The effectiveness of a mentoring intervention to improve social participation of adolescents with visual impairments: Study protocol for a randomized controlled trial.
Abstract

Social participation is challenging for people with visual impairments. As a result, on average, social networks are smaller, romantic relationships formed later, educational achievements lower, and career prospects limited. Adolescents on their way towards that goal may benefit from the knowledge and experience of adults who have overcome similar difficulties. Therefore, a mentoring intervention, called Mentor Support will be developed and studied in which adolescents with a visual impairment are matched with successfully social participating adults with and without a visual impairment. The main objective of this study is to evaluate the effectiveness of Mentor Support. Secondary aims are to distinguish the importance of disability-similarity experiences of mentors, predictors of success, and mediating factors. The effect of the mentoring program will be tested in a randomized controlled trial, using pretest one week before starting, and posttest after 12 months, and a follow-up after 18 months. Participants will be referred to one of the experimental groups or the control group and this randomization will be stratified according to country region. Three groups are included in the trial: 40 participants will receive Mentor Support by mentors with a visual impairment in combination with care-as-usual, 40 participants will receive Mentor Support by mentors without impairments in combination with care-as-usual, and 40 participants will receive care-as-usual only. Mentor Support consists of 12 face-to-face meetings of the mentee with a mentor with an overall time period of one year. On a weekly basis, dyads have contact via email, internet, or telephone. The primary outcome measure is improved social participation within three domains (school/work, leisure activities and, social relationships). Mediator variables are psychosocial functioning and self-determination. Also, predictors such as demographics and personality are investigated in order to distinguish the pathways to successful social participation. Intention-to-treat and completer analyses will be conducted. The primary outcomes of this trial regard increased social participation. The study may yield insights to further improve effects of support programs to adolescents with visual impairments.
Introduction

Young people with a visual impairment dream about their futures just like everybody else. However, hopes of meaningful relationships with others, exciting leisure activities, successful school careers, and work career pursuits are often dampened due to the difficulties engendered by their disabilities. These difficulties are not only experienced when trying to engage in the activities necessary for successful participation (e.g., communication, mobility), but may also result from negative responses from others as well as weaker self-efficacy. Adolescents may therefore benefit when society, including rehabilitation services, supports them in the making of choices, identification of opportunities, and the elimination of obstacles to realizing their goals in social participation (McConachie, Colver, Forsyth, & Parkinson, 2006).

A Dutch longitudinal study of adolescents with a visual impairment showed relatively small social networks, fewer friends than their sighted peers, fewer dating, and later sexual debut, have low social competencies, spend more time at home, have less peer activity, have trouble establishing a stable partner relation, and less frequently start a family or have children at a later age. This implies that successful social participation is challenging for Dutch adolescents with a visual impairment. Although most of them had a degree and jobs, they had to surmount more obstacles than their non-disabled peers in order to achieve these goals (Kef, 1997; 1999; 2002; Kef & Dekoviç, 2004; Kef, Hox, & Habekothé, 2000). Another Dutch study paints an even bleaker picture for adults with a visual impairment regarding employment (Goertz, Van Lierop, Houkes, & Nijhuis, 2010). Across Europe, persons with a visual impairment report less job satisfaction, fewer opportunities, and lower pay (Mojon-Azzi, Sousa-Posa, & Mojon, 2009). Moreover, research reviews conclude that all over the world persons with a visual impairment have distinct challenges on social participation and inclusion as well as (very) low relative employment rates (Gold, Shaw, & Wolffe, 2007; Shaw, Gold, & Wolffe, 2007).

Building blocks for social participation have been shown to include strong parental, family, and other (e.g., teacher) support for the participation, a sense of self-efficacy or self-determination, and opportunities to gradually build up experience and skills by ‘testing the waters’ (Law et al., 2000; Law, 2002; Mawjee, & Grieshop, 2001). Examples of such gradual stacking include dating as a preparation for steady relationships (Kef & Bos, 2006), and having summer or weekend jobs as a preparation for long-term employment (McDonnall, 2010a). Research indicates that rehabilitation services are still seeking to improve their support for social participation. For example, structured school-to-work programs do not enhance the chances of success in employment (McDonnall, 2010a). The experiences as studied by McDonnall et al. (2010) (McDonnall, 2010a, 2010b) are also uttered by young adults in the Dutch longitudinal study (Kef, 1999). An important question is therefore how factors associated with successful participation may be implemented in support. The availability of specific, structured programs, professional support in Dutch rehabilitation centers, or adapted training has not yet proven to be enough.

