EFFECT OF INDIVIDUALIZED SOCIAL ACTIVITIES ON QUALITY OF LIFE
AMONG OLDER ADULTS WITH MILD TO MODERATE COGNITIVE
IMPAIRMENT IN A GERIATRIC PSYCHIATRY FACILITY

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ABSTRACT

The study examined the effect of an individualized social activities intervention (ISAI) on quality of life among older adults with mild to moderate cognitive impairment in a geriatric psychiatry facility. This randomized control trial consisted of 52 older adults (65 years of age or older). A 2 (group condition) x 2 (time of measurement) design was used to compare the control (treatment-as-usual) and intervention (treatment-as-usual plus ISAI) conditions at pre- and post-treatment. ISAI consisted of 30- to 60-minute sessions for up to 15 consecutive days. Intent-to-treat analyses indicated a significant Time x Group Condition interaction on quality of life, with this effect remaining when only completer data were included. There was no evidence of a significant treatment effect on behavioral and psychological symptoms of dementia. Findings suggest that individualized social activities are a promising treatment for cognitively impaired geriatric inpatients.

LIST OF ABBREVIATIONS AND SYMBOLS

α	Probability of making a Type I error in statistical hypothesis testing
β	Population values of regression coefficients
CI	Confidence interval: type of interval estimate of a population parameter
d	Cohen's d : difference between two means divided by a standard deviation for the data
F	Fisher's F ratio: A ratio of two variances
M	Mean: the sum of a set of measurements divided by the number of measurements in the set
Mdn	Median: numerical value separating the higher half of a data sample from the lower half
N	Statistical notation for total sample size
η^2	Eta-squared: measure of effect size for use in ANOVA
p	Probability of obtaining a test statistic as extreme as the observed value, assuming that the null hypothesis is true
SD	Standard deviation
t	Ratio of the departure of an estimated parameter from its notional value and its standard error
$<$	Less than
$=$	Equal to
$\pm$	Plus or minus

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CONTENTS

ABSTRACT.....	ii
LIST OF ABBREVIATIONS AND SYMBOLS	iii
ACKNOWLEDGEMENTS.....	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
1. INTRODUCTION	1
a. Current Study.....	4
2. METHODS.....	5
a. Participants.....	5
b. Setting.....	6
c. Recruitment.....	6
d. Measures.....	6
i. Sociodemographic Information.....	6
ii. Cognitive Status.....	6
iii. Quality of Life.....	7
iv. Behavioral and Psychological Symptoms.....	7
v. Engagement in Pleasant Events.....	8
e. Treatment Implementation.....	8
f. Treatment Benefit and Participant Satisfaction.....	9
g. Design and Procedures.....	9

i. Intervention Condition.....	10
ii. Control Condition.....	11
iii. Mid- and Post-Treatment Assessments.....	11
3. RESULTS.....	12
i. Primary Analyses.....	14
ii. Secondary Analyses.....	16
iii. Exploratory Analyses.....	16
iv. Treatment Implementation.....	18
v. Treatment Benefits and Participant Satisfaction.....	18
4. DISCUSSION.....	20
a. Study Limitations.....	22
b. Future Directions.....	23
c. Summary and Conclusions.....	23
REFERENCES	25
APPENDIX.....	30

LIST OF TABLES

1. Demographic and Clinical Characteristics of the Overall Sample and Separately for the Intervention and Control Group	13
2. Outcome Data by Assessment Time and Group Condition	16

LIST OF FIGURES

1. Flow of participants through the course of the study	12
2. Interaction between time and group condition on General DQoL	15

INTRODUCTION

Prevalence of mild cognitive impairment (MCI) among older adults ranges dramatically from 3 to 42% (Ward, Arrighi, Michels, & Cedarbaum, 2012), with incidence rates of 8.5 to 76.8 cases per 1,000 person-years (Luck, Luppia, Briel, & Riedel-Heller, 2010). Unfortunately, cognitive impairment is associated with decreased quality of life in multiple domains, such as privacy, individuality, relationship, and mood (Abrahamson, Clark, Perkins, & Arling, 2012). Both individuals with MCI (Mini-Mental State Examination (MMSE) scores of 19-23; Folstein, Folstein, & McHugh, 1975) and severe dementia (MMSE scores of 0-3) have reported lower quality of life than individuals with normal cognition (Missotten et al., 2008). This burden is expected to increase substantially because the older adult segment of the U.S. population is the fastest growing demographic (U.S. Census Bureau, 2009) and therefore will place a greater proportion of individuals at risk for developing cognitive impairments. As such, there is a need to implement care or interventions that will promote well-being and maintain optimal quality of life for this increasing number of vulnerable older adults.

