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Effects of a social internet-based intervention programme for older adults: An explorative randomised crossover study

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Abstract

Introduction: Restraints and changes in social activities might contribute to loneliness and health decline for older adults. To reduce loneliness and support activities, social internet-based interventions are indicated to be effective. The aim of this study was to evaluate the effects of a social internet-based intervention for older adults who are vulnerable to loneliness.

Method: An explorative, randomised, crossover study with an AB/BA sequence was completed. The intervention was conducted over a period of three months. Thirty participants were included (24 women and six men, 61–89 years old) and allocated to two groups. Data were collected at three time points. The primary outcome was the UCLA loneliness scale, and the secondary outcomes were satisfaction with social contacts and social interaction skills. Statistical analyses were conducted with the paired *t*-test, Wilcoxon's signed-rank test and repeated-measures analysis of variance.

Results: Loneliness was significantly decreased in both groups post intervention, and satisfaction with social contacts online significantly increased in one group. Significant treatment effects were detected for all outcomes.

Conclusion: The results of the social internet-based intervention programme are promising, but further evaluations are needed.

Keywords

Loneliness, social activities, social contacts

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Introduction

Health decline among older adults can originate from experiences of loneliness (Adams et al., 2004). Loneliness is evident for older adults in the Western world, and influenced by cultural differences (De Jong-Gierveld and Havens, 2004). In Sweden, the prevalence of reported loneliness is more than 7% among older adults, and it increases with age (Yang and Victor, 2011). Considering loneliness as an actual threat to health, the exploration of intervention programmes with the potential to reduce or prevent loneliness is critical (O'Luanaigh and Lawlor, 2008). Research has shown that older adults perceive that their social contacts and participation in activities can be supported and improved by social internet-based activities (SIBAs; Larsson et al., 2013; Nyman and Isaksson, 2015).

Literature review

Loneliness can emanate from several restraints or alterations in social contacts and activities such as becoming a retiree, living alone (Mullins et al., 1991), entering widowhood (Dahlberg et al., 2015) or being afflicted by reduced mobility and social interaction skills (Cohen-Mansfield and Parpura-Gill, 2007). As the restraints and alterations in social contacts are experienced differently by individuals (Stanley et al., 2010), loneliness is defined as a subjective experience of lacking satisfying social contacts (Peplau and Perlman, 1982).

Accordingly, it is indicated that participation in internet-based activities and the use of SIBAs in interventions for older adults might reduce experiences of loneliness (Ballantyne et al., 2010; Cotten et al., 2013; Tsai and Tsai, 2011). SIBAs could be used to include seniors in the internet-based society, to support online social contacts and to complement social contacts outside the internet (Lelkes, 2013). However, to reduce loneliness more

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effectively using SIBAs and the internet, research has emphasised the importance of using individual adapted programmes (Aarts et al., 2014), rather than general, predefined internet introduction programmes. Consequently, the intervention programme should be client centred (Hammell, 2001) to support older adults more efficiently to be active and independent in preventing loneliness (Stanley et al., 2010). However, such a programme for older adults has not yet been sufficiently explored in previous research.

Therefore, a multiple case study was conducted prior to this study in order to explore a social internet-based intervention programme (Larsson et al., 2013) for socially vulnerable older adults (vulnerability is understood as self-reported loneliness, reduced social contacts and/or social activities). The results show that the intervention programme is promising for reducing loneliness and supporting participation in social activities. More research is required to determine the intervention effects of the social internet-based intervention programme. Therefore, the aim of this study was to evaluate the effects of a social internet-based intervention for older adults who are vulnerable to loneliness.

Method

The method follows the CONSORT (2010) statements for non-pharmacological treatment interventions, and a modified CONSORT flow chart (Figure 1) shows the crossover design of the study.

Study design

An explorative study with a two-period crossover design (AB/BA) was conducted. The crossover design traditionally includes a washout period in which the participants are observed until measures equal to baseline values are reached (Wang et al., 2006). A washout period was not applicable in this study because of the educational feature of the intervention in which the knowledge was expected to be sustained, as well as because of a lack of research regarding estimation of the correct washout period length (previously applied by Prosperini et al., 2013). Despite the omission of a washout period, the crossover design was chosen based on the ethical benefits, as all participants were offered the intervention.

