Purpose: The psychosocial needs of patients suffering from severe visual loss associated with advanced age-related macular degeneration (ARMD) are generally ignored in the clinical routine. The aim of this study was to develop and evaluate a psychosocial intervention program for ARMD patients. This intervention program was based on six modules carried out in five weekly group sessions. These modules included (a) progressive muscle relaxation; (b) exchange of disease-related experiences; (c) understanding the connections among thought, emotion, and behavior; (d) description of and emphasis on the use of available resources; (e) improvement of general problem-solving skills, and (f) information exchange on ARMD-related treatment and rehabilitation options. Design and Methods: A preliminary evaluation of this intervention program was performed with the aid of a preintervention–postintervention comparison-group research design, which included 14 individuals (mean age of 73.1 years) in the interventional group and 8 participants (mean age of 72.6 years) in the comparison group. The preintervention–postintervention assessment addressed a set of emotional (e.g., positive and negative affect) as well as behavioral (e.g., limitations to activities and instrumental activities of daily living) outcome measures. Results: Although the sample size of the pilot evaluation test was small, our results demonstrate the usefulness of this pilot program. A statistical analysis comparing the interventional group with the comparison group revealed that the intervention group benefited from the program in five out of six outcome measures. Implications: Psychosocial group intervention is a promising approach to improve the quality of life in patients suffering from ARMD.

Key Words: Age-related low vision, Age-related macular degeneration, Psychosocial group intervention, Quality of life

Age-related macular degeneration is the leading cause of severe visual impairment in developed countries, affecting approximately every fifth older person between 65 and 74 years of age and nearly every third person beyond the age of 75 (Fine, Berger, Maguire, & Ho, 2000). It has been estimated that age-related macular degeneration accounts for approximately 50% of all cases of late-life vision impairment (Evans, 1995). Macular degeneration is a complex, multifactorial disorder that affects the central retina. To date, the pathogenesis of this disease is poorly understood. Severe visual loss results either from sequelae of the formation of new blood vessels under the central retina or from immediate cell death (Bellmann & Holz, 2001; Holz, Pauleikhoff, Spaide, & Bird, 2003). A distinction is made between dry and wet forms of the disease. Although the two forms differ in their rates of visual loss, both ultimately result in significant loss of central vision. Whereas the dry form of the disease is considered to progress at a slower pace, the wet form of the disease leads to more rapid and severe visual loss. Wet age-related macular degeneration is associated with the growth of new blood vessels from the vascular layer (choroids) found beneath the
Central retina (choroidal neovascularization). Various treatment strategies have been used for this type of macular degeneration. A beneficial effect has been shown for thermal laser treatment for certain vascular membranes located outside of the foveal center. Prospective, randomized, placebo-controlled trials also have demonstrated a therapeutic effect for photodynamic therapy, which is a nonthermal process leading to localized production of reactive oxygen species in newly formed vessels (see Fine et al., 2000). Emerging approaches for the treatment of this disease include pharmacological intervention, such as antiangiogenic substances injected into the affected eye, and surgical modalities. Unfortunately, and despite these treatments, the functional outlook is still dismal for most patients with neovascular age-related macular degeneration. In addition, there is no proven treatment for late-stage dry macular degeneration. For unaffected fellow eyes from limited categories of both types of disease, it has recently been shown in the Age-Related Eye Disease (ARED) Study that high doses of vitamins C and E, beta carotene, and zinc have a limited prophylactic effect with regard to the incidence of late-stage wet or dry macular degeneration (ARED Study Research Group, 2001).

The characteristic visual impairment for both late forms of this disease is loss of the central visual field (known as the central scotoma). This loss results in severe difficulties in reading that may be only partly compensated for by technical means such as the use of magnifying glasses or screen-projection devices. Facial recognition and other everyday tasks also may become difficult or even impossible for patients with this disease. Thus, age-related macular degeneration challenges the adaptational resources of affected individuals and frequently leads to a severe psychological burden. However, the psychosocial needs related to this burden are hardly met within most existing health care settings. Our aim in this study was to create a program addressing the psychological needs of elderly patients who suffered from age-related macular degeneration.