Recent studies have developed and administered a variety of measures to assess factors associated with quality of life in older adults with cognitive impairments from the perspectives of both the person with dementia and their caregiver. For both patient and caregiver ratings, behavioral and psychological symptoms of dementia (BPSD) have been found to be negatively associated with patient quality of life (Hurt et al., 2008; Missotten et al., 2008). BPSD commonly include: agitation/irritability, anxiety, depression, apathy, sleep and appetite disturbance, disinhibition, delusions, and hallucinations (Hurt et al., 2008). Lyketos and colleagues (2002) found that almost 50% of participant's with MCI

and 80% with dementia exhibited at least one behavioral and psychological symptom from the time of recognition of cognitive symptoms. BPSD have a significant contribution to global quality of life, with explanatory effects varying from 18-35% depending on level of cognitive functioning (Missotten et al., 2008). Because these symptoms increase as cognition declines and can be a source of distress to both patients and their caregivers (Hurt et al., 2008), it is important to develop treatments that address reducing BPSD and target individuals early in the disease process (e.g., individuals with MCI).

Studies also suggest that quality of life in dementia is influenced by environmental factors (e.g., living setting) independent of dementia severity (Hoe, Katona, Roch, & Livingston, 2005; Thorgrimsen et al., 2003). For instance, quality of life has been found to diminish among older adults with cognitive impairment in institutionalized settings (e.g., nursing homes, departments of geriatric psychiatry, etc.) compared to community residents (Barca, Engedal, Laks, & Selbaek, 2011; Leon et al., 1998; Leon-Salas et al., 2013). Lehman, Slaughter, and Myers (1991) examined quality of life in alternative residential settings of psychiatrically disabled adults and found that as the facility became larger and more restrictive, quality of life declined. However, little research has been conducted in what is often thought to be one of the most restrictive environments, geriatric psychiatry facilities. Geriatric psychiatry facilities have arisen out of the need to provide service for older adults who need both psychiatric and medical inpatient care (George, Adamson, & Woodford, 2011). Although research on treatment outcomes is quite sparse, there is evidence that inpatient psychiatric treatment in geriatric psychiatry facilities may help improve older patients' cognitive, affective, and functional

status over the course of the stay (Ngoh, Lewis, & Connolly, 2005; Snarski, Scogin, DiNapoli, Presnell, McAlpine, & Marcinak, 2011).

The need-driven dementia-compromised behavior model (NDB; Algate et al., 1996) suggests that behavioral symptoms that accompany dementia are an indication of unmet needs. More specifically, these need-driven behaviors are a result of an interaction between background factors (e.g., cognitive abilities, health state, neurological factors, and psychosocial history) and proximal factors (e.g., social environment, physical environment, and physiological or psychological need state). Therefore, persons with cognitive impairment and inadequate social engagement may display behavioral and psychological symptoms as an indication of unmet social needs. From an ecological perspective, a person's activities and well-being are seen to be influenced by a number of factors, such as attributes of the person and context. Everyday activities can either be facilitated or constrained by these personal and contextual factors. Central to an individual's well-being is the meaning derived from their everyday activities. Positive well-being develops from being involved in activities that are personally meaningful, whereas inability to be involved in meaningful activities results in negative feelings. As such, interventions that increase participant's engagement in meaningful social activities will likely improve quality of life, as well as decrease behavioral and psychological symptoms.

Important evidence confirms this notion by suggesting that straightforward non-pharmacological approaches, such as pleasant activities, may have significant benefits in the treatment of BPSD (e.g., depression; Allen-Burge, Stevens, & Burgio, 1999). Individualized social interventions have been shown to improve quality of life and reduce

agitation and behavioral symptoms in older adults with dementia (Cohen-Mansfield, Libin, & Marx, 2007; Gitlin et al., 2009; Kolanowski, Litaker, Buettner, Moeller, & Costa, 2011; Van Haitsma, Curyto, Abbott, Towsley, Spector, & Kleban, 2013). Such interventions are tailored to the participant's functional and cognitive abilities, personality factors and/or personal interests. Unfortunately, there is an absence of literature studying these individualized social approaches in geriatric psychiatry facilities, where residents have decreased quality of life and increased presence of BPSD. As such, there is a need to determine if individualized social activities can be used as an intervention for improving quality of life, as well as decreasing BPSD in one of the most restrictive of settings, a geriatric psychiatry facility. This information is essential for reducing patient/staff distress and improving quality of care.

Current Study

The present study compares the effectiveness of an individualized social activities intervention (ISAI; Richards, Beck, O'Sullivan, & Shue, 2005) to treatment-as-usual care for quality of life in cognitively impaired geriatric inpatients. Outcome measures examined quality of life and behavioral and psychological symptoms at pre- and post-treatment. The primary hypothesis is that participants in the ISAI group will have significantly higher scores on a direct-interview quality of life measure, Dementia Quality of Life Instrument (General DQoL factor; Brod, Stewart, Sands, & Walton, 1999), following treatment than the treatment-as-usual control group. The secondary hypothesis is that scores on a direct-interview neurobehavioral measure, Neurobehavioral Rating Scale (NRS-R; McCauley et al., 2001), will be significantly lower for the ISAI group than the treatment-as-usual control group following treatment.