After enrolment, the participants received an initial pretest at measurement point one (T1; Figure 1). The participants were then randomised to one of the following sequences: I/C (intervention period/control period) or C/I (control period/intervention period). Group 1 (I/C) received the intervention for the first three months and then crossed over to the control group for three additional months. For group 2 (C/I), the periods were reversed. During the control periods, no additional intervention was offered to the participants in the study. Measurement point two (T2) followed the first three months for both groups, and measurement point three (T3) followed the final intervention and control period. The study lasted 34 weeks, including the measurement points (T1, T2 and T3).

Power analysis

The power analysis was based on one of the secondary outcomes, the Evaluation of Social Interaction Skills (ESI; Fisher and Griswold, 2013) because standard error (SE) and mean values for a normal sample of older adults were provided. The pre–post mean value in a group of adults was 0.34 logits (Simmons and Griswold, 2010), although two SE values were used to minimise the risk of errors, resulting in a mean difference of 0.30. Using the standard deviation (SD) of the sample of older adults in the ESI database (equal to 0.38) provided an effect size of 0.79 ($0.30/0.38 = 0.79$). A power of 0.8 was selected, and a sample of 25 participants was anticipated to be sufficient for the statistical analysis (Lipsey and Hurley, 2009).

Participants and randomisation

To enrol participants, information regarding the study and contact details was announced on bulletin boards and in local daily newspapers in a mid-sized northern city in Sweden. Older adults who were interested in participating could contact the project leaders via email or telephone. The inclusion criteria were: (a) living in ordinary housing with no home care services, (b) aged 60 years old or older, (c) retired, (d) reporting experiences of loneliness, (e) reporting decreased social contacts and/or decreased participation in social activities, (f) internet users (including email) and (h) having a computer with Internet access at home. The exclusion criteria were: (a) regular participation in SIBAs such as Facebook and Skype, (b) inability to communicate verbally and/or in writing and (c) inability to receive individual support in their homes due to geographical distance. During the two-month recruitment period, the older adults' eligibility was assessed by the project leader during individual phone calls. Eighteen older adults were excluded based on the established criteria (Figure 1). Finally, 30 older adults (24 women and six men aged 61–89 years) were enrolled, and the majority were single and/or were widows/widowers (Table 1). At recruitment, the participants received verbal and written information about the study and its purpose and about their right to withdraw at any time. Before the initiation of the study, all participants signed a voluntary consent letter.

The 30 participants were randomised using a computerised programme. The first author wrote in the sequence boundaries (1–24, 25–30) for randomisation, and the participants were stratified according to sex. The numbers were then randomly assigned into two groups by one employee who was working at the same department as the research group (not otherwise included in the study). The first author then received a preset list from a second employee (within the research group) with a number for

