Perceived parent and peer support during adolescence and loneliness in later life among people with a visual impairment: A longitudinal study.

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Abstract

This study determined the trajectories of perceived parent and peer support among adolescents with a visual impairment and their differential associations with loneliness in later life. A total of 316 adolescents (Mean age 18 years) participated in the study in 1996. Three more measurement waves took place in 2005 (N = 205), 2010 (N = 178), and 2016 (N = 161). Drop-out was not associated with gender distribution and social support levels. Latent growth curve models were fitted to the data. For perceived parent support a linear decrease was found. No association was found between perceived parent support and loneliness in later life. For perceived peer support a quadratic growth pattern was found, with first an increase and after age 27 a decrease in peer support. The initial level and the rate of change in perceived peer support both predicted loneliness in adulthood. Adolescents who started with relatively little peer support as well as those who experience the most rapid decline in peer support, experienced most loneliness in later life. This study indicates that social support develops similarly in adolescents with a visual impairment compared to typically developing adolescents, but highlights the importance of establishing and maintaining peer relationships throughout life.
Introduction

Young persons with a visual impairment, on average, have smaller social networks and fewer friends, date less, and spend more time home alone (Gold, Shaw, & Wolfe, 2010; Kef, 1997; Kef, Hox, & Habekothé, 2000). As a consequence, they might be at heightened risk for experiencing a lack of social support and loneliness. Social support might be especially missed during the stressful transition period from adolescence to adulthood. However, little is known about the course of social support and its associations with loneliness in later life among young people with a visual impairment, due to the preponderance of studies with cross-sectional designs. The current study was aimed to fill this gap by studying trajectories of social support from adolescence to young adulthood.

Loneliness is a subjective feeling of distress resulting from deficiencies in social relationships (De Jong Gierveld, 1987; Weis, 1973) and is hence closely linked to social relationships and support (Cacioppo, Hawkley, Cole, & Thisted, 2010). While loneliness has its highest prevalence in elderly people, it is also known that adolescence, in which the construction of the autonomous self and individualization takes place, is a particularly critical period for developing loneliness (Luhmann & Hawkley, 2016; Qualter et al., 2015; Yang & Victor, 2011). The experience of loneliness and social isolation during adolescence has a detrimental effect on health status in later life (Caspi, Harrington, Moffitt, Milne, & Poulton, 2006). Cumulative effects may arise on health outcomes when people become socially isolated during multiple life periods. Those who are chronically lonely have a higher mortality risk (Shiovitz-Ezra & Ayalon, 2010). It is, therefore, important to study predictors of loneliness to prevent early onset.

Perceived Parent and Peer Support

Persons’ perceptions about the availability of social support offered to them, in short perceived social support (Haber, Cohen, Lucas, & Baltes, 2007), are inextricably linked to relationships with parents and peers. Several studies showed that perceived social support from parents is related to self-confidence and emotional stability (Cutrona, Cole, Colangelo, Assouline, & Russell, 1994; Meadows, Brown, & Elder, 2006). A close parent-child relationship increases communication levels and, therefore, allows the child to talk about emotional problems, like feelings of insecurity and loneliness (Franzoi, Davis, & Young, 1985; Mounts, Valentiner, Anderson, & Boswell, 2006). Social support from parents continues to be important throughout adulthood. For example, cross-sectional studies among typically developing adolescents and adults showed that those with high levels of perceived parent support were better adjusted, less distressed, and had higher wellbeing, compared to those with low levels of perceived parent support (Holahan, Valentiner, & Moos, 1995; Merz, Consedine, Schulze, & Schuengel, 2009).

Not only social support from parents, but also peer support is related to psychological outcomes. Support from friends is a consistent predictor of emotional, social, and overall wellbeing (Friedlander, Reid, Shupak, & Cribbie, 2007; Rueger, Malecki, Pyun, Aycock, & Coyle, 2016). Research showed that unpopular and rejected children reported higher levels of loneliness than socially accepted children (Cassidy & Asher, 1992; Williams & Asher, 1992). In addition, peer relationships proved to be a buffer between stress and loneliness (Barrera, 1986; Cohen & Wills, 1985; Lee & Goldstein, 2016). Higher levels of peer interactions were associated with less loneliness, such that peer support helps keeping up
or regaining strength and diminishes the potentially detrimental effect of stress on psychological wellbeing. Hence, peer relationships are particularly relevant for enhancing psychological wellbeing (Cantone et al., 2015; Kun, Stroeken, Tintelen, & Vreeman, 2013). It is therefore not surprising that small social networks, peer rejection, and low friendship quality in adolescence are important predictors of feelings of loneliness (Vanhalst, Luyckx, & Goossens, 2014; Woodhouse, Dykas, & Cassidy, 2012).