Three lines of evidence argue for the development of psychosocial intervention programs for age-related macular degeneration. These include research on age-related vision loss in general, psychosocial research directly related to macular degeneration, and existing intervention research with patients. Current research (Burmedi, Becker, Heyl, Wahl, & Himmelsbach, 2002b) provides strong evidence that impairment in functional ability is a major consequence of age-related vision loss. Researchers normally measure this by taking advantage of the common distinction between basic activities of daily living (ADL) and instrumental activities of daily living (IADL), as originally suggested by Lawton and Brody (1969). In addition, there are studies supporting the view that late-life vision loss has a negative impact on the exertion of leisure activities (e.g., Burmedi et al., 2002b; Wahl, Schilling, Oswald, & Heyl, 1999). Concerning the emotional consequences of this disease, it is clear that reduced visual acuity coincides with lower well-being and reduced positive affect as well as with higher depression and negative affect (e.g., Burmedi, Becker, Heyl, Wahl, & Himmelsbach, 2002a; Horowitz & Reinhardt, 2000). Furthermore, longitudinal research has shown that the future expectations of visually impaired older adults progressively worsen over time (Heyl & Wahl, 2001; Wahl et al., 1999). One important finding in interindividual outcome differences is that objective vision loss does not play a major role in terms of emotional outcome. Alternatively, subjective appraisal processes, which can be quite different at comparable levels of objective vision loss, are assumed to play a more important role in this regard (e.g., Horowitz & Reinhardt).

Second, there is evidence directly addressing the psychosocial burden of age-related macular degeneration in the elderly population. Of special note is the research provided by Brody and colleagues (2001) and Rovner, Casten, and Tasman (2002), which has shown that age-related macular degeneration is significantly associated with lowered functional ability and higher depression. In addition, research also has emphasized that regulation of psychological control is an important factor for patients in maintaining functional ability and emotional well-being (Kleinschmidt et al., 1995; Wahl, Becker, Burmedi, & Schilling, 2004). Specifically, balancing control in terms of keeping the proper equilibrium between exerting primary control (“changing the world”) and secondary control (“changing the self”) is a critical issue for sufferers of age-related macular degeneration. Overly dominant primary control may lead to failure and disappointment, whereas overly dominant secondary control may undermine remaining action potentials in the “real world” (Heckhausen & Schulz, 1995; Wahl et al., 2004).

Third, Brody and colleagues (1999) have conducted a randomized clinical trial to test the efficacy of a self-management intervention for elderly patients suffering from age-related macular degeneration. This intervention program consisted of six, weekly, 2-hr group sessions with 7 to 10 participants in each group. Furthermore, the program was focused on two major elements, didactic presentations and group problem solving with guided practice. The former informed on biological processes and available visual aids and services, whereas the latter focused on behavioral skills training in communicating with others about visual disability and handling a variety of challenges associated with age-related macular degeneration. Notably, this study revealed that participants experienced significantly reduced psychological distress and improved self-efficacy. In a more recent study, Brody and colleagues (2002) were able to repeat and extend earlier findings by showing that their interventional program resulted in significantly better mood and functional ability for the intervention group than for a control group. In addition, a health education program for elderly persons with age-related macular degeneration has been developed and tested by Dahlin-Ivanoff (2000). This program was predominantly based on occupational therapy elements and was offered to patients with macular degeneration during 2 to 3 hr of weekly meetings over 8 weeks. This group program
consisted of information and skills training related to self-care, meals, communication, orientation and mobility, food preparation, shopping, financial management, and cleaning. Dahlin-Ivanoff’s findings underscore the effectiveness of the program in terms of improved or maintained perceived security in daily occupations as compared with usual care.