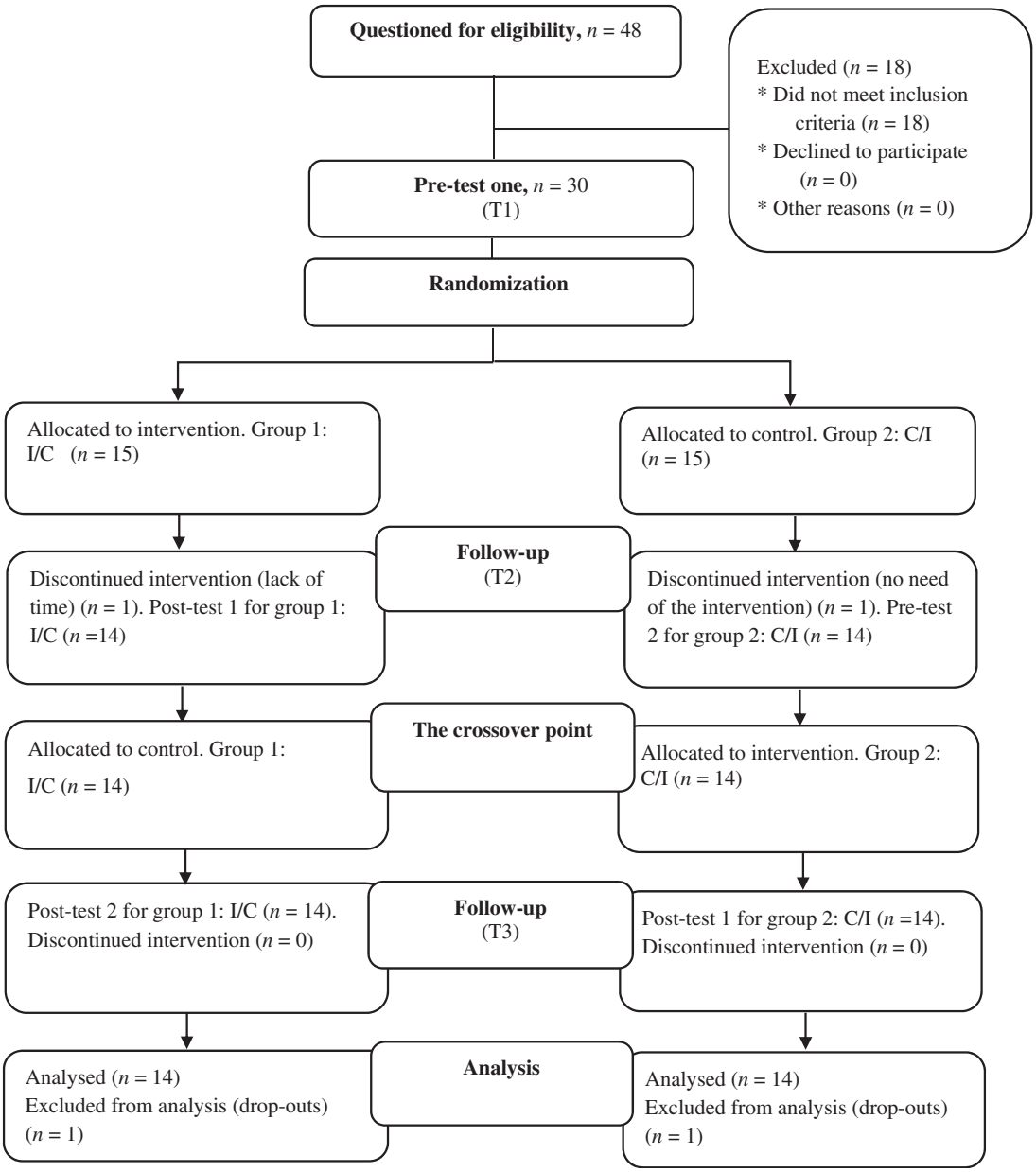

Figure 1. A flow chart displaying participant recruitment and allocation. The number of participants at the different time points is displayed. T1: measurement point one; T2: measurement point two; T3: measurement point three; group 1 (I/C): intervention period/control period; group 2 (C/I): control period/intervention period.

each participant that revealed each participant's group enrolment.

During the study, two participants dropped out: woman from group 1 (I/C) and one man from group 2 (C/I). The reasons given for withdrawal were a lack of time and no need for the intervention. One male participated only in the measurement periods but not in the intervention, and one female did not participate in the last month of her intervention period. These two participants were not considered as dropouts, thereby supporting future comparisons to studies in which not all participants comply with the intervention plans.

The individually adapted SIBA intervention

The intervention programme (Larsson et al., 2013) was based on the client-centred approach described in the Occupational Therapy Intervention Process Model (OTIPM; Fisher, 2009). The focus of the intervention programme was to support individually adapted and goal-directed participation in SIBAs. The intervention programme combines individual and group meetings, including in-home support and remote support via the internet or telephone. The programme characteristics include a description of the frame (that is, the time and

Table 1. Baseline characteristics of the participants, including age, sex, educational level, living arrangements and frequencies of social activity participation and email use.

	Participants		
	Total sample ($n=30$)	Group 1 (I/C; $n=15$)	Group 2 (C/I; $n=15$)
Age (years (mean))	61–89 (71.2)	66–89 (73.4)	61–76 (69.0)
Sex (n (%))			
Men	6 (20.0)	3 (20.0)	3 (20.0)
Women	24 (80.0)	12 (80.0)	12 (80.0)
Educational level (n (%))			
Elementary school	6 (20.0)	4 (26.7)	2 (13.3)
High school	7 (23.3)	4 (26.7)	3 (20.0)
University	17 (56.7)	7 (46.7)	10 (66.7)
Living arrangements (n (%))			
Married or cohabiting	9 (30.0)	5 (33.3)	4 (26.7)
Widow/widower/single	21 (70.0)	10 (66.7)	11 (73.3)
Frequency of participation (n (%)) in social activities (offline)			
Once a week or more	26 (87.0)	14 (93.3)	12 (80.0)
Once a month or less	1 (3.0)	0 (0)	1 (6.7)
Never	3 (10.0)	1 (6.7)	2 (13.3)
Frequency of email use (n (%))			
Once a week or more	21 (70.0)	10 (66.7)	11(73.3)
Once a month or less	5 (17.0)	4 (26.7)	1 (6.7)
Never	4 (13.0)	1 (6.7)	3 (20.0)

