Social intelligence of students with and without hearing impairment in mainstream schools

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ABSTRACT:

Children must accomplish interpersonal tasks and behaviors to have an appropriate relationship. To achieve this goal, the development of social intelligence which is the ability of individuals to understand the feelings, thoughts, and behaviors of others, and respond to them properly, is important. This study aimed to compare the social intelligence of students with and without hearing impairment. This study was descriptive and 122 students from mainstream schools participated (61 students with hearing impairment and 61 without any disability). The Tromso Social Intelligence scale was used to gather the data and analyze it. The results showed that social intelligence and its components (social information processing, social skills, and social awareness) are lower in students with hearing impairment than their peers from the general population. These findings, make us look more into this area and have a plan and appropriate interventions to enhance the skills related to social intelligence in students with hearing impairment.

Keywords: social intelligence, hearing impairment, mainstream schools

Introduction

Having a good relationship with peers and people in society is an important developmental task for adolescents. High social status predicts well-being (Ostberg, 2003), social behaviors, and interpersonal functioning (Guinote et al., 2015). At the interpersonal level comes one of the strengths in the Values in Action (VIA) Classification of Character Strengths and Virtues (Peterson, Seligman, 2004) which is called Social Intelligence (SI).

Social intelligence is the ability to understand your own and others' actions and manage them wisely in human relations. It includes the skills which are important for an individual to succeed in all aspects of life (Adler, 2022). In other words, social intelligence can be defined as the capacity to find the best way to get along with others, win their cooperation, and negotiate in complex social relationships and environments (Sadiku et al., 2019; Honeywill, 2015). In the definition of social intelligence, different aspects are looked at. In early studies, social intelligence had been analyzed based on two aspects which are cognitive (understanding people) and behavioral (managing people), but later studies state that it has a multiple-aspect structure. For example, Marlowe (1986) proposed a four-dimensional construct: social interest (being interested in others), social self-sufficiency, empathy skills (the ability to understand others cognitively and emotionally), and social performance skills (observable social behaviors). Goleman (2006) introduces two broad categories of social intelligence: social awareness and social facility. Weis and Süß (2007) supported the multidimensional structure of social intelligence for the domains of social knowledge, social understanding, and social memory. The Tromso social intelligence scale contains three different components: social information processing, social awareness, and social skills created (Silvera et al., 2001) and adopted by different countries (Chater et al., 2023; Sook Kyoung et al., 2019, Zulkifli et al., 2021). The Social Information Processing Model consists of social and behavioral adaptation of children in line with their responses to the social situations they encounter. This can be understood as children who make positive comments in social situations, who create and react positively, are more cooperative in the context of social interaction (Senol & Metin, 2021). Social awareness is defined as understanding ethical behavior, empathizing with others, and recognizing social support and systems (Alexander & Vermette, 2019). Students with social awareness problems are at a greater risk for antisocial behaviors, low academic performance, self-efficacy, motivation, and adaptability (Schultze-Krumbholz & Scheithauer, 2013; Van Huynh, 2018). Social awareness can enhance the quality of relationships and resilience, which in turn may decrease adverse outcomes later in life. Social skills are individuals' abilities to behave positively in social situations and interact positively with their environment (McGinnis, 2012). It includes the skills of having social cooperative behaviors, coping with difficulties positively, and social interaction (Merrell, 2003; Özbey & Köyceğiz, 2020). Children with hearing impairment have marked social interaction difficulties compared with their hearing peers. A wide range of factors can influence the social interactions between deaf and hearing children. Studies showed that the role of communication gained the highest consensus (Batten et al., 2014).

Problems with expressive language (Svirsky, 2000) in children with hearing impairment can cause them difficulties in communication, social interaction, self-awareness, independent thinking, and problem-solving skills (Sarant, 2018; Kennedy et al., 2006). Social skills abilities affect pragmatic language and social interaction (Snow & Douglas, 2017), and also enable communicating and interacting verbally and non-verbally with others (Little et al., 2017). In those who have sensory impairment (hearing), their social skills problems are more than their peers (Quevedo, 2020; Davoudi et al., 2014). Some studies have shown the relationship between social information processing and social skills (Ziv, 2013; Ziv & Sorongon, 2011), and the importance of social interaction in social processes (Ziv & Elizarov, 2020) and social awareness. Thus, the social skills and social interaction problems in children with hearing impairment may cause them social information processing and awareness difficulties too.