In summary, much evidence supports the notion that visually impaired elderly persons in general and persons with age-related macular degeneration in particular suffer from lowered emotional and behavioral functioning (Brody et al., 2001; Burmedi et al., 2002a, 2002b). Furthermore, longitudinal work shows progressive psychosocial deterioration with time and therefore highlights the potential benefit of early intervention in order to prevent negative long-term outcomes (Heyl & Wahl, 2001; Wahl et al., 1999). Current psychosocial research offers many beneficial strategies for such interventional programs. For example, attention should be directed at the importance of subjective appraisal processes (frequently quite different from objective vision loss) and the role of control and self-efficacy regulation. Finally, intervention research, typically using group interventions with patients suffering from age-related macular degeneration, has been successful in improving emotional and behavioral quality of life (Brody et al., 1999, 2002; Dahlin-Ivanoff, 2000).

Description of the Psychosocial Intervention Program

The development of our interventional program—corresponding with other published research in its group approach—was aimed to address the role of psychological variables in adaptation to age-related macular degeneration based on a body of empirical research on age-related vision loss summarized herein. The program also incorporated elements of existing intervention programs for persons with age-related macular degeneration, such as those of Brody and colleagues (2002) and Dahlin-Ivanoff (2000). It also was based on proven cognitive-behavioral therapy strategies in psychosocial group treatments with older adults (e.g., Rybarczyk, DeMarco, DeLaCruz, Lapidos, & Fortner, 2001).

The program consisted of five group sessions over 5 weeks. We considered five sessions an adequate time frame to sufficiently use the potential of the six modules envisaged for the program (see the paragraphs that follow). We also chose this number of sessions to limit the need for repeated clinic visits for patients dependent on transport from family or friends. We chose a clinical setting on the basis of the assumption that a “medical” setting would enhance the motivation of age-related macular degeneration patients to attend a new and somewhat foreign psychosocial program. Another reason for the clinical setting was that participants of such an intervention will normally be recruited in eye hospitals and thus are already familiar with its location and infrastructure.

Figure 1 depicts an overview of the six major modules of the program. Although the modules will be separated analytically for the sake of description, they were interwoven within the actual intervention program. However, specific sessions served to put particular emphasis on different modules and the respective training. In the first module, group trainers taught progressive muscle relaxation skills based on the Jacobson (1938) method as a means to reduce anxiety and stress symptoms frequently found in patients with age-related macular degeneration. This technique normally can be learned in two sessions and can also, as is the case with other elements of the program, be practiced outside of group sessions and upon completion of the intervention program. For this purpose, attendees received an audiocassette for home training.

In the second module, exchange of personal experiences in dealing with age-related macular degeneration was addressed in order to underscore the close interdependence of these systems. One important aspect of this component was to improve the response to internal dialogues and negative and irrational thoughts.
thoughts (e.g., “Faced with vision loss, my life is now over.”). The main task of the group leaders in this regard was to stimulate the reflection on these links as well as to keep the group and individual discussion in the “here and now.”

In the fourth module, the focus was on strategies toward making the most of available resources, improving the awareness of existing competencies, and developing sources of personal growth. For this purpose, the group leaders stimulated the attendees to actively imagine what kind of new plans of action would be possible for them and how they could enhance the probability of their own positive experiences. Attendees were encouraged to report on these experiences in forthcoming group sessions. Another facet of this component was the development of a “caring for myself” attitude as a basis for better day-to-day living with age-related macular degeneration.

In the fifth module, systematic problem-solving strategies were taught in order to improve the general capacity of patients with age-related macular degeneration in the treatment group to deal with current and future problems in their personal lives. A major aspect of this classic cognitive-behavior therapy was to circumscribe problems as clearly as possible and to concretely formulate new goals and respective problem-solving alternatives. Group leaders supported the application of such strategies to existing problems. In order to serve the specific situation of the visually impaired group attendees, we designed a tactile-based “problem indicator” containing different touchable symbols for “changing the environment,” “changing myself,” “doing things differently than usual,” “requesting the help of others,” and “using other senses.” Attendees were encouraged to use this device as a tactile means to reflect on their coping styles and alternative problem-solving means.

In the sixth and final module, information on more practical issues in dealing with age-related macular degeneration, such as learning more about available rehabilitation possibilities, home modification options, and the existence of self-help organizations was presented. This was based on personal communication about the contents of available information materials as well as the input of professionals such as rehabilitation teachers. We designed the six modules of this program as pieces of a puzzle, which was completed in the last group session. It was critical to provide clear information on the modular format from the beginning of the first session in order to elicit realistic expectations for the attendees. The program’s modular structure required group trainers to make the sessions as structured as possible. Nevertheless, when it was possible to do so, specific needs of the patients were met during the sessions. Our experience showed that an acceptable compromise could be made between meeting special needs of the patients and running the program in a structured manner.

