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Feelings of Loneliness and Reduced Self-Esteem in the Context of Risk of Internet Addiction Among Hearing and Hearing-Impaired Adolescents

ABSTRACT

The article presents the results of a study on two groups of adolescents aged 15–18 based on an assessment of risky behaviors during internet use. The purpose of the research was to investigate the correlation between feelings of loneliness among both hearing and hearing-impaired adolescents and risky internet use, which increases the risk of internet addiction. Three tools were used to gather the data: the Questionnaire of Intrapersonal, Interpersonal and Attitudes Towards the World by Bartłomiej Golek and Ewa Wysocka (2011), the Polish adaptation of the Loneliness Scale by Jenny de Jong Gierveld and Theo van Tilburg (Grygiel et al. 2011), and the Polish adaptation of the Questionnaire of Problematic Internet Use by Kimberly Young (Poprawa 2012). The findings clearly indicate a correlation between higher levels of loneliness, lower levels of self-esteem, and the tendency to engage in risky online behavior among hearing-impaired adolescents.

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Loneliness in the 21st century

In recent years, society's understanding of loneliness has undergone an evolution. It seems that loneliness in the 21st century may have a slightly different face than in the past: what was considered until recently a typical experience of elderly, ailing, and isolated people today also seems to be the experience of much younger people (Fabiś 2017: 279–297; Kramkowska 2016: 41–42; Dołęga 2003; Wasilewska 2010; Wrótniak 2018). The social transformations and changes we are experiencing seem to bring not only benefits, but also numerous difficulties. According to Stanisław Kawula (Kawula 1999), contemporary society faces numerous problems and challenges. An unstable labor market, the risk of losing a job, or the increasing need for separation due to economic reasons are only a small part of the changes experienced in the past several years (Zamorska 2014).

But what is loneliness and how should it be understood in a social context? There are many definitions and attempts to grasp how this phenomenon should be considered. For the purposes of this study, the approach of researchers who equate loneliness with solitude (Rembowski 1991; Gajda 1987; Łopatkowa 1983) was used.

Loneliness can therefore be considered a psychological state in which an individual feels a lack of satisfaction from social relationships and may therefore develop a subjective sense of isolation, exclusion from the group, and loneliness (Śliwak, Reizer, Partyka 2015). Interestingly, this subjective feeling can accompany both people who are actually deprived of social contact and those who surround themselves with their closest family or circle of friends in their daily life (Wrótniak 2020). The condition can vary in intensity and it can affect various aspects of daily functioning, from social relationships and occupational functioning to a person's overall health (Weiss 1973). Feeling lonely can result in a number of consequences, the main ones being related to emotional health. States of depression, anxiety, sadness, or helplessness significantly contribute to higher stress levels, which, in turn, have a negative impact on general health. Moreover, general difficulties in establishing and maintaining satisfactory social relationships are much more common among people experiencing loneliness. This may, in turn, result in reduced productivity and poorer professional functioning, as the aforementioned difficulties

may be followed by problems with concentration, making decisions, and maintaining an adequate level of motivation and engagement in activities (Qualter et al. 2010). Finally, loneliness can result in an untrue self-image. This is because full self-cognition often only takes place when interacting with other people and when part of society. Misconceptions about oneself may be contained in both an inflated sense of self-esteem and in questioning one's own value as an individual (Wałejko 2007). It also seems interesting to consider the correlation between loneliness and gender. According to researchers, the quality of friendships is higher among girls than among boys, while having a friend of the opposite sex increases loneliness in boys—as opposed to female respondents (Humenny, Grygiel, Dolata 2018). Thus, loneliness ceases to be only a personal situation of a particular individual and becomes a social issue.

Social functioning of deaf adolescents

The definition of hearing-impaired people has been the subject of much debate among researchers for many years. This is because there are different perceptions of the phenomenon in medical, linguistic, and pedagogical terms. This study adopts the concept found in deaf education, which emphasizes its correlations with the socioemotional functioning, level of self-esteem, overall quality of life, and identity of a deaf or hearing-impaired person (Kobosko 2014).