METHODS

Participants

Participants were residents of the state of Alabama who were committed by the probate court to receive mental health services at the Mary Starke Harper Geriatric Psychiatry Facility (i.e., Harper Center). The following inclusion criteria was used: (a) 65 years of age or older; (b) a score in the range of 15 to 27 on the St. Louis University Mental Status Examination (SLUMS; Tariq, Tumosa, Chibnall, Perry, & Morley, 2006); (c) deemed not actively psychotic by their psychiatrist or attending mental health care provider; (d) a below average response (score of 3 or below) on the general factor (General DQoL) or global item on the Dementia Quality of Life Instrument (DQoL; Brod et al., 1999); and (e) a resident in the hospital for at least a 5-day acclimation period. The SLUMS cutoff range of 15-27 was selected to include those with mild to moderate cognitive impairment (Raji et al., 2005). A General DQoL or global item score of 3 or lower on the DQoL was selected to indicate less than optimal quality of life.

An appropriate sample size for this study was based on a power analysis performed using the G*power program (Faul, Erdfelder, Lang, & Buchner, 2007). This study aimed to reach an overall power level of .80 using an alpha of .05 and an effect size of $d = .40$. The effect size chosen for this study was determined by averaging the main effect sizes of similar studies using psychosocial interventions for quality of life ($d = .41$; Forsman, Schierenbeck, & Wahlbeck, 2011) and BPSD ($d = .54$; Kolanowski et al., 2005), as well as the main effect size of an intervention used in the same geriatric psychiatry hospital ($d = .23$; Snarski et al., 2011). It was established that fifty-two participants would be needed in the study; 26 in each condition.

Setting

Harper Center is a state-supported facility for Alabama residents age 65 and over. The facility contains four geriatric psychiatry units, each with approximately 25 residents. In most cases, patients are involuntarily committed to obtain treatment at this facility. Patients are usually treated with pharmacological approaches, group therapy, and recreational therapy.

Recruitment

Participants were recruited within a one-year period with multiple strategies, including seeking referrals from nursing staff, therapist observation, and performing patient chart reviews. In addition, direct-care staff and other hospital employees (i.e., psychiatrist, social workers, and physicians) were presented with a description of the study and were urged to provide referrals for appropriate participants. To encourage participation, patients were offered incentives to participate in the study. Specifically, each participant was given \$2 for completion of the pre- and post-treatment assessments, regardless of their random group assignment.

Measures

Sociodemographic Information. A researcher-developed questionnaire collected participant age, sex, race, marital status, years of education, employment status, basic needs assessment, self-rated global health status, Vulnerable Elders Survey (VES-13) score (Saliba et al., 2001), primary mental health diagnosis, and current duration in facility.

Cognitive Status. The Saint Louis University Mental Status Examination (SLUMS; Tariq et al., 2006) was used to assess participant's mental status. It is an 11-

item measure that tests four areas of cognitive function: orientation, memory, attention and executive functions. Scores on the SLUMS range from 0-30, with lower scores indicating increasing severity of cognitive impairments. The SLUMS was chosen over other cognitive screeners (e.g., Mini-Mental State Examination) because it has been found to be more sensitive at detecting MCI (Heyn, Tang, Mukaila, Nakamura, & Kuo, 2005), which is the target population for this study.

Quality of Life. The Dementia Quality of Life Instrument (DQoL; Brod et al., 1999) is 29-item direct-interview instrument used to assess quality of life in mild to moderate dementia participants. A factor analysis conducted by Edelman, Fulton, Kuhn and Chang (2005) found two distinct factors: Negative affect (11 items) and General DQoL (comprising the remaining 18 items). To assess global quality of life, this study used the summed and averaged score of the items that comprise the General DQoL. A global item of quality of life (i.e., “Overall, how would you rate your quality of life?”) was also used to determine participant inclusion. The General DQoL and global item scores range from 1 (never or bad) to 5 (very often or excellent), with higher scores indicating greater quality of life. The DQoL was tested on 99 patients diagnosed with mild to moderate dementia (MMSE ranged from 12 to 21) and only 4 were unable to comprehend the test questions (Brod et al., 1999). Brod et al. (1999) also found that the instrument is reliable (e.g., internal-consistency reliability, $Mdn = .80$; two-week retest reliability, $Mdn = .72$) and shows evidence of validity.

Behavioral and Psychological Symptoms. The Neurobehavioral Rating Scale – Revised (NRS-R; McCauley et al., 2001) was used to assess participant’s cognitive, psychiatric, and behavioral symptoms. The NRS-R is a 29-item direct-interview

instrument and each item is scored on a scale of 0 (Absent) to 3 (Severe). An overall score was calculated by summing the responses, with higher scores indicating greater presence of behavioral and psychological symptoms. Results from Sultzer, Berisford and Gunay (1995) support the reliability of the NRS for an assessment measure of behavioral and psychological symptoms in patients with dementia.

