CHAPTER 7

Intra- and interpersonal factors in adolescence predicting loneliness among young adults with a visual impairment

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Abstract

Youth with a visual impairment experience difficulties with forming and maintaining social relationships with peers. This challenges their psychosocial functioning and puts them at risk of being lonelier later in life. The study’s primary goal was to investigate how intra- and interpersonal factors during adolescence influence loneliness in young adulthood. Analyses were conducted on data from a national dataset. Participants \( (N = 96) \) were interviewed at two different time points. General linear regression and mediation analyses were used to examine the role of social competence, personality, and satisfaction with social support, measured at mean age 17.83, and on loneliness measured at mean age 23.45. Analyses showed that adolescents with a visual impairment who were more emotionally stable, and had higher social competence during adolescence were less lonely later in life. In addition, the results showed that emotionally unstable adolescents reported lower social competence and, therefore, were lonelier in young adulthood. These findings indicate that factors connected to loneliness in young adulthood include people’s personality traits and their level of social competence at a younger age. Knowing the underlying causes of an individual’s loneliness assists practitioners in selecting what type of intervention would be suitable for addressing these issues. Those with low social skills benefit more from a social skill training, those with negative biases of one’s own functioning profit more from interventions based on cognitive approaches. Screening methods could be used in order to determine these underlying issues and personality structure, before assigning persons to specific interventions.
Introduction

Loneliness is described by Matthews et al. (2016) as a subjective feeling of distress, emerging when social connections are regarded in a way that they are inadequate or unfulfilling. Frequent and long-lasting feelings of loneliness can have negative effects on several mental health outcomes, such as psychosis, cognitive decline, and depression (Hawkley & Cacioppo, 2010; Matthews et al., 2016). Loneliness also diminishes psychosocial functioning such as wellbeing and self-esteem. Loneliness increases the risk of physical problems like elevated blood pressure, hormonal disturbance, and even mortality (Cacioppo, Hawkley, Norman, & Berntson, 2011; Caspi, Harrington, Moffitt, Milne, & Poulton, 2006; Shiovitz-Ezra & Ayalon 2010). A variety of intra- and interpersonal factors can explain the experience of loneliness, but less is known about these associations among people with a visual impairment.

Whereas studies have shown that loneliness is a frequent experience among elderly people, recent research has shown that young people also experience loneliness (Yang & Victor, 2011). These findings are disturbing since the need for social engagement is especially important during adolescence and young adulthood because of the many stressful life turning points that take place during this period. Social support is vital for one’s ability to regulate physiological stress and for one’s overall mental wellbeing (Kawachi & Berkman, 2001). Research among typically developing persons showed that higher perceived and enacted social support is predictive of higher life satisfaction and lower negative affect (Siedlecki, Salthouse, Oishi, & Jeswani, 2014).

During adolescence restructuring of social networks takes place and peers take a more central role as parents become less influential (Woodhouse, Dykas, & Cassidy, 2012). In this transition phase, social competence is essential for success in social interactions with significant others and for the ability to build up and maintain successful peer relationships (Cillessen & Bellmore, 2011). It reduces the risk of being excluded by peers, becoming less integrated, and growing lonely (Teppers et al., 2013). Those with low social competence have a higher chance of experiencing loneliness (DiTommaso, Brannen-McNulty, Ross, & Burgess, 2003; Woodhouse et al., 2012).

Besides the interpersonal factors social competence and perceived social support, some intrapersonal factors, such as personality traits are also predictive of the experience of loneliness (Mund & Neyer, 2015; Teppers et al., 2013; Vanhalst, Goossens, Luyckx, Scholte, & Engels, 2013). Personality traits are often measured using the Big Five (McCrae & Costa, 1987). Being more extrovert, more emotionally stable, and more agreeable have been associated with lower degrees of loneliness and better social functioning because these traits are more socially desired (Jensen-Campbell et al., 2002; Mund & Neyer, 2015; Roberts, Walton, & Bogg, 2005). Those with a more neurotic personality tend to be more socially anxious, which is a disadvantage for one’s social functioning (Kaplan, Levinson, Rodebaugh, Menatti, & Weeks, 2015).

