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## Feature Article

## The effects of a Socially Supportive Activities Program (SSAP) on mood in long term care: A pilot study

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## ABSTRACT

This study examined the effects of a facilitated 10-week Socially Supportive Activities Program (SSAP) designed to improve mood in a geriatric institutional setting. A sample of 68 Taiwanese elders in long-term care facilities with depressive symptoms were randomly assigned to either an experimental group ( $N = 35$ ) or a control group ( $N = 33$ ). Outcomes were measured before the intervention, week 1, and at week 12, one-week post intervention. In the experimental group, pre-post measurement results demonstrated significant reductions in depressive symptoms, measured by Geriatric Depression Scale, and significantly higher levels of self-transcendence, measured by the Self-Transcendence Scale. An additional post-intervention measure of mood was collected with the Apparent Emotional Rating Scale. The AERS also demonstrated a significantly higher score (better mood) in the experimental group than in the control group. This study supports the use of a structured, facilitated, well-designed social activities program like the SSAP, to enhance and improve mood in elders who live in long-term care facilities.

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## Introduction

Self-transcendence (ST) is a concept that describes an individual's expanded sense of self, both inner-facing, through introspection, as well as outward-facing, through altruism or concern for living beings. Additionally, a temporal aspect of ST includes an examination and integration of one's past and future, and how the present may be enhanced through contemplation and reflection on one's current place in time.<sup>1</sup> ST is distinct from attitudes of self-absorption or striving for self-esteem in the sense that a person with an elevated sense of ST will find meaning in adverse events, which may help that individual confront negatively perceived health or other life events with a sense of calm acceptance.<sup>2–3</sup>

Through the use of validated instruments, ST can be measured through items that capture the quality and quantity of interpersonal relationships, shared wisdom, assistance to others and an interest in life-long learning.<sup>3</sup> Several studies have examined ST as a potential developmental resource that allowed long-term care facility (LTCF) residents to achieve a sense of inner peace and harmony. One study found that intrapersonal self-transcendence positively facilitated residents' self-acceptance and sense of a meaningful life, which helped facilitate adjustment to the LTCF.<sup>4</sup> Haugen et al.<sup>5</sup> hypothesized that LTCF residents who exhibited higher levels of interpersonal and

intrapersonal ST might exhibit fewer depressive symptoms. Additional studies have demonstrated that by offering older people increased opportunities for meaningful social engagement, not only was ST increased, but in community-dwelling elders, there was also a significant decrease in LTCF placements,<sup>6</sup> and an overall improved quality of life with fewer depressive symptoms.<sup>7–10</sup>

Geriatric depression is a global problem that is commonly under-treated or unrecognized.<sup>11</sup> The United States has had reports of depression rates in long term care facilities (LTCF) as high as 49%.<sup>12</sup> In one recent sample of Medicare fee-for-service beneficiaries the incidence of depression in post-hospitalized elders placed in a LTCF was reported at 10%.<sup>13</sup> Other researchers have found that after LTCF placement the incidence of a new depression diagnosis ranged anywhere from 9.4% to 45.8%.<sup>14–15</sup> Higher rates of depression in LTCF residents were seen among those with certain characteristics that included those who were: women, unmarried, reported higher income, demonstrated less functional ability and/or impaired ability to complete activities of daily living, demonstrated severe cognitive impairments, or reported significant levels of loneliness, and reported less participation in social activities.<sup>9,13,15–17</sup> It is vital that health care providers recognize and treat geriatric depression as it can be associated with significantly worse health outcomes that include poor physical health in general, as well as less functional independence,<sup>18</sup> increased frailty,<sup>19</sup> sarcopenia,<sup>20</sup> and increased cardiovascular mortality.<sup>21</sup>

While treatment with pharmaceutical agents such as antidepressants can be an effective and important intervention,<sup>22</sup> there have been

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incidents of serious adverse events associated with these medications, especially in the setting of polypharmacy.<sup>23–25</sup> Importantly, health care providers may be over estimating the benefits of antidepressants in this population<sup>26</sup> while underestimating the benefits of non-pharmacological interventions such as social or psychological intervention.<sup>27–28</sup> There is a body of research that suggests psychosocial interventions may effectively decrease depressive symptoms in the elderly. One systematic review that examined the efficacy of psychosocial interventions for geriatric depression suggested that interpersonal psychotherapy may be an effective intervention for this population.<sup>29</sup> Kiosses, et al.<sup>29</sup> recommended further study of psychosocial interventions for geriatric depression in non-traditional settings such as LTCF, as well as to expand this type of research to include more diverse populations.