Social development is the continuation of a series of changes occurring in a child's motor, physical, emotional, and intellectual development. During the first stages of development, it is the child's closest social environment, mainly the family, that has the greatest influence on the formation of their social identity. Through interactions and bonds with those closest to the child, they learn to build relationships with others and acquire basic interpersonal skills. According to Christopher Murray and Mark T. Greenberg (2001), what builds emotional and social competence is an appropriate level of communication competence, an adequate level of motivation, an understanding of feelings and needs (both one's own and others'), the ability to exercise self-control, flexibility to adapt one's behavior to different situations, and the ability to use help and to offer support to other people. Thanks to the nucleus of communication and

motor skills, the first attempts to initiate contact with one's environment take place in infancy. This is when the first face-to-face interactions and attempts to imitate parents' facial expressions or to make simple gestures to get the parents' attention take place. Over time, rapid motor and language development allows the child to initiate contact on an increasingly large scale—not only with parents, but also with peers or siblings. The key stage for the development of the above-mentioned skills is the preschool period. If difficulties arise at this stage in communicating one's needs, establishing relationships, and understanding emotions, these difficulties are likely to grow in the following years and to affect the child's further functioning in almost every area of life. This is because relationships with peers are a natural opportunity to develop the social competences necessary for adult life.

From the perspective of meeting the needs of a child and providing the right conditions for their development in all aspects of life, it is important that the child has the chance to grow up in a diverse environment, in the company of many different people, so that they can undertake a wide range of activities and establish a range of contacts with both peers and adults. A proper emotional bond with adults and a sense of security and stability is essential. It is adults who convey knowledge to the child about how to function in the world around them (not always exclusively through verbal means) and teach them to interpret and categorize their experiences. Only over time does a child learn self-control and self-evaluation, which will give them the basis for correctly interpretating the events they experience. In other words, the first experiences from the surrounding world reach the child, as it were, through the filter of an adult, most often a parent (Schaffer 2005).

Numerous studies on the specific functioning of deaf children indicate the difficulty they have in understanding the other person's point of view and drawing conclusions from it. This phenomenon is explained by the well-known *theory of mind*. It focuses on a person's ability to behave appropriately in a situation that is new to them and to flexibly adapt their behavior to the needs of the current situation. In essence, the theory of mind is based on the ability to look beyond one's own, familiar point of view and to guess what another person is feeling or thinking. Deficits in this area will result in a significant

deterioration of the child's social functioning because this entails the risk that they will close themselves off within safe and predictable patterns in order to avoid anxiety, discomfort, and emotional tension in interpersonal interactions. Any difficulties that arise in this area may therefore cause problems in understanding the rules of alternation that apply in interaction, being attentive to non-verbal messages from an interlocutor, using metaphors, understanding the emotional tone of statements, or understanding verbal manipulation techniques (Wiśniewska 2018). Research has shown that, depending on which families and environments deaf children grow up in, clear differences in emotional and social functioning can be discerned. Deaf children and adolescents who grew up in hearing families tend to display poorer adjustment than deaf children growing up in deaf families. In addition, the former are prone to a number of psychological problems, which can manifest as difficulties controlling emotions, low self-esteem and self-image, or social competences (Calderon, Greenberg 2003).

Emotional regulation in children with hearing impairment is characterized by clear impulsivity and difficulties controlling it, sometimes also by impulsive aggression. Despite the efforts to teach deaf children to recognize their emotions and respond to them appropriately, positive results of such interventions usually focus on vocabulary and concepts related to emotions rather than on the actual ability to recognize them. Thus, there is a tendency in most deaf children to be dominated by negative emotions, which results in lower levels of self-esteem. These factors inhibit children's ability to verbalize the emotions they experience, which is essential for the proper regulation of those emotions (Dyck, Denver 2003).