Visual Impairment and Loneliness

Among older individuals, research has found that those with a visual impairment experience more loneliness than those without (La Grow, Yeung, Alpass, & Stephens, 2015). Among young people with a visual impairment mixed results have been found. Some studies found that youngsters with a visual
impairment experience more loneliness than their peers without impairments (Huurre & Aro, 1998; Pinquart & Pfeiffer, 2011a) while other studies found no different loneliness scores between the two groups (Kef, 2002; Kef, 1999). However, Kef (2005; 2002 & 1999) did find that young people with a visual impairment experience other difficulties in social life such as a smaller social network.

Due to restrictions such as moving about and stigmatization, young people with a visual impairment have a high risk of being less engaged in social activities and spend more time home alone and, therefore, lack experiences to develop efficacious social competence (Gold, Shaw, & Wolffe, 2010; Kef, 2002). Also, their inability to see facial and physical gestures during social interactions increases the chance of demonstrating socially inappropriate behavior, since social norms can't be learned by visual cues. With these social challenges in mind it is not surprising that research demonstrates that young people with a visual impairment have fewer friends and smaller networks (Huurre & Aro, 1998; Kef, 2002; Pinquart & Pfeiffer, 2011a). One study done by Kef (1999) showed that 41% of Dutch adolescents who have blindness or low vision are unsatisfied with their social network and 60% of them want to have more social contact. Another study by Kef and Deković (2004) among young people with a visual impairment showed that being less supported, especially by peers, relates to lower psychosocial wellbeing. All such social challenges and the associated compromised social development, crucial for establishing and maintaining social relationships at a young age, contribute to the risk among people of experiencing loneliness later in life.

Less is known with respect to the role of different personality traits on the social development of young people with a visual impairment. One study showed that adolescents with a visual impairment who are extroverts are better at making close friends (Pinquart & Pfeiffer, 2011b). The same study also showed that young people with a visual impairment are less extroverted than peers without impairments. However, no studies have yet explored the direct role of personality traits in young people with a visual impairment and their association with loneliness later in life.

The current study
The current study aimed to assess the role of personality traits, social competence, and satisfaction with social support in adolescence on loneliness in young adulthood. The main hypothesis was that social competence would operate as a mediator in the relationship between personality traits and loneliness and that both personality traits (intrapersonal factors) and satisfaction with social support (interpersonal factors) during adolescence are associated with loneliness later in life.

Methods
Procedure
The data used in the current study were part of a longitudinal research project. The study was executed in compliance with a research design that has been developed and approved by a committee consisting of several professionals working in two national rehabilitation organizations and two persons with a visual impairment as representatives of the perspectives of persons with a visual impairment.
Participants were recruited via organizations providing support or education for adolescents with a visual impairment. A brief description of the study in the form of an information letter was send to eligible participants and informed consent was obtained. According to national legislation, this type of study did not require ethical medical approval. At the first measurement, all participants were interviewed individually at their homes by the researcher and several trained research assistants using the method computer assisted personal interviewing (CAPI). The overall duration of the interviews was about 90 minutes. After the first interview the participants could notify the interviewer or researcher if they wanted to be part of future measurements. These participants were searched for and reached again in 2010. This time, due to limited financial resources and time constraints, the interviews were taken by telephone, again using CAPI.

Participants
The sample in the current study consisted of 96 participants. In 2005, 154 participants entered the study. However, in 2010, 58 participants dropped-out for several reasons such as of a lack of time, reduced interest, no up to date contact information was available, or passing away. No significant differences were found on demographic or visual impairment characteristics between those who dropped-out and participants in the current sample. At the first measurement (T1 2005) the participants were aged 14 to 21 (\( M = 17.83, SD = 1.99 \)) and at the second measurement (T2 2010) they were aged 20 to 27 (\( M = 23.45, SD = 1.90 \)). Fifty-four per cent of the participants were male. A minority of the participants had no Western-Europe origins (8%), such as Moroccan or Surinamese and the majority were Dutch (92%).