Mentoring programs may address this need for support. According to Vygotsky (Vygotsky, 1986) a person becomes more competent in interaction with a more competent person. Therefore, jointly accomplishing tasks may lead to better outcomes. This concept of zone of proximal development is consisted with the idea of mentoring, whereby a mentee benefits from a slightly older and more
experienced person. Also, Deci and Ryan (Deci & Ryan, 2000; Ryan, & Deci, 2000) argue on the basis of self-determination theory that relatedness is one of the three psychological needs that supports wellbeing, creativity, persistence, and performance. Relatedness refers to the desire to feel connected, cared for, and loved by others and is a fundamental aspect of mentoring. While supporting adolescents with a visual impairment it is important not to focus only on their anatomic disabilities, but also on the social and environmental context as described with the model of International Classification of Functioning (ICF) (WHO, 2007). Mentors interact with mentees within their personal context and, thus, may be well-positioned to address the needs for support for adolescents with a visual impairment.

The positive effects of mentoring have been extensively documented (Allen, Eby, Poteet, Lentz, & Lima, 2004; Eby, Allen, Evans, Ng, & DuBois, 2008; DuBois, Holloway, Valentine, & Cooper, 2002; DuBois, Portillo, Rhodes, Silverthorn, & Valentine, 2011; Grossman, & Rhodes, 2002; Mathews, Fawcett, & Seldon, 2009; Ragins, & Cotton, 1999). Mentoring leads to greater career outcomes, more satisfaction with career outcomes, and commitment with careers (Bell, 2012; DuBois et al., 2002). It also leads to an improvement of quality of life, a lower chance of risk behavior and it facilitates emotional, social and psychological growth (DuBois et al., 2011; Mathews et al., 2009). One study in the United States of America (USA) (Bell, 2012) found positive results for mentoring adolescents with legal blindness aged between 16 and 26 years, targeting one domain of social participation (academic achievement and career success). Also, other mentoring projects for persons with a visual impairment in the USA, such as Career Connect and MentorMatch, target only employment. None of these studies or projects is aiming to achieve participation in all three domains of social participation (school/work, leisure activities, and social relationships) (Gold, et al., 2010). In addition, MentorMatch and Career Connect are designed for all vocational ages, are not protocol-based, or are conducted on-line only. Based on the current state of the field, therefore, there was a need to develop and test a more comprehensive mentoring program in the Netherlands.

For the purposes of this research, a mentoring intervention called Mentor Support will be developed and tested for adolescents a with visual impairment (mentees), aged between 15 and 22 years. Mentor Support consists of joint meetings with a mentor in or near the mentee’s own (usually home) environment during an overall time period of one year. By performing activities and through modeling, mentees gather information, possible actions and strategies to improve their social participation. Mentor Support is based on existing mentoring interventions in the USA such as Mentor Match, Career Connect, Big Brother and Big Sister, and Home Start and adapted to our target group and theoretical framework consisting the self-determination theory, the model of ICF, and the zone of proximal development of Vygotsky. Also, scientific knowledge from a previous national longitudinal study among the target group is used to develop the program of Mentor Support (Kef, 1999; 2002; Kef et al., 2000; Kef et al., 2004).

**Trial Objective**

In the present study the effectiveness of Mentor Support, a mentoring intervention for adolescents with a visual impairment, will be examined by the use of a randomized controlled trial. Participants in one experimental group will receive the intervention from a mentor with a visual impairment, participants
in another experimental group from a mentor who is sighted, while participants in the control group will receive only care-as-usual. The main objective of this study is to improve social participation of adolescents with a visual impairment. Potential mediating variables, such as indicators of psychosocial functioning, and self-determination, and predictors will be investigated in order to distinguish the pathways to successful social participation.

Hypotheses
The main hypothesis in this study is:
- Adolescents who are assigned to Mentor Support will improve their social participation more strongly in comparison with adolescents assigned to care-as-usual control group.
- The secondary hypotheses in this study are:
  - Adolescents who are assigned to Mentor Support receiving the intervention from a mentor with a visual impairment will improve their social participation as much as adolescents receiving the intervention from a mentor who is sighted.
  - Adolescents who are assigned to Mentor Support will improve their psychosocial functioning and feeling of self-determination.
  - Adolescents who are assigned to Mentor Support and are self-determined or have a high level of psychosocial functioning will improve their social participation more strongly.

