

Intellectual and Developmental Disabilities

The Role of the Relationship Between Siblings and Adults with Intellectual Disability --Manuscript Draft--

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Abstract

The aim of this study was to examine the relationship between the feeling of loneliness and life satisfaction in siblings of adults with intellectual disability, considering the potential role of the assessment of the quality of the relationship as a mediator and moderator of this relationship. 103 siblings of persons with intellectual disability completed a set of questionnaires. The results indicated a significant relationship between the feeling of loneliness and life satisfaction, showed that the association between these variables is not direct and one of the factors that explains the association is the quality of the relationship with a sibling with a disability. Knowledge on these correlations may be used by professionals working with siblings of adults with intellectual disability.

Key words: adults with intellectual disability, siblings, loneliness, life satisfaction

Introduction

In recent years, the role and experiences of siblings of people with intellectual disability have been the focus of research. The functioning of these siblings during childhood and adolescence has been relatively well documented, covering positive aspects such as the psychosocial development of typically developing siblings, warmth, and engagement in relationships. Conversely, negative aspects have been explored within a deficit model, which assumes that having a brother or sister with a disability poses a risk factor for the child's healthy adjustment (Stoneman, 2001; Zaidman-Zait et al., 2020). Much less research has been conducted among the siblings of adults with intellectual disability, despite the importance of these ties for mental well-being (Sommanico et al., 2020). Research shows that young adult siblings of individuals with intellectual disability spend time together with their brothers or sisters with intellectual disability engaging in a wide range of activities and describe their relationships as of high quality (Travers et al., 2020). While people with intellectual disability and their parents become older, relations between siblings gain a new context that is based on caring and taking the role of a primary support by a non-disabled brother or sister (Avieli et al., 2019). The new challenges related to caregiving and supporting siblings with intellectual disability, tasks formerly undertaken mainly by parents, overlap with many other roles carried out in adulthood (Coyle et al., 2014; Tomeny et al., 2017). Non-disabled siblings need to include a new task of caring for their adult brother or sister with an intellectual disability and their aging parents (Lee et al., 2019; Saxena et al., 2019). The extended range of life activities creates a unique quality of their life and relations with their brother or sister with a disability, incomparable to those characteristics of their peers with non-disabled siblings (Burbidge & Minnes, 2014). Sommanico, Parrello, and De Rosa (2020) suggested that adult siblings of people with intellectual disability show a less positive attitude towards their relationship with their brother or sister, more severe depression and anxiety, and a lower life satisfaction (compared to peers with non-disabled siblings). This is especially true of relationships with siblings with severe intellectual disability and greater needs for support (Neely-Barnes et al., 2008). However, little do we know about the broader quality of these siblings' social

relationships and their importance for the overall assessment of their quality of lives. Certain social circumstances may strengthen the psychosocial functioning of adult siblings without disabilities or weaken them leading to a feeling of loneliness and alienation in the context of their life tasks (Jurkiewicz, 2017).

The Feeling of Loneliness and Life Satisfaction

Empirical findings of prior research indicate that the feeling of loneliness is directly and indirectly related to life satisfaction: a higher sense of loneliness is associated with higher helplessness, greater intensity of psychological distress, which in turn are associated with lower psychological well-being and life satisfaction (Chipuer et al., 2003; Goodwin et al., 2001; Szcześniak et al., 2020). With regard to the links with helplessness and depressive symptoms, loneliness is considered to be one of the most important factors explaining a lower assessment of one's own life (Beutel et al., 2017; Zhang et al., 2018). The feeling of loneliness is subjective and arises as a result of the perceived discrepancy between the desired and the possessed social relationships. Thus, a person can be lonely regardless of having a large social network (Perlman, 2004). Satisfaction with life, in turn, is understood as a cognitive process in which a person assesses their satisfaction against selected preferred criteria (Bucher et al., 2018). Both the feeling of loneliness and life satisfaction are significant elements of subjective well-being. The relationship between the sense of loneliness and life satisfaction can be explained using the theory of social determination which states that life satisfaction is related to the need to have close and meaningful relationships with others. Unfulfilled relational needs may lead to loneliness, negatively affecting the assessment of life satisfaction (Bucher et al., 2018). To our knowledge, the relationship between the feeling of loneliness and life satisfaction in siblings of adults with intellectual disability has not been analyzed so far.

Siblings of adults with disabilities, due to their involvement in care and support at earlier stages of development, have a well-established biography and identity of a 'guardian', with a kind of moral obligation to care for their brother or sister (Leane, 2019). Greater involvement of adult

siblings (as compared to children and youth) in caregiving responsibilities for their brother or sister with a disability may be a source of satisfaction and joy, but also tension, stress, frustration, and an additional burden (Rossetti & Hall, 2015; Saxena et al., 2019). The siblings report struggling with the dilemma of choosing between autonomy and the duty resulting from kinship, the feeling of guilt and harm while revealing empathy (Leane, 2019), increased anxiety about the care-related duties (Chou et al., 2007), and problems in balancing the caring role with others life roles, all of which significantly increases their sense of loneliness (Lee & Burke, 2018). This sense of loneliness is treated as one of the most important elements of adaptation to new developmental requirements, including reformulating communication between siblings and developing appropriate forms of participation of non-disabled siblings in various activities of their brother or sister with an intellectual disability (Roberts, 2021). Interestingly, Jurkiewicz (2017), who revealed a high sense of loneliness in people who have adult siblings with intellectual disability, suggested that it is not only the new breakthrough period of life related to reconciling many life roles that may be a potential source of a feeling of loneliness in non-disabled siblings. Susceptibility to loneliness could have been shaped in earlier developmental periods. Research shows that non-disabled siblings often report feeling like an outsider among other family members involved in raising their brother or sister with a disability. The feeling of isolation, a feeling of being aloof/different from peers, experiencing negative attitudes of peers, such as teasing or misunderstanding due to having a sibling with a disability (Avieli et al., 2019; Jurkiewicz, 2017) could create a basis for closing in and working alone through matters related to their adult sibling with a disability. The experience of being a sibling of an adult with an intellectual disability is most often described as a combination of benefits and challenges, significantly influenced by social stigma attached to devalued social identity (Paul et al., 2021).