Two group trainers with a strong background in clinical psychology ran the program. The major reason for having two group trainers was our expectation that the ambition of the program—that is, to address a scope of intervention modules in a rather dense manner across five sessions—would profit from such teamwork. We also hoped that two trainers would provide a better basis for reflecting the contents, flow, and strategies of this newly developed program between sessions. A minimum of 3 and a maximum of 6 participants were optimal for conducting the program.

Pilot Evaluation Study of the Intervention Program

Goal and Hypothesis

Our goal in this evaluation study was to provide a pilot test of the program’s usefulness. We based it on the hypothesis that applying the program to elderly patients suffering from age-related macular degeneration would lead to measurable improvements in their emotional and behavioral functioning. In particular, we assumed that the intervention program would be able to improve well-being and prevent negative feelings, as well as to improve objective and perceived behavioral competence in patients with macular degeneration. Furthermore, we hoped that participants would gain more awareness of their capacity to actively deal with day-to-day problems.

Methods

Research Design and Participants

The pilot study’s research design was a preintervention–postintervention standardized assessment of an intervention and nonintervention group. A total of 22 persons with age-related macular degeneration were recruited for the study. All of these people were patients of the Department of Ophthalmology, University of Heidelberg, which also served as the host for conducting the intervention program. All patients fulfilled the criterion of suffering from bilateral age-related macular degeneration as documented by the assessment of the ophthalmologists involved in the study. In addition, their remaining visual acuity in the better eye had to be less than 20/70, which represents a substantial loss in day-to-day functioning and reading ability. Additional inclusion criteria were being between 60 and 80 years of age and living in a private household. We excluded patients suffering from severe terminal illnesses, major hearing loss (not corrected or correctable by a hearing aid), and major cognitive impairment from the study. We based this assessment on the overall clinical evaluation of ophthalmologists as well as information in the medical files of patients. Because of the preliminary character of the study, we performed no rigorous randomization of patients into intervention and nonintervention groups. Thus, we hesitate to label the nonintervention group a “control” group, and we are only talking about a “comparison” group. We selected the first 14 patients who were approached by the study ophthalmologists, and who agreed to participate, for the intervention program; the following
8 patients served as the comparison group. We documented voluntary participation in both arms of the study by a written informed consent, after detailed information on the goals and strategies of the study was provided. Patients assigned to the intervention group were informed about the contents and practical issues of the program, whereas participants assigned to the comparison group were informed that the study’s aim was to learn more about day-to-day challenges of age-related macular degeneration patients over time.

In order to reach the group sizes for the pilot evaluation study, about twice the number of patients (45) had to be approached. No systematic data collection with respect to study refusers has been conducted (which is forbidden by law in Germany, when no informed consent is given for a study); the main reasons reported by refusers were that they felt too ill to participate or had practical difficulties in attending the intervention sessions (e.g., no spouse or relative available for transportation). No significant differences with respect to age and gender existed between dropouts prior to entering the study and intervention–comparison group participants. In addition, 5 individuals who had agreed to participate in the study dropped out for different reasons during the intervention and were thus not included in the data analysis. One woman did not show up at all with the argument that the assessment at Time 1 (T1) was not related to age-related macular degeneration. One man refused to return after having attended the first session because he felt that he had no need for group therapy at this point in time. One woman sent her excuse for not returning after the first session without any additional information. Two women dropped out of the study as a result of general hospital stays at different stages during the intervention. Furthermore, 3 individuals dropped out from the comparison group because they had problems with the questionnaire at T1 or T2 (both men), with 1 woman refusing the T1 assessment without providing any reason, although she had agreed with her informed consent to participate in the comparison study arm. Finally, it is important to note that both group participants were naturally able to search for regular eye doctor service if needed at any time between T1 and T2. Comparison group participants also were asked at T2 whether they had received any psychosocial or psychiatric service between the measurement occasions. This was not the case.