Interestingly, but not surprisingly, a number of studies have demonstrated a strong inverse association between ST and depression or depressive symptoms in elders who live in LTCF.<sup>5,30</sup> Additional studies support the idea that active participation in meaningful social or religious activities also play an important role to promote protective effects, which have a very real potential to prevent or decrease depressive symptom.<sup>31</sup> Finally, there is a small literature base that supports the use of non-pharmacologic, or low-dose pharmacologic intervention, paired with social interventions to effectively manage mood in the elderly.<sup>28,32,33</sup> Unfortunately, few LTCF provide residents with structured social programs that are specifically designed to address or prevent depressive symptoms or enhance self-transcendence.

Therefore, the primary aim of this pilot study was to examine the effectiveness of a standardized ten-week, structured, facilitated social group activity on depressive symptoms and perception of ST in a sample of elderly Taiwanese who lived in a LTCF. Additionally, we sought to explore the relationship between depressive symptoms and self-transcendence to better understand that if self-transcendence could be heightened through meaningful activities and social interactions, would depressive symptoms be mitigated?

## Method

### Design and sample

This pilot study was a pre-post, experimental, controlled design. Four intermediate care facilities and two nursing homes participated in the study. Inclusion criteria of participants included: 65 years old or older, able to communicate in either Mandarin Chinese or a Taiwanese dialect, ambulatory, cognitively competent—indicated by a score  $\leq 3$  incorrect answers on the 10-item Short Portable Mental Status Questionnaire (SPMSQ),<sup>34</sup> and with significant depressive symptoms captured by the Geriatric Depression Scale (GDS) with a score  $\geq 5$ .<sup>35</sup> Exclusion criteria included being bed-ridden, severe hearing loss, speech deficits, or a formal diagnosis of dementia. In each facility, participants who met inclusion criteria and agreed to take part in the study were randomly assigned, based on their sequential number at enrollment, to either the control or experimental group. Of 93 potential participants screened, 14 did not meet inclusion criteria. A total of 79 eligible participants were allocated into either the experimental group ( $n=40$ ) or control group ( $n=39$ ). After the 10-week intervention, the final sample consisted of 68 participants (Fig. 1).

### Measurements

Two screening questionnaires were administered, the SPMSQ to evaluate cognitive competence, and the GDS to confirm depressive symptoms.

Demographic questionnaires were administered at the beginning of the study, after eligibility was confirmed, and included age, gender, years of formal education, number of months in the facility, number of children, marital status, financial status, and religious preference.

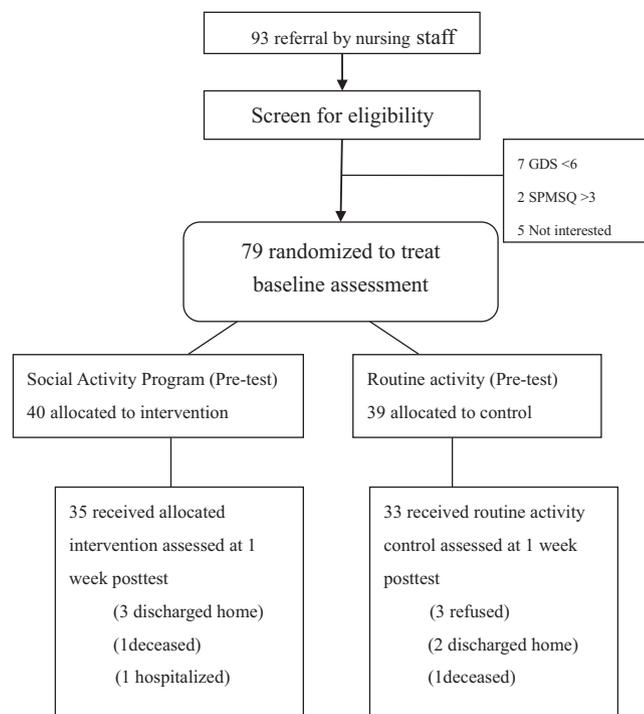


Fig. 1. Flow of participants.