Engagement in Pleasant Events. The Pleasant Events Schedule – Nursing Home Version (PES-NH; Meeks, Shah, & Ramsey, 2009) was used to assess whether ISAI increases participant's engagement in meaningful activities. The measure is divided into subscales assessing frequency, pleasantness, and availability of activities. Both the pleasantness and availability subscales were answered on a dichotomous (0 = no and 1 = yes) scale. On the frequency subscale, participants answer how often in the past week they engaged in pleasant events with 0 = not at all, 1 = 1-6 times and 2 = 7+ times. To assess participant's engagement in activities, a product score was calculated by multiplying the pleasantness and frequency subscales (Meeks et. al., 2009). Higher frequency x pleasantness scores indicate greater availability and participant perceived pleasantness of events. Older adults with cognitive impairment have been shown to reliably respond to the instrument and all scales have acceptable internal consistency and test-retest reliability (.78-.99; Meeks et al., 2009).

Treatment Implementation

Lichstein, Riedel, and Grieve (1994) proposed a treatment implementation model that involves the measurement of individual treatment components (delivery, receipt, and enactment) to ensure that a treatment is conducted as intended. Enactment refers to the patient's adherence with treatment regimen and was assessed by the number of completed

sessions, total time spent engaging in activities and overall average of therapist perceived participant engagement. Delivery refers to the proper presentation of the treatment protocol and was rated by having an independent reviewer listen to one randomly chosen audiotape session from early in treatment (Sessions 2-7) and one from late in treatment (Sessions 8-14). Reviewers rated the following delivery procedures: participant's willingness to participate in activity and understanding of his/her role in the activity, therapist encouraging the participant to actively engage in the activity, therapist not including other forms of psychotherapy (e.g., cognitive behavioral therapy), and therapist administration of the treatment receipt question. Receipt refers to mastery of the treatment rationale and procedures by the participant and was measured through brief "quizzes" to test participant's understanding of completed activity.

Treatment Benefit and Participant Satisfaction

Following the treatment, participants were asked brief questions about the helpfulness and applicability of the treatment. Examples of such questions include, "On a scale from 0-10 (0 = least helpful; 10 = most helpful), rate how helpful the treatment was to you in general" or "On a scale from 0-10 (0 = not well suited; 10 = very well suited), rate how well suited you feel individualized social activities are for people in this setting." In addition, participants were asked on a scale from -3 (very dissatisfied) to +3 (very satisfied) about their level of satisfaction with the therapist, questionnaires, and research assistants.

Design and Procedure

All potential participants that were deemed capable and appropriate to participate in the study read and signed an informed consent form, as well as a release form for

researchers to speak with his/her psychiatrist. Immediately following the patient's indication of consent, a checklist with questions about the previously read consent form was used to assess whether the participant adequately understood key items (e.g., confidentiality, randomization, etc.). If participants were unable to correctly answer the questions on the consent checklist, they were deemed ineligible for the study. Since decision-making capacity may have fluctuated during the course of the research, a verbal re-assent was acquired prior to participating in any intervention activities and a written re-consent was obtained at mid- and post-treatment assessments. Participants were then screened with the SLUMS and DQoL by a trained research assistant and included in the study if he/she was deemed eligible based upon the selection criteria. Once participants completed a pre-treatment assessment (Sociodemographic form, NRS-R, and PES-NH), they were randomly assigned to either the intervention (treatment-as-usual plus ISAI) or control (treatment-as-usual) group. Participants in both groups had various other treatments (e.g., group therapy and pharmacological approaches) that may have had an effect on any improvements. However, by using random assignment it was expected that the implementation of ISAI would be the primary difference between the groups.

Intervention Condition. Participants in the intervention group received the ISAI for approximately 30- to 60-minutes for up to 15 consecutive days. A 114-item Assessment Tool for Individualizing Activities, The Participant Review, and participant characteristics were used to prescribe activities (e.g., gardening, writing a letter, etc.; Richards et al., 2005). The Assessment Tool for Individualizing Activities consists of a 110-question checklist and four fill-in-the-blank items. Examples of checklist items are enjoys gardening, follows one-step directions, and ambulates with cane, whereas fill-in-

the-blank items examples include occupation, education level, and favorite music. The Participant Review consists of fill-in-the-blank questions about family, occupation, religion, hobbies, and music, as well as favorite foods, color, season and games. As such, the intervention was individualized based on participants' interests (work and leisure history), cognition, and functional status (mobility, hearing, vision, and fine motor skills). The intervention was administered by the principal investigator (PI) along with clinical psychology graduate students (i.e., 3 students in their 2nd year, 4 students in their 3rd year, and 1 student in her 4th year) participating in clinical training at the Harper Center. The PI delivered the intervention to 9 participants, while the remaining 17 participants were divided amongst the 8 clinical graduate student therapists (i.e., 1 to 4 participants each). The therapists were predominately female (i.e., 7 female and 2 male) with an average age of 27.11 years (Range = 24 to 35 years).