Quality of the Relationship With a Sibling With a Disability

One of the most important social relationships for siblings of people with intellectual disability is the one with their brother or sister with a disability. It is similar to a sibling relationship between

non-disabled persons, but may involve a variety of unique interactions and circumstances that influence the nature of the relation / relationship (Doody et al., 2010) that are associated with the greater involvement in providing support and care (Dew et al., 2008). This relationship is often hierarchical because siblings with disabilities are more dependent on their non-disabled brother or sister and require emotional, instrumental, and practical support. In addition, siblings with disabilities have less social life (Circirelli, 2013). One of the characteristics of this relationship analyzed in the research is its quality. Relationship quality is determined by indicating closeness and frequency of contact, as well as overall positive, satisfying engagement in mutual interactions, and the expression of positive feelings towards this relationship (Burbidge & Minnes, 2014; Niedbalski, 2023).

Research indicates different results regarding the quality of sibling relationships in which one has an intellectual disability. It has been found that these relationships are close (Burbidge & Minnes, 2014; Hodapp et al., 2010; Tomeny et al., 2017) and positive in the majority of siblings (Rossetti et al., 2020; Rossetti & Hall, 2015), along with the declaration of the non-disabled siblings that these relationships are significant and strong for them, despite the passage of time and subsequent life challenges (Rossetti & Hall, 2015). Researchers also emphasize the complex determinants of the quality of these relationships, including the importance of different daily contacts when the sibling with an intellectual disability: a) lives in the same house or a short distance away (Rossetti & Hall, 2015) or in a nursing home (Jacobs & MacMahon, 2016); b) has a sister or brother who have their own family or when they live alone (Saxena et al., 2019). Hence, the relationships between adults and their siblings with intellectual disability are intricate and influenced by various factors, as indicated by Avieli et al. (2019).

The quality of the relationship translates into various aspects of the lives of both siblings, including current and planned care and general well-being (Rossetti & Hall, 2015). Previous research has revealed a positive correlation between the quality of the relationship with the sibling with an intellectual disability and the willingness to take care of them (Lee et al., 2019), greater responsibility in terms of provided care (Burke et al., 2012), increased support and life satisfaction (Tomeny et al.,

2017), and better well-being (Hodapp et al., 2010). On the other hand, the quality of the relationship has been found to be negatively correlated with the severity of depressive symptoms, stress (Tomeny et al., 2017), and guilt (Shivers, 2019). Siblings assessing the relationship with their brother or sister with an intellectual disability as a close one reported more benefits, and positive aspects from the experience of being a sibling of a person with a disability (Doody et al., 2010). More psychosocial benefits from the relationship with siblings with intellectual disability are emphasized by adults acting as caregivers and in a closer relationship than siblings not involved in caring (Lee et al., 2019). The durability of the relationship and the responsibility related to caring determine its constant emotional impact on the functioning of non-disabled siblings. As a result, the quality of this relationship is an important factor influencing life satisfaction of adult siblings with intellectual disability (Hall & Rossetti, 2018; Sommantico et al., 2020). Thus, the assessment of this relationship by adult non-disabled siblings is of key importance in the analysis of how they assess their quality of life in general. However, it has not been analyzed so far in relation to the feeling of loneliness and life satisfaction.

Referring to the results of previous studies, we assumed there is a significant relationship between sense of loneliness and life satisfaction in siblings of adults with intellectual disability (H1). We also formulated two hypotheses about the role of sibling relationship quality in explaining the correlation between these variables. H2: Quality of the relationship mediates the associations between sense of loneliness and life satisfaction among siblings of adults with intellectual disability. H3: Quality of the relationship moderates the link between sense of loneliness and life satisfaction among siblings of adults with intellectual disability.

Method

Participants

The sample consisted of siblings of adults with intellectual disability. The authors sent invitation letters proposing participation in the research to 20 institutions, foundations, and associations in Poland that employ people with disabilities or provide support to individuals with intellectual disability and their families. Of these, 17 distributed the questionnaires to eligible adults who consented to participate in the project. The participation in the study was voluntary and the respondents did not receive compensation for their involvement. The authors certify that all applicable institutional regulations concerning the ethical use of human volunteers were followed during the course of this research. A total of 103 siblings of people with intellectual disability participated in the study. Only single respondents were included in the study. Such a selection was made considering the results of previous studies which showed that single people (living alone) showed higher levels of loneliness and lower life satisfaction compared to partnered adults, regardless of whether their partnerships are romantic or non-romantic (Bucher et al., 2019). This inclusion criterion was adopted to standardize the sample in terms of marital status.