**Social Support and Transition into Adulthood**

From the late teens through the twenties, social behaviors rapidly and dramatically change (Arnett, 2000; Nelson, Leibenluft, McClure, & Pine, 2005), leading to restructuring of the social network. Important network figures such as friends, parents, and significant others take on new social roles (Bokhorst, Sumter, & Westenberg, 2010). These shifts in the social network have been shown in several studies in typically developing young people. The results indicate that parental support decreases during adolescence whereas support from peers increases (Cheng & Chan, 2004; Furman & Buhrmester, 1992; Helsen, Vollebergh, & Meeus, 2000; Rueger et al., 2016). This could be explained by the fact that peer interactions increase, a greater focus on social status is established, and less time is spent at home with family members. Therefore, peers become more important, take up a more central role in the social network, and replace parents as the main source of social support.

Support from parents continues to contribute to psychological wellbeing throughout adolescence as well, albeit to a lesser extent than support from peers (Papafratzeskakou, Kim, Longo, & Riser, 2011; Segrin, 2003). Cauce and Srebnik (1990) found, while mapping out the social network of adolescents into the two dimensions ‘intimacy’ and ‘relevance’, that friends were strongly represented in both dimensions and parents only in the dimension ‘intimacy’. Moving from emerging adulthood to adulthood, social support from peers eventually also becomes less important (Brown, Eicher, & Petrie, 1986; Dunphy, 1963). One explanation for this change is that romantic relationships become more common and an important source for social support. This curvilinear relationship between age and peer support was also found in a longitudinal study conducted by Helsen and colleagues (2000) in 2,918 typically developing Dutch adolescents.

**Social Support, Loneliness, and Having a Disability**

Research among youth with disabilities has shown that transitioning into adulthood takes longer, is more complex, and more discontinuous compared with youth without disabilities (Hudson 2003, 2006; Stewart et al., 2014; Stewart, Law, Rosenbaum, & Willms, 2002). Disabilities, such as a visual impairment, account for several disability related problems which diminish options for establishing high levels of perceived social support (Kef, Hox, & Habekothé, 2000; Tipton, Christensen, & Blacher, 2013). Having less social support and smaller social networks make the complex process of adult development more stressful. Berger (2012) showed that adults with a visual impairment experienced practical limitations with moving about, which diminish their opportunities to participate in social activities outside the home. Furthermore, contextual stressors such as stigmatization and victimization place substantial
Perceived social support and loneliness

constraints on forming and maintaining social relationships with significant others (De Laat, Freriksen, & Vervloed, 2013; Forgeron et al., 2010; Vignes et al., 2009; Wilson & Scior, 2014). Also, family-related aspects, such as parental overprotectiveness can be a restriction to expand their social networks (King et al., 2006; Pinquart & Pfeiffer, 2011b).

In studies in which youth with a visual impairment are compared with youth without disabilities on levels of social support the results are mixed. A Finnish study performed by Huurre and colleagues (1999) comparing youth with a visual impairment with sighted peers did not find a difference in levels of perceived parent support. In the Netherlands, Kef (2002) studied 316 Dutch youth, aged 14-24 years, who were blind or low-sighted, and found that they perceived less support from most network figures, except peers, compared to youth without disabilities. In 2004, Kef and colleagues ran the analysis in the same sample but with only the young adolescents (N = 178; aged 14-18) and again found this difference between youth with and without disabilities, and this time also for perceived social support from peers. This study also showed higher perceived support levels from parents compared to peers (Kef & Deković, 2004). Furthermore, perceived peer support was more predictive of psychological wellbeing than parental support. Studies among adults with a visual impairment also showed that higher levels of perceived and received social support were related to better psychological wellbeing (Cimarolli & Boerner, 2005; Guerette & Smedema, 2011). However, little is known about the way perceived social support changes over time and how that helps to explain why some people feel lonely.