Mean ages of the intervention and comparison group were 73.1 years and 72.6 years (p > .05), respectively, with 5 men (36%) in the intervention group and 3 men (38%) in the comparison group (p > .05). Years of education also were comparable between the two groups, at 9.6 years (intervention) and 9.8 years (comparison; p > .05). A greater number of participants (p < .05) in the comparison group were married (75% vs. 57%).

Outcome Measures

We measured the following constructs as outcomes: Positive and negative affect were assessed with the German version of the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). The PANAS positive and negative affect subscales consist of 10 adjectives connoting positive and negative emotions. Interviewers asked participants to indicate on a 5-point scale, ranging from 0 (not at all) to 4 (very often), how frequently they had experienced each emotion during the past week. We divided the total scores by the number of items. We assessed depressive symptoms with the short version (15 items) of the Geriatric Depression Scale (GDS) suggested by Sheikh and Yesavage (1986). We measured ADL–IADL ability by using a slightly modified version of a scale taken from the Multilevel Assessment Instrument (MAI; Lawton, Moss, Fulcomer, & Kleban, 1982). For our purposes, we expanded the original scale to include four activities, which specifically addressed functional tasks that can be affected by vision loss (e.g., identifying coins and bills). We assessed the 18 items of this extended scale on a 4-point scale from 0 (performs task with no difficulty) to 3 (can perform task only with help) and summed them to create a total functional ability score (range 0–54). In addition, interviewers asked participants to rate their perceived autonomy on an 11-point Likert-type scale ranging from 0 (completely dependent) to 10 (completely independent). We adapted this measure from a German intervention study, Maintaining and Supporting Independent Living in Old Age (Oswald, Hagen, Rupprecht, & Gunzelmann, 2003), where it revealed a particular sensitivity to detect training gain. Finally, we used the Active Problem Orientation subscale from the Freiburger Fragebogen zur Krankheitsbewältigung, a standard German psychodiagnostic instrument used to assess coping style with illness (Muthny, 1989). This five-item measure addresses illness-related behaviors such as seeking information on diseases and treatments or making plans to proactively cope with illnesses. Each item is rated on 5-point Likert-type format from 1 (not at all) to 5 (very strong). All of the scales revealed satisfactory reliabilities reflected in internal consistencies beyond .70 (Cronbach’s alpha).

We checked group differences at T1 for all six outcome measures by use of a t-test procedure and regarded them—as a result of low sample sizes—as statistically meaningful if at least significance at the .10 level was reached. By these means, we found no effect with respect to negative affect, depression, ADL–IADL, and perceived autonomy, although there was a meaningful difference with respect to positive affect and active problem orientation (both lower in the intervention group at T1). As a consequence, we also corrected all analyses for differences in mean levels at T1 between the intervention and comparison groups in effect size calculations (Cohen, 1988).

Procedure

We performed the assessment at initial time points by means of a standardized interview in the eye hospital 1 week before the intervention program began. Our assessment of the comparison group also was done
in the hospital setting. Both interviews were only performed after informed consent was given. Posttesting of the intervention group (T2) was done in the week after completion of the program. All assessments were performed by the group trainers and thus were not blind to treatment assignment. The period between T1 and T2 was somewhat shorter in the intervention group (7 weeks versus 9 weeks in the comparison group) as it was more difficult to reach comparison-group participants for the T2 assessment. T2 assessments were done as personal and phone-based interviews, with comparable distributions of both of these assessment modes in the intervention and comparison group. The mean duration of assessment was approximately 50 min.

The intervention itself was split into three groups with 3, 5, and 6 attendees. Group sessions were run by two master’s degree candidates in clinical psychology (T. Birk and S. Hickl) and supervised by an experienced clinical psychologist (A. Kämmerer).