The sample consisted of 91 women (88.35%) and 12 men (11.65%). More than half of respondents were city residents (88-85.44%), 15 people (14.56%) were rural residents. Their age ranged from 19 to 46 years ($M = 29.06$, $SD = 9.21$). Education attainment of respondents was as follows: primary education (3-2.91%), vocational (21-20.39%), high school (32-31.07%), postgrad high school (21-20.39%), university (26-25.24%). The remaining respondents (31-30.1%) declared being a student. Most respondents (89-86.41%) had permanent employment. The average assessment of respondents' financial situation was 3.50 ($SD = 0.68$, scale range: 1-5).

The respondents have adult siblings with intellectual disability of both sexes, 77 people (74.76%) have a brother, 25 respondents (24.27%) have a sister, and one respondent reported having both a brother and a sister. The mean age of siblings with intellectual disability was $M = 27.27$ ($SD = 17.04$). The respondents indicated the degree of disability of their siblings: mild (19-18.45%), moderate (41-39.80%), severe (27-26.21%), and profound (16-15.53%).

The assessment of the quality of their relationships with siblings with disabilities was relatively high ($M=3.59$; $SD=0.63$ on a 1-5 scale, where 1 is very low and 5 is very high). Most respondents (89-86.41%) stated they lived with their siblings with disabilities.

Measures

The Satisfaction With Life Scale (SWLS) by Diener et al. (1985), in the Polish adaptation by Juczyński (2010). It is a 5-item scale used to determine the general feeling of life satisfaction. Respondents assess on a scale from 1 (completely disagree) to 7 (completely agree) to what extent each statement applies to their life so far. The Polish version of the scale has satisfactory psychometric properties. The reliability index in this group of respondents is Cronbach's $\alpha = .89$.

The UCLA Loneliness Scale by Russell et al. (1980), in the Polish adaptation by Rembowski (1992). The scale consists of 20 items: 10 of them are negative statements describing dissatisfaction with social contacts, and the remaining 10 are positive statements measuring satisfaction with interpersonal relationships. The scale includes three subscales that relate to different dimensions of the feeling of loneliness: a) sense of lack of close relationships (SLC); b) subjective sense of broken social ties (SBT); c) sense of belonging to a social group (SBG). Higher scores in subscales: SLC and SBT and lower score in subscale SBG indicate an increased general sense of loneliness. Reliability for individual subscales in this group of respondents is satisfactory (SLC - Cronbach's $\alpha = .67$; SBT - Cronbach's $\alpha = .76$; SBG - Cronbach's $\alpha = .77$).

The quality of the relationship with siblings with intellectual disability (QRS) was measured using one question: How do you assess the quality of the relationship with your brother / sister with an intellectual disability? Respondents rate their satisfaction with their relationship with a sibling with a disability on a scale from 1 (very low) to 5 (very high).

Statistical methods

First, we calculated descriptive statistics (means and standard deviations) for all the variables and performed correlational analyses to explore associations among sense of loneliness, the quality of the relationships and life satisfaction. Second, to examine whether the quality of the relationship mediates the relationship between sense of loneliness and life satisfaction, regression-based mediation analyses were conducted using the Process macro for SPSS (Model 4, Hayes, 2018). Finally, to test whether the quality of the relationship moderated the relationship between sense of loneliness and life satisfaction, a set of moderation analyses using the Process macro for SPSS was used (Model 1, Hayes, 2018).

Results

Table 1 shows descriptive statistics (means and standard deviations) for all variables: sense of loneliness, the quality of the relationship and life satisfaction, and intercorrelations (Pearson's r) between analyzed variables.

[Insert Table 1 Here]

Data indicate that all dimensions of the feeling of loneliness significantly correlate with both life satisfaction and the quality of the relationship with the sibling with a disability in respondents. The feeling of a lack of close relationships with other people and the feeling of broken social ties negatively correlates with the quality of the relationship and life satisfaction. In turn, the sense of belonging to a social group creates positive correlations with both the quality of the relationship and life satisfaction. Moreover, the quality of the relationship is positively related to life satisfaction in the examined siblings of adults with intellectual disability.

In the next step of the analysis, we checked whether the quality of the relationship was mediated by the relationship between sense of loneliness and life satisfaction. Three mediation models were created: three dimensions of loneliness as predictors, quality of the relationship as a mediator and life satisfaction as an outcome variable (Figure 1).

[Insert Figure 1 Here]

The regression analysis showed that lower loneliness manifested in lower sense of lack of close contacts with others is associated with a higher assessment of the quality of the relationship with the sibling with a disability in respondents ($B = -.48$; $p < 0.001$), which in turn is associated with higher life satisfaction ($B = .21$; $p < 0.01$). The indirect effect between these variables, with the assessment of the relationship quality as a mediator ($IE = .21$; 95% CI $(-.14, -.03)$) was significant. We also found that a lower sense of loneliness in the form of a decreased sense of broken social ties is associated with a higher assessment of the quality of the relationship with the sibling with an intellectual disability ($B = -.43$; $p < 0.001$), which in turn correlates with higher life satisfaction in respondents ($B = 1.34$; $p < 0.001$). A significant indirect effect of the relationship quality in the relationship between this dimension of the sense of loneliness and life satisfaction ($IE = .38$; 95% CI $(-.56, -.02)$) was revealed.

The third dimension of the sense of loneliness: the sense of belonging to a social group was not significantly related to the assessment of the quality of the relationship ($B = .11$; $p = 0.167$), which was positively associated with life satisfaction in respondents ($B = 1.76$; $p < 0.01$). The indirect effect was not significant ($IE = .07$; 95% CI $(-.21, .73)$). All three mediation models were statistically significant and accounted for 38 to 43% of the variance in life satisfaction. They revealed a significant relationship between the feeling of loneliness and life satisfaction, with the mediating contribution of the assessment of the quality of the relationship with the sibling with an intellectual disability.