To our knowledge, only one study used a longitudinal design, with a 2-year interval, to study social support of young people with a visual impairment (Pinquart & Pfeiffer, 2013). In that study, change in social support scores of 182 German students with a visual impairment (mean age = 15.64 years, SD = 2.07) was modelled, showing an average decline of both parent and peer support over time. When comparing the levels of social support of the students with a visual impairment to 556 sighted peers (mean age = 14.19 years, SD = 1.83) only a small difference was found for the initial levels of perceived parent support and this effect disappeared when controlling for habitat (students with a visual impairment did significantly live less often with their parents than sighted peers). Perceived parent and peer support changed over time in similar fashion for the two groups (Pinquart & Pfeiffer, 2013). While these results may appear reassuring at least for the adolescent period, trajectories of perceived social support may still change across the transition to adulthood.

Youth with disabilities are more at risk of experiencing loneliness than typically developing children (Bauminger, & Kasari, 2000; Boer, Pijl, Post, & Minnaert, 2013; Gilmore & Cuskelly, 2014). Because most studies on loneliness in populations with a visual impairment are done among elderly (Pinquart & Pfeiffer, 2011a), less is known about loneliness in young people with a visual impairment. One cross-sectional study by Kef (2002) found no differences between levels of loneliness of young people (aged 14-24) with a visual impairment and sighted youth. In contrast, Huurre and Aro (1998) did find higher reports of loneliness among adolescents who were blind or had low vision (mean age = 14.0 years, SD = 0.87) compared to typically developing adolescents. These mixed findings among young people with a visual impairment underscore the importance of continuing research to explore the nature of loneliness among people with a visual impairment also into adulthood.
Chapter 2

The Current Study

The purpose of this study was to examine the course of perceived parent and peer support among young people with a visual impairment in a period of twenty years, from adolescence to adulthood, and to investigate how these individual trajectories in support are related with loneliness in later life. Based on prior research with young people with a visual impairment, which indicated impediments for building and maintaining a comprehensive social network, we suspect decreasing linear trajectories of change for parent support from adolescence through emerging and young adulthood to adulthood and a curvilinear trajectory, starting with an increase from adolescence into early adulthood and later a decrease when progressing into adulthood, for peer support over time. The second hypothesis is that both initial levels and the trajectories of change of perceived social support from parents and peers predict loneliness in later life.

Methods

Procedure and Sample

Four measurement waves were conducted in a longitudinal cohort of persons with a visual impairment. Data from previous waves have been reported in cross-sectional studies related to psychosocial outcomes (e.g., Kef, 1997; Kef, 2002; Kef & Bos, 2006; Kef & Deković, 2004; Kef, Hox, & Habekothé, 2000). The initial study in 1996 was carried out in cooperation with a Dutch federation of parents of children with a visual impairment and the population included in the study were adolescents living in the Netherlands who are blind or low-sighted, aged between 14 and 24 years old, and with no additional impairments (such as cognitive or hearing impairments). In 1996, participants were recruited within (special) education and rehabilitation centers for people with a visual impairment and were contacted by letter. All participants provided informed consent before entering the study. At the first (1996) and second measurement (2005) trained interviewers visited the home of the participants and used Computer Assisted Personal Interviewing (CAPI) to collect the data. In the third (2010) and fourth (2016) measurement waves the participants were interviewed by trained interviewers using Computer Assisted Telephone Interviews (CATI). After every measurement, participants were invited to participate in future interviews. Before the start of the study at the first measurement in 1996 the study-protocol was developed and approved by a committee consisting of several professionals working in the two national rehabilitation organizations in the Netherlands. Persons with a visual impairment also took part in this committee as representatives of the perspectives of people with a visual impairment. Before every measurement all participants received an information letter with a brief description of the aims and main topics of the study. No incentives were provided for participation. The study protocol had been approved by the Ethics Committee of the Vrije Universiteit Amsterdam (VCWE.1310.010).

Participants were interviewed in 1996 (T1; N = 316; mean age 18), 2005 (T2; N = 205; mean age 27), 2010 (T3; N = 178; mean age 32), and 2016 (T4; N = 161; mean age 39). 18 participants, who dropped-out between 1996 and 2005, re-entered the study in 2010 and 15 of them also participated in 2016. A total of 27 participants dropped-out between 2005 and 2010, with two re-entering the study in 2016. The sample at the first measurement in 1996 consisted of adolescents living in either the community
(91%) or in institutions. 19% of the total group in 1996 was blind, 18% had severe low vision, and 63% low vision. There was an almost equal gender distribution (T1 53% male) in 1996 and the follow-up measurements (T2 57% male; T3 55% male; T4 56% male). At T4 67% of the 161 participants were in a romantic relationship and 44% were married.

