

Special Article – Family Caregivers

Preliminary Evidence for Effectiveness of Resourcefulness Training in Women Dementia Caregivers

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Received: June 20, 2016; Accepted: July 13, 2016;

Published: July 15, 2016

Abstract

Nearly 10 million women in the U.S. are caregivers for an elder with dementia, which often produces overwhelming stress and adversely affects their health. Resourcefulness training (RT) may promote the caregiver's optimal health and continue in their caregiving role. This pilot trial of 138 women dementia caregivers examined the effectiveness of RT on perceived stress, depressive cognitions, and negative emotions over time. Caregivers were first randomized to RT or no RT and then further randomized into random versus choice *conditions* followed by assignment to the journal or recorder *methods*, thus creating eight groups. We examined differences on perceived stress, depressive cognitions, and negative emotions between groups: 1) RT versus no-RT, 2) choice versus random condition; and 3) journaling versus recording. Significant time by group interactions were found on stress ($F=4.36$, $p<.05$), depressive cognitions ($F=10.93$, $p<.001$), and negative emotions ($F=20.48$, $p<.001$) in the RT versus no RT group. No differences were found between the random versus choice *conditions* or the journaling versus recording *methods* for practicing the RT skills. The results provide evidence for the effectiveness of RT for decreasing stress, depressive cognitions, and negative emotions in women caregivers of elders with dementia. The findings also suggest the need for further examination of the effects of allowing caregivers to choose a method for practicing RT in larger samples if caregivers of elders with dementia.

Keywords: Dementia caregivers; Caregiver stress; Intervention; Resourcefulness

Abbreviation

RT: Resourcefulness Training; NAC: The National Alliance for Caregiving; QOL: Quality of Life; REACH: Resources for Enhancing Alzheimer's Caregiver Health; PSS: Perceived Stress Scale; DCS: Depressive Cognition Scale; ESC: Emotional Symptom Checklist; RMANOVA: Repeated Measures Analysis of Variance; RCTs: Randomized Controlled Trials

Introduction

Every minute in the United States (US) a new case of Alzheimer's disease or other dementia goes undetected, changing the affected elder's family forever [1]. Typically, the closest and most accessible family member [2] assumes responsibility for the care of the elder. Dementia is the most under recognized health crisis of the 21st century with over 46 million people worldwide living with dementia, a number expected to reach 131.5 million by 2050 [3]. In the US, family members provide more than 18 billion hours of informal, unpaid care for over 5.4 million elders with dementia, costing more than \$221 billion each year [1]. The annual cost associated with health care, long-term care, and hospice for persons with dementia is estimated to be \$214 billion, making dementia one of the most costly chronic illnesses [4].

The National Alliance for Caregiving & the AARP Public Policy

Institute reported that more than 50% of dementia caregivers perform activities of daily living, administer medications, and manage finances and communications, and other activities of the elders [5]. Compared to other caregivers, dementia caregivers report greater physical strain (28% vs 17%) due to the duration and complexity of dementia caregiving [5]. Approximately two thirds of dementia caregivers are women [1] who are known to experience overwhelming stress and adverse effects on their health and wellbeing [6-8]. Thus, there is a substantial need to provide women dementia caregivers with interventions to sustain their health. This study tested the effects of a resourcefulness training intervention on the psychological health of women dementia caregivers.

Caregiver Stress

Family caregivers of elders with dementia endure daily stress for long periods of time [9] related to uncertainty of how disease will progress in care-recipients [10], and the physical, mental, behavioral and memory problems associated with dementia [11]. Dementia caregivers are particularly vulnerable to stress because they not only provide direct care for the elders, but also manage behavioral and memory problems, and are the elder's advocate for healthcare and household decisions. The increasing demand for caregiving time, loss of freedom to work and to socialize [11,12] can result in feelings of resentment, family conflict, and physical, emotional and financial

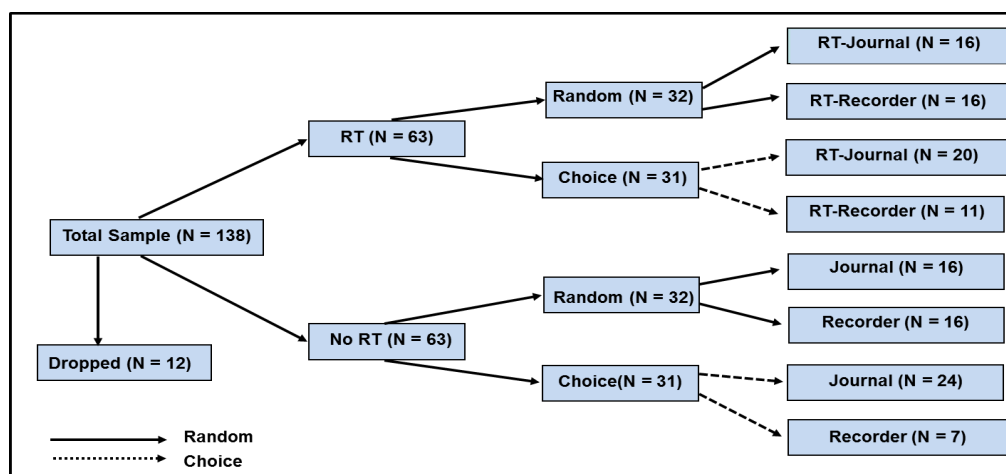


Figure 1: Assignment to groups defined by RT or no RT intervention, random versus choice conditions, and journal versus recorder methods.

strain [12], increasing caregivers' stress level [6]. Chronic stress increases cortisol and inflammatory markers in the body [9], making caregivers vulnerable to poor health, depression, and low quality of life [13].