The SPMSQ was used to evaluate cognitive function for screening purposes. The SPMSQ consists of ten binary items with correct answers valued at 0 points and incorrect answer valued at 1 point. The SPMSQ evaluates short-term and long-term memory, orientation, information about current events, and capacity to perform serial mathematical tasks.<sup>34</sup> To be eligible the participant needed to score less than or equal to 3 points, which indicated cognitive competence.

The GDS<sup>35</sup> was used for both screening and outcome measure to confirm depressive symptoms. The GDS is a 15-item, self-reported instrument with dichotomous variables. The GDS was specifically designed for use in older adults, and has been used in many studies examining depression and depressive symptoms in elder Taiwanese. Scores can range from 0 to 15. A score greater than or equal to 5 points suggests clinically significant depression.<sup>36</sup> The GDS demonstrated satisfactory reliability with Cronbach's alpha = 0.79–0.83.<sup>30,37</sup> This study showed a strong internal consistency with Cronbach's alpha at 0.86.

The Self-Transcendence Scale (STS) was developed by Reed (2009)<sup>3</sup> to reflect one's capability to expand one's boundaries of self. The STS consisted of 15 items using a 4-point response rating (1 = not at all to 4 = very much) and is intended to measure a person's perception of his or her level of self-transcendence, the second outcome measurement. The Chinese version of the STS demonstrated validity with Cronbach's alphas with 0.78.<sup>30</sup> Cronbach's alpha was 0.73 in this study.

An additional measure of mood was captured using the Apparent Emotional Rating Scale (AER) developed by Snyder and colleagues.<sup>38</sup> This instrument measured mood through direct observation by a trained observer who watched the participants as they engaged in various activities. The AER measured six affective states that included pleasure, interest, tranquility, anger, anxiety, and depression. The AER ranked emotions on a scale of 0 (not observed) to 15 (observed). Scores could range from 0 to 90 points. Higher scores indicated less depression, or a happier state. Cronbach's alpha coefficient of 0.93 has been established in Taiwanese elders.<sup>39</sup> Concurrent validity was supported by significant correlation with the GDS.<sup>38</sup> In this study, Cronbach's alpha coefficient was satisfactory at 0.83.

## Intervention

The control group received routine activities offered by the facility, which generally included opportunities to play games, watch television or movies, sing karaoke or participate in arts and crafts. The experimental group was not prevented from enjoying the existing activities offered by their facility, but in addition they also participated in the Socially Supportive Activities Program (SSAP). The SSAP consisted of 10 weekly, structured and facilitated, 60-min group activities, with a manual that offered step by guidance and instructions for the group facilitator at each session. The SSAP provided a wide range of social activities that most people would find enjoyable such as playing games, learning to use an iPad®, sharing life stories, and making a family photo album. These activities were specifically designed to offer opportunities for interpersonal interaction, communication, learning, and foster social support in a group setting. The program was designed based on results of a previous study.<sup>9</sup> The SSAP development included a preliminary review and evaluation of content validity using a content validity index (CVI) (Lynn, 1986)<sup>40</sup> by a panel of five geriatric experts in the fields of nursing, occupational therapy, geriatric medicine, and long-term care professionals. The score of the scale-level CVI was 0.96, which indicated that the activities incorporated into the SSAP were highly relevant to interpersonal interaction and support.