Methods
Study Design
This study is a superiority randomized controlled trial with multiple arms: two experimental groups and one care-as-usual-only as control group. Based on equivalence the two intervention groups receive care-as-usual plus a mentoring intervention called “Mentor Support”. The difference between these two groups is determined by the disability of the mentors and not by the way Mentor Support is performed. One group receives Mentor Support from a mentor with a visual impairment and one group from a sighted mentor. The effectiveness of this randomized controlled trial will be tested with pretest, posttest, and follow-up (Netherlands Trial Register NTR4768). This study protocol has been approved by the Ethics Committee of the VU University.

Study Population
Adolescents (N = 120) aged between 15 and 22 years with a visual impairment are the target population. This study defines visual impairment as ‘impairment in vision, which even with correction affects an adolescent’s social participation’ and, thus, includes both blindness and low vision. No up to date population numbers of adolescents with a visual impairment in the Netherlands exists. Past research estimated the number to be around 1000 people for an age range of 14 till 25 years (Kef, 1999). For the seven-year age range used in this study (15 till 22) this could be estimated at 500. The minimum
response rate is therefore 24% if the total population can be reached.

Inclusion criteria are: diagnosed with a visual impairment, age between 15 and 22 years, and living in the Netherlands. Exclusion criteria are: having severe additional impairments, such as complete deafness or intellectual disabilities, and not mastering the Dutch language. For the 120 mentees, 40 mentors will be recruited, half of them having a visual impairment. During Mentor Support mentors will accompany a maximum of two mentees.

**Intervention**

Mentor Support is a mentoring intervention developed for adolescents with a visual impairment. The primary purpose of Mentor Support is to improve social participation of these adolescents on three domains of 1) school/work, 2) leisure activities, and 3) social relations (Gold, et al., 2010).

In total, Mentor Support consists of 12 face-to-face meetings of the mentee with a mentor within an overall time period of one year. On a weekly basis, dyads also have contact via email, internet, or telephone. The joint meetings take place in or near the mentee’s own (usually home) environment and are mostly executed ‘outside’. As shown in Table 1, every domain of social participation consists of four meetings, which can be performed in diverse order. Activities accomplished during the meetings are based on mentees’ ambitions and self-designed goals. During Mentor Support mentees gather information, possible actions and strategies, through modeling, to improve their social participation.

**Table 1. Description of the themes and domains of each Mentor Support meeting**

<table>
<thead>
<tr>
<th>Meeting</th>
<th>Themes of activities</th>
<th>Domain of Social Participation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meeting 1</td>
<td>Basic conversation skills first meeting</td>
<td>Social relationships</td>
</tr>
<tr>
<td>Meeting 2</td>
<td>Sports and searching for possibilities</td>
<td>Leisure activities</td>
</tr>
<tr>
<td>Meeting 3</td>
<td>Timeframe development for future</td>
<td>School/work</td>
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<tr>
<td>Meeting 4</td>
<td>Life-space-mapping</td>
<td>Social relationships</td>
</tr>
<tr>
<td>Meeting 5</td>
<td>Job visit and searching for vacancies</td>
<td>School/work</td>
</tr>
<tr>
<td>Meeting 6</td>
<td>Hobbies and searching for possibilities</td>
<td>Leisure activities</td>
</tr>
<tr>
<td>Meeting 7</td>
<td>Preparing a party and inviting new friends</td>
<td>Social relationships</td>
</tr>
<tr>
<td>Meeting 8</td>
<td>Presentation skills and appearance</td>
<td>School/work</td>
</tr>
<tr>
<td>Meeting 9</td>
<td>Out of the box or out your comfort zone</td>
<td>Leisure activities</td>
</tr>
<tr>
<td>Meeting 10</td>
<td>Searching for your motto in life and role model(s)</td>
<td>School/work</td>
</tr>
<tr>
<td>Meeting 11</td>
<td>Discussing romantic relationship, flirting and dating</td>
<td>Social relationships</td>
</tr>
<tr>
<td>Meeting 12</td>
<td>Evaluating intervention during special leisure activity</td>
<td>Leisure activities</td>
</tr>
</tbody>
</table>