**Measures**

*Perceived social support.* Perceived social support was assessed with the Personal Network List (PNL), using the role-relation method (Meeus, & ’t Hart, 1993). This 3-item questionnaire measures perceived social support from several resources (e.g., father, mother, best friends, friends, important classmates or colleagues) in three different domains: leisure time, school/work problems, and relational/emotional problems. Examples of the items assessing these types of support are ‘How important is your mother in your leisure time?’ (social companionship), ‘If you encounter a problem in school or at work, how important is your father?’ (practical support), and ‘If you encounter a problem in a relationship with another person, how important are your best friends?’ (emotional support). The answering scores ranged from 10 ‘not important’ to 100 ‘very important’. In this study on every time point the highest score of father or mother was taken on all three domains and summed across domains to one overall perceived parent support score. To measure perceived peer support, the highest scores of best friends, other friends, and important colleague/classmate was used for all three domains and then summed across domains to one score for peer support at every time point. The total summed scores varied between 30 and 300 for both perceived parent and peer support. The internal consistency for the three domains of perceived parent support on the four measurement points ranged from $\alpha = .72$ to .82 and for perceived peer support from $\alpha = .73$ to .81.

*Loneliness.* The 11-item loneliness scale of De Jong Gierveld (De Jong Gierveld & Van Tilburg, 1999) was administered. Questions were answered on a three-point Likert scale (0 = yes, 1 = more or less, and 2 = no). The questionnaire consists of both positive items, measuring feelings of belongingness, and negative times, applying to the aspect of missing relationships. Following the scoring instructions, responses were dichotomized by reversing the answering scale ‘more or less’ to either ‘yes’ or ‘no’ depending on the direction of the statement (negative or positive). A ‘more or less’ answer is an indicator of loneliness because people are reluctance to admit to items describing deficits in social relationships due to stigma. The minimum score of 0 refers to a complete absence of loneliness and the maximum score of 11 refers to no social embeddedness at all and, thus, complete loneliness. In the current sample the internal consistency of the total scale measured at T4 in 2016 was good (Cronbach’s alpha = 0.91).

**Results**

**Strategy of Analyses**

Preliminary analyses were conducted to examine distribution properties and to screen for potential outliers. Results showed that the variables for perceived parent and peer support were somewhat negatively skewed, with skewness ranging from -1.24 ($SE = 0.17$) to -0.48 ($SE = 0.17$). A majority of the participants had high scores on perceived parent and peer support at all four time-points; mean score
for perceived parent support ranged between 175 and 217 and for perceived peer support between 216 and 230 (scores could range between 30 and 300). Loneliness was positively skewed, with skewness of 1.30 (SE = 0.19), which shows that most of the participants had a low score on this variable. For handling the bias in results introduced as a result of these deviations from normality, we used a maximum likelihood estimator with robust standard errors with a numerical integration algorithm (MLR) available in Mplus version 7.1 (Muthén & Muthén, 1998-2012).

To model the individual differences in growth we used Latent Growth Curve Modeling. A latent growth model describes an individual growth curve for each subject. First, we identified the statistical model that best described the longitudinal data on perceived parent support, as well as on perceived peer support. Based on our hypothesis, we used a linear growth model for perceived parent support (Figure 1). This model contains two factors. The first factor was the intercept (I) describing the initial level (T1, 1996) of perceived parent support. The second factor was the linear slope (S), describing the linear rate of change in the true levels of perceived parent support from T1 to T4, with positive values meaning an increase of support and a negative value a decrease of support in time. The intercept was specified by setting its factor loadings to 1. The factor loadings of the linear slope were fixed to values reflecting the spacing of assessment over time. Namely, nine years between the first (1996) and the second (2005) measurement, 14 years between the third (2010) and the first measurement, and 20 years between the fourth (2016) and the first measurement. In the linear growth model for perceived parent support, nine parameters were estimated freely: the mean and variance of both intercept and slope (four parameters), the covariance between intercept and slope (one parameter), and the residual variances of the parent perceived support variables at the four measurements; T1, T2, T2, and T4 (four parameters).