The SSAP was delivered by 3 trained researchers. Each researcher received 3 h of face-to-face instruction and practice on the ideal implementation of the protocol conducted by the principle investigator (PI) to maximize the intervention consistency. Of the three trained researchers, two were masters prepared registered nurses who had additional training in how to effectively facilitate groups. The third research assistant was a graduate student from the health division who functioned as the activity coordinator. This research assistant tracked participant attendance for each class and maintained attendance records. Participation was enhanced through a personal invitation. If the participant was not in the session area thirty minutes prior to the class, the research assistant would go to the participant's room to inquire if they were planning to attend the session. Attendance was recorded, as well as reasons for absences. Each group in each facility had 5–8 participants. The SSAP intervention was flexibly scheduled according to each facility's schedule, thus, there were no disruptions of regularly scheduled activities. All activities concluded at the end of each session, there were no out of class assignments. Attendance was recorded, and the occasional absences were taken into account for the final data analysis.

## Data collection procedure and analysis

Facility directors were initially contacted by the PI via telephone. Only the directors who reported that they did not offer activities specifically designed for residents with depressive symptoms were invited to participate in the study. After obtaining each facility director's consent to participate, researchers contacted the nurse managers at each facility to describe the study. Next, arrangements were made to meet with nursing staff, and to identify and meet potential participants. The nursing staff provided a list of potential participants who were approached and asked if they would be interested in participating in a study. All potential participants were told that there would be 2 screening assessments in order to establish inclusion/exclusion criteria. In week 1, baseline assessments and outcome measures at pre-intervention were completed. The ten-week intervention began at week 2 and ran through week 11. Post-test assessments were completed at week 12.

Data analysis was performed using IBM SPSS Statistics 20.<sup>41</sup> To ensure that the two groups were comparable, the demographic data and the scores on the screening measures at baselines were performed with independent t-tests, Chi square, and Fisher's Exact Test. Changes over time were captured on the GDS and STS scores before

and after the 10-week intervention. Mean differences between and within groups were analyzed with independent-sample t-tests and paired sample t-tests. A significance level of  $p < 0.05$  was set for all statistical tests.

## Ethical consideration

The study was approved by the Chang Jung Christian University's institutional review board, number CJCU-98-019. Potential participants who were initially approached about the study were given time to re-approach the research assistants and express interest. At that time, a research assistant provided a full explanation of the study along with the aims, methods, anticipated benefits, potential risks, and the right to refuse to participate or withdraw from the study at any time without threat to care in the facility. A written informed consent was obtained from each participant before the 2 inclusion eligibility screening questionnaires were administered. Participants who completed all assessments received a gift card for 100 New Taiwan Dollars (approximately 3 US dollars).

## Results

### Demographic characteristics

The mean age of participants was 79.44 (SD=7.90). The average of length of stay in the LTCF was 29.90 months and ranged from 3 to 92 months (SD=24.04). There were more female (61.8%,  $N = 42$ ) than male participants (38.2%,  $N = 26$ ), consistent with national statistics from the Republic of China, where in 2017, elderly Chinese women (65 years old or older) represented 55.4% of those who lived in LTCF compared to Chinese men at 44.6%.<sup>42</sup> The majority of participants (78.8%) reported that they were financially comfortable, and 92.6% ascribed to some forms of religious belief. Gender was the only variable with a significant difference. Thus, we concluded that the baseline characteristics of our sample demonstrated adequate randomization and resulted in two equivalent, homogenous groups (Table 1).

Results from the t-tests appear in Table 2. An independent-sample t-test was conducted to compare self-transcendence and depressive symptoms in both the experimental and control groups. At the pre-intervention assessment, there were no significant differences between the self-transcendence and depressive symptom scores between experimental group and control group [ $t(65) = -1.09, p = 0.28$ ;  $t(65) = 1.23, p = 0.22$ , respectively]. The post-intervention scores of self-transcendence were significantly higher (mean = 47.40, SD = 5.69) in the experimental group than in the control group (mean = 35.0, SD = 6.57) [ $t(65) = -8.12, p < 0.001$ ]. Depressive symptom scores were significantly lower (mean = 2.69; SD = 2.23) in the experimental group than in the control group (mean = 7.58, SD = 3.95) [ $t(65) = 6.23, p < 0.001$ ].