For the majority of children and young people with hearing impairment, their self-image and the resulting self-esteem are negative and most often inadequate. Often, this is amplified by feelings of loneliness, alienation, and isolation. Sometimes, however, their level of self-acceptance and self-image can be too high. This, in turn, is relatively often associated with narcissistic disorders, which are more common in deaf adolescents than in their hearing peers. It is in this group that we are more likely to observe behavior disorders: tendencies to engage in risky behavior, the need to seek strong stimuli, aggression toward people and animals, stealing, cheating,

destruction of property, and, more seriously, oppositional-defiant disorder. According to research, children and young people with hearing impairment are more likely to be rejected by their peers and face unpleasant situations involving ridicule or stigmatization of their deafness. Long-term behavior of this nature can lead to secondary emotional disorders, social phobias, neuroses, or other mental disorders (Kobosko, Glanc 2021). At the same time, it is worth pointing out that current knowledge about people with hearing impairment emphasizes the growing heterogeneity of this group. The specific features of their functioning differ depending on the severity of the hearing impairment, its causes, on when it was discovered, and any therapeutic interventions implemented. Taking these variables into account, the total population of people with hearing impairment can be divided into more than 100 smaller groups, which, in fact, highlights its heterogeneity (Domagała-Zyśk 2014).

The sense of loneliness and the risk of addiction

As mentioned above, adolescence is a very important time in the life of a young person. On the one hand, teenagers face many social expectations, new challenges, and responsibilities, as they are taking on new social roles; on the other hand, they continue to be dependent on their immediate family and do not enjoy complete independence. When we juxtapose this period in life with the dynamics of many social changes, we find that it hardly surprising that escapist behaviors and tendencies appear in many young people who cannot cope with the pressure of their social environment. These may include directly self-destructive behaviors (e.g., self-aggression, directed against one's own health or life) or directly self-destructive behaviors (e.g., risky, impulsive behaviors, neglecting one's own needs and health, or a vulnerability to addictions) (Wasilewska-Ostrowska 2018).

The leading concepts of addiction risk oscillate around two of the most popular positions: the bio-psycho-social model of addiction and the concept of protective factors and risk factors. The former involves the theory according to which addiction is made up of biological factors (e.g., genetic predisposition or neurobiological mechanisms), psychological factors (emotional, cognitive, and behavioral elements), and social factors (e.g., specific features of the family,

peers, and wider society). When it comes to neuroscience, it is important to point out the role of serotonin and dopamine, which stimulate the reward center of the brain when we perform activities that give us a sense of satisfaction and fulfilment. These activities can have a regulating influence on negative emotions and, although they may prove unfavorable or even harmful in general, they are perceived by the brain as desirable and thus there is an urge to repeat them regularly. The psychological factors include an individual's character traits, temperament, or susceptibility to stress. The latter plays a significant role in the need for various sensations—and it is sensations, in the broadest sense, that accompany the perpetuation of certain habitual behaviors. Among the social factors, on the other hand, we find patterns of socialization created over the years by parents, close family, friends, acquaintances, or other significant people in our lives. If these patterns include certain deficits—for example, inappropriate coping strategies, a lack of understanding of one's own and others' emotions, or difficulties establishing and maintaining relationships—they will be fertile ground for the emergence and perpetuation of habitual behavior (Soo-Hyun et al. 2017).

The concept of protective factors and risk factors, on the other hand, identifies the following areas:

- family environment (especially relationships and connections with close people),
- non-family environment (including peers),
- school environment, related to the place of residence, and
- individual resources, qualities, skills, and abilities.

Any abnormalities resulting from disturbed relationships in particular areas may push a young person closer to addictive behavior (Jessor 1991). Based on the knowledge we have gained so far about the specific social development of people with hearing impairment and the communication difficulties that accompany it, it seems justified to look at risky behaviors in this group of adolescents, which can lead to the mechanism of addiction.

Analysis of research results

In the study on differences in risky behavior during internet use among hearing and deaf adolescents, quantitative data collection

tools (testing methods and questionnaires) were used: the Test of Problematic Internet Use (PIU) (2012), which is Ryszard Poprawa's adaptation of Kimberly Young's Internet Addiction Test; the Questionnaire of Intrapersonal, Interpersonal Attitudes and Attitudes Towards the World by Bartłomiej Gołek and Ewa Wysocka; the De Jong Gierveld Loneliness Scale by Jenny de Jong Gierveld and Theo van Tilburg (Polish adaptation by Paweł Grygiel, Grzegorz Humenny, Slawomir Rębisz, Piotr Świtaj, and Justyna Sikorska), and a questionnaire on perceived support from the social environment.

