizawa (2014) and this study had the common point that the score of the second scale (self-image) was the lowest among the three scales.

The mean scores for all items on Scale 1 and Scale 3 was 3 point or more, but Scale 2 had a wide range of scores, with one-point items and two-point items. The items in the one-point range were two items: "Has an affinity for a stranger who wears a hearing aid and cochlear implant. (M = 1.34, SD = 0.68)" and "Shows excited, positive responses to those who use sign language. (M = 1.84, SD = 1.05)". The items in the two-point range were three items: "Takes pride in physical appearance/personal attractiveness. (M = 2.03, SD = 1.03)", "Other students look to this student as a leader. (M = 2.70, SD = 1.04)" and "Demonstrates acceptance/pride in own social group membership. (M = 2.94, SD = 1.09)". The two items, which were in the one-point range in this study, were also in the one-point range in Ichinomiya and Aizawa (2014).

Figure 1 The distribution of the scores (Scale 1)

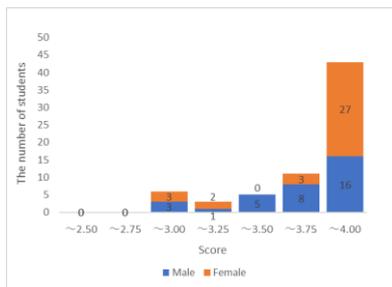


Figure 2 The distribution of the scores (Scale 2)

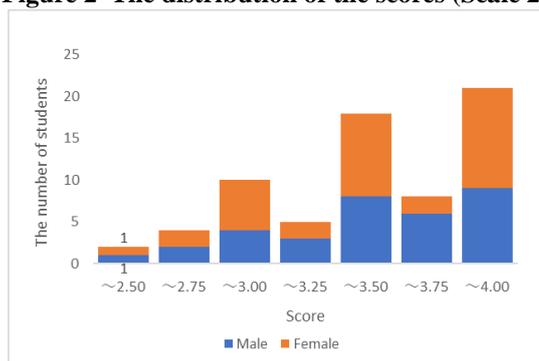
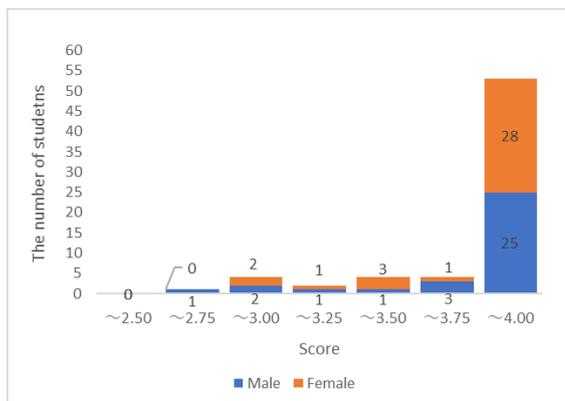


Figure 3 The distribution of the scores (Scale 3)



Paying attention to the distribution of the students’ scores (Figure 1 ~ Figure 3), the scores of 13 students on Scale 1, that of 14 students on Scale 2, and 10 students on Scale 3 were 1 SD or lower than the mean scores of each scale.

Comparison by student attributes

In order to investigate the relationship between student attributes and their scores, the students were classified by their attributes and their scores were compared by t-test.

Table 3 Comparing by gender

	Male	Female	
	Mean (SD)	Mean (SD)	P
Scale 1	3.68 (.341)	3.78 (.357)	.272
Scale 2	3.41 (.437)	3.43 (.489)	.833
Scale 3	3.79 (.375)	3.82 (.320)	.768

Table 4 Comparing by hearing level

	Mild group	Profound group	P
	Mean (SD)	Mean (SD)	
Scale 1	3.81 (.250)	3.73 (.351)	.361
Scale 2	3.44 (.293)	3.43 (.503)	.899
Scale 3	3.94 (.077)	3.80 (.355)	.011*

Table 3 shows the result of comparing the students' scores by gender. On three scales, female students tended to score higher than male students, but there was no significant difference in scores by gender. Students with mild, moderate and severe hearing loss were classified as "mild group", and those with profound hearing loss were classified as "profound group" and the scores of the two groups were compared (Table 4). In all three scales, the scores in mild group tended to be higher than those in profound group, and a significant difference was seen at Scale 3 ($p < .05$). As a result of examining the scores of items included in Scale 3, 9 items showed significant differences.

Table 5 Comparing by hearing aid or cochlear implant

	HA	CI	P
	Mean (SD)	Mean (SD)	
Scale 1	3.72 (.355)	3.66 (.355)	.570
Scale 2	3.37 (.441)	3.26 (.446)	.410
Scale 3	3.80 (.346)	3.70 (.406)	.348

* $p < .05$

Table 5 shows the result of comparison between the hearing aid (HA) and the cochlear implant (CI). Students who wear only hearing aid tended to have higher scores, but there was no significant difference in their scores.

Table 6 Comparing by educational background

	Public school	School for special needs education	P
	Mean (SD)	Mean (SD)	
Scale 1	3.81 (.316)	3.70 (.360)	.276
Scale 2	3.38 (.490)	3.43 (.456)	.679
Scale 3	3.79 (.401)	3.81 (.329)	.882

Table 6 shows the result of comparison based on students' educational background. On Scale 1, students who had been enrolled a public school tended to score higher than students who had enrolled in only a school for special needs education. On the other two scales, students who had been enrolled in only a school for special needs education tended to score higher.