![Figure 1](image-url). Linear latent growth model of perceived parent support. I is the intercept and represents the average initial levels of perceived parent support at T1 in 1996. S is the slope and indicates the linear change of perceived parent support over time. The intercept (I) is specified by setting its factor loadings at 1. The factor loadings of the linear slope (S) are fixed to the values reflecting the spacing of assessment over time; 9 years between T1 and T2, 14 years between T1 and T3, and 20 years between T1 and T4. e₁, e₂, e₃, and e₄ represent the residual variances of the four measurement points.
Given that a curvilinear development in perceived peer support was hypothesized, a quadratic growth model was used (Figure 2). This model contains three factors. The first two factors are the intercept and linear slope, for which the same fixed values of the factor loadings were used as in the perceived parental support model. The third factor was the quadratic slope (Q), which describes the possible curvilinear development of perceived peer support. The quadratic slope factor loadings were fixed to the quadratic values of the linear slope factor loadings; 81, 198, and 400. In the quadratic growth model for perceived peer support, 13 parameters were estimated freely: the mean and variance of the intercept, linear slope, and quadratic slope (6 parameters), the covariances between intercept and slope factors (3 parameters), and the residual variances of the perceived peer support variables at the four measurement points; T1, T2, T3, and T4 (4 parameters).

Figure 2. Curvilinear latent growth model of peer support. I is the intercept and represents the average initial levels of perceived peer support at T1 in 1996. S and the Q are the slope and the quadratic factor and indicate together the nonlinear change of perceived peer support over time. The intercept (I) is specified by setting its factor loadings at 1. The factor loadings of the linear slope (S) are fixed to the values reflecting the spacing of assessment over time; 9 years between T1 and T2, 14 years between T1 and T3, and 20 years between T1 and T4. The factor loadings of the quadratic factor (Q) were fixed at the quadratic values of the linear slope; 81, 198, and 400. e1, e2, e3, and e4 represent the residual variances of the four measurement points.
Overall goodness of fit of the models was evaluated with four widely used model fit indices (Kline, 2011): Root Mean Square Error of Approximation (RMSEA, with .05 < RMSEA < .08 = acceptable fit; RMSEA < .05 = good fit), Tucker-Lewis index (TLI > .90 = acceptable; > .95 = good), Comparative Fit Index (CFI > .90 = acceptable; > .95 = good), and the Standardized Root Mean Square Residual (SRMR < .08). Because the \( \chi^2 \) test statistic is thought to be more heavily influenced by the sample size, we did not use the \( \chi^2 \) to evaluate the model but reported it for completeness. The model that best described the data, in terms of goodness of fit, was selected for both perceived parent and perceived peer support.

After the best model was selected, the variable loneliness was added to the model, with the I, S, and Q factors predicting loneliness. The aim of these analyses was to test for the relationship between initial and the trajectories of change over time in perceived parent and peer support with loneliness in later life (T4).

**Descriptives and Missing Data**

In Table 1 the inter-correlations, means, and standard deviations of measures for perceived parent and peer support are presented. In general, participants in this study reported high levels of perceived support from both parents and peers. For loneliness a mean score of 2.7 (SD = 3.11), on a range from 0 – 11, was found. A score higher than the cut-off point of 3.0 is used for feeling lonely (De Jong Gierveld & Van Tilburg, 1999). Almost 65% of the participations had a score between 0 and 2.0, and 28% a score above 3.0. In a middle aged (45-79 years) typically developing sample with 727 participants an almost similar mean loneliness score of 2.8 was found (De Jong Gierveld & Dijkstra, 2008).

**Table 1. Inter-correlations, means, and standard deviations of perceived parent and peer support**

<table>
<thead>
<tr>
<th></th>
<th>Perceived parent support</th>
<th>Perceived peer support</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1 (1996)</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>T2 (2005)</td>
<td>0.32** 1.00</td>
<td>0.42** 1.00</td>
</tr>
<tr>
<td>T3 (2010)</td>
<td>0.35** 0.53** 1.00</td>
<td>0.27** 0.42** 1.00</td>
</tr>
<tr>
<td>T4 (2016)</td>
<td>0.38** 0.46** 0.58** 1.00</td>
<td>0.28** 0.53** 0.44** 1.00</td>
</tr>
<tr>
<td>T4 Loneliness</td>
<td>-0.13 -0.08 -0.04 0.08</td>
<td>-0.16* -0.29** -0.20* -0.33**</td>
</tr>
</tbody>
</table>

| N                | 316 200 167 154          | 316 201 173 157       |
| M                | 21704 197.53 201.19 175.38 | 226.66 230.38 223.42 215.67 |
| SD               | 57.19 61.01 52.08 73.18  | 50.04 49.04 52.08 50.14 |

Note: ** correlations are significant at p < 0.001. * correlations are significant at p < 0.05

Table 1 also shows that the inter-correlations among the four measurements of perceived parent support and perceived peer support scores were significant, ranging from moderate to large in size (0.27 - 0.58). With regard to loneliness, only the correlations with perceived peer support were statistically
significant (ranging from -0.16 to -0.33). No significant associations were found between perceived parent support and loneliness.