Positive thinking and having success experiences are the main focus of these meetings. Examples of activities can be visiting an (unknown) sports club, gallery, or restaurant, inviting and making friends, and visiting the workplace of the mentor. Mentors and mentees will keep record of their experiences and reflect on their meeting through an evaluation form. All meetings are accompanied by a specially
designed systematic handbook consisting assignments, exercises, and example activities. These tools can also be downloaded by the mentors and the mentees from the Mentor Support website, which is especially designed and accessible for persons with a visual impairment. Mentors and mentees have to upload their completed evaluation forms, assignments or exercises, and, therefore, the website will also be used to coordinate the intervention. Modifying the intervention and creating an individualistic path or personalized course is prohibited for several reasons such as health related problems within the direct family or moving to another part of the country during Mentor Support.

Participants randomized to the control group will receive only care-as-usual. The two national organizations for people with visual impairments in the Netherlands offer a wide range of services, such as mobility training and itinerant teacher support at school. At pre-test, post-test, and follow-up all participants are asked about the kind and amount of care-as-usual service they have received.

Procedure

Mentees. Participants will be recruited through two national service organizations (Bartiméus and Royal Dutch Visio) for people with visual impairments. These organizations have multiple rehabilitation centers, have special education schools all over the Netherlands, and also offer itinerant teacher support to adolescents with a visual impairment in regular education. By sending a recruitment brochure and cover letter, all clients/students who meet the inclusion criteria and their parents are informed. Clients/students who do not participate will remain anonymous to the researcher. Participants are also to be recruited through online banners, brochures on social media, internet- magazine- website advertisements, and brochures spread by several associations for people with visual impairments.

If participants decide to participate, they sign up for this study, with their name and email address, via the website. After signing up, the participants are asked questions about demographic factors, their visual impairment, and possible additional impairments. If participants meet the inclusion and exclusion criteria for this study, they and their parents (if the participant is under 18) receive an official information letter and informed consent form. After signing and sending back the informed consent a participant is eligible to participate in this study. Because signing and sending back the signed informed consent could be challenging for people with visual impairments, participants are allowed to sign the consent form by placing a cross (X) in a box and sending it back by e-mail. Printing and signing by hand is therefore not needed. This procedure has been established with approval of the Ethics Committee of the VU University.

Once the informed consent is sent back to the researchers, participants receive a baseline measurement (T1). Data will be collected in the Netherlands in their own home environment through computer assisted telephonic interviews. These interviews are conducted by several trained researcher assistants using online survey software called Qualtrics. An interview takes about one hour and 30 minutes and contains several questionnaires. After this baseline measurement every participant is randomly allocated to one of the experimental groups or the care-as-usual control group. The results from the randomization will be sent to the participants in the experimental group (mentees) by e-mail and the care-as-usual control group will be informed by telephone.
Mentors. All voluntary mentors of Mentor Support will be extensively selected and trained before starting. First of all, the mentors have to sign-up through the website, where they enter background information, such as age, disability, and educational/working achievements. Based on this, eligible mentors will be invited for an intake by telephone. This structured interview contains questions about their own social participation, life experience, and prospects of mentoring. Next, expectations about the intervention will be discussed in order to distinguish eligible mentors. After the intake phase, mentors are invited to attend the Mentor Support-mentoring training. Before attending, mentors receive an information letter and have to sign an informed consent. The Mentor Support-mentoring training is developed and held at VU University and is partly based on knowledge and experiences from other mentoring programs in and outside the Netherlands. It consists of topics such as: the background and design of the intervention, information about having a visual impairment, do’s and don’ts related to etiquette for helping people with visual impairments, safety, information about trust and privacy, and establishing a positive mentor-mentee relationship. During this eight-hour training, mentors have to practice their newly acquired skill by role playing and through assignments about problem scenarios.
which could occur during the Mentor Support intervention. The training is guided by a Mentor Support training manual. After successfully completing the training, mentors have to hand over a certificate of good conduct. This document, that needs to be requested from their own city office, declares that the mentor did not commit any criminal offences that are relevant to the performance of their duties. With this last step mentors are eligible to accompany mentees. The main objective for mentors, executing the Mentor Support intervention, will be to share life experiences, in order to support their mentee(s). Research has shown that mentors benefit from participating in mentoring programs (Ragins & Scandura, 1999). Possible positive outcomes could be for example an improvement in their social skills, meeting new people, and possibly developing new friendships. After finishing Mentor Support all mentors receive an official certificate.