Results

Figure 2 shows the T1–T2 trajectories of both the intervention and the comparison groups with respect to the six outcome measures. Preintervention–postintervention data trajectories provided support for the usefulness of the program in five of the six measures. There was an increase in negative affect in the comparison group that was not observed in the intervention group, a decrease in depressive symptoms in the intervention group and an increase in the comparison group, a slight increase in functional ability in the intervention group and a decrease in the comparison group, an increase in perceived autonomy in the intervention group and a decrease in the comparison group, and an increase in active coping in the intervention group and a decrease in the comparison group. We observed no clear difference in T1–T2 trajectories with respect to positive affect between both groups.

In addition to performing a descriptive data analysis, we tested for statistical significance of differences in change scores between the intervention and comparison groups (Table 1). Because of the small sample sizes, we used a nonparametric test procedure (Mann–Whitney U test) besides an unpaired t-test procedure, and we took the value of $p = .10$ as the upper threshold for a meaningful group difference. In order to acknowledge reduced statistical test strength that was due to low sample sizes, we also calculated effect sizes (Cohen, 1988) of differences in change scores and corrected effect sizes by subtracting $T_2$ from $T_1$ effect sizes following a recommendation of Klauer (1993), thus allowing for adjustment of existing differences in $T_1$ status between groups (see Figure 2). The interpretation of effect sizes was informed by Cohen’s (1988) proposal to regard effect sizes between .20 and .50 as low, between .50 and .80 as medium, and above .80 as high.

As shown in Table 1, we found no significant difference with respect to positive affect, whereas the difference in negative affect was significant ($p < .05$) both in the $t$ test and $U$ test, with a corrected effect size of .78 quite near the “high” range of Cohen’s interpretation of effect sizes. With respect to depressive symptoms, there was at least a statistical tendency in the $t$ test, whereas the corrected effect size was in the “low” range (.44). The difference in ADL–IADL was statistically significant with a corrected effect size in the medium range (.66), whereas we observed at least a tentative effect in both statistical tests with respect to perceived autonomy. The corrected effect size of this difference was, however, substantial with a value of 1.14. Finally, the difference in terms of the Active Problem Orientation subscale was tentatively statistically significant in both tests, with a high respective corrected effect size of .85.

Discussion

A body of research has demonstrated that the psychosocial needs of visually impaired elderly patients in general, and those with age-related macular degeneration in particular, are substantial (e.g., Brody et al., 2001; Burmedi et al., 2002a, 2002b; Horowitz & Reinhardt, 2000). However, these needs are largely unmet in clinical practice. Our major goal in this work was to expand on previous psychosocial intervention programs for patients suffering from age-related
macular degeneration (Brody et al., 2002; Dahlin-Ivanoff, 2000) by putting stronger emphasis on cognitive-behavioral group therapy.

The pilot evaluation study described here argues for the effectiveness of such a program. What is most important is that the evaluation demonstrated that such a program is manageable in practical terms, running over 5 weeks in a hospital setting. Furthermore, there is early evidence that positive effects such as prevention of negative affect, reduction in depressive mood, increase in ADL–IADL functioning, increase in perceived autonomy, and increase in active problem orientation can be achieved by such a program. The reason behind a complete lack of statistical difference in T₁–T₂ change in terms of positive affect between the intervention and comparison groups is, however, unclear. It should be noted, though, that positive and negative affect tend to be uncorrelated (Watson et al., 1988). It could well be that the intervention adds predominantly to the reduction and prevention of negative affect caused by vision loss, while positive affect remains more or less untouched. This would agree with results from Brody and colleagues (2002), which showed that their intervention program worked best for more depressed patients with age-related macular degeneration. It is also noteworthy that the intervention group started with higher although statistically insignificant scores in negative affect and depression, as compared with the comparison group.