Control Condition. Participants in the control group received treatment-as-usual, including any scheduled activities provided by the Harper Center.

Mid- and Post-Treatment Assessments. After 7- and 15-days, the intervention and control group participants were given the mid- and post-treatment assessments, which consisted of DQoL, PES-NH and NRS-R. Upon completion of the individualized social activities intervention, treatment benefits and participant satisfaction were assessed in the intervention group. An assessor blinded to group assignment conducted the mid- and post-treatment assessments. To learn the NRS-R structured interview, assessors practiced the assessment with the PI until an adequate mastery was obtained. All assessments were audiotaped and the PI randomly reviewed approximately 10% of the recordings to ensure that the delivery of the assessments was standardized and appropriate.

RESULTS

Approximately 92% of the sample completed both the pre-and mid-treatment assessments and 61.5% of sample completed all three assessment periods (see Figure 1).

Figure 1. Flow of participants through the course of the study.

The sample was largely white (76.9%) with an average age of 70.63 years ($SD = 5.62$).

Table 1

Demographic and Clinical Characteristics of the Sample

Variable	Overall, (n = 52)	Intervention, (n = 26)	Control, (n = 26)
Age (<i>M</i> ± <i>SD</i>)	70.6 ± 5.6	71.6 ± 6.1	69.6 ± 5.0
Sex			
Male	21 (40.4%)	12 (46.2%)	9 (34.6%)
Female	31 (59.6%)	14 (53.9%)	17 (65.4%)
Race			
White	40 (76.9%)	20 (76.9%)	20 (76.9%)
Black	12 (23.1%)	6 (23.1%)	6 (23.1%)
Marital Status			
Never Married	9 (17.6%)	5 (19.2%)	4 (15.4%)
Married	10 (19.6%)	7 (26.9%)	3 (11.5%)
Separated	1 (2.0%)	1 (3.9%)	0 (0%)
Divorced	17 (33.3%)	6 (23.1%)	11 (42.3%)
Widowed	14 (27.5%)	7 (26.9%)	7 (26.9%)
Years of Education (<i>M</i> ± <i>SD</i>)	13.7 ± 3.0	14.1 ± 3.0	13.3 ± 3.1
Employment Status			
Retired	36 (70.6%)	19 (73.1%)	17 (68.0%)
Part-Time Work	2 (3.9%)	0 (0%)	2 (8.0%)
Unemployed	3 (5.9%)	2 (7.7%)	1 (4.0%)
Disability	17.6%)	5 (19.2%)	4 (16.0%)
Basic Needs			
Not difficult	21 (42.0%)	12 (46.2%)	9 (37.5%)
Not very difficult	5 (10.0%)	3 (11.5%)	2 (8.3%)
Somewhat difficult	11 (22.0%)	6 (23.1%)	5 (20.8%)
Very difficult	13 (26.0%)	5 (19.2%)	8 (33.3%)
Self-Reported Health			
Poor	2 (4.1%)	1 (3.8%)	1 (4.3%)
Fair	8 (16.3%)	5 (19.2%)	3 (13.0%)
Good	21 (42.9%)	13 (50.0%)	8 (34.8%)
Very Good	10 (20.4%)	4 (15.4%)	6 (26.1%)
Excellent	8 (16.3%)	3 (11.5%)	5 (21.7%)
VES-13 Score (<i>M</i> ± <i>SD</i>)	3.0 ± 2.8	3.1 ± 2.6	2.8 ± 3.1
Primary Mental Health Diagnosis			
Dementias	10 (19.6%)	6 (24.0%)	4 (15.4%)
Schizophrenia Spectrum	18 (35.3%)	6 (24.0%)	12 (46.2%)
Bipolar	7 (13.7%)	4 (16.0%)	3 (11.5%)
Depression	3 (5.9%)	1 (4.0%)	2 (7.7%)
Psychosis NOS	13 (25.5%)	8 (32.0%)	5 (19.2%)
Current Length of Stay (<i>M</i> ± <i>SD</i>)	47.4 ± 151.9	18.1 ± 19.9	75.6 ± 210.0
SLUMS Score (<i>M</i> ± <i>SD</i>)	21.4 ± 3.7	21.5 ± 3.6	21.2 ± 3.8

Note. VES = Vulnerable Elders Survey; SLUMS = Saint Louis University Mental Status Examination.

Table 1 presents the demographic and clinical characteristics for the full sample, as well as separately for the intervention and control group. Even though the length of stay in the control condition was longer than the intervention condition because of an outlier (i.e., length of stay of 470 days), this difference was not significant, $t(24) = 1.36, p = .19$. There were no significant differences found among the demographic or pre-treatment outcome scores (General DQoL and NRS-R) between the intervention and control group, suggesting that the randomization was successful.