Total sample: $n=30$; group 1 (I/C): $n=15$; group 2 (C/I): $n=15$. Group 1 (I/C): intervention period/control period; group 2 (C/I): control period/intervention period.

place of the intervention) and the content (that is, preset actions and individual tasks; Table 2). In the frame, an hour and a half is set as the maximum time for each meeting (in groups and individually). The individual meetings are offered weekly, and the frequency and type of support (in home or remotely) are adapted to the participants' needs for support, and can therefore take place more frequently for some participants. The group meetings are offered every second week. The programme content includes pre-decided actions for the occupational therapists, for example to establish a collaborative relationship initially (described in the OTIPM), as well as pre-decided tasks and individually adapted goal-directed tasks for the participants (see Table 2 for examples). Goal achievements are not evaluated in this article because of the large volume of data available, but the goals could include finding a new friend with the same interests or learning how to participate in debates using SIBAs.

In total, three part-time occupational therapists (two per intervention period) provided the intervention. They worked in parallel and were responsible for six to eight participants each per intervention period. The occupational therapists had previous experience of working with older adults, and prior to the intervention, they attended a two-day course on how to apply the intervention programme.

Data collection

An external rater who was blinded to group allocation and was trained to administer all of the measurements performed all data collection during the three measurement points (T1, T2 and T3). At T1, baseline characteristics were collected, and initial evaluations of the primary and secondary outcomes were conducted. At T2 and T3, the primary and secondary outcomes were re-evaluated.

Baseline characteristics. At baseline, information was collected on the participants' age, educational level, living arrangements, frequency of email use and participation in other social activities. Moreover, computer-related skills were evaluated using the Assessment of Computer-Related Skills (ACRS; Fischl and Fisher, 2007), an observational tool that evaluates 37 skills required for computer and Internet use. The ACRS information was only used to describe the target group, not for pre–post comparisons.

Primary outcome. The primary outcome was self-reported loneliness, measured using the UCLA loneliness scale (Russell, 1996), which has been found to be valid and reliable when used for groups of older adults and in intervention studies (Cattan et al., 2005). For this study, a Swedish version of the UCLA loneliness scale that was previously translated by Engelberg and Sjöberg (2005) was used. The scale contains 20 questions graded on a four-step scale, where 1 = never, 2 = rarely, 3 = sometimes and 4 = always. Nine questions are reversed before the answers are graded. The scores are summarised to yield a total score ranging from 20 to 80. A higher total score indicates a higher degree of loneliness (20–34 = low, 35–49 = moderate, 50–64 = moderately high and 65–80 = high experiences of loneliness; Perry, 1990).

Secondary outcomes. The secondary outcomes were satisfaction with social contacts online and offline, which were measured using the visual analogue scales (VASs) from the Social Network Online and Offline (SN) questionnaire (Larsson et al., 2013). The scales ranged from 0 = not satisfied to 10 = very satisfied. The ESI (Fisher and Griswold, 2013) was used to observe and rate the quality of 27 social interaction skills when participating in social activities offline. The performance quality was rated using a four-step scale, where 1 = severely limited, 2 = ineffective, 3 = questionable and 4 = competent. The measurement is valid to use for groups of older adults (Simmons et al., 2010). The ESI software (ESI, 2015) uses the Rasch measurement model to transform ordinal data into interval data, generating a measure (in logits) of the quality in social interaction skills for each person. The age normative limits (±2 SD) for each age group are: 60–69 years old, 1.3 logits; 70–79 years old, 1.0 logits; and 80 years old and older, 0.8 logits (Fisher and Griswold, 2013).