To test whether quality of the relationship moderates the relationship between sense of loneliness and life satisfaction, we used a set of moderation analyses. Moderation models were proposed with dimensions of sense of loneliness as predictors, life satisfaction as an outcome variable, and quality of the relationship as a moderator. All three moderation models were significant and accounted for 28 to 39% of the variance in life satisfaction, but only one interaction was significant.

The analysis revealed no interactive effect of the dimension of loneliness: the sense of lack of close contact with others and the quality of the relationship with the sibling with an intellectual disability on life satisfaction ($B = 0.05$; 95% CI (-0.33; 0.11)). In the case of the second dimension of the sense of loneliness: the sense of the lack of social ties and the quality of the relationship no interaction was found with life satisfaction ($B = 0.10$; 95% CI (-0.09; 0.26)). The analysis showed the interactive effect of the third dimension of the sense of loneliness: belonging to a social group and the quality of the relationship on life satisfaction in respondents ($B = .12$; 95% CI -0.43; -0.21), $\Delta R^2 = 0.04$). The sense of belonging to a social group positively correlated with life satisfaction in respondents with a high ($B = 0.12$; 95% CI (0.11; 0.37)) and average ($B = 0.14$; 95% CI (0.09; 0.28)) assessment of the quality of the relationship with their sibling with an intellectual disability, but not with a low ($B = -0.04$; 95% CI (-0.12; 0.25) assessment of this relationship.

Discussion

The aim of the present research was to test the relationship between the feeling of loneliness and life satisfaction in siblings of adults with intellectual disability, considering the potential role of the assessment of the quality of the relationship as a mediator and moderator of this relationship. The results of our research confirmed a significant relationship between the feeling of loneliness and life satisfaction, and showed that the relationship between these variables is not direct. These conclusions are consistent with previous findings (Szcześniak et al., 2020; VanderWeele et al., 2012; Zhang et al., 2018). The level of life satisfaction in siblings of adults with intellectual disability can be better explained with the use of intermediate variables. The research revealed that the quality of the relationship with siblings with intellectual disability may be considered more as a mediator than a moderator of the relationship between the feeling of loneliness and life satisfaction in this group of respondents.

Confirming our first hypothesis, loneliness was negatively related to life satisfaction. A higher sense of lack of close contact with others and a higher sense of lack of social ties were associated

with lower life satisfaction. On the other hand, a higher sense of belonging to a social group corresponded to higher life satisfaction in siblings of adults with intellectual disability. These results are consistent with previous findings pointing to an important predictive role of the feeling of loneliness in lowering overall life satisfaction (Demeter & Rad, 2020; Mellor et al., 2008). As shown, the sense of limited relationships with others and the related lack of commitment to fulfil various social roles, resulting in a weakening of emotional exchange, is associated with a deterioration of well-being and reduced life satisfaction (Zhang et al., 2018). Other studies have revealed that higher levels of loneliness are associated with higher psychological distress and lower psychological well-being, which in turn translates into a lower assessment of various aspects of one's life (Bhagchandani, 2017; Bramston et al., 2002; Goodwin et al., 2001). Loneliness can induce feelings of insecurity, adopting a defensive, overly alert attitude in contact with others leading to social withdrawal. Thus, it may strengthen the tendency to negatively perceive one's everyday life and life in general (Segel-Karpas & Ayalon, 2020). Research by Senese and colleagues (2021) confirmed a strong relationship between loneliness and psychological maladjustment in adults. The positive relationship revealed in our study between belonging to a social group (one of the measured dimensions of the sense of loneliness) and life satisfaction is also consistent with previous research results. Research conducted so far underscores the significance of satisfying the need for belonging for the assessment of one's everyday life and life in general (Mellor et al., 2008) and shows that single individuals report higher levels of loneliness and lower life satisfaction compared to people living in partner relationships (Bucher et al., 2019). People living alone, engaged in the absorbing role of a permanent primary support of a brother or sister with an intellectual disability, in the absence of adequate family or institutional support, may feel particularly lonely in the implementation of many daily tasks (Jurkiewicz, 2017). This in turn translates into their assessment of their own quality of life (Múries-Cantán et al., 2022).

Our second hypothesis, verified in the research, has also been confirmed. The quality of the relationship with a sibling with an intellectual disability appeared to be an important mediator of the

relationship between the two dimensions of the sense of loneliness (the sense of lack of close contact with other people and the sense of broken social ties) and life satisfaction. A lower sense of lack of close contact with other people and a lower sense of broken social ties were associated with a higher assessment of the quality of the relationship with the sibling with an intellectual disability, which in turn was associated with respondents' greater life satisfaction. Thus, lower sense of loneliness, indicating satisfactory social contacts and satisfaction of relational needs (Stein & Tuval-Mashiach, 2015) is almost naturally associated with the tendency to evaluate one's relationships higher and appreciate their value. The positive relationship found in our study between the quality of the relationship with an adult sibling with an intellectual disability and life satisfaction is consistent with other researchers' findings. As emphasized by Heller and Arnold (2010), since relationships with siblings with disabilities are long-term ones, with age they become more caring and supportive, translating into an overall assessment of everyday life. Researchers draw attention to the uniqueness, increasing emotional closeness and the special importance of this relationship in adulthood in comparison with younger developmental stages (Orsmond et al., 2009; Tomeny et al., 2017) mainly because the adopted new caring role not only changes existing relationships, but also affects various aspects of the life of non-disabled adult siblings (Coyle et al., 2014). It has been shown that siblings of people with developmental and intellectual disability who report satisfactory relations with their brother or sister also report good health and see the benefits of having a sibling with a disability (Hodapp & Urbano, 2007). Therefore, considering the results of our study and research by other authors, the quality of the relationship with adult siblings with intellectual disability can be considered a path leading from the severity of loneliness to life satisfaction.