At T1 15% of the participants were totally blind, 27% had severe low vision and 58% moderate low vision. The biggest proportion of the sample consisted of students (56%). Also, many participants both studied and worked (42%). Only a few participants did not follow education or had a job (2%). At T2 six years later, 57% of the participants had graduated from secondary education or Intermediate Vocational Education and 25% had a college degree. Around half of the participants were involved in a long-term romantic relationship (51%) and 2% of the participants had children.

Measurements

Loneliness. Loneliness was measured by an adapted self-report version of the Loneliness Scale of De Jong-Gierveld and Van Tilburg (1999). This scale consists of eleven items with response categories on a three-point Likert scale (“yes”, “more or less”, “no”). Total scores on the scale can vary between 0 and 11. The response category “more or less” was each time reversed to either “yes” or “no” depending on the direction of the statement. In the current sample the internal consistency of the total scale was acceptable to good (2004: \( \alpha = 0.83 \), 2010: \( \alpha = 0.74 \)).

Social competence. Social competence was measured using three subscales of the Dutch translated version of the Self Perception Profile for Adolescents (Harter, 2012). The used subscales were Social Acceptance, Close Friendship and Romantic Appeal, each consisting of five items. The subscale Social Acceptance concerns satisfaction with one’s own social skills. The subscale Close Friendship concerns the ability to make close friends. Finally, the subscale Romantic Appeal concerns the perception of one’s own
romantic attractiveness. Each item consists of two contradicting statements describing different types of people. The respondents had to choose between the statements and mention if this was either "sort of true for me" or "really true for me". In the current study the three used subscales were combined into one single variable. This was possible because the subscales correlated ($r = 0.56, 0.48, 0.38$). The internal consistency of the total scale was acceptable ($\alpha = 0.75$).

**Personality.** Personality was measured using a Big Five self-report scale (McCrae & Costa, 1987). The five personality traits that were measured were: Emotional Stability (being able to cope with negative emotions), Extraversion (strong social orientation and high social activity and positive emotions), Agreeableness (showing behavior focused on keeping and strengthening social relationships), Conscientiousness (showing orderly and responsive behavior), and Openness to Experience (curiosity and creativity). The total questionnaire consists of 30 items, six items per subscale, each mentioning a trait. Participants were asked to which extent they possessed these traits. They could answer on a seven-point Likert scale (1 = "completely incorrect for me" to 7 = "completely correct for me"). Mean scores for each subscale were used as a separate variable based on the scores of the six corresponding items. The internal consistency of the subscales turned out to be acceptable to good in the current sample (Emotional Stability: $\alpha = 0.81$, Extraversion: $\alpha = 0.87$, Agreeableness: $\alpha = 0.85$, Conscientiousness: $\alpha = 0.88$, Openness to Experience: $\alpha = 0.68$).

**Satisfaction with social support.** Satisfaction with social support was measured using two questions: one about the satisfaction with emotional support from the social network ("How satisfied are you with the help you receive when you have personal problems?") and one about the satisfaction with practical support from the social network ("How satisfied are you with the help you receive when you have practical issues?") (Kef, 1997). The two questions have response categories on a 5-point scale varying from 1 = "Not satisfied" to 5 = "Very much satisfied". Mean scores of these two questions formed the variable of satisfaction with social support. The internal consistency was acceptable ($\alpha = 0.74$).

**Statistical analyses and power**

To analyse the data the researchers used the software program IBM SPSS Statistics 23 (2016), with the addition PROCESS V2.15 (2016). For all analyses, an alpha level of 0.05 was used. Firstly, preliminary analyses were executed. The relationships between the variables were determined using the correlation coefficient ($r$) and with linear regression analyses. The separate mediation models for the possible role of social competence were tested using PROCESS (Hayes, 2016). To measure the indirect effect of the mediation model the Bias Corrected Bootstrap method was used, with a Bootstrap sample size of 10,000. The statistical power was calculated using G*Power 3.1. The analysis was executed using the statistical test Linear multiple regression: Fixed Model, $R^2$ deviation from zero. The found power was 0.76 (sample size 96, $\varepsilon = 0.15, \alpha = 0.05, \text{predictors} = 7$) which means that the chance to find a significant effect in this sample, when a true effect is present in the total population, was 76%. The chance of a type 2 error thus was 24%.
Results