The results from paired sample t-tests showed that on each measurement, the mean of perceived peer support was significantly higher than the mean of perceived parent support; T1 \( (t = 67.47, p < 0.001) \); T2 \( (t = 45.75, p < 0.001) \); T3 \( (t = 42.09, p < 0.001) \); T4 \( (t = 29.22, p < 0.001) \). The results from a comparison of levels of perceived peer support in T1 between participants who also completed the measurement at T2 and participants with incomplete data at T2 showed no significant difference between the groups (complete data: \( M = 223.93, SD = 50.67, N = 201 \); incomplete data: \( M = 231.43, SD = 48.77, N = 115 \); \( t = 1.28, p = 0.20 \)). The same analyses were conducted for subsequent waves for perceived peer and parent support and no significant differences were found \( (p > 0.05) \).

**Latent Growth Analysis**

Fit indices suggested an acceptable (based on RMSEA) to good model fit (based on CFI, TLI and SMRS) for a linear latent growth curve model for perceived parent support: \( \chi^2 = 9.97, p = 0.07; \) RMSEA = 0.056, CFI = 0.96, TLI = 0.95, SRMR = 0.050. The estimated mean values of the intercept and the linear slope were \( I = 217.53 (SE = 3.02, p < 0.001) \) and \( S = -1.80 (SE = 0.27, p < 0.001) \). The intercept represents the average initial level of perceived parent support at T1 in 1996 and the linear slope indicates the average decrease in levels of perceived parent support over time. Significant variance of the intercept and linear slope (variance \( I = 772.20, SE = 206.24, p < 0.001 \) and variance \( S = 1.86, SE = 0.83, p = 0.024 \) was also found, indicating individual differences in perceived parent support at T1 in 1996 and individual differences in the rate of change in perceived parent support over time. The correlation between intercept and slope was estimated at \( .99 (p < .001) \). This indicates that adolescents who started with high levels of perceived parent support at T1 decreased less than adolescents who started with lower levels of perceived parent support.

With regard to perceived peer support, the fit indices suggest an excellent model fit for a quadratic latent growth curve model: \( \chi^2 = 2.17 (df = 4), p = 0.54; \) RMSEA = 0.000, CFI = 1.000, TLI = 1.018, SRMR = 0.058. The estimated mean values of the intercept, the linear slope, and the quadratic slope were \( I = 226.78 (SE = 2.814, p < 0.001), S = 0.97 (SE = 0.58, p = 0.09), \) and \( Q = -0.08 (SE = 0.03, p = 0.007) \). The intercept represents the average initial level of perceived peer support at T1 in 1996 and the linear and quadratic slope together indicate the average nonlinear change in perceived peer support over time. The model shows that perceived peer support first increases between T1 (mean age 19) to T2 (mean age 27) and decreases after T2 until T4 (mean age 39). Significant variances of the intercept and linear slope (variance \( I = 1172.69, SE = 232.23, p < 0.001 \) and variance \( S = 3.14, SE = 1.58, p = 0.047 \) were obtained, indicating significant individual differences in perceived peer support at T1 in 1996 and in the rate of change in perceived peer support over time. The variance of \( Q \) was close to zero and nonsignificant, leading to estimation problems in the estimates of the correlations of \( Q \) with \( I \) and \( S \). Therefore, we constrained the variance of \( Q \) to zero. The correlation between intercept and slope was not significant and estimated at \( -0.33 (p = .14) \). This indicates that adolescents who started with high or a low levels of perceived peer support do not differ in how strong their perceived peer support changed over time.
Relationship Between Perceived Peer Support and Loneliness