The research presented here also revealed that for correlations of the third dimension of the sense of loneliness considered here: belonging to a social group, with life satisfaction, we should consider not the mediating but moderating role of the quality of the relationship with the sibling with an intellectual disability. The feeling of belonging to a social group was positively associated with life satisfaction, but only in adult siblings of people with an intellectual disability, who indicated high and

average quality of the relationship between them. No such relationship was found in respondents who assessed their relationship with their sibling with a disability as low. Thus, the hypothesis concerning the moderating role of the quality of sibling relations in the relationship between the sense of loneliness and life satisfaction has been confirmed only in relation to this particular dimension of the sense of loneliness. This means that for people who assess their relationship with their adult sibling with an intellectual disability at least at an average level, the sense of belonging to a wider social group, providing emotional exchange and support, becomes an important element of overall life satisfaction. These results correspond with other findings indicating that the lack of good relationships, and not satisfying the need to belong to a social group may increase the feeling of loneliness, contributing to the deterioration of well-being and life satisfaction (Mellor et al., 2008).

In conclusion, our findings show that the quality of relationships with adult siblings with intellectual disability plays a complex role in mediating the relationship between the feeling of loneliness and life satisfaction. It can be considered as a mediator in the analysis of the relationship between such dimensions of the sense of loneliness as: the sense of lack of close contacts with other people and the sense of the lack of social ties, and satisfaction with life. In turn, when explaining the relationship between the so-called positive indicator of the sense of loneliness: the sense of belonging to a social group, and life satisfaction, the quality of the relationship with the sibling can play a moderating role.

The current study provides interesting results, expanding the existing, still not very in-depth analyses of the psychosocial functioning of siblings of adults with intellectual disability. However, some limitations of the study should be considered in future research. Firstly, the tested mediation model in the cross-sectional study cannot be used to clearly prove the assumed relationships. Although the results are important and interesting cognitively, they should be confirmed in longitudinal studies. Second, the study only included singles caring for adult siblings with intellectual disability. In future research, it would be worth testing these connections also among siblings who have their own families and act as a primary support for their brother or sister with a disability. Third,

in this study, the quality of sibling relationships was established with just one statement. In subsequent studies, it is worth using a more complex tool to measure this variable. Fourth, it should be emphasized that in this study, the quality of sibling relationships was analyzed solely from the perspective of individuals without disabilities. It would be worthwhile, using other tools and methods such as observation, to understand the quality of these relationships from the perspective of siblings with intellectual disability. Fifth, the obtained percentage of the explained variance in mediation models (38-43%) and the moderation model (28-39%) suggests the importance of other variables (not included here) for the analysis of the relationship between the sense of loneliness and life satisfaction in adults with siblings with intellectual disability. To reduce potential confounding effects from varying relationship dynamics, we limited the sample to single siblings. However, despite this effort, we were unable to recruit a group with entirely similar demographic characteristics, which may still introduce some variability. Subsequent analyses could also verify the role of social support provided to individuals acting as primary support of their adult brother or sister with an intellectual disability.

Despite the indicated limitations, the present study provides valuable cognitive conclusions. The relationship between the sense of loneliness and life satisfaction in adult siblings of people with intellectual disability is not direct, it can be explained to a greater extent through the mediation and moderation models. The relationship between these variables can be explained by an important factor: the quality of the relationship with a sibling with a disability. At the same time, its contribution differs depending on the considered dimension of the feeling of loneliness. Higher life satisfaction in adult siblings of people with intellectual disability can be seen as a result of the association with a lower sense of loneliness affecting a higher assessment of the quality of sibling relations. Moreover, with a high and medium assessment of this relationship, the sense of belonging to a social group and the lack of loneliness correspond to higher life satisfaction in adult siblings of people with intellectual disability.

The study also offers some practical implications worth considering. Understanding that the quality of the relationship with a sibling with a disability plays a crucial role in mitigating loneliness and enhancing life satisfaction suggests that intervention strategies, such as mental health counselling, family counselling and support groups targeting the enhancement of these sibling relationships, could be beneficial. This knowledge could also inform the development of educational initiatives aimed at raising awareness among parents, caregivers, and siblings about the significance of nurturing quality relationships between siblings.

Additionally, policymakers should take into account the implications of these findings for resource allocation and service provision, potentially necessitating increased funding for programs that promote positive relationships with siblings with disabilities. Considering that the results of this study align with those obtained in other countries, these programs could extend beyond the national borders.

In summary, the results underscore the importance of supporting positive sibling relationships, particularly in the context of disability, which can greatly impact mental well-being and overall life satisfaction. Recognizing and addressing the value of these relationships can lead to more comprehensive and effective support systems for families navigating these challenges.

References

Avieli, H., Band-Winterstein, T., & Araten-Bergman, T. (2019). Sibling relationships over the life course: growing up with a disability. *Qualitative Health Research*, 29(12), 1739-1750.

<https://10.1177/1049732319837228>.

Beutel, M.E., Klein, E.M., Brähler, E., Reiner, I., Jünger, C., Michal, M., et al. (2017). Loneliness in the general population: prevalence, determinants and relations to mental health. *BMC Psychiatry*, 17(1), 97. <https://doi.org/10.1186/s12888-017-1262-x>

Bhagchandani R.K. (2017). Effects of loneliness on the psychological well-being of college students.