### Conclusions

In summary, this study corresponds with existing research (Brody et al., 2002; Dahlin-Ivanoff, 2000) that supports the use of psychosocial interventions to improve the quality of life of elderly persons suffering from age-related macular degeneration. An important question to be addressed in future research is the systematic exploration of whether or not such a program can be reduced to fewer sessions. The major reason for this would be the search for the minimum number of sessions that are still supportive and helpful as a psychosocial intervention. Having a limited number of sessions would also aid in patient recruitment. In this study, a significant number of patients who were asked to participate refused on the basis of the length of the intervention and associated logistical problems. Despite the potential benefit of reducing the number of sessions, however, five sessions already offer quite a limited amount of time to address the relevant modules of the intervention program as suggested in this study. We thus recommend the further use of this application format until new evidence is available that address the potential of program downsizing and modification. We also recommend that, at this stage of program development and evaluation, it is better to stay with two group leaders, which was revealed to be most helpful given the ambition of the intervention in terms of its diversity of modules. Another issue not addressed in the current study concerns the question of which module resulted in the greatest positive effects and whether there exists considerable differential impact of modules. For example, it could well be that a more cognitively oriented problem-solving approach may be more helpful for some patients, whereas others prefer an emotion-focused intervention. Future research should thus address whether such a tailored approach to specific patients is feasible and on which empirical basis such differential intervention can rely.

Finally, the limitations of the present study in terms of rigor of design and sample size are obvious. In particular, we did not randomly assign participants into the intervention and comparison groups (thus we did not have a true control group), which may have evoked differences between groups from the beginning. Furthermore, assessments at T₁ and T₂ were not done into the intervention and comparison groups (thus we did not have a true control group), which may have evoked differences between groups from the beginning. The pilot evaluation study described here argues for the effectiveness of such a program. What is most important is that the evaluation demonstrated that such a program is manageable in practical terms, running over 5 weeks in a hospital setting. Furthermore, there is early evidence that positive effects such as prevention of negative affect, reduction in depressive mood, increase in ADL–IADL functioning, increase in perceived autonomy, and increase in active problem orientation can be achieved by such a program. The reason behind a complete lack of statistical difference in T₁–T₂ change in terms of positive affect between the intervention and comparison groups is, however, unclear. It should be noted, though, that positive and negative affect tend to be uncorrelated (Watson et al., 1988). It could well be that the intervention adds predominantly to the reduction and prevention of negative affect caused by vision loss, while positive affect remains more or less untouched. This would agree with results from Brody and colleagues (2002), which showed that their intervention program worked best for more depressed patients with age-related macular degeneration. It is also noteworthy that the intervention group started with higher although statistically insignificant scores in negative affect and depression, as compared with the comparison group.

### Table 1. Results of Statistical Testing of Intervention Effects

<table>
<thead>
<tr>
<th>Variable</th>
<th>Intervention Group</th>
<th>Comparison Group</th>
<th>t</th>
<th>u</th>
<th>Effect Size</th>
<th>Corrected Effect Size*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive affect</td>
<td>−0.26</td>
<td>−0.14</td>
<td>−0.51 (p = .61)</td>
<td>−0.49 (p = .66)</td>
<td>0.23</td>
<td>0.28</td>
</tr>
<tr>
<td>Negative affect</td>
<td>0.10</td>
<td>−0.43</td>
<td>2.6 (p = .02)</td>
<td>−2.3 (p = .02)</td>
<td>1.14</td>
<td>0.78</td>
</tr>
<tr>
<td>Depression</td>
<td>1.4</td>
<td>−0.05</td>
<td>1.98 (p = .06)</td>
<td>−1.6 (p = .13)</td>
<td>0.88</td>
<td>0.44</td>
</tr>
<tr>
<td>ADL–IADL</td>
<td>1.3</td>
<td>−4.8</td>
<td>2.5 (p = .02)</td>
<td>−2.2 (p = .03)</td>
<td>1.11</td>
<td>0.66</td>
</tr>
<tr>
<td>Perceived autonomy</td>
<td>−0.80</td>
<td>1.0</td>
<td>−2.0 (p = .06)</td>
<td>−1.8 (p = .07)</td>
<td>0.90</td>
<td>1.14</td>
</tr>
<tr>
<td>Active Problem</td>
<td></td>
<td></td>
<td>−1.4 (p = .07)</td>
<td>−1.8 (p = .08)</td>
<td>0.84</td>
<td>0.85</td>
</tr>
</tbody>
</table>

Notes: T₁–T₂ = mean difference score; t test, df = 20; ADL = activities of daily living; IADL = instrumental ADL. For corrected effect size, see text for further explanation.

### References