The PIU test consists of 37 items related to seeking sensations in the internet, escaping from real-life problems, seeking to satisfy frustrated needs, strengthening the Self, and compensating for one's weaknesses through excessive internet activity. The respondents rated how true each statement in the questionnaire was about their behavior on a 5-point scale. The main symptoms related to problematic internet use revolve around increasing difficulty in regulating one's internet activity, compulsion to use the internet, experiencing mood changes when internet activity is reduced, neglecting important duties in favor of spending time in the virtual world, or failing to perceive the long-term consequences of the time spent online.

In the second questionnaire (the Questionnaire of Intrapersonal, Interpersonal Attitudes and Attitudes Towards the World), the statements were categorized into several areas:

1. social support vs. indifference from other people (additionally, whether or not one feels appreciated),
2. feeling safe vs. feeling threatened by others,
3. doing things for others and sociability vs. egocentrism and the need to isolate oneself,
4. aggressiveness vs. lack of aggression,
5. image of the world—beliefs about the meaning of life in this world and being kind to people, and
6. life image—beliefs about the effectiveness of one's actions and the ability to control the course of one's life (Michalczyk 2022).

The first area focuses on the respondents' behavior in specific social networks, for example, experiencing emotional support (which can be messages of approval, acceptance, liking, or respect), experiencing support in terms of value (assurances of the importance of

the individual against the whole group, e.g., "Thanks to you, we did well"), experiencing instrumental support (material and/or financial help), and experiencing information support (e.g., advice when facing a problem) (Kmiecik-Baran 2000). The feeling of being appreciated or unappreciated by others is also included in this category.

According to Christopher A. Murray, the second area, the need for security, has three components: social, physical, and psychological. The need for security is one of the most important and basic developmental needs; whether it is fulfilled will determine further relationships and contact with other people throughout one's life (Gołek, Wysocka 2011).

In the third area, the respondent addresses the need to experience altruism or support in the material or spiritual sphere, to share with others, to engage socially, or to focus on the common good. A common feature of pro-social behavior is its selflessness and idealistic dedication to other individuals, groups, or communities.

The fourth area defines behavior characterized by negative emotions and directed at a specific person or group of people (in which case it is referred to as interpersonal aggression) or inanimate objects. This can take the form of a verbal and/or physical attack that allows one to vent the frustration about events in which one is involved.

Area five is related to the belief that the world is meaningful, friendly, properly organized, and, in the vast majority of cases, friendly toward the people living in it. These are beliefs that build an individual's private worldview and attitude toward life.

In the sixth area, on the other hand, the main assumption is that human beings, and not something else, are the driving force behind all events, which entails the need for control. Satisfying this need is extremely important for achieving mental balance and skillfully dealing with emotionally difficult situations.

The scale for measuring feelings of loneliness contained 11 positive and negative statements. The respondents were asked to rate how accurately these statements described their well-being in terms of subjective feelings of loneliness and isolation.

The study group consisted of 75 hearing and 75 deaf adolescents aged 15–18 years attending boarding schools in the Lesser Poland, Greater Poland, and Subcarpathian voivodeships. The degree of hearing impairment in the group of deaf adolescents ranged from mild to profound hearing loss.

Table 1. Analysis of differences between girls and boys among hearing respondents

Dependent variable	Means		Statistical deflection		t	p
	K	M	K	M		
QIIA&ATW C-IS	15,61	16,10	1,89	1,87	,37	,546
QIIA&ATW PS	16,17	17,49	1,78	1,89	,01	,917
QIIA&ATW S-MS	14,58	15,51	1,75	1,79	,03	,862
QIIA&ATW PS	14,69	15,21	1,83	1,73	,04	,846
QIIA&ATW SO	17,00	17,72	2,39	1,81	3,29	,074
QIIA&ATW LST	16,03	16,69	2,44	1,42	11,89	,001
QIIA&ATW P-S	15,17	16,46	2,65	1,67	5,79	,019
QIIA&ATW LA	12,25	12,72	1,61	2,49	8,58	,005
QIIA&ATW MS&OW	13,47	12,10	1,44	1,82	,44	,508
QIIA&ATW FW	13,31	12,46	1,82	2,35	2,29	,134
QIIA&ATW SE	15,64	15,77	1,84	1,84	,11	,740
QIIA&ATW NFH	14,42	15,44	2,71	2,09	2,66	,107
QIIA&ATW GS-ES	61,06	64,31	5,25	4,54	,05	,827
QIIA&ATW IF	60,44	63,59	7,16	4,16	9,87	,002
QIIA&ATW OTM	33,03	34,41	4,37	2,36	14,18	<,001
QIIA&ATW MTO	27,42	29,18	3,40	3,09	,51	,479
QIIA&ATW WI	26,78	24,56	2,21	2,85	4,87	,031
QIIA&ATW LI	30,06	31,21	4,02	3,11	2,48	,119
GAL Neg. em.	10,86	11,56	1,15	1,96	7,64	,007
GAL Social pos.	19,78	19,21	,90	1,96	4,41	,039
GAL general	14,81	16,62	1,97	4,26	3,70	,058
PIU	29,00	27,28	11,60	18,79	10,89	,001