Matching. Matching the mentees and mentors is firstly based on their geographic proximity and subsequently on their similar interests. These interests are measured with a questionnaire. After all mentors and mentees are matched, the primary researcher will notify them by e-mail and within the same month these dyads begin with the Mentor Support intervention. Directly after Mentor Support has ended, a post-test and a follow-up, after six months, measurement among all participants will be conducted. Figure 1 illustrates the different steps and stages of the research procedure. During the study participants receive information about the study progress through a newsletter. All participants receive a summary report about the effects of Mentor Support, at the end of the study.

Randomization

With signing the informed consent, before randomization, participants agree to be allocated to one of the three groups. An independent researcher will randomly assign participants at individual level to one of the three arms of this randomized controlled study. The allocation will take place with a computerized random number generator after the baseline measurement and before the start of the intervention. Randomization stratification on the important factor of geographic proximity will be used to make sure there is equal allocation to regions. Blocking randomization in each region with a block size of 15 participants will be used to strive for regional groups with the same size. The independent researcher will keep the results of the randomization until this study is completed and all eligible participants are allocated. During the study the primary researcher and participants are not blinded. Only the researchers measuring the post-test and follow-up will be unaware of who is allocated to which arm.

Measures

Primary outcome measures

The main question of this study is whether adolescents with a visual impairment improve their social participation after participating in Mentor Support. Several questionnaires will be used to measure social participation within the three domains; school/work, leisure activities, and social relationships.

Social participation. An adapted version of the Dutch questionnaire ‘Visuele Activiteiten en Participatie’ (VAP; Visual Activities and Participation) will be used to measure social participation (Looijestijn, 2007). With a 10-point scale this questionnaire measures the ability to perform a certain task of daily living and
their perception about whether this performance is normal or problematic. The original questionnaire for adolescents consists of 10 domains, each containing four questions. By answering these questions three subdomains can be distinguished: visual competence (Cronbach's alpha .94), self-reliance (.83), and participation perception (.91) (Looijestijn, 2007). In this study five of the 10 domains will be used with each four questions, using two subdomains (self-reliance and participation perception).

**Education/Work.** To measure type of education, history of education (special or regular schools), and level of education, three closed-ended questions will be used. For employment, 11 questions measuring type of job, voluntary or unpaid employment hours, travel hours, side jobs, and the maximum working hours per week are asked.

**Leisure activities.** To assess the leisure activities of adolescents, a Dutch translation of the Degree of Peer Activity (DPAL) questionnaire will be used to measure the amount and frequency of peer contact (Deković, 1996, Kendel & Davies, 1982). This questionnaire consists of five items with a 6-point scale with answers ranging from 'never' to 'every day'. The internal consistency was .66 (Deković, 1996). All participants will furthermore be asked about their activities during leisure time with 20 questions about sports, hobbies, affiliation with political or religious groups, hours spent on activities during leisure time, and reasons for participating in these activities. Using the internet, including social media, is one of the most common leisure activities done by adolescents today (O’Keeffe & Clare-Pearson, 2011; Neiger et al., 2012). Therefore, this study will include four questions to measure type and frequency of internet and social media use. Also, a Dutch version of The Multidimensional Scale of Facebook Use (MSFU), with 10 items and a 6-point scale, will be adapted and used to measure social media use (Frison & Eggermont, 2015a). The original scale measured three dimensions of Facebook use; passive Facebook use (.52), active private Facebook use (.66), and active public Facebook use (.84) (Frison & Eggermont, 2015a). In this study the questionnaire is adapted to general social media use and a 7th answer on the scale namely 'multiple times per hour' is added. To measure the perceived online social support on social media a questionnaire with four items and a 5-point scale will be used. These questions are based on the family subscale of the Multidimensional Scale of Perceived Social Support (Zimet, Dahlem, Zimet, & Farly, 1988). The internal consistency of this scale was .95 (Frison & Eggermont, 2015b).