Table 7 Comparing by main communication method

	Sign language	Oral language	P
	Mean (SD)	Mean (SD)	
Scale 1	3.78 (.320)	3.67 (.357)	.209
Scale 2	3.55 (.401)	3.25 (.457)	.007**
Scale 3	3.86 (.309)	3.73 (.393)	.125

** $p < .01$

Table 7 shows the result of comparison based on the main communication method which students use. Students using sign language tended to have higher scores on all three scales, and a significant difference was seen on Scale 2 ($p < .01$). Comparing the scores of each item, significant differences were found in 10 items.

DISCUSSION

Comparison with previous studies

The average scores in this study were higher than in previous studies on all three scales. Several factors are supposed to explain why the scores obtained in this study was higher than in previous studies.

It is considered that the size of the school in which the participants of this study were enrolled influenced the score. It is said that children learn about self-adjustment, learning, cognition, and behavior, as well as adjusting emotion and motivation, through learning activities between children in their groups and classrooms (Kuwabara & Nakamoto, 2019). Therefore, it is thought that the experience of working and activity in a group may play an important role in development of sociability. In this study, the number of samples was insufficient because the survey was conducted at only one specific school. Further considerations are needed to determine whether school size affects the development of sociability of students with hearing impairment.

Tendency of scores

In this study and Ichinomiya and Aizawa (2014), the score of Scale 2 was lower than other scales. At Scale 2, there were several one-point and two-point items, and these items scored lower than the results of Meadow (1983). It is speculated that the differences in culture and environment between the United States and Japan may have influenced this result. SEAI was developed around the time when the deaf culture began to be asserted in the United States, and it is presumed that items related to deaf culture and acceptance of disability were set. Deaf culture and acceptance of disability are considered to be different depending on culture and environment. Hence, when measuring the sociability of Japanese hearing-impaired children, it may be necessary to consider setting items that match Japanese culture.

From the results obtained in this study, the students in this study overall scored higher, and there were no major problems with their sociability. However, differences between high score students and low score students at each scale suggested that development of their sociability varies greatly between individuals, and some students seemed to have a delay of sociability.

Relationship between student attributes and scores

As a result of comparing scores by gender of the students, no significant difference in their scores was found. Meadow (1983) reported that scores of female students were significantly higher than these of male students on Scale 1 and Scale 2, which was inconsistent with the results of this study. Whereas he surveyed a large number of students from several schools, participants in this study were only students of certain school. Therefore, further examination may be needed to determine whether there is a difference in the development of sociability between male students and female students.

As a result of the comparison based on the students' hearing level, the score of mild group was significantly higher on Scale 3. Although the score of profound group was lower than that of mild group, the mean score was 80 percentile or higher in the norms created by Meadow, so the score of them was not low, and hearing level don't seem to have much effect on development of sociability.

There were no significant differences in scores between students wearing only hearing aid and those wearing cochlear implant. Students wearing only hearing aids tended to positive response to those who use sign language. This is likely due to the large number of students who use sign language as their main communication method. Students wearing cochlear implant scored higher for the item: "Demonstrates acceptance/pride in own social group membership.", and some of them seem to be actively involved in activities outside of school and felt to be accepted by their social groups.

As a result of comparing the educational background of the students, no significant difference was found. On the Scale 2, students using sign language as their main communication method scored significantly higher than those of using oral language. The overall average score for the item: "Shows excited, positive responses to those who use sign language." was 1.84, suggests that student using sign language tend to respond positively to those who use sign language. The item: "Demonstrates acceptance/pride in own social group membership." had a large difference in score depending on their communication method. Some students who use sign language as their main communication method were member of deaf family. It is said that hearing-impaired children who grew up in deaf family are more likely to show desired development of sociability because their parents are less likely to feel stress about acceptance of their children's disability (Sawa, 1999). This study also suggests that students who grew up in an environment where they can

communicate in sign language from an early stage have well accepted their disability and are accepted in social groups to which they belong.

CONCLUSION

In this study, a questionnaire survey on sociability was conducted in order to investigate the actual of sociability of high school students with hearing impairment. Participants indicated higher scores on all three scales than previous studies. The relatively large size of the school in which students of this study were enrolled may make it easier to obtain social experience and group experience, which may have a positive effect on development of sociability. Overall, there were no major problems with their sociability, but some students had a delay in their sociability.

The score of Scale 2 was lower than other two scales, and there were several one-point and two-point items. These items were related to acceptance of disability and sign language, and it is considered that differences in culture and environment between the United States and Japan may have affected the scores.

As a result of examining the relationship between student attributes and scores, it is thought that main communication method most influence the development of hearing-impaired students' sociability. It is presumed that the environment in which hearing-impaired children can communicate in sign language from an early stage and the disability acceptance of them and their parents have a positive effect on their self-image.

The present study's result suggested that establishing a communication method between parents and children from an early stage and gaining social and group experiences through the growth environment and school life could promote the development of sociability in hearing-impaired children. However, participations of this study were small and limited, thus in order to accurately examine the status of sociability of students with hearing impairment, a survey of students enrolled in various size schools is needed.

In addition, this study couldn't discuss factors that may affect sociability of hearing-impaired children, such as their growth history and whether there are persons with hearing impairment in their family. Therefore, further consideration for other factors that may affect their development of sociability is needed.

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