Note. Abbreviations used in the table stand for the following thematic areas of the tools that were used: QIIA&ATW: Questionnaire of Intrapersonal, Interpersonal Attitudes and Attitudes Towards the World; C-IS: cognitive-intellectual sphere; PS: physical sphere; S-MS: socio-moral sphere; PS: personality sphere; SO: support from others; LST: lack of a sense of threat; P-S: pro-sociality; LA: lack of aggressiveness; MS&OW: making sense of and organizing the world; FW: friendliness of the world; SE: sense of efficacy; NFH: no feeling of helplessness; GS-ES: global self-esteem sphere; IF: interpersonal functioning; OTM: others toward me; MTO: me toward others; WI: world image; LI: life image; GAL: general area of loneliness; GAL Neg. em.: negative emotions; GAL Social pos.: social position; GAL general: general level of loneliness; PIU: problematic internet use.

Source: Michalczyk 2022: 100–101.

The data in Table 1 show that girls scored statistically signifi-
cantly higher than boys in world image (QIIA&ATW WI) (26.78
vs. 24.56 points), social position (GAL Social pos.) (19.78 vs. 19.21
points), and problematic use of the internet (PIU) (29.00 vs. 27.28
points). Boys, on the other hand, scored significantly higher than
girls in the lack of a sense of threat (QIIA&ATW LST) (16.69 vs.
16.03 points), pro-sociality (QIIA&ATW P-S) (16.46 vs. 15.17
points), non-aggressiveness (QIIA&ATW LA) (12.72 vs. 12.25
points), interpersonal functioning (QIIA&ATW IF) (63.59 vs.
60.44 points), the area of "others toward me" (QIIA&ATW OTM)
(34.41 vs. 33.03 points), and negative emotions (GAL Neg. em.)
(11.56 vs. 10.86 points). In the overall result, it is characteristic that
both gender groups scored high in the sphere of general self-esteem
and self-esteem in the physical sphere. This means that both groups
perceive themselves as attractive and have a fairly high overall self-
esteem. The analysis also shows that there are no large discrepancies
in scores between the male and female groups, indicating that there
are no particularly large differences in terms of how both genders
function in the areas captured by the tool.

Table 2. Analysis of differences between girls and boys in the group of respondents
with hearing impairment

Dependent variable	Means		Statistical deflection		t	p
	K	M	K	M		
QIIA&ATW C-IS	11,78	10,89	2,23	1,74	1,93	,057
QIIA&ATW PS	13,08	13,13	2,07	2,30	−,10	,921
QIIA&ATW S-MS	12,57	11,87	1,85	2,33	1,44	,155
QIIA&ATW PS	13,16	13,18	2,41	2,10	−,04	,966
QIIA&ATW SO	10,32	10,11	1,68	2,33	,47	,643
QIIA&ATW LST	10,84	10,74	1,89	2,48	,20	,844
QIIA&ATW P-S	13,81	15,47	2,07	2,81	−2,92	,005
QIIA&ATW LA	8,43	8,68	1,44	1,79	−,67	,505
QIIA&ATW MS&OW	9,59	9,87	1,88	2,12	−,59	,556
QIIA&ATW FW	9,65	8,50	1,87	2,41	2,30	,024
QIIA&ATW SE	12,76	13,95	1,80	2,01	−2,70	,009
QIIA&ATW NFH	10,32	11,47	2,07	2,04	−2,42	,018
QIIA&ATW GS-ES	50,59	49,08	5,21	4,38	1,36	,177