In the experimental group, paired-sample t-test pre-post self-transcendence and depressive symptom scores demonstrated significant differences [ $t(34) = -12.85, p < 0.001$ ;  $t(34) = 12.73, p < 0.001$ , respectively]. The mean STS scores increased from 33.91 (SD = 4.25) at pre-intervention to 47.40 (SD = 5.69) at post-intervention. The mean GDS scores decreased from 8.11 (SD = 2.52) at pre-intervention to 2.69 (SD = 2.23) at post-intervention. In the control group, there were no significant differences in either measure of self-transcendence or depressive symptoms at pre-intervention and post-intervention [ $t(34) = -1.85, p = 0.07$ ;  $t(34) = 1.61, p = 0.12$ , respectively].

With respect to AER scores, the data were not normally distributed, statistical comparisons between the two groups were performed using the nonparametric Mann-Whitney U Test. At the pre-intervention measurement, there was no significant difference between AER scores in the two groups ( $Z = -2.00, p = 0.05$ ). However, post-intervention measurements showed that AER scores were significantly higher in the experimental group (mean rank = 41.94) than in the control group (mean rank = 26.61) ( $Z = -3.80; p < 0.01$ ).

**Table 1**  
Baseline characteristics of the study sample by group.

Characteristics	Total (n = 68)		Experimental group (n = 35)		Control group (n = 33)		P value
	Mean (SD)	N (%)	Mean (SD)	N (%)	Mean (SD)	N (%)	
Age <sup>a</sup>	79.54	7.90	79.57	6.52	79.52	9.24	n.s.
Education in years <sup>a</sup>	5.40	4.73	4.66	3.52	6.18	5.69	n.s.
Months of stay duration <sup>a</sup>	29.90	24.04	28.00	24.87	31.91	23.32	n.s.
Number of children <sup>a</sup>	3.28	2.03	3.34	2.25	3.21	1.80	n.s.
Gender (%) <sup>b</sup>							0.03*
Male	26	38.2	9	25.7	17	51.5	
Female	42	61.8	26	74.3	16	48.5	
Marital Status (%) <sup>c</sup>							n.s.
Married	24	35.3	11	31.4	13	39.4	
Widowed	38	55.9	21	60.0	17	51.5	
Single/Divorced	6	8.8	3	8.6	3	9.1	
Financial status (%) <sup>c</sup>							n.s.
Poor	10	14.7	4	11.42	6	18.18	
Just make ends meet	52	76.5	29	82.86	23	69.70	
Have some savings	4	5.9	1	2.86	3	9.09	
Missing	2	2.9	1	2.86	1	3.03	
Religion belief (%) <sup>c</sup>							n.s.
Yes	63	92.6	33	94.3	30	90.9	
No	5	7.4	2	5.7	3	9.1	
SPMSQ score <sup>a</sup>	1.26	0.97	1.23	0.97	1.30	0.98	n.s.
GDS score <sup>a</sup>	8.44	2.27	8.11	2.52	8.79	1.95	n.s.

Note:.

<sup>a</sup> = independent sample *t* tests.<sup>b</sup> =  $\chi^2$  tests.<sup>c</sup> = Fisher's Exact Test; n.s. = non-significant, *p* > 0.05.

## Discussion

This study was a follow-up project developed from a prior related study that examined institutionalized elders' thoughts about meaningful and enjoyable activities and mood.<sup>9</sup> It seems to be a common-sense notion that when a group of people, who, after all, are social beings, engage in pleasurable activities with others who share similar life situations and experiences such as age, culture and living situation, that mood would improve. Especially, when the activities have been specifically designed to bring pleasure and are facilitated with the intent and goal of making an enjoyable experience. In this sample of elderly Taiwanese who lived in a LTCF there was strong evidence that the Socially Supportive Activity Program benefitted mood by mitigating depressive symptoms as well as increasing a sense of self-transcendence.