Social intelligence is related to emotional and behavioral skills. A socially intelligent person has behavioral flexibility and can change his/her behavior depending on the circumstances of the situation. Adequate role-taking, social perception, insight, interpersonal awareness, and adaptiveness in social performance are some indicative components of social intelligence. These abilities and skills are vital to career opportunities and progression. As social intelligence is still built up during the adolescent years, it is an important time to develop these abilities and skills. Contributions and offering opportunities for developing these skills could have beneficial impacts on adulthood. Helping children and adolescents to recognize their emotional triggers and understand and manage the impacts will influence their well-being as well as develop social and emotional capabilities in them (Lau, 2016). Children and adolescents with hearing impairment are considered a population at risk for not developing age-appropriate social and emotional skills, knowing about

the related skills that could impact the establishment and/or improvement of their social skills seems important. Even though there are studies that have addressed some skills such as language, communication, and social skills in this population, information and knowledge about their social intelligence including two important components of social information processing and social awareness skills could have an immense impact on their social skills and interactions, are missing. Thus, the purpose of this study was to examine social intelligence and its components in adolescents with and without hearing impairment.

METHOD

Participants

The participants consisted of 6th to 9th-grade students with and without hearing impairment (61 students in each group) in the mainstream schools in 2019. The mean age was 13.5± 1. Most of the students with hearing impairment were using hearing aids (56 students), and the severity of their problems was mild. In this study, 5 students had cochlear implants. The distribution of gender and grades is shown in table 1.

Instruments

Tromso Social Intelligence Scale: Measures social intelligence with the 21 items. It is relatively free of social desirability bias (Silvera et al. 2001). The scale includes three subscales of social information processing (α = .80), social skills (α = .79), and social awareness (α= .72). The scale is based on the 7-point Likert scale; how well the individual performs each skill (1 = extremely poor, 7 = extremely well). The reliable composite social intelligence score was α = .82 (Meijs et al., 2010). The reliability for the present study was α = .75

RESULTS

The Kolmogorov-Smirnov test was used to measure the normality of variable distribution. The parametric (t-test) was applied for those with a normal distribution (total social intelligence, social information processing, and social skills), and a non-parametric test (Mann- Whitney U) was used for social awareness. Table 2 shows the mean scores of social intelligence and its components for students with and without hearing impairment.

As shown in Table 2, the mean scores of social intelligence and its components for students with hearing impairment were lower than for students without hearing impairment. Table 3, part A and B shows the comparison of social intelligence and its components between students with and without hearing impairment.

According to table 3, there is a significant difference between the scores of social intelligence and its components in students with and without hearing impairment (P <0.001). The mean score of total Social Intelligence in

Table 1: **Demographic information of students with and without hearing impairment**

Demographic Information		Hearing Impairment	Without Hearing Impairment
Sex	Male	28	35
	Female	33	26
Grade	6	11	13
	7	14	13
	8	25	21
	9	11	14

Table 2: **Social intelligence among students with and without hearing impairment**

Social Intelligence (SI) Domain	Students with Hearing Impairment	Students without Hearing Impairment	Score Range
	Mean±SD	Mean±SD	
Social Information Processing	26.50 ± 5.78	29.36 ± 3.98	7-49
Social Skills	27.11 ± 5.05	30.85 ± 4.65	7-49
Social Awareness	27.52 ± 5.19	32.04 ± 3.94	7-49
Total Social Intelligence Score	81.15 ± 9.09	90.40 ± 8.24	7-147

Table 3: **Comparison of social intelligence between students with and without hearing impairment**

A: Social information processing, social skills, and total social intelligence scores

Social Intelligence (SI) Domains	Students with and without hearing impairment	Confidence interval		*P-value
	Mean Difference			
Social Information Processing	-2.85	-4.63	-1.07	<0.001
Social Skills	-3.74	-5.48	-1.00	<0.001
Total SI	-9.25	-12.37	-6.13	<0.001

**T-test used for comparison*

B: Social awareness score

Social Intelligence (SI) Domain	Mean Rank		Sum of Ranks		*P-value
	HI Students	NL Students	HI Students	NL Students	
Social Awareness	44.19	78.09	2695.50	4685.50	<0.001

**Mann Whitney test used for comparison*

students with hearing loss was 9.25 lower than normally hearing students in the score range of 7 to 147.