Additional univariate analyses (chi-square tests, t -tests) were used to identify significant pre-treatment differences between completers (i.e., participants that completed all three assessments) and non-completers (i.e., those who did not complete all three assessments). Of the 34 participants that completed the study (see Figure 1), two participants (one from each condition) had partially completed the mid-treatment assessment (e.g., missing NRS-R assessment results). Therefore, 12 control and 20 intervention participants fully completed all three assessments. There were no significant differences in demographic or pre-treatment outcome scores (General DQoL and NRS-R) between completers and non-completers, suggesting that attrition was largely nonsystematic.

Primary Analyses. Repeated measures analysis of variance (ANOVA) were conducted to test the main hypothesis with General DQoL as the dependent variable and the group condition as the independent variable with the repeated factor of time. These analyses examine the interaction between time (pre-and post-treatment assessment) and group condition (intervention and control) on General DQoL scores with an $\alpha = .05$. Carry forward end-point analyses were used to address missing data due to participant

attrition. In this procedure, the last observation is substituted for future data. The mid-treatment data was collected only for the purpose of being carried forward to represent post-treatment data in the event of attrition between mid- and post-treatment assessments.

On the General DQoL, the Time x Group Condition interaction was significant, $F(1,49) = 4.29, p = .04$ (see Figure 2). The partial eta-squared ($\eta^2 = .08$) was of medium size. The intervention group had significantly higher General DQoL scores following treatment than the control group. In addition, paired-sample t -tests revealed that post-treatment General DQoL scores were significantly greater than pre-treatment scores for the intervention, $t(24) = -3.44, p = .002$ (see Table 2).

Figure 2. Interaction between time (pre-and post-treatment assessment) and group condition (intervention and control) on General DQoL.

The Reliable Change Index (RCI; Jacobson, Follette, Revenstorf, Baucom, Hailweg, & Margolin, 1984; Jacobson & Truax, 1991) was designed to measure clinical significance of therapeutic change. The RCI tests whether a participant's observed change is greater than that which would be expected by random measurement error. Approximately 15% of participants receiving the intervention versus only 4% of control

group participants experienced clinically significant positive change in quality of life.

However, reliable change in the intervention was not significantly different from the

control group, $\chi^2(1, N = 52) = 1.99, p = .16$.

Secondary Analyses. Repeated measures analysis of variance (ANOVA) of the NRS-R scores showed that the interaction between the two groups over the pre- and post-treatment assessment period was not significant, $F(1,48) = .67, p = .42$. Paired-sample *t*-tests revealed that post-treatment NRS-R scores were significantly lower than the pre-treatment NRS-R scores for both the intervention ($t(25) = 3.72, p = .001$) and control group ($t(23) = 2.37, p = .03$; see Table 2).

Table 2

Outcome Data by Assessment Time and Group Condition

	Pre-Treatment, <i>M</i> ± <i>SD</i>	Post-Treatment, <i>M</i> ± <i>SD</i>
General DQoL score		
Control Group	3.21 ± .63	3.27 ± .72
Intervention Group	3.22 ± .53	3.64 ± .66
NRS-R score		
Control Group	13.75 ± 7.27	10.04 ± 6.97
Intervention Group	12.65 ± 8.53	7.19 ± 5.58
PES-NH (Freq x Plea.) score		
Control Group	665.21 ± 163.71	712.08 ± 256.36
Intervention Group	617.87 ± 149.54	722.22 ± 209.30

Note. DQoL = Dementia Quality of Life; NRS-R = Neurobehavioral Rating Scale – Revised; PES-NH = Pleasant Events Schedule – Nursing Home Version; Freq. x Plea. = Frequency x Pleasantness.

Exploratory Analyses. To assess whether the intervention increased participant's engagement in activities, repeated measures analysis of variance (ANOVA) were conducted with PES-NH (frequency x pleasantness) scores as the dependent variable and the group condition as the independent variable with the repeated factor of time. On

PES-NH (frequency x pleasantness), the Time x Group condition interaction was not significant, $F(1,45) = 1.28, p = .26$. However, paired-sample t -tests revealed that engagement in pleasant activities increased over time for the intervention group, $t(22) = -3.01, p = .006$ (see Table 2).