**Social relationships.** The Social Network Map (Kef, 1999; 2002; Kemp, Whittaker, & Tracy, 1997; Papadopoulos, Papakonstantinou, Montgomery, & Solomou, 2014; Tracy & Whittaker, 1990) will be used to measure the size and composition of the social network of the adolescents. With this scale each sector or category such as family, extended family (e.g., uncle, aunt, and niece), friends, and professionals/therapists can be outlined. It measures the amount of people in each sector and the importance of these relationships. Social support will be measured by the Personal Network List (PNL) with the role-relation method (Kef & Deković, 2004; Meeus, 1990). This 7-item questionnaire measures the social support during leisure activities, problems at school/work, and social relationship problems with answers ranging from 10 'not important' to 100 'really important'. The internal consistency was .76, .79, and .81 (Meeus, 1990). Satisfaction with the social network is measured with two items: 'how satisfied are you with the support you get with practical problems?' and 'how satisfied are you with the support you get for personal problems?' (Kef, 1997). Answers are given on a 5-point scale. Developing and maintaining romantic relationships is a common interest during adolescence (Connolly, Craig, Goldberg, & Pepler,
2004; Collins, 2003; Kef & Bos, 2006). To assess this topic 12 questions will be used for example ‘do you have a romantic partner?’, ‘how long has this relationship lasted?’ and ‘have you ever fallen in love?’.

Measures of Mediating Variables

**Wellbeing.** General wellbeing will be measured with a Dutch translation of the wellbeing measure developed by Cantrill (Cantrill, 1965), which asks ‘How do you feel in general?’. The response is given on a 10-point scale, by choosing a number between 1 (feel really bad) and 10 (feel really good). Three items are added regarding wellbeing in the domains of leisure activities/sport, network of friends and school/work (Kef, 1999; Kef & Decovic, 2004).

**Perceived self-competence.** Perceived self-competence will be measured with a Dutch version of Harter’s Self Perception Profile (Harter, 1982). In this study four domains (physical appearance, sociability, intimate relationships and social acceptance) of the questionnaire will be used with each of four items. Each item consists of two opposing statements. Participants have to choose the description that fits them best and then indicate whether this description is true or very true for them. The internal consistencies of these subscales where: Cronbach’s alpha = .77, .69, .56, and .62 (Harter, 1982).

**Self-esteem.** To measure self-esteem, the Dutch version of the Rosenberg Self-Esteem Scale (RSES) (Rosenberg, 1965) will be administered. This scale comprises 10 items (e.g., ‘I take a positive attitude towards myself’). Answers were scored on a five-point Likert-scale, with an internal consistency of .85 (Van der Linden, Dijkman, & Roeders, 1983).

**Loneliness.** To assess loneliness the questionnaire of De Jong Gierveld will be used (De Jong Gierveld & Van Tilburg, 1999). This questionnaire consists of 11 items with answer categories: yes’, ‘no’, and ‘more or less’. By answering this questionnaire two subscales of loneliness can be computed: emotional loneliness and social loneliness with an internal consistency of .81 and .68 (Kef, 2002).

**Acceptance of the impairment.** Acceptance of the impairment will be measured using a subscale of the Nottingham Adjustment Scale (NAS) (Dodds, Flannigan, & Ng, 1993; Dodds, Bailey, Pearson, & Yates, 1991). This subscale contained 9 items. An example of an item is: ‘I feel bad when I realize what sighted people can do and what I can’t’. Answers will be scored on a five-point Likert scale. One positively formulated item is added: ‘My visual impairment is part of me, but doesn’t determine what I do or think’. Internal consistency was .81 (Kef, 1999).

**Coping.** Coping will be measured by the Cognitive Emotion Regulation Questionnaire (CERQ) (Garnefski, Kraaij, & Spinhoven, 2002). This scale consist of 36-items and answers will be scored on a four-point Likert scale. By answering these questions nine sub domains of cognitive coping can be distinguished. The internal consistency of the sub domains is ranging from .68 to .83 (Gamefski & Kraaij, 2006; Garnefski, Kraaij, & Spinhoven, 2002; Garnefski, Legerste, Kraaij, Van den Kommer, & Teerds, 2002).