Data analysis

Descriptive statistics and *t*-tests were used for baseline characteristics. To compare pre–post intervention

Table 2. Characteristics of the intervention programme, including examples of the frame and content of the programme.

Frame of the intervention	Preset educational group meetings offered every second week	Individual meetings offered weekly, or more frequently if needed
Time	1.5 hours/occasion	1.5 hours/occasion
Place	Remotely via Skype	In the participants' homes
Additional support (to accomplish the tasks or participation)	Remotely during meetings	Remotely or in their homes
Number of meetings attended per participant	2–5	1–16
Examples of the content in the intervention programme Occupational therapists' predetermined actions	**Participants' predetermined tasks**	**Participants' individual and goal-directed tasks**
Establish collaborative relationship at an individual meeting and support goal establishment with interview and measurement tools	Identify and define goals with participation in SIBAs; learn about security settings	Upload pictures to Facebook and 60 + profiles
Provide education (verbally, in writing and using manuals) on how to use chosen SIBAs, in accordance with participants' goals Inform about blogs, debates, forums and different communities	Use one social media platform at a time instead of another approach (that is, instead of using the regular phone)	Search for relatives using SIBAs
Adapt the working environment, that is, keyboard, seating position, lighting Provide education (verbally, in writing and using manuals) on how to connect web camera and headphones to the participants' computers	Contact another known or unknown person using SIBAs	Write a comment in a forum and press 'like' on another comment on Facebook
Prepare the participants for the Skype meeting Act as a group leader at the meeting	Participate at the group meeting with the theme 'Contemporary debates in society'	Prepare to participate at the group meeting via Skype by reading a blog post and formulate questions to discuss
Support the progress of the individuals' goal achievement Evaluate the participants' progress, re-establish new goals	Participate in goal evaluations	Consider the individual progress and whether the goals are achieved

differences, the paired *t*-test or Wilcoxon signed-rank test was used (for linear or ordinal data, respectively). In addition to the comparison of pre- and post-test intervention scores, a calculation of the percentage change was added, which is a comparison of the mean change between the measurement points (T2–T1 and T3–T1). To assess whether the intervention effects were sustained for three months post intervention (no significant difference between T3 and T2 for group 1 [I/C]), the Bonferroni post hoc test was used. The sustainability test was not applicable for group 2 (C/I) because they were not followed up after three months. With repeated-measures analysis of variance (RM-ANOVA), differences within and between subjects were compared using the measurement points (T1, T2 and T3) and the group allocations (group 1 [I/C], group 2 [C/I]), respectively. A time–treatment interaction analysis was applied to assess the treatment effect at T3. The result of this analysis is referred to as the time effect. Possible covariates of the main outcome (age, educational level and living arrangements) were included in the RM-ANOVA. The analyses were conducted using IBM SPSS Statistics for Windows v22.0 (IBM Corp., Armonk, NY). A p-value of ≤ 0.05 was set to detect significant changes.

Results

Baseline characteristics

Baseline differences between the two groups were controlled for; no significant differences were found for loneliness ($p = 0.464$), satisfaction with social contacts online ($p = 0.705$), satisfaction with social contacts offline ($p = 0.273$) or ESI ($p = 0.285$). No differences were detected for the living arrangement ($p = 0.690$) or educational level ($p = 0.512$), but a significant difference was found for age ($p = 0.047$; group 1 [I/C] had a higher mean age, including participants older than 80 years of age). At baseline, 87% of the participants partook in social activities offline once per week or more frequently, and 70% used email once a week or more frequently (for more details, see Table 1). The ACRS observations at baseline indicated that the most challenging skills for the participants (displayed by inefficient and/or deficient skills for 93% of the participants) were adapting their performance and modifying their behaviour while using computers and the internet.

Effects from pre-and post-intervention analyses

Analysis using Wilcoxon's signed-rank test revealed significantly reduced experiences of loneliness post intervention in

both groups (group 1 [I/C] $p = 0.003$; group 2 [C/I] $p = 0.049$). Satisfaction with social contacts online was significantly improved post intervention for group 2 (C/I; $p = 0.05$), and no change was detected for group 1 (I/C; $p = 0.266$; Table 3). No significant differences for satisfaction with social contacts offline post intervention were detected (group 1 [I/C] $p = 0.451$; group 2 [C/I] $p = 0.074$). Analysis of the ESI measurement by a paired *t*-test showed that the participants' social interaction skills were significantly lowered post intervention for group 1 (I/C; $p = 0.007$), but no change was detected for group 2 (C/I; $p = 0.210$; Table 3). Because of the negative trend in social interaction skills for one group, the ESI data were further explored using a box plot. Outliers in the data were found but were not removed due to the already small size of the sample.