DISCUSSION

The objective of the present study was to examine social intelligence and its components (social information processing, social skills, and social awareness) in students with and without hearing impairment. The finding indicated that the social intelligence of students with hearing impairment is lower than their peers in the general population. Research suggests that many children with hearing impairment have significantly more social problems compared to their hearing peers (Antia & Kreimeyer, 2015; Batten et al., 2014; Quevedo, 2020). Impaired language development is linked to poorer social skills and interactions, and fewer friendships (Horwitz, et al., 2003; Rice et al., 1991; McCue Horwitz, et al., 2003). Many children with hearing impairment fall short of achieving age-appropriate language levels and are often functioning in the low average range compared to their normal hearing peers (Yoshinaga-Itano, 2005; Lederberg et al., 2013). The connection between communication and social functioning with cognitive and language development in children with hearing loss has been indicated in some studies (McCann et al., 2009; Netten et al., 2015). For example, Netten with coauthors (2015) found a positive relationship between children's communication skills in the spoken language and the social functioning of children with hearing impairment. Communication skills are very important for the social learning of children (McCue Horwitz, et al, 2003), and incidental learning (unplanned and unintended learning outside of educational settings) helps them in their social learning (Saffran et al., 1997; Conte & Andrews, 1993). For incidental learning to succeed, individuals should communicate with others as well as observe and overhear how others interact. Overhearing others can be challenging for children with hearing impairment. They miss frequent exposure to this type of social learning and have problems with their social functioning.

Another finding of the present study showed that there is a significant difference between students with hearing impairment and their peers in the general population in social processing information (SIP). Torres and coauthors (2016) found that deaf adolescents and adults had lower scores than hearing participants in all social information processing steps based on Crick and Dodge's (1994) SIP model (coding, interpretation, goal formulation, response generation, response decision, and representation). Senol and Metin's (2021) study indicated that there is a positive relationship between social information processing and social interaction. Children's social interactions affect their behaviors and responses to the situations they experience (Kington, 2013; Henrich et al., 2001; Keller et al., 2004). This situation can be explained by Crick and Dodge's (1994) Social Information Processing Model: the relationships and interactions that children establish affect the reactions in social situations which are the basis of social information processing (focusing on particular social cues and based on these cues, interpret the situation, consider possible responses from

previous experiences, evaluate them, and select one to enact). Children establish relationships with their peers and people around them, and their social interactions are related to their reactions to social information processing.

A significant difference was found between students with hearing impairment and their peers in the general population in which social skills in these students are lower than their typical hearing peers. Other studies indicated the same findings (Nassrallah et al., 2020; Quevedo & Andretta, 2020; Borton et al., 2010). Social skills are abilities that could impact social interactions and are highly related to pragmatic language abilities (Snow & Douglas, 2017). It also enables having an interaction and communication verbally and non-verbally through gestures, body language, or personal appearance. Social skills are learned and developed through social interactions, released in a certain social situation (Del Prette & Del Prette, 2017; Zive, 2013). Individuals with hearing impairment have a greater difficulty in identifying components of interaction and social performance of others. Thus, these limitations can be barriers to recognizing the demands of the social context and achieving expected performance since there is sensory deprivation (Del Prette & Del Prette, 2011).

Regarding social awareness, the findings revealed a significant difference between students with hearing impairment and their peers in the general population in which this skill is lower in students with hearing impairment than their peers. Social awareness is defined as the capacity to be aware of one's point of view and understand the perspectives of others (Selman, 2003). According to Piaget, individuals understand the world through actions and interactions (Piaget, 1963). To have good relationships, children should understand others' experiences and expressions while managing their self-expression. Children with hearing impairment experience a possible developmental delay in facial expression recognition ability (Most & Michaelis, 2012; Wang et al., 2011). Some believe this could be related to their language ability rather than deafness (Sidera et al., 2017), and some stated that people with hearing impairment match hearing individuals in the recognition of facial expressions of emotion (Rodger et al., 2021). However, students who struggle to initiate basic social awareness skills cannot form a fine peer relationship and/or interaction with others. To develop meaningful relationships and networks, children should learn how to behave toward others with kindness. Kindness is a social signal for engaging with others and people are motivated to do kind acts when they are in positive moods, and relationships, and are aware of others' needs (Campos & Algoe, 2009). Kindness, maintaining positive relationships, and problem-solving are originated in social awareness (Fowler & Christakis, 2010). Children should learn to analyze social situations and find effective ways to resolve problems. Delays in some aspects of cognitive development are related to language lag (Schick et al., 2002). When language is delayed, thinking critically about a situation is affected. Critical thinking means reviewing the ideas produced, making an indefinite decision about what action is best to take for solving the problem, and then evaluating and clarifying that solution or belief (Ruggiero, 2012). For students, it occurs when they analyze, evaluate, interpret information, and apply their creative thought to form an argument, solve a problem, or reach a conclusion. Thus, language delay is linked with lags in problem-solving, which many children with hearing impairment present with.

This study had some limitations. We did not consider some differences in the students with hearing impairment, such as differences in oral communication skills. The population of individuals with hearing impairment is diverse. Thus, our findings cannot be generalized to all subjects with this disorder. Also in this study, the self-reported measures were used and the risk to validity could have occurred; the participant could respond unusually well. Including teacher and parent reports along with students' self-reports would assess social skills more adequate.

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