Dependent variable	Means		Statistical deflection		t	p
	K	M	K	M		
QIIA&ATW IF	43,41	45,00	3,01	5,27	−1,60	,113
QIIA&ATW OTM	21,16	20,84	2,56	4,00	,41	,682
QIIA&ATW MTO	22,24	24,16	2,23	3,24	−2,97	,004
QIIA&ATW WI	19,24	18,37	2,88	3,57	1,17	,247
QIIA&ATW LI	23,08	25,42	2,82	3,26	−3,32	,001
GAL Neg. em.	19,22	19,24	2,33	1,92	−,04	,967
GAL Social pos.	12,35	12,74	2,15	2,06	−,79	,431
GAL general	40,49	40,08	4,32	5,05	,38	,709
PIU	84,57	72,21	6,58	11,70	5,62	< ,001

Source: Michalczyk 2022: 102.

When analyzing the results, it can be seen that the girls with hearing impairment scored statistically significantly higher in the sphere of world friendliness (QIIA&ATW FW) (9.65 vs. 8.50 points) and on the PIU questionnaire (84.57 vs. 72.21 points). In contrast, the boys scored higher in pro-sociality (QIIA&ATW P-S) (15.47 vs. 13.81 points), sense of efficacy (QIIA&ATW SE) (13.95 vs. 12.76 points), lack of sense of helplessness (QIIA&ATW NFH) (11.47 vs. 10.32 points), sphere of "me toward others" (QIIA&ATW MTO) (24.16 vs. 22.24 points), and life image (QIIA&ATW LI) (25.42 vs. 23.08 points).

Differences in the criterion of hearing or hearing impairment among respondents of the same sex are shown in Table 3.

Table 3. Analysis of differences between the group of female respondents with hearing impairment and the group of female hearing respondents

Dependent variable	Means		Statistical deflection		t	p
	S	NS	S	NS		
QIIA&ATW C-IS	15,61	11,78	1,89	2,23	7,92	< ,001
QIIA&ATW PS	16,17	13,08	1,78	2,07	6,81	< ,001
QIIA&ATW S-MS	14,58	12,57	1,75	1,85	4,79	< ,001
QIIA&ATW PS	14,69	13,16	1,83	2,41	3,05	,003
QIIA&ATW SO	17,00	10,32	2,39	1,68	13,82	< ,001
QIIA&ATW LST	16,03	10,84	2,44	1,89	10,16	< ,001

Dependent variable	Means		Statistical deflection		t	p
	S	NS	S	NS		
QIIA&ATW P-S	15,17	13,81	2,65	2,07	2,44	,017
QIIA&ATW LA	12,25	8,43	1,61	1,44	10,67	< ,001
QIIA&ATW MS&OW	13,47	9,59	1,44	1,88	9,87	< ,001
QIIA&ATW FW	13,31	9,65	1,82	1,87	8,46	< ,001
QIIA&ATW SE	15,64	12,76	1,84	1,80	6,77	< ,001
QIIA&ATW NFH	14,42	10,32	2,71	2,07	7,27	< ,001
QIIA&ATW GS-ES	61,06	50,59	5,25	5,21	8,54	< ,001
QIIA&ATW IF	60,44	43,41	7,16	3,01	13,32	< ,001
QIIA&ATW OTM	33,03	21,16	4,37	2,56	14,20	< ,001
QIIA&ATW MTO	27,42	22,24	3,40	2,23	7,71	< ,001
QIIA&ATW WI	26,78	19,24	2,21	2,88	12,52	< ,001
QIIA&ATW LI	30,06	23,08	4,02	2,82	8,60	< ,001
GAL Neg. em.	10,86	19,22	1,15	2,33	−19,31	< ,001
GAL Social pos.	19,78	12,35	,90	2,15	19,16	< ,001
GAL general	14,81	40,49	1,97	4,32	−32,50	< ,001
PIU	29,00	84,57	11,60	6,58	−25,26	< ,001

S: hearing, NS: deaf
Source: Michalczyk 2022: 103–104.