**Self-determination.** Self-determination will be measured with the Basic Psychological Need Satisfaction and Need Frustration (BPNSF) scale (Chen et al., 2015). This 24-item questionnaire with a five-point Likert scale measures satisfaction of the three basic psychological needs according to the self-determination theory namely, autonomy satisfaction, relatedness satisfaction, and competence satisfaction. The internal consistency ranged between .64 and .89 (Chen et al., 2015).
Chapter 3

**Predictor Variables**

Predictors that might distinguish adolescents who benefit from the interventions include demographic factors and personality.

*Personality.* To measure personality a Dutch version of the Big Five questionnaire with 30 items and 7-point answer scale is used (Goldberg, 1992). From this scale five different domains or dimensions of personality can be distinguished: extraversion, neuroticism, openness-to-experience, agreeableness and conscientiousness. The internal consistency ranged from .68 to .90 (Branje, Van Lieshout, & Gerris, 2007).

*Demographic characteristics.* 15 open-ended and closed questions will be used to collect participants' demographic information concerning gender, age, nationality, ethnic origin, living situation, and characteristics of their home and family.

**Control Variables**

Degree of visual impairment, mobility, and treatment integrity will be measured and used as control variables.

*Degree of visual impairment.* The Functional Vision Scale of Weiner (Weiner, 1991) will be used to measure functional vision. This 6-item questionnaire with answer categories ‘yes’ and ‘no’ categorized participants in three groups: blindness, severe low vision, and moderate low vision. Participants will be categorized as blind if they used Braille, as having severe low vision if they cannot read regular print but do not use Braille, and as having moderate low vision when they can read regular print. Further, questions will be asked about the onset and course of the impairment as well as the medical diagnosis. Seven close-ended questions will be used to measure additional impairments or chronic diseases and one closed-question will measure their perceived level of general health.

*Mobility.* Two questions on level of mobility, independence in travelling and use of aids, will be used to measure mobility (Kef, 1999).

*Treatment integrity.* To assess whether the intervention is carried out according to the Mentor Support handbook all dyads have to fill in an evaluation form after every meeting. These forms will show what kind of activity, how long, and which assignments or exercises they have performed.

**Sample Size**

The total sample size is based on the expected differences in outcome measures between participants assigned to the experimental arm receiving Mentor Support and the care-as-usual-only arm. For testing the significance of the between-subject factor (primary hypothesis) a sample of 120 participants (40 in each condition) is necessary to achieve an adequate power of .85 within a medium effect size $(d = .5)$ between the conditions over time with a significance level of .05. Due to drop-out or unexpected organizational aspects the number of participants could drop to as least 108 to achieve a high power of .80. To answer the research question concerning the influence of potential mediators or predictors on the effectiveness of Mentor Support, several repeated measures within-between interaction analyses will be performed. Based on a significant level of .05 a power of .85 ($f = .25$) a total sample size of 110 is needed.
Selective Attrition
All participants will be expected to participate in pre-test, post-test, and follow-up during this study. All those who drop-out of the study during Mentor Support or from the care-as-usual-only group will be measured for post-test and followed up if possible. Drop-out reasons will be documented and analyzed in order to use this information for improvement of the execution of the intervention. To account for selective attrition, intention-to-treat analyses will be performed.

Data Analyses
Most analyses will be conducted using the software program SPSS. With standard methods the descriptive analyses will be carried out. If necessary, outliers will be checked and winsorized before analyzing. Differences in baseline characteristics between both experimental groups and the care-as-usual-only group will be analyzed and results will be controlled for these differences if needed. For analyzing the primary (social participation on three domains), mediation (psychosocial functioning and self-determination), and predictors (demographic factors and personality) outcomes, ANOVA repeated measures or multilevel analyses will be used. The primary outcomes of participants in both experimental groups will be compared separately from the care-as-usual-only group. Pre-test, post-test, and follow-up will show the change in quantity and quality of social participation, psychosocial functioning, and self-determination as compared with the care-as-usual-only group, over time. Feasibility of the Mentor Support intervention will be analyzed using descriptive analyses. General mixture modelling with M-plus version 7.1 (Muthén & Muthén, 1998-2012) will be used to examine the impact of the Mentor Support intervention on subgroups. Analyses and reporting the results will be done according to the CONSORT Statement-guidelines.