Firstly, the distribution of the data was examined. The Kolmogorov-Smirnov test was used to determine the normality of the variables. Results showed that most of the variables, except the variables Emotional Stability and Openness to Experience, did not show a normal distribution ($p < .05 - p < .001$). The distribution of the dependent variable was somewhat skewed to the right. On the dependent variable two outliers were found, with scores of 10 and 9. However these were not deleted, because the Cook’s distance values showed that the outliers did not affect the results of the regression analyses. The correlations between the variables were calculated, as is summarized in Table 1. The dependent variable of Loneliness showed small to moderate correlations with the independent variables of social competence, Emotional Stability and Extraversion. The control variables age, gender, and degree of visual impairment were tested, but no significant relationships with loneliness were found.

Table 1. Descriptives and Pearson correlations coefficients (r) for all study variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean (SD)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Loneliness T2</td>
<td>2.85 (2.10)</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Social Competence</td>
<td>8.20 (1.38)</td>
<td>-.47**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Emotional Stability</td>
<td>4.20 (1.13)</td>
<td>-.35**</td>
<td>.39**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 Extraversion</td>
<td>4.73 (1.23)</td>
<td>-.24*</td>
<td>.63**</td>
<td>.54**</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 Agreeableness</td>
<td>5.61 (0.70)</td>
<td>-.18</td>
<td>.23*</td>
<td>-.03</td>
<td>.17</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Conscientiousness</td>
<td>4.58 (1.27)</td>
<td>.01</td>
<td>.20*</td>
<td>-.15</td>
<td>.08</td>
<td>.35**</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 Open. Experience</td>
<td>4.73 (0.90)</td>
<td>.09</td>
<td>-.00</td>
<td>-.29**</td>
<td>-.12</td>
<td>.21*</td>
<td>.14</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>8 Satisfaction Support</td>
<td>4.07 (0.66)</td>
<td>-.06</td>
<td>.21*</td>
<td>-.01</td>
<td>.09</td>
<td>.24*</td>
<td>.08</td>
<td>.23*</td>
<td>1</td>
</tr>
</tbody>
</table>

Note. N = 96, *p < .05, **p < .01

Next, a multiple linear regression analysis was executed. The results showed that only the variables of social competence and Emotional Stability were significant predictors of loneliness (see Table 2). The total multiple regression model explained 30% of the variance in the scores on Loneliness.

Table 2. Predictors of loneliness at T2

<table>
<thead>
<tr>
<th>Variable</th>
<th>B</th>
<th>SE</th>
<th>t</th>
<th>p</th>
<th>β</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>10.11</td>
<td>2.07</td>
<td>4.89</td>
<td>&lt;.001</td>
<td>-0.51</td>
</tr>
<tr>
<td>Social Competence</td>
<td>-0.78</td>
<td>0.18</td>
<td>-4.26</td>
<td>&lt;.001</td>
<td>-0.51</td>
</tr>
<tr>
<td>Emotional Stability</td>
<td>-0.46</td>
<td>0.21</td>
<td>-2.16</td>
<td>.034</td>
<td>-0.25</td>
</tr>
<tr>
<td>Extraversion</td>
<td>0.40</td>
<td>0.22</td>
<td>1.85</td>
<td>.067</td>
<td>0.24</td>
</tr>
<tr>
<td>Agreeableness</td>
<td>-0.50</td>
<td>0.30</td>
<td>-1.68</td>
<td>.097</td>
<td>-0.17</td>
</tr>
<tr>
<td>Conscientiousness</td>
<td>0.18</td>
<td>0.16</td>
<td>1.08</td>
<td>.282</td>
<td>0.11</td>
</tr>
<tr>
<td>Openness to Experience</td>
<td>0.12</td>
<td>0.23</td>
<td>0.54</td>
<td>.588</td>
<td>0.05</td>
</tr>
<tr>
<td>Satisfaction Support</td>
<td>0.14</td>
<td>0.30</td>
<td>0.47</td>
<td>.639</td>
<td>0.05</td>
</tr>
</tbody>
</table>