Mediation analyses using the bootstrapping method with bias-corrected confidence intervals (Preacher & Hayes, 2004) was used to test the indirect effect of treatment condition on General DQoL change scores through NRS-R change scores and PES-NH (frequency x pleasantness) change scores. In the present study, the 95% confidence interval of the indirect effects was obtained with 1,000 bootstrap resamples. For NRS-R as a mediator, the treatment condition was not associated with the NRS-R change scores ($\beta = -2.29, t(47) = -1.08, p = .28$), nor were NRS-R change scores associated with General DQoL change scores ($\beta = -.01, t(47) = -.65, p = .52$). The results of the mediation analysis did not support the mediating role of NRS-R change scores in the relation between treatment condition and General DQoL change scores ($\beta = .02$; CI = $-.02$ to $.16$). Similarly, the treatment condition was not associated with PES-NH change scores ($\beta = 62.74, t(44) = 1.22, p = .23$), nor were PES-NH change scores associated with General DQoL change scores ($\beta = .00, t(46) = 1.31, p = .20$). PES-NH change scores do not mediate the effect of treatment condition on General DQoL change scores ($\beta = .05$; CI = $-.02$ to $.22$).

The primary and secondary analyses were repeated using completer data (i.e., 12 control and 20 intervention participants). The Time x Group Condition interaction for General DQoL was significant, $F(1,30) = 4.35, p = .05, \eta^2 = .13$. The intervention group ($M = 3.64, SD = .72$) had significantly higher General DQoL scores following treatment

than the control group ($M = 3.35$, $SD = .76$). On the other hand, the Time x Group Condition interaction for NRS-R was not significant, $F(1,30) = .09$, $p = .76$. In general, the same patterns were observed with the intent-to-treat analyses. However, all exploratory analyses should be interpreted with caution because the power of this study was designed for analysis of the primary hypothesis.

Treatment Implementation. The researchers are confident that treatment was conducted as intended, which is supported by the following enactment, receipt, and delivery outcomes. Sixteen of the intervention participants (61.5%) engaged in all 15 sessions of the ISAI ($M = 12.46$, $SD = 4.05$). The average total time the participant's spent engaging in activities was 616.88 minutes ($SD = 239.60$) and sessions lasted an average of 53.47 minutes ($SD = 11.01$). A correlation was run between the total amount of time participants in the intervention group engaged in activities and General DQoL change scores. A nonsignificant correlation ($r(23) = -.006$, $p = .98$) suggests that overall time spent engaging in activities did not influence treatment effectiveness in a meaningful way. On a 5-point scale (0 = not at all; 5 = a lot), therapist's perceived the participants as actively engaging in the activities ($M = 4.20$, $SD = .47$). Approximately 98% of the brief quizzes assessing participant's understanding of the completed activities were answered correctly. Independent reviewer rated the delivery of treatment and found that 93.1% of the sessions were appropriately delivered. In addition, 98.9% of the assessments were delivered correctly and had agreement on item scoring.

Treatment Benefits and Participant Satisfaction. The majority of the intervention participants (82.6%) found the treatment to be very to extremely helpful. In addition, 91.3% of the intervention participants felt that ISAI is somewhat to very well suited for

patients in geriatric psychiatry facilities. The intervention participants were largely satisfied with the assessment questionnaires (91.3% of participants), therapist (86.9% of participants), and research assistants (100% of participants). Participants' qualitative comments about the program were very positive: *"I think this is an excellent program and I hope it continues;"* *"I really have been delighted to participate in this;"* *"It took some time, but I learned a lot;"* and *"It made me feel useful and I enjoyed the intellectual stuff."*

DISCUSSION

To the authors knowledge, this is the first randomized control trial of an individualized social activities intervention in a geriatric psychiatry facility. Overall, the results of this investigation suggest that individualized social activities may be a useful intervention for improving quality of life in older adults with mild to moderate cognitive impairment. Consistent with our hypothesis, self-reported quality of life (General DQoL) was significantly higher at post-treatment assessment for those who received the intervention compared with those in the control group. These results provide further support to previous findings that highlight the beneficial effects of implementing tailored social activities to cognitively impaired older adults (Gitlin et al., 2009; Kolanowski et al., 2011; Van Haitsma et al., 2013).

The secondary aim of the study was to evaluate the clinical utility of individualized social activities as a treatment for BPSD. Contrary to our prediction, behavioral and psychological symptoms on a self-reported measure (NRS-R) were not significantly different at post-treatment between the intervention and control group. However, many of the NRS-R variables assess the severity of negative affect symptoms, such as depressive mood, guilt, hostility, irritability, and anxiety. Lawton's dual channel hypothesis suggests that the amount of engagement with the environment enhances positive affect but does not influence negative affect (Lawton, Winter, Kleban, & Ruckdeschel, 1999). Interpersonal factors, including health, self-esteem, and personality, are more likely to contribute to negative affect states (Lawton et al., 1999). Therefore, increasing participant's engagement in social activities would be more likely to increase positive affect (General DQoL scores) rather than reduce negative affect (NRS-R scores).