Health research is by necessity focused on preventing or managing disease and dysfunction. Our project focused on how we could mitigate depressive symptoms in elders who lived away from family and lifelong friends, and promote an optimal mental state conceptualized

as self-transcendence through social engagement focused on happy memories, as well as facilitating new friendships within the elders' living situation. The findings in this study have important practical implications for older adults who live in LTCF and who exhibit depressive symptoms. As the results of this study suggest, an intervention as simple as providing and teaching an elder how to use an iPad to engage in an online participatory game such as bowling can have dramatic effects. Prior to this study, all of the participants had identified themselves as non-users of electronic devices such as personal computers, iPads, or smart phones, and none had considered themselves "gamers." After the study, participants did change their opinions about these devices. This finding increased our confidence that this new pastime very likely had a positive influence on mood, in contrast to other studies that suggest electronic engagement can have a negative effect on mood and attention.<sup>43</sup> However, participants' improved mood may not have only been a direct result derived from the pleasure of gaming itself, but rather, may have reflected the dynamic of interpersonal engagement, as we observed participants interacting in a mutually beneficial manner as they assisted each other to understand the

**Table 2**  
*t*-tests of Socially Supportive Activity Program on self-transcendence, depression, and mood status.

	Experimental group (n = 35)		Control group (n = 33)		<i>t</i> <sup>b</sup> ( <i>p</i> )
	Mean (SD)		Mean (SD)		
Self-transcendence					
Pretest	33.91 (4.25)		32.64 (5.34)		-1.09 ( <i>p</i> = 0.28)
Posttest	47.40 (5.69)		35.00 (6.57)		-8.12 ( <i>p</i> < 0.001*)
		<i>t</i> <sup>a</sup> = -12.85 ( <i>p</i> < 0.001*)		<i>t</i> <sup>a</sup> = -1.85 ( <i>p</i> = 0.07)	
Depression					
Pretest	8.11 (2.52)		8.79 (1.95)		1.23 ( <i>p</i> = 0.22)
Posttest	2.69 (2.23)		7.58 (3.95)		6.23 ( <i>p</i> < 0.001*)
		<i>t</i> <sup>a</sup> = 12.73 ( <i>p</i> < 0.001*)		<i>t</i> <sup>a</sup> = 1.61 ( <i>p</i> = 0.12)	
Mood status <sup>c</sup>					<i>Z</i> ( <i>p</i> )
Pretest	38.86		29.88		-2.00 ( <i>p</i> = 0.05)
Posttest	41.94		26.61		-3.80 ( <i>p</i> < 0.001)

<sup>a</sup> = paired-sample *t*-test.<sup>b</sup> = independent-sample *t*-test.<sup>c</sup> = Mann-Whitney U Test.\* = *P* < 0.05.

nuances of using the electronic device, as well as how to play the games. This finding supports our hypothesis that building mutual support networks through supportive behaviors with a focus outward to 'other' may have a positive impact on mood.

Prior studies have examined the impact of computer-based interventions to improve health and well-being in various domains such as health education and information, cognitive training, and interactive computer games e.g. Wii®.<sup>44,45</sup> Results suggested that simple online games are able to enrich and improve a monotonous institutional life as well as provide a connection to the outside world. Technology for mood enhancement may also benefit elders who suffer with diminished physical mobility. Many older adults who live in LTCF have a higher prevalence of partial or complete immobility due to frailty and physical disability that limits participation in recreational and social activities. Small portable electronic devices could offer an easy platform to play games, engage with the outside world, and decrease the sense of social isolation. We can make this extrapolation with confidence as more than 50% of our sample included elders with some degree of physical disabilities. The results of this study extend the evidence for the potential benefits of electronic device use for psychosocial health in elders living in LTCF who engage with entertainment-oriented technology.

During the 10 weeks, we frequently observed mutually assistive behaviors as participants attempted to complete novel, multiple goal-oriented activities. The group setting seemed to be particularly helpful as it allowed participants to be in a situation where they were able to learn from each other's questions. We observed that individuals within the group seemed to have their sense of achievement reinforced, which likely improved their mood. These behaviors may have affected group members' sense of altruism, compassion, and sense of self-worth as they realized the value of their personal contribution that improved another's experience. All of these feelings and attitudes are thought to contribute to the sense of heightened self-transcendence. Through helping someone, not only is the recipient of the act benefitting, but through the performance and altruistic attitude, the assistant may achieve a sense of happiness, satisfaction and/or pleasure.