To find an answer to the question ‘What is the relation between the initial level (T1) and the rate of change over time of perceived peer support with loneliness in later life?’ the variable loneliness was added to the quadratic latent growth model for perceived peer support. Model fit was excellent: \(\chi^2 = 3.45, p = 0.75; \) RMSEA < 0.001, CFI = 1.000, TLI = 1.039, SRMR = 0.058. A negative unstandardized path coefficient of \(-0.033 (SE = 0.01, p = 0.001)\) from the intercept \(I\) of perceived peer support to loneliness was obtained, indicating that lower levels of perceived peer support at T1 in 1996 predicted higher levels of loneliness at T4 in 2016. Also, a negative unstandardized coefficient path coefficient, -0.58 (\(SE = 0.28, p = 0.038\)), from the rate of change \(S\) of perceived peer support over time to loneliness at T4 was found, indicating that the faster perceived peer support decreased, the higher loneliness was at T4. Since the variance of Q was constrained to zero, we did not predict loneliness from Q. Because no significant relationships were found between perceived parent support at any measurement wave and loneliness at T4, loneliness was not added to the perceived parent support model.

Discussion

From adolescence to adulthood, young people with a visual impairment perceived decreasing support from parents and peers, after a peak in peer support in early adulthood. Those adolescents who already started with relatively little peer support as well as those who experienced the most rapid decline in perceived peer support, experienced most loneliness 20 years later. These findings are in line with previous research on the development of social support in typically developing young people (Cheng & Chan, 2004; Furman & Buhrmester, 1992; Helsen, et al., 2000). Although peer support trajectories in young people with a visual impairment show similar patterns compared to results among typically developing adolescents, the mean age at which perceived peer support peaked was later than expected.

In a study done by Helsen and colleagues (2000) among typically developing adolescents a decline in peer support was found between age 16 and 18. Brown and colleagues (1986) found a decline in peer group affiliation before age 19. In our study a decline occurred after T2 when the participants had a mean age of 27 years. This confirms earlier research showing that young people with disabilities experience developmental delays in social functioning across the transition into adulthood (Hudson, 2003, 2006; Stewart et al., 2014; Stewar, Law, Rosenbaum, & Willms, 2002). Therefore, although adolescents and young adults with a visual impairment experienced several social challenges, their social support trajectories followed a similar, but delayed, pattern as typically developing young people. Pinquart and Pfeiffer (2013) also found similarities in the trajectories of social support between visually impaired and typically developing young people, but due to the use of a limited time window (2 years instead of 20 years) it provided no insight in possible developmental delays in the course of social support.

Further, this study focused on the relationship between initial levels and the trajectory of change of social support and loneliness in later life. For perceived peer support both the initial levels and the rate of change predicted loneliness. No association was found between perceived parent support and feelings of loneliness during adulthood. Differences in type of support (emotional or instrumental support) could explain the unexpected findings for perceived parent support and loneliness, because earlier studies
have shown that especially emotional support contributed to psychological wellbeing and instrumental support can even have a detrimental effect (Merz & Considine, 2009; Morelly, Lee, Ann, & Zaki, 2015). Due to disability specific challenges among young people with a visual impairment, instrumental or practical support from parents, such as material, financial, and mobility assistance, may dominate and reduce the positive effects of emotional support on psychological wellbeing. Furthermore, Shaw and colleagues (2004) showed that psychosocial variables, such as self-esteem and personal control, explain a big part of the relationship between parent support and psychological wellbeing. This means that parent support that enhances self-esteem and personal control will also improve psychological wellbeing. The fact that having a disability could also challenge these psychosocial factors and, thus, diminish the positive mediating effects of self-esteem and personal control between parent support and psychological wellbeing, could be a possible explanation that our results did not support our hypothesis. Further longitudinal research is needed to study the effect of having a visual impairment on self-esteem and personal control and how these cognitions might in turn affect psychological wellbeing.

Further, the finding that perceived parent support is not associated with loneliness echoes earlier findings. During adolescence, when peers take up a more central role in the support network, parent support becomes less effective in enhancing psychological wellbeing, relative to perceived peer support (Cantone et al., 2015; Kun et al., 2013; Lee & Goldstein, 2106; Papafratzesakou et al., 2011). For perceived peer support we did find an association with support and loneliness in later life. Both the initial levels and trajectory of change predicted loneliness. This is in line with previous research showing that especially peer support enhances psychological wellbeing in adolescence (Friedlander et al., 2007; Kef & Dekovic, 2004; Rueger et al., 2016). It shows that a person’s ability to form close relationships, get accepted by peers, and keep up high levels of peer support during this life period was associated with risk of poor wellbeing. While transitioning into adulthood, adolescents usually become more autonomous, depend less on their parents, and focus more on social integration with peers. Decision-making responsibilities shift from parent to child, and children may more actively decline offers of parental support in order to develop autonomy. Peer support becomes more acceptable because it meets adults’ expectations about social roles in their lives. The differential associations between parent and peer support with loneliness is consistent with an important principle in Life Course Theory (Elder 1998), that developmental antecedents and consequences of experiences vary according to timing in someone’s life.