After analyzing the data in Table 3, the conclusion is that all the differences between hearing and deaf respondents were highly statistically significant. The group of hearing-impaired girls obtained lower values in almost every area of the questionnaires.

The largest differences between hearing-impaired and hearing group scores, respectively, were in the following areas: interpersonal functioning (QIIA&ATW IF) (43.41 vs. 60.44 points), global self-esteem (QIIA&ATW GS-ES) (50.59 vs. 61.06 points), and perceived support from others (QIIA&ATW WI) (17.00 vs. 10.32 points). Only for three areas—the general area of risky online behavior (PIU), the general area of loneliness (GAL), and the area of experiencing negative emotions (GAL Neg. em.)—were the scores of the hearing-impaired girls significantly higher.

Table 4. Analysis of differences between the hearing-impaired respondents and the hearing respondents (boys

Dependent variable	Means		Statistical deflection		t	p
	S	NS	S	NS		
QIIA&ATW C-IS	16,10	10,89	1,87	1,74	12,64	< ,001
QIIA&ATW PS	17,49	13,13	1,89	2,30	9,08	< ,001
QIIA&ATW S-MS	15,51	11,87	1,79	2,33	7,72	< ,001
QIIA&ATW PS	15,21	13,18	1,73	2,10	4,60	< ,001
QIIA&ATW SO	17,72	10,11	1,81	2,33	16,03	< ,001
QIIA&ATW LST	16,69	10,74	1,42	2,48	12,98	< ,001
QIIA&ATW P-S	16,46	15,47	1,67	2,81	1,88	,064
QIIA&ATW LA	12,72	8,68	2,49	1,79	8,14	< ,001
QIIA&ATW MS&OW	12,10	9,87	1,82	2,12	4,97	< ,001
QIIA&ATW FW	12,46	8,50	2,35	2,41	7,30	< ,001
QIIA&ATW SE	15,77	13,95	1,84	2,01	4,15	< ,001
QIIA&ATW NFH	15,44	11,47	2,09	2,04	8,43	< ,001
QIIA&ATW GS-ES	64,31	49,08	4,54	4,38	14,98	< ,001
QIIA&ATW IF	63,59	45,00	4,16	5,27	17,20	< ,001
QIIA&ATW OTM	34,41	20,84	2,36	4,00	18,17	< ,001
QIIA&ATW MTO	29,18	24,16	3,09	3,24	6,96	< ,001
QIIA&ATW WI	24,56	18,37	2,85	3,57	8,44	< ,001
QIIA&ATW LI	31,21	25,42	3,11	3,26	7,97	< ,001
GAL Neg. em.	11,56	19,24	1,96	1,92	−17,35	< ,001
GAL Social pos.	19,21	12,74	1,96	2,06	14,10	< ,001
GAL general	16,62	40,08	4,26	5,05	−22,07	< ,001
PIU	27,28	72,21	18,79	11,70	−12,55	< ,001

S: hearing, NS: deaf
Source: Michalczyk 2022: 104–105.

The data in Table 4 shows that, as with the comparison of the results of the two groups of girls, the male hearing respondents scored higher in almost all areas of the questionnaires used. This is particularly evident for the sphere of global self-esteem (QIIA&ATW GS-ES) (64.31 vs. 49.08 points) and interpersonal functioning (QIIA&ATW IF) (63.59 vs. 45.00 points). In contrast, the proportions were completely reversed for three other areas: problematic

internet use (PIU) (72.21 points for the hearing-impaired respondents vs. 27.28 for the hearing group), general feelings of loneliness (GAL general) (40.08 vs. 16.62 points, respectively), and negative emotions (GAL Neg. em.) (19.24 vs. 11.56 points).

Table 5. Analysis of differences between the hearing-impaired and hearing respondents in terms of perceived support

How often, during the last year, did you have the feeling of understanding and support from:	Hearing						Deaf					
	rarely		often		always or almost always		rarely		often		always or almost always	
	N	%	N	%	N	%	N	%	N	%	N	%
Your parents	23	31	40	53	12	16	56	75	11	15	8	10
Siblings or other family members	19	24	36	48	21	28	47	62	14	19	14	19
Friends and other people you know	17	23	12	16	46	61	13	17	29	39	33	44
Teachers and educators	33	44	30	40	12	16	43	57	20	27	12	16

Source: own study.