The Bonferroni post hoc test showed that the intervention effects for all variables (loneliness, $p = 1.000$; satisfaction with social contacts online, $p = 0.499$; satisfaction with social contacts offline, $p = 0.165$; and ESI measurement, $p = 0.393$) were sustained for group 1 (I/C) three months post intervention, as no significant changes were detected for the already established effects.

Comparisons among measurement points T1, T2 and T3

RM-ANOVA showed no interaction between the intervention and group allocation (group 1 [I/C] vs group 2 [C/I]), indicating that the sequence (AB vs BA) had no effect on the intervention. The time-treatment interaction analysis (time effect) showed significant treatment effects for all variables (experiences of loneliness: $F = 13.156$, $p < 0.001$; satisfaction with social contacts online: $F = 13.159$, $p < 0.001$; satisfaction with social contacts offline: $F = 11.723$, $p < 0.001$; and ESI measurement: $F = 3.375$, $p = 0.050$; Table 3). The *F*-statistic is the ratio between within-subject variation (intervention effect) and error variation (random/unsystematic differences). A large *F*-statistic yields a correspondingly small *p*-value, suggesting that there is a large variation in means between the measurement points over time. When age, educational level and living arrangement were added to the model, the treatment effect remained unchanged.

Discussion and implications

The results indicate that the individually adapted SIBA intervention programme for socially vulnerable older adults has the potential to reduce experiences of loneliness. The intervention effects were sustained post intervention, which was expected and desired as part of the goal of the programme. As previous research indicated a relationship between health and loneliness (O'Luanaigh and Lawlor, 2008), the results from this study indicate that the SIBA intervention has the potential to be used by occupational therapists in health-promotive actions for older adults. The occupational therapists' ability to work in a client-centred way, to tailor the intervention to the individual (that is, level of independence and time needed to learn)

Table 3. Results of the outcomes, including the UCLA loneliness scale, satisfaction with social contacts online and offline and the Evaluation of Social Interaction skills (ESI).

	T1 raw value, mean (SD), $n = 15$/group	T2 raw value, mean (SD), $n = 14$/group	T3 raw value, mean (SD), $n = 14$/group	Comparison of pre- and post-intervention scores	% change, T2-T1, mean (SD)	% change, T3-T1, mean (SD)	Interaction between intervention and sequence (I/C vs C/I), $n = 28$	Time effect among T1, T2 and T3, $n = 28$
UCLA loneliness scale							$F = 0.755$; $p = 0.475$	$F = 13.156$; $p < 0.001$*
Group 1 (I/C)	45.53 (7.41)	42.43 (7.44)	42.00 (7.34)	$p = 0.003$*	−0.07% (0.07)	−0.08% (0.08)		
Group 2 (C/I)	43.93 (8.61)	41.93 (8.82)	39.50 (10.42)	$p = 0.049$*	−0.05% (0.09)	−0.09% (0.13)		
Satisfaction with social contacts online							$F = 2.267$; $p = 0.125$	$F = 13.159$; $p < 0.001$*
Group 1 (I/C)	3.62 (2.94)	5.24 (2.64)	6.14 (2.82)	$p = 0.266$	6.12% (19.58)	8.10% (24.56)		
Group 2 (C/I)	3.11 (3.00)	3.52 (2.80)	6.39 (2.51)	$p = 0.05$*	1.42% (3.11)	7.30% (10.16)		
Satisfaction with social contacts offline							$F = 0.334$; $p = 0.717$	$F = 11.723$; $p < 0.001$*
Group 1 (I/C)	5.84 (2.13)	6.29 (1.72)	7.20 (1.39)	$p = 0.451$	0.28% (0.68)	0.46% (0.64)		
Group 2 (C/I)	4.23 (2.41)	5.63(2.40)	6.62 (2.56)	$p = 0.074$	1.23% (2.90)	0.96% (1.52)		
ESI							$F = 2.371$; $p = 0.114$	$F = 3.375$; $p = 0.050$*
Group 1 (I/C)	1.02 (0.32)	0.81 (0.22)	0.91 (0.21)	$p = 0.007$*	−0.20% (0.3)	−0.74% (0.3)		
Group 2 (C/I)	0.79 (0.33)	0.79 (0.26)	0.85 (0.20)	$p = 0.210$	−0.24% (1.1)	−0.06% (2.5)		