We also investigated potential mediating components (e.g., increasing activities and decreasing BPSD) that may explain the effect of ISAI on quality of life. Because ISAI aims at increasing participant's engagement in activities, it was expected that PES-NH (frequency x pleasantness) scores would mediate the effect of ISAI on General DQoL. Similarly, because BPSD are proven predictive factors of quality of life (Hurt et al., 2008), it was expected that NRS-R scores would affect treatment effectiveness. The findings for both of these meditational analyses were non-significant, which was likely an artifact of the study being underpowered for such explorations. Alternatively, the relation between ISAI and quality of life may be mediated by other factors, such as self-efficacy. Individualized social activities encourage participants to gain a sense of accomplishment by completing meaningful tasks, which may in turn improve quality of life by increasing self-efficacy (Blazer, 2002).

It should be noted that implementing the intervention did not cause any apparent adverse outcomes. In fact, General DQoL scores significantly increased and NRS-R scores significantly decreased between pre- and post-treatment for the intervention group. Moreover, 15% of the participants receiving ISAI experienced clinically significant positive change in quality of life. Such results are clinically useful because improving quality of life in older adults can in turn cause other beneficial outcomes. For example, quality of life is associated with independent living (Noreau & Shephard, 1995), hospitalization, morbidity, and mortality (Mapes et al., 2003; Sullivan, Nelson, Mulani, & Sleep, 2006).

Individualized social activities were found to be feasible in a geriatric psychiatry facility, as well as appropriate for individuals with mild to moderate cognitive

impairment. The most frequently delivered activities in the study included: reminiscence/life review or casual conversation, puzzles/cards/board games, listening to music, doing art (e.g., painting or crafts), embroidering, and watching a favorite movie or television show. As such, the activities do not need to be expensive or complex to be meaningful to the participant or to provide beneficial effects on quality of life. These findings also highlight the need for hiring a recreational therapist and/or a psychologist in geriatric psychiatry facilities. These trained mental health professionals can serve an important role in creating a therapeutic benefit to patients through providing individualized social activities.

Study Limitations

Although the results of the current study are informative, there were several limitations. First, the sample consisted of patients in an Alabama geriatric psychiatry facility and therefore, results may not be generalizable to older adults in other geographical regions or institutional settings. Another problem was related to the sample size of the investigation, which started out relatively small and decreased with participant attrition. A larger sample size is needed to conduct more advanced statistical analyses, such as tests of mediation. In addition, follow-up assessments were not feasible due to the wide range of participant discharge placements and locations. Lastly, because the ISAI was provided on-unit, the participants in the control group were aware of and observed intervention participants engaging in activities, which may have negatively affected control group outcomes.

Future Directions

Often times there appears to be a divide between research findings and implementation of such knowledge into clinical practice. As a way to bridge this gap and to ensure long-term sustainability, researchers could begin to use the existing infrastructure in facilities to implement interventions. For example, Harper Center direct-care staff and recreational therapists could have been educated and trained on implementing the ISAI. Because the ISAI did not directly reduce negative affect (NRS-R scores), researchers should investigate the additive benefit of incorporating facets of other inventions (e.g., cognitive behavioral therapy) into ISAI that directly target interpersonal factors. In addition, future studies should: a) examine the ideal dosage of individualized social activities (e.g., 15 vs. 30 days, once vs. twice a day, etc.), b) determine the cost of implementing ISAI, c) identify participants that are most likely to benefit from ISAI, d) investigate the long-term effects of ISAI by administering follow-up assessments, and e) emulate the current study using a larger sample of participants.

Summary and Conclusions

The use of individualized social activities in geriatric psychiatry facilities is consistent with most practice guidelines that suggest nonpharmacological approaches as the first-line of treatment for individuals with cognitive impairment (Ballard & Corbett, 2010), as well as with the movement toward providing person-centered care (Brooker, 2003). The present investigation extends the literature on individualized social activities for older adults with cognitive impairments. It also provides preliminary findings regarding the efficacy of individualized social activities as a treatment for improving quality of life in older adults with mild to moderate cognitive impairment in a geriatric

psychiatry facility. Overall, the results indicate that individualized social activities may be a promising and feasible treatment for cognitively impaired older adults in geriatric psychiatry facilities.

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APPENDIX

Office for Research

Institutional Review Board for the
Protection of Human Subjects

March 1, 2013

Elizabeth A. DiNapoli, M.A
Department of Psychology
College of Arts & Sciences
The University of Alabama

Re: IRB Protocol # 12-027-ME
"Effect of Individualized Social Activity on Quality of Life in
Institutionalized Older Adults with Mild to Moderate Cognitive
Impairment"

Ms. DiNapoli:

The University of Alabama Medical IRB has granted initial approval of the above application for a one-year period. Please be advised that your protocol will expire one year from the date of approval, 3/1/13.

If your research will continue beyond this date, complete the Renewal Application Form. If you need to modify the study, please submit the Modification of An Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure Form.

Should you need to submit any further correspondence regarding this proposal, please include the assigned IRB application number. Please use reproductions of the IRB approved stamped consent/assent forms to obtain consent from your participants.

Good luck with your research.

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