International Journal of Social Science and Humanity, 7(1), 60-64.

<https://10.18178/ijssh.2017.7.1.796>

Bramston, P., Pretty, G., & Chipuer, H. (2002). Unravelling subjective quality of life: An investigation of individual and community determinants. *Social Indicator Research*, 59, 261–274.

<https://doi.org/10.1023/A:1019617921082>

Bucher, A., Neubauer, A. B., Voss, A., & Oetzback, C. (2019). Together is better: higher committed relationships increase life satisfaction and reduce loneliness. *Journal of Happiness Studies*, 20, 2445-2469. <https://doi.org/10.1007/s10902-018-0057-1>

Bucher, A., Neubauer, A. B., Voss, A., & Oetzback, C. (2019). Together is better: higher committed relationships increase life satisfaction and reduce loneliness. *Journal of Happiness Studies*, 20, 2445-2469. <https://doi.org/10.1007/s10902-018-0057-1>

Burbidge, J., & Minnes, P. (2014). Relationship quality in adult siblings with and without developmental disabilities. *Family Relations*, 63, 148–162.

<https://doi.org/10.1111/fare.12047>

Burke, M.M., Taylor, J.L., Urbano, R., & Hodapp, R.M. (2012). Predictors of future caregiving by adult siblings of individuals with intellectual and developmental disabilities. *American Journal of Intellectual and Developmental Disabilities*, 117(1), 33-47. <https://10.1352/1944-7558-117.1.33>

Cicirelli, V. (2013). *Sibling relationships across the life span*. Springer Science, Business Media.

Coyle, C.E., Kramer, J., & Mutchler, J.E. (2014). Aging together: sibling carers of adults with intellectual and developmental disabilities. *Journal of Policy and Practice in Intellectual Disabilities*, 11(4), 302-312. <https://doi.org/10.1111/JPPI.12094>

- Demeter, E., & Rad, D. (2020). Global life satisfaction and general antisocial behavior in young individuals: the mediating role of perceived loneliness in regard to social sustainability—a preliminary investigation. *Sustainability*, *12*, 4081. <https://doi.org/10.3390/su12104081>
- Dew, A., Balandin, S., & Llewellyn, G. (2008). The psychosocial impact on siblings of people with lifelong physical disability: A review of the literature. *Journal of Developmental and Physical Disabilities*, *20*, 485–507. <https://doi.org/10.1007/s10882-008-9109-5>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, *49*, 71-75.
- Doody, M.A., Hastings, R.P., O’Neill, S., & Grey, I.M. (2010). Siblings relationships in adults who have siblings with or without intellectual disabilities. *Research in Developmental Disabilities*, *31*(1), 224-231. <https://doi.org/10.1016/j.ridd.2009.09.007>
- Goodwin, R., Cook, O., & Yung, Y. (2001). Loneliness and life satisfaction among three cultural groups. *Personal Relationships*, *8*, 225–230. <https://doi.org/10.1111/j.1475-6811.2001.tb00037.x>
- Heller, T., & Arnold, C.K. (2010). Siblings of adults with developmental disabilities: Psychosocial outcomes, relationships, and future planning. *Journal of Policy and Practice in Intellectual Disabilities*, *7*(1), 16–25. <https://doi.org/10.1111/j.1741-1130.2010.00243.x>
- Hodapp, R.M., Urbano, R.C., & Burke, M.M. (2010). Adult female and male siblings of persons with disabilities: Findings from National Survey. *Intellectual and Developmental Disabilities*, *48*(1), 52-62. <https://doi.org/10.1352/1934-9556-48.1.52>
- Hodapp, R. M., & Urbano, R. C. (2007). Adult siblings of individuals with Down syndrome versus with autism: findings from a large-scale US survey. *Journal of Intellectual Disability Research*, *51*(12), 1018-1029. <https://doi.org/10.1111/j.1365-2788.2007.00994.x>
- Jacobs, P., & MacMahon, K. (2016). It’s different, but it’s the same: perspectives of young adults with siblings with intellectual disabilities in residential care. *British Journal of Learning Disabilities*, *45*(1), 12-20. <https://doi.org/10.1111/bld.12169>

- Juczyński, Z. (2001). *Narzędzia pomiaru w promocji i psychologii zdrowia. [Research instruments in health promotion and psychology]*. Polskie Towarzystwo Psychologiczne.
- Jurkiewicz, P. (2017). *Rodzeństwo osób z niepełnosprawnością intelektualną. W drodze od osamotnienia do zaradności, zrozumiałości i sensowności [Siblings of persons with intellectual disabilities. On the way from loneliness to resourcefulness, comprehensibility and meaningfulness]*. Wydawnictwo APS.
- Kruithof, K., Ijzerman, L., Nieuwenhuijse, A., Huisman, S., Schippers, A., Willems, D., & Olsman, E. (2021). Siblings' and parents' perspectives on the future care for their family member with profound intellectual and multiple disabilities: A qualitative study. *Journal of Intellectual & Developmental Disability, 46*(4), 351-361. <https://doi.org/10.3109/13668250.2021.1892261>
- Leane, M. (2019). Siblings caring for siblings with intellectual disabilities: naming and negotiating emotional tensions. *Social Science and Medicine, 230*, 264-270
<https://doi.org/10.1016/j.socscimed.2019.04.022>
- Lee, C. E., Burke, M., Arnold, C. K., & Owen, A. (2019). Correlates of current caregiving among siblings of adults with intellectual and developmental disabilities. *Journal of Applied Research in Intellectual Disabilities, 32*(6), 1490–1500. <https://doi.org/10.1111/jar.12644>
- Lee, Ch., & Burke, M.M. (2018). Caregiving roles of siblings of adults with intellectual and developmental disabilities: A systematic review. *Journal of Policy and Practice in Intellectual Disabilities, 15*(3), 237-246. <https://doi.org/10.1111/jppi.12246>
- Mellor, D., Stokes, M., Firth, L., Hayashi, Y., & Cummins, R. (2008). Need for belonging, relationship satisfaction, loneliness, and life satisfaction. *Personality and Individual Differences 45*(3), 213–21. <https://doi.org/10.1016/j.paid.2008.03.020>
- Mellor, D., Stokes, M., Firth, L., Hayashi, Y., & Cummins, R. (2008). Need for belonging, relationship satisfaction, loneliness, and life satisfaction. *Personality and Individual Differences, 45*, 213–218. <https://doi.org/10.1016/j.paid.2008.03.020>