The analysis of the data shows that for hearing-impaired respondents, the subjective feeling of support was significantly lower than for their hearing peers. This difference is particularly marked in the context of parents, other family members, and teachers and educators.

The differences between hearing and hearing-impaired girls proved to be highly statistically significant. The largest disparity, however, was in problematic internet use and general feelings of loneliness: the hearing impaired girls had an advantage in these indicators. However, when comparing the differences between the two groups of boys, most findings were similar: the greatest disproportion again related to problematic internet use and general sense of loneliness "in favor" of the hearing-impaired group.

While analyzing the correlations between age and questionnaire variables in the group of hearing adolescents, the following statistically significant relationships were observed:

1. As age increases, so does the lack of aggressiveness (.56** on the Pearson scale).
2. The higher the age, the lower the degree of making sense of and organizing the world (–.27* on the Pearson scale).

3. The higher the age of the respondents, the higher the level of "me toward others" (.33* on the Pearson scale).
4. The higher the age, the lower the level of world image (–.33** on the Pearson scale).

In contrast, for the group of hearing-impaired respondents, the relationships were somewhat different:

1. The higher the age, the lower the level of self-assessment in the physical sphere (–.35** on the Pearson scale).
2. The higher the age, the lower the level of character self-assessment (–.37** on the Pearson scale).
3. The higher the age, the lower the level of pro-sociality (–.26* on the Pearson scale).
4. The higher the age, the lower the level of global self-esteem (–.40** on the Pearson scale).
5. The higher the age, the lower the level of "me toward others" (–.32** on the Pearson scale).
6. The higher the age, the lower the level of problematic internet use (–.23* on the Pearson scale).

Among the respondents with hearing impairment, the correlation between the questionnaire variables and the degree of hearing impairment was also analyzed. One correlation proved statistically significant: the higher the degree of hearing impairment, the lower the feeling of loneliness (–.26* on the Pearson scale).

Conclusions and recommendations

The results clearly indicated a significant risk of internet addiction among young people. This phenomenon is more and more often discussed in the media, at schools, and in parent and teacher guides, but, to a large extent, the warnings contained therein concern hearing adolescents. However, as the results of the research show, it is young people with hearing impairment who are at much higher risk of problematic internet use, which, over time, may develop into real internet addiction. There may be many more reasons for this, but the phenomenon of loneliness among young people with hearing impairment is particularly strong as the research findings presented here show. Educators and teachers working with hearing-impaired young people should pay particular attention to instilling a sense of

security and trust in their students. It is often the boarding school tutor or teacher in charge who, for obvious reasons, spends most of their time with the student. Therefore, it is very important to be attentive to any changes in behavior or moods and to be sensitive to possible symptoms of increasing loneliness and isolation. For parents, one of the key issues is the ability to establish a real dialogue with their child. It is vital for the family home to be synonymous with safety for the adolescent, where they can always count on the necessary support, help, and understanding, regardless of the situation. Spending time together while doing interesting things adapted to the teenager's age and interests may prove helpful. Activities that seem too childish may lead to discouragement and alienation, which is particularly undesirable in the context of feelings of loneliness. When teenagers are offered activities that they find childish, they may feel that they are being treated like a child and that those around them do not understand the problems they are experiencing. Another, equally important tip, which can be particularly helpful nowadays, is that parents and teachers need to be introduced to the world of modern technology. It is very common for parents to completely misunderstand and cut themselves off from the virtual world in which their child operates, and to treat the internet as the greatest danger, to be approached with caution and reluctance. However, in order to strengthen the bond and prevent the sense of loneliness in young people, it would be a good idea to maintain contact with loved ones via the internet, which could be particularly useful for students attending boarding schools.

In the context of the conclusions discussed above, one more issue should be particularly clear. It is an oversimplification to see the internet as the cause of addiction and as merely a negative influence. Addiction to the internet, shopping, gambling, food, or extreme sports is only a symptom of a much deeper problem, the root of which may be issues related to loneliness, although this is not the only possible explanation. It is up to adults, especially parents, to discern the causes and mechanisms of such behavior and, if necessary, to respond appropriately by addressing the real nature of the problem.

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