**Implications for Practice and Society**

Early onset loneliness has considerable personal and societal costs. Because both the trajectory of change and the initial level of support from peers are related to loneliness in later life, rehabilitation and education practices might not only focus on establishing relationships with peers during adolescence, but also on how to maintain those relationships throughout adolescence and adulthood. Difficulties with social interactions, developmental delays, and low social competence could diminish the opportunities of young people with a visual impairment for keeping up relationships with close and important peers. In addition, adolescents and young adults with visual disabilities may benefit from learning how to maintain a network of peer support, even when inevitably some peer relationships break down.
Both trajectories of perceived parent and peer support showed a decrease over time from emerging adulthood into adulthood. Although this trend converges with the trajectories of typically developing young people, a gap in support could occur for young adults with a visual impairment. This decline in parent and peer support among typically developing people occurs as the life course takes a new turn when romantic partners become more salient as source of support. Research among young people with a visual impairment showed that they struggle more with developing romantic relationships (Huure & Aro, 1998; Kef & Bos, 2006) and that they tend to date less and have children at a later age. Keeping up high levels of social support from peers throughout adulthood or establish relationships with other support figures, such as neighbors and family members, may therefore be needed to ensure sufficient access to support. Also, support is needed for young people with a visual impairment to encourage them in taking part in dating experiences and enhancing them with a self-assured and competent feelings within the romantic relationships domain.

Another important implication for society is the need for raising awareness of possible negative societal stereotyping or victimization towards (young) people with impairments (De Laat et al., 2012). These society-based attitudes have social consequences which limit persons within this subgroup in social opportunities. Perceived stigmatization can even lead to avoidance or withdrawal from social activities and interactions. Public-society-based education campaigns could help to dispel myths about people with (visual) impairments and reduce negative attitudes in society. Further, public campaigns and inclusion programs introducing children, already at a young age, to children with disabilities reduces the risk of social exclusion, bulling or victimization, since familiarity changes someone’s attitudes and assumptions (Macmillan, Tarrant, Abraham, & Morris, 2014; Rillotta, & Nettelbeck, 2007).

**Implications for Research**

As stated earlier preponderance of instrumental social support might diminish the positive effects of parent support on loneliness. Merz and colleagues (2009) showed that the negative impact of instrumental support on psychological wellbeing can be buffered by a high-quality relationship. Therefore, more research is needed on the quality of the relationship between parents and children with a visual impairment and its effect on the relationship between social support from parents on loneliness.

Moreover, individual differences in initial level and rate of change over time for both perceived parent and peer support among young people with a visual impairment exist and are informative. Participants thus differ in the level of support during early adolescence, with some of them having a steeper decrease in social support over time. Further research is needed to investigate which factors predict these variations in trajectories of social support of young people with a visual impairment.

**Limitations**

Current findings are based on self-reported data in a community based sample of young people with a visual impairment and may not be generalizable to other groups and differ from outside perceptions. In addition, few participants in this study reported low scores on social support as well as high levels
of loneliness. Also over the 20 years, drop-out occurred at every measurement point, especially from T1 to T2 (36%). Drop-out rates decreased over time, due to the fact that technical applications, such as internet and social media, made it easier to reestablish and keep in contact with the participants. Furthermore, drop-out rates were not related to levels of perceived social support.

Another limitation was that no data were gathered on actual levels of support provided by parents and peers. This study only assessed the importance of support figures for perceived social support throughout life. No information is available about the frequency of support given by the different support figures. Research on the relation between perceived social support and actual levels of provided support from parents and peers may be relevant to further inform recommendations for public policy and interventions.

**Conclusion**

This study’s major contribution concerned an extension of existing knowledge about social support among young people with a visual impairment using a unique longitudinal design over a 20-year period. The results indicate that peer support is important to psychosocial wellbeing in a way similar to people without visual disabilities. In contrast, no association of perceived social support from parents on loneliness in later life was found in this target group. More insight is needed in the nature of support parents provide to these young people and its implications for psychological wellbeing. Although the correlational design of the study should be kept in mind, its findings underscore the relevance of efforts to foster and expand social networks of people with a visual impairment, not only in old age but also around the transition to adulthood.