Múries-Cantán, O., Schippers, A., Giné, C., & Blom-Yoo, H. (2022). Siblings of people with intellectual and developmental disabilities: a systematic review on their quality of life perceptions in the context of a family. *International Journal of Developmental Disabilities*.

<https://doi.org/10.1080/20473869.2022.2036919>

Jakub Niedbalski (2023). *Osoba z niepełnosprawnością intelektualną. Tożsamościowy wymiar samostanowienia i (nie)zależności w kontekście życia rodzinnego [A person with an intellectual disability: The identity dimension of self-determination and (in)dependence in the context of family life]*. Wydawnictwo UŁ.

Orsmond, G.I., Kuo, H.Y., & Seltzer, M.M. (2009). Siblings of individuals with an autism spectrum disorder Sibling relationships and wellbeing in adolescence and adulthood. *Autism*, 13(1), 59-80. <https://doi.org/10.1177/1362361308097119>.

Orsmond, G.I., & Seltzer, M.M. (2007). Siblings of individuals with autism or Down syndrome: effects on adult lives. *Journal of Intellectual Disability Research*, 51(9). 682-96, <http://dx.doi.org/10.1111/j.1365-2788.2007.00954.x>

Paul, A.M., Hussey, M.M., Woodman, A.C., Smith, A.L., & Shriver, T.P. (2022). Experiences of siblings of people with intellectual disabilities: Multiregional perspectives. *Family Relations*, 2, 671-685. <https://doi.org/10.1111/fare.12608>

Prino, L. E., Scigala, D., Fabris, M. A., & Longobardi, C. (2019). The moderating role of gender in siblings of adults with intellectual disabilities. *Interpersona*. 13(1), 1-13. <https://doi.org/10.5964/ijpr.v13i1.323>

Prino, L.E., Scigala, D., Fabris, M.A., & Longobardi, C. (2019). The moderating role of gender in siblings of adults with intellectual disabilities. *Interpersona*, 13(1), 1-13. <http://dx.doi.org/10.5964/ijpr.v13i1.323>

[Rembowski, J. \(1992\). *Samotność \(Loneliness\)*. Wydawnictwo Uniwersytetu Gdańskiego.](#)

- Roberts, C. L. (2021). A review of the literature on siblings of individuals with severe intellectual and developmental disabilities. *International Review of Research in Developmental Disabilities*, 60, 153-188. <https://doi.org/10.1016/bs.irrdd.2021.08.005>
- Rossetti, Z., Lee, E., Burke, M., & Hall, S. (2020). Perspectives about adult sibling relationships: a dyadic analysis of sibling with and without intellectual and developmental disabilities. *Research in Developmental Disabilities*, 96. <https://doi.org/10.1016/j.ridd.2019.103538>
- Russell, D., Peplau, L.A., & Cutrona, C.E. (1980). The Revised UCLA Loneliness Scale: Concurrent and Discriminant Validity Evidence. *Journal of Personality and Social Psychology*, 39(3), 472-480.
- Saxena, M., Farrell, A. F., & Adamsons, K. (2019). Empirical examination of caregiving processes and outcomes among adult siblings of individuals with intellectual and developmental disabilities. *OBM Geriatrics*, 3(2). <https://doi.org/10.21926/obm.geriater.1902054>
- Scigala, D. K., Matteo, A. F., & Longobardi, C. (2020). The relationship between personality traits and coping strategies in a sample of siblings of people with and without intellectual disability: the mediating role of sibling relationship quality. *The Open Psychology Journal*, 13(1), 101-114. <https://doi.org/10.2174/1874350102013010101>
- Segel-Karpas, D., & Ayalon, L. (2020). Loneliness and hostility in older adults: a cross-lagged model. *Psychology and Aging*, 35, 169–176. <https://doi.org/10.1037/pag0000417>
- Senese, V.P., Nasti, C., Mottola, F., Sergi, I., Massaro, R., & Gnisci, A. (2021). The relationship between loneliness and psychological adjustment: validation of the Italian Version of the Interpersonal Acceptance – Rejection Loneliness Scale. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.655410>
- Shivers, C. M. (2019). Self-reported guilt among adult siblings of people with intellectual and developmental disabilities. *American Journal of Intellectual and Developmental Disabilities*, 124(5), 470-477. <https://doi.org/10.1352/1944-7558-124.5.470>