$R^2 = .30$

$F(7,95) = 5.43, p < .001$

Note. N = 96
For Emotional Stability, which was shown to be predictive of Loneliness, a mediation model was computed to analyze the role of social competence between Emotional Stability and Loneliness. It was found that social competence functions as a full mediator in the relation between Emotional Stability and Loneliness (see Table 3). This means that the direct effect between Emotional Stability and Loneliness disappears when social competence was added to the statistical model. The relationship between Emotional Satiability and Loneliness can, thus, be fully explained by level of social competence. The indirect effect was significant, $b = -0.29$, $SE = 0.10$, Bootstrap CI [-0.53,-0.12]. The total effect of the mediation model was also significant, $b = -0.64$, $SE = 0.18$, $t = -3.58$, $p < .001$. The model explained 25% of the variance in the scores on Loneliness.

Table 3. Model summary information for the mediation model with Emotional Stability as predictor

<table>
<thead>
<tr>
<th>Antecedent</th>
<th>M (COMP)</th>
<th>Y (LONELINESS)</th>
</tr>
</thead>
<tbody>
<tr>
<td>X (EM.ST.)</td>
<td>$a = 0.48$</td>
<td>$c' = -0.36$</td>
</tr>
<tr>
<td>M (COMP)</td>
<td>$b = -0.60$</td>
<td>$c = 0.18$</td>
</tr>
<tr>
<td>Constant</td>
<td>$i = 6.18$</td>
<td>$i = 9.25$</td>
</tr>
</tbody>
</table>

$R^2 = .15$ $R^2 = .25$

$F(1,94) = 17.20, p = .001$ $F(2,93) = 15.62, p = .001$

Discussion

The present study showed that lower social competence and low scores on the personality trait Emotional Stability are predictive of experiencing loneliness later in life. Our results are in line with previous results from research among persons without visual impairment (Teppers et al., 2013; Vanhalst et al., 2013).

Moreover, this research found that social competence fully explains the relationship between Emotional Stability and loneliness. This means that those who are less emotionally stable, are less likely to be socially competent and also appear to experience more loneliness later in life. Possibly, because emotionally unstable persons experience more social anxiety, this makes them less socially active which makes it harder for them to form close relationships that can protect them from feelings of loneliness.

The personality traits Extraversion, Agreeableness, Conscientiousness, and Openness to Experience did not predict loneliness. For the personality traits Conscientiousness and Openness to Experience this is not an unexpected finding, because previous research found that these traits show small to no relationship with loneliness (Teppers et al., 2013; Vanhalst et al., 2013). This could be explained by the fact that these traits are less associated with someone's social functioning and development.

Further, also no association was found between satisfaction with social support and feeling lonely. Previous research among young people with a visual impairment showed that the actual amount of social support was especially predictive of psychosocial wellbeing (Kef & Deković, 2004). There might, thus, be a difference between the effect of amount of social support and satisfaction with social support on loneliness. Those with satisfying levels of social support could still experience challenges with social
engagement and, thus, have lower levels of actual amount of social support, increasing the likelihood of being lonely. This indirect effect could be an important direction for research in the future.

The current results show that intrapersonal factors, in this study personality traits, are only slightly important for the degree of loneliness one experiences later in life. Flexible, interpersonal factors, in this case social competence, do appear to be of greater importance. This is in line with the theoretical model of De Jong-Gierveld (1987), in which it becomes clear that intrapersonal factors have little to no impact on the experience of loneliness in contrast to the subjective evaluation of one’s social environment, which is more influential. The findings also fit well with the socioecological theory around the microsystem as it is described in the model of Bronfenbrenner (1979). In the microsystem the experienced activities, roles, and interpersonal relationships, the proximal factors, are especially influential on one’s functioning. Direct contact within relationships and interactions are important and have the greatest impact on the development of young people. Thus, lower social competence might lead to fewer social interactions and reduce the positive effects of the microsystem.