Data Management and Monitoring
Data will be collected using online survey software called Qualtrics. This software makes it easy to transport data to other software programs such as SPSS to analyze data. There is no risk of participants being involved in data management and, therefore, no Data Monitoring Committee has to be established. This study is financially supported by Vereniging Bartimeus Sonneheerdt and ZonMW, the Dutch Organization for Health Research and Development program InZicht and is embedded in the EMGO+ Institute for Health and Care Research of the VU University Medical Center. These three organizations will conduct site visits or audits to check the progress of the study throughout the project. The EMGO+ Institute provides an electronic quality assurance handbook to uniform the conduct and safeguard the quality of research within the institute and this handbook will be consulted during this study.

Protection of Data Privacy
All participants in the study will be assigned a participant-number. Key lists will be stored separately from the data and will be deleted after final data analyses. Data will be analyzed in a way that no conclusions can be drawn about individual participants. All data are stored on lockable laptops in lockable cabinets in lockable rooms. All researchers, research assistants, and students working within the project sign a
statement in which they declare not to disclose any information about research participants to a third party.

**Publication Policy**

The results of this study will be published in international journals. To make the results also available for Dutch service providers, professionals and participants, we plan to publish the results in Dutch journals. Results will also be presented at international scientific conferences, as well as at national conferences within the field of youth care and visual impairments.

**Ethical Considerations**

The study protocol has been approved by the Ethics Committee of the VU University (VCWE.1310.010). Changes within the study procedures will firstly be proposed to the Ethics Committee.

**Discussion**

This study aims to improve social participation of adolescents with a visual impairment and compares two experimental groups with one care-as-usual-only group. A secondary objective is to distinguish if psychological factors and self-determination mediate this process and if the two experimental groups lead to different social participation outcomes. A strength of this study is the added-value of the use of two types of mentors to improve social participation. This might give us more insight into the importance of experiential expertise during mentoring, especially during the transition phase from adolescence to young adulthood. This effect is still uncertain and is never been studied before. Also, the lack of studies about the effectiveness of mentoring interventions to improve social participation makes this study unique.

Targeting three domains of social participation is another strength of this study. It provides information about the outcomes factors of mentoring and the connectedness of these domains within social participation. A fourth strength of this study is the use of several well-known, frequently used reliable questionnaires which measure a large number of key variables and factors. This provides the opportunity to look at predictors and mediating effects over time and to compare results from this study with other (international) studies. Another strength of this study is that the target group is a less frequently studied group of persons. Most of the studies concerning people with visual impairments examine developmental problems such as language development, locomotion and academic achievement. But the total construct of social participation is mostly neglected, especially during the transition phase from adolescence to young adulthood. This study may therefore expand knowledge about social participation development. Finally, a strong aspect of this study is the use of the internet during the intervention, with a specially designed website. In this case, information is spread easily and participants are all contacted in the same way. This is especially salient because participants in this study live in several (sub) urban places throughout the Netherlands, and as adolescents are likely to be extremely comfortable with web-based interactions and information flow.
One limitation inherent in this study may be the risk of selective attrition during the relatively long period of 18 months that the participants are connected with the study. During the Mentor Support intervention mentees could drop-out of the study for several reasons, such as moving to other part of the Netherlands, parental concerns, or health reasons. Drop-out from the care-as-usual-only group may occur directly after the primary researcher has informed them about the results of the randomization and after 12 months with T2. All participants receive and sign an informed consent whereby they are informed in advance about the possibility of ending up in the care-as-usual-only group. It is also mentioned in the first letter or brochure they received. This may prevent drop-out from the care-as-usual-only group. Another limitation of this study could be the relatively small sample size, due to the small population size. This could lead to problems with making firm conclusions about predictors and mediating study findings. Finally, a limitation could be to find enough mentors in the same region of the country where the participant lives. In this case more mentors are probably needed than the number of 40 that’s described above.

In conclusion this study will gain knowledge about the effectiveness of a mentoring intervention (Mentor Support) for adolescents with a visual impairment to improve their social participation. Three conditions are included to test the importance of disability-specific experience. In addition, this study will also give more insight in the pathways to successful social participation, several predictors and the mediating effects of psychological functioning and self-determination.

**Status of The Trial**

The study started in December 2012. After being granted permission by the Ethics Committee of the VU University to start including participants, the first research participants were included in September 2014. At the moment, data is collected from the first wave of 58 participants. Currently, recruitment and data collection is still in progress. We expect the main RCT results to be published at the beginning of 2018.