- Sommantico, M., Parrello, S., & De Rosa, B. (2020) Adult siblings of people with and without intellectual and developmental disabilities: sibling relationship attitudes and psychosocial outcomes. *Research in Developmental Disabilities, 15*.
<https://doi.org/10.1016/j.ridd.2020.103594>
- Stein, J.Y., & Tuval-Mashiach, R. (2015). The social construction of loneliness: an integrative conceptualization. *Journal of Constructivist Psychology, 28*(5), 210–227.
<https://doi.org/10.1080/10720537.2014.911129>
- Stoneman, Z. (2001). Supporting positive sibling relationships during childhood. *Mental Retardation and Developmental Disabilities Research Reviews, 7*(2), 134-142.
<https://doi.org/10.1002/mrdd.1019>
- Szcześniak, M., Bielecka, G., Madej, D., Pieńkowska, E., & Rodzeń, W. (2020). The Role of Self-Esteem in the Relationship Between Loneliness and Life Satisfaction in Late Adulthood: Evidence from Poland. *Psychology Research and Behavior Management, 13*, 1201-1212.
<https://doi.org/10.2147/PRBM.S275902>
- Tomeny, T.S., Ellis, B.M., Rankin, J.A., & Barry, T.D. (2017). Sibling relationship quality and psychosocial outcomes among adult siblings of individuals with autism spectrum disorders and individuals with intellectual disability without autism. *Research in Developmental Disabilities, 62*, 104-114. <https://doi.org/10.1016/j.ridd.2017.01.008>
- Travers, H.E., Carlton, M.E., & Carter, E.W. (2020). Social Connections Among Siblings With and Without Intellectual Disability or Autism. *Intellectual and Developmental Disabilities, 58* (1): 19–33. <https://doi.org/10.1352/1934-9556-58.1.19>
- VanderWeele, T.J., Hawkey, L.C., & Cacioppo, J.T. (2012). On the reciprocal association between loneliness and subjective well-being. *American Journal of Epidemiology, 176*(9), 777–784. <https://doi.org/10.1093/aje/kws173>
- Zaidman-Zait, A., Yechezkiely, M., Regev, D. (2020). The quality of the relationship between typically developing children and their siblings with and without intellectual disability: Insights from

children's drawings. *Research in Developmental Disabilities*, 96, 103537.

<https://doi.org/10.1016/j.ridd.2019.103537>.

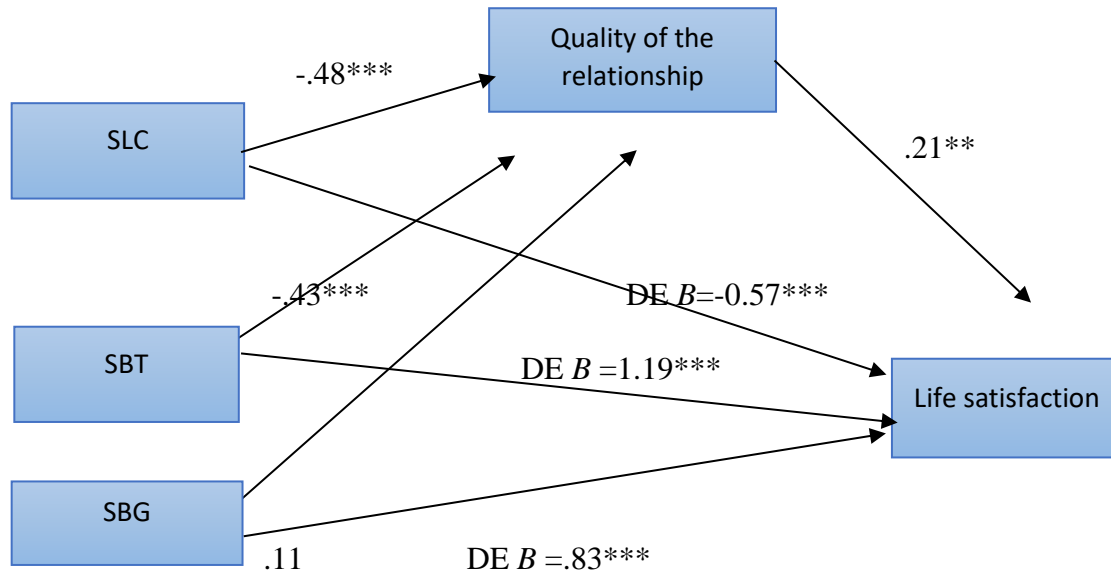
Zhang, W., Liu, L., Tang, F., & Dong, X. (2018). Social Engagement and Sense of Loneliness and

Hopelessness: Findings from the PINE Study. *Gerontology and Geriatric Medicine*, 4(1).

<https://doi.org/10.1177/2333721418778189>

Figure 1

Mediation Model of Dimensions of Sense of Loneliness on Life Satisfaction Using Quality of the Relationship as a Mediator



Note: SLC- sense of lack of close relationships, personal and intimate contacts with other people; SBT - subjective sense of broken social ties; SBG - sense of belonging to a social group; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 1

Descriptive Statistics and Pearson's Correlations between Sense of Loneliness, Quality of Relationship and Life Satisfaction

Variables	M	SD	1	2	3	4	5
1.SLC	18.42	4.76	-				
2.SBT	14.42	2.01	-.61***	-			
3.SBG	19.14	2.90	-.68***	-.67***	-		
4.Quality of the relationship	4.10	1.12	.29*	-.38***	.40***	-	
5.Life satisfaction	20.55	5.57	-.48**	-.43***	.41***	.31**	-

Note. SLC- sense of lack of close relationships, personal and intimate contacts with other people; SBT - subjective sense of broken social ties; SBG - sense of belonging to a social group; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$