Limitations

However, the power of the present study is too small to test a model with more predictors. The small sample size (N = 96), caused by a low prevalence of visual impairments in the population, can thereby also be noted as a limitation. This makes the generalizability of the findings more challenging. Another methodological limitation of the study is that most of the measured variables were not normally distributed. For example, Agreeableness and social support were skewed to the right, meaning that the majority of the sample judged themselves as agreeable and that most of them were rather satisfied with the social support they received. The variable loneliness was also skewed, with less people reporting being lonely. Also, the mean degree of loneliness in this current sample did not go beyond the threshold of 3.00, which means that on mean level the participants weren’t very lonely.

Although the exact same interview-protocols were used during the first (2005) and second (2010) measurement, it is not sure how the change in interview method, from face-to-face in the first measurement to computer assisted telephone interviews in the measurement, might have led to differences in responses of participants. At both measurements interviewers received an extensive pre-interview training and were constantly supervised during the data collection by the project supervisors. No differences in participants experiences were reported during the post-measurement evaluation interviews and also interviewers did not experienced changes in participant responsiveness. This might be explained by the fact that face-to-face interactions do not provide additional information for most of the participants, because they aren’t able to recognize facial expressions or physical gestures.

Implications for Research and Practice

Little research has been done on the predictors of loneliness among young people with a visual impairment using multiple measurement time points. The present study has made a beginning in sketching a profile of adolescents with a visual impairment that are at risk of being lonely later in life. However, other personal factors, such as job status, number of close relationships, and place of residence,
could be investigated as predictors of loneliness. Also, factors of the social context (the macro- and exosystem, by Bronfenbrenner and Ceci, 1994), such as facilities and acceptance in society, have not been taken into account, but are subjects of interest for future research.

The results of this study also implicate some directions for practice. Attention should be paid to young people with a visual impairment who are less emotionally stable or have lower social competence and, therefore, are at higher risk of being lonely. These individuals could benefit from interventions focused on improving social functioning, during adolescence, to enhance their chances of being more socially embedded when they reach adulthood. Being socially active provides opportunities to develop social skills and social competence. What type of intervention would be suitable for individuals with low social competence depends on the underlying causes for this social deficit. Those with low social skills benefit more from a social skill training, but those with negative biases of one’s own social functioning profit more from interventions based on cognitive approaches which strengthen their self-confidence (Lodder, Goossens, Scholte, Engels, & Verhagen, 2016). Screening methods could be used in order to determine these issues before assigning individuals to specific interventions.

One example of an intervention focusing on social competence could be the use of a group based social skill programs, as group settings provide naturalistic and experimental opportunities for social engagement (Milligan, Phillips, & Morgan, 2016). Also interventions targeting emotion recognition have shown to be effective (Stichter et al., 2010). For older people with visual impairments, who already experience loneliness, an effective rehabilitation intervention, Actively Participating (“Actief Meedoen”) was developed in order to decrease loneliness (Alma, 2012). The intervention promotes social participation and factors that are of influence on it, such as psychosocial functioning.

Other types of existing interventions that have been shown to strengthen social competence are for example universal social school programs for young children (Domitrovic, Durlak, Staley, & Weissberg, 2017), peer let group meetings, and family-oriented social skills training (Amrai, Hassanzadeh, Afrooz, & Pirzadi, 2012). Cognitive Bias Modification procedures are suitable for those that have low social self-confidence and are socially anxious (Sportel, De Hullu, De Jong, & Nauta, 2013).

Conclusion

Adolescents with a visual impairment who are less emotionally stable and have lower social competence tend to experience more loneliness later in life. The intrapersonal factor ‘personality’ appears only important through the more interpersonal factor ‘social competence’ on loneliness. Since interpersonal factors are easier to adjust, support that enhance social skills or cognition should be provided for young people with a visual impairment. Further research is needed on the effectiveness of programs aiming to enhance social competence of young people with a visual impairment, in order to reduce the likelihood of experiencing loneliness later in life.