The T1 raw values are based on 30 participants, while the other outcomes are based on 28 participants.
T1: measurement point one; T2: measurement point two; T3: measurement point three. * indicates a significant *p*-value < 0.05.

and to support meaningful goal-directed online activities (Larsson et al., 2013) might have influenced the positive results. Previous studies have identified that the frequency or time online cannot entirely explain or support a reduction in loneliness (Aarts et al., 2014). Furthermore, the implementation of the intervention can be facilitated by collaborating with several actors in society (for example, senior organisations, professionals in health care and other establishments), which could help to reduce demands on health care. However, due to the explorative study design, the results should be interpreted with caution.

In this study, the majority of participants were women living alone, who represent a group indicated to be more vulnerable to loneliness (Dahlberg et al., 2015). Despite this characteristic of our study population, none of the participants reported high levels of loneliness at baseline according to the loneliness scale, indicating that the intervention was tested on a group with low to moderate levels of loneliness. Therefore, continuing to explore the applicability and effects of the programme for older adults with different levels of loneliness, especially for those with high experiences of loneliness, is important.

The secondary outcome, satisfaction with social contacts online, was significantly improved for one group post intervention, but no significant change was detected for satisfaction with social contacts offline. However, at T3, the treatment effect was significantly improved for satisfaction with social contacts both online and offline. Previous research has highlighted that satisfaction with social contacts and high-quality social relationships can decrease loneliness (Routasalo et al., 2006; Stanley et al., 2010). Therefore, the results from this study, indicating that satisfaction online and offline has improved over time, are promising but still very preliminary. The inconclusive results of this study related to satisfaction with social contact could be due to the high baseline values in the groups, indicating less possibility for improvement. Consequently, satisfaction with social contacts should be controlled for in forthcoming studies. Additionally, privacy and technological issues that are known to limit successful use of internet-based activities (Nef et al., 2013) must also be controlled for and recognised as factors that can affect the establishment of and satisfaction with friendships via the internet.

Social interaction skills (measured by the ESI) were assumed to be related to participation in SIBAs. However, one group unexpectedly displayed decreased social interaction skills during the intervention. This result must be considered and followed up in future studies. A possible explanation for the decrease in social interaction skills includes unreported diagnoses (that is, depression and cognitive decline), as that could affect social interaction skills and must be evaluated accordingly (Fisher and Griswold, 2013).

This explorative study, which included a small sample size, can form the basis for future larger, controlled studies and robust power calculations (Devane et al., 2004). The strengths of this study include the randomisation strategy and the use of an external rater who evaluated the study outcomes. An additional strength is that the occupational therapists who provided the intervention were not otherwise included in the study and were not biased by expectations of the study outcome. However, as no alternative intervention was offered during the control periods, the effects might have been biased by the attention received by the participants from the intervening occupational therapists. To isolate the effects of the individual approach applied in this programme, a comparison study with a general predefined intervention programme should be conducted. Consequently, if an alternative intervention or no intervention had been provided to one of the groups, the validity of the study might have been strengthened.

Conclusion

The present study indicates that this individually adapted SIBA intervention programme has the potential to reduce experiences of loneliness in socially vulnerable older adults. If occupational therapists embrace this SIBA intervention programme, their readiness to support seniors in the technological changing society might be enhanced. To advance the applicability of the intervention programme, further randomised controlled studies should be conducted.

Key findings

- The SIBA intervention programme is client-centred, individually adapted and goal directed to support the participation of seniors in SIBAs.
- The SIBA intervention programme shows evidence of reducing older adults' experiences of loneliness.

What the study has added

This study adds knowledge about the social effects from participation in the client-centred, individually adapted SIBA intervention programme and the need to use such programmes in a more technology-based society.

Ethics

The Ethical Committee Umeå, Sweden (Dnr 2011-109-31 M) approved this study.

Declaration of conflicting interests

The authors confirm there is no conflict of interest.

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