The group dynamic is an important feature because there is such strong evidence to suggest that social isolation and loneliness may be detrimental to both mental and physical health, with up to a 6% increase in mortality, adjusting for other factors.<sup>46,47</sup> Any intervention that could encourage and increase social interactions should be expected to result in a beneficial outcome, above and beyond our simple outcome measures of depressive symptoms and self-transcendence. Not only did we directly observe behaviors that suggested that the SSAP group participants experienced increased sense of connectedness and support, but the self-reported data supported our observations.

There is also evidence of an inverse relationship between depressive symptoms and self-transcendence, thus, the SSAP intervention re-established social connections, shifted participants into a more positive mood with a potential outcome of an overall improved mental and physical health. An elder's sense of well-being, inner strength, positive interpersonal interactions, and sense of being socially connected contributes to both inter and intrapersonal self-transcendence and better mental health.<sup>3,5,48</sup> The evidence from this project suggested that the SSAP may have facilitated improved sense of self-worth, social connectedness with improved self-transcendence and mood.<sup>30,49</sup>

Additionally, there is evidence that more frequent social contacts, someone to talk with, and a higher frequency of visits led to higher degrees of self-transcendence and fewer depressive symptoms.<sup>9,49</sup> One important component of the SSAP included several group reminiscence activities, which provided resident-to-resident and resident-to-researcher social interactions where life stories, as

well as current events were discussed. Our findings corresponded with prior results that suggested group reminiscence could alleviate symptoms of depression.<sup>50</sup> In the SSAP activity that focused on reminiscence, the facilitators listened actively and with interest to the participants' life stories. Through this engaged listening, group leaders demonstrated and created a space for a pro-social behavior that is thought to promote positive feelings and a sense of being cared for in the story-teller. This reciprocity of sharing life experiences may facilitate self-transcendence through exposure to opportunities for more connections that lead to a greater sense of social connection with a subsequent decreased sense of social isolation and loneliness,<sup>51,52</sup> and improved psychological well-being.<sup>9,37</sup>

## Limitations

There were several limitations. First, with the exception of the activity coordinator, two researchers who conducted the intervention also collected data. This familiarity may have led to the Hawthorne effect, where the participants may have responded in a socially desirable way to please the research assistants. This may have biased outcome measures with more positive psychological results. Second, while the attrition rate in both groups was similar (12.5% for experimental group and 15.4% for control group), and the reasons for attrition were comparable (illness, transfer from facility, death), the control group had an additional reason to not participate through refusal. This refusal seen in the control group could have been the result of more severe depressive symptoms that may have included low energy or anhedonia. Third, although technology can have a positive therapeutic effect and be psychologically beneficial because the activity may be perceived as fun, entertaining and allow the LTCF residents increased outside contact, many facilities and families are not able to afford the electronic devices or the expense of the internet services required for connectivity. Fourth, intrinsic to the nature of this type of research, which relies on personal interactions as the main intervention, the design is not amenable to a true randomized, double-blinded, placebo-controlled trial. True blinding of participants or researchers who are conducting the intervention is impossible. Our attempt to use a standard of care, which included our control groups participating in routine facility activities, as a "placebo" was the closest we could get to "no intervention," but was the most ethical course of action as we could not intentionally worsen a participant's social interactions. We mitigated some of these biases by having the data analyst blinded. Finally, the study design was limited to one post-test assessment of the psychological impact of the intervention. Further longitudinal assessment should be conducted to evaluate the long-term effects of the limited 10-week study intervention. While an evaluation of the long-term effect was not the aim of this study, further longitudinal studies are warranted to determine dose and frequency of the SSAP for maximum health benefit.

## Conclusion

Findings from this study support the idea that a well-organized, facilitated, structured program that included group-oriented social activities led to improvement in mood, which was measured by improvement in depressive symptoms, and an increased sense of self-transcendence. The SSAP was an effective, feasible, practical, non-pharmacological intervention with a multimodal approach that included basic entertainment, recreational activities, reminiscence, and an introduction to electronic technology. Because the SSAP has a manual, it should be replicable in other LTCF. Finally, while this program was structured, it could be easily modified for any culture and therefore, easily implemented in any LTCF to improve the health and well-being of elders globally.

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