Caregiver Depressive Symptoms

The tremendous burden experienced by dementia caregivers makes them vulnerable to psychological health problems often expressed in thoughts and feelings, which reflect depressive symptoms [14-15]. Thus, dementia caregivers are at greater risk for developing depressive illness [6,14]. Factors associated with dementia caregiver depression include female gender, high caregiving workload, and behavioral and memory problems in the elder [15]. Research suggests that dementia caregivers are prone to negative, dysfunctional or maladaptive cognitions [16-17]. Further, dementia caregivers often express negative emotions associated with caregiving such as anger and anxiety. In fact, dementia caregivers have more fluctuations in negative affect than other caregivers [18]. Fluctuations in affect expressed in negative emotions have been linked with closeness to the elder, dependency needs of the elder, older age, lower socioeconomic status, and lack of sleep [18-19]. Thus, the psychological impact of dementia caregiving is profound and has been associated with poorer health and quality of life [12,18]. Therefore, the need for intervention research focused on promoting positive psychological health outcomes is evident.

Dementia Caregiver Intervention Research

Systematic reviews describe interventions for dementia caregivers, including those focused on reducing stress and promoting/preserving health [20-26]. Multi-site projects such as the Resources for Enhancing Alzheimer's Caregiver Health (REACH) [27-29], had a primary aim to develop and test methods for helping family caregivers manage daily activities and stress associated with dementia caregiving. REACH projects tested educational support groups [30], behavioral care [31], and skills training programs [32], family-based interventions [33], environmental modifications [34-35], and computer-based information and communication services [33,36]. Each REACH study has been a well-designed, randomized, controlled clinical trial with caregivers randomly assigned to treatments [28-

29]. All of the interventions were found to be superior to control conditions for women versus men, and for caregivers with lower versus higher education. Positive outcomes include fewer depressive and anxiety symptoms, better adaptation, fewer problem behaviors, greater satisfaction, improved affect, and better sense of well-being [30-36].

Although many positive findings have emerged from the REACH trials, interventions tested did not include teaching resourcefulness skills. Systematic reviews of other intervention studies of dementia caregivers have described beneficial effects on caregiver health of such skills as cognitive reframing, problem solving, self-management, and help-seeking [22, 37-39], all of which are incorporated within resourcefulness training [40-41]. Consistent with the personal (self-help) and social (help-seeking) skills taught during resourcefulness training (RT), researchers have identified the need for interventions to assist dementia caregivers to seek out and mobilize social resources while enhancing personal coping effectiveness [42-43]. RT has been found effective in reducing stress, depressive cognitions, and negative emotions, and improving overall health in older adults [44-46] and caregiver populations [47-49], including dementia caregivers [50-51].

Therefore, the study reported here addressed the following aims: 1) To compare the effects of RT (which includes journaling or recording as practice / reinforcement methods) with comparison groups (journaling or recording without learning resourcefulness skills); 2) To determine whether choosing between the two practice methods yields greater effects than random assignment; and 3) to establish whether there is a difference in effectiveness between the journal and the records for practicing resourcefulness skills.

Methods

Design

This study was a modified partially randomized preference trial [52] that involved the use of randomization and the element of preference (i.e. choice between journaling and digital recording), resulting in the formation of eight groups (Figure 1). The study design involved two levels of randomization that initially resulted in four groups (indicated by solid arrows in Figure 1), which were then further randomized to use journal or recorder methods (random

condition), or to choice condition where they chose between the journal and recorder. Groups designated as “no RT” were not taught resourcefulness skills. Effects on stress, depressive cognitions, and negative emotions examined at baseline (T1) and at 2 (T2), 6 (T3) weeks post-intervention.

Sample

This community-based pilot trial involved a convenience sample of 138 women caregivers of elders with dementia. To be included, caregivers had to have been caring for an elderly family member with dementia (any form) in the same household for at least 6 months and for at least 4 hours/day. Approval for the protection of human subjects was obtained from the University Institutional Review Board. Women caregivers were recruited through flyers posted in the community and distributed at caregivers support groups, in geriatrician offices, and through referrals made by other caregivers. Caregivers who met study criteria were enrolled and randomly assigned to conditions (random versus choice) and methods (journal versus recorder).

Although 138 caregivers completed baseline (T1) interviews, 12 did not continue because of phone disconnection, loss of interest, or too busy to continue. A more detailed discussion of reasons for attrition has been published elsewhere [32]. The final sample sizes of 126 caregivers for the RT versus no RT analysis and 63 caregivers for the analyses by *condition* (i.e. random versus choice of RT method) and by *method* (i.e. journal versus recorder) were considered sufficient for examining descriptive statistics, including frequencies, and percentages; for plotting changes in mean scores on stress, depressive cognitions, and negative emotions over time; and for conducting repeated measures analyses based on an alpha of .05, power .80 and estimated medium to small effect size of .16 for a two group analyses across three measurement points [53].

Instruments

In addition to a demographic questionnaire that was used to describe the sample above, we used three quantitative measures to evaluate the effectiveness of the RT intervention, practice methods, and random versus choice conditions.

Perceived stress was measured by the 14-item Perceived Stress Scale (PSS) [54]. Items are rated on a 5-point Likert-type scale from “never” to “very often,” with scores ranging from 0 to 56. After reversing scores on 7 items reflecting low stress, higher scores indicate greater perceived stress. Internal consistency estimates (i.e. Cronbach’s alphas), have ranged from .84 to .87 [54-55]. Cronbach’s alpha in this sample was .83. Test-retest reliability has been reported, with a correlation of .85 [54-55]. Evidence for construct validity comes from predictive relationships with self-assessed health, health service use, health behaviors, help-seeking behavior, and salivary cortisol [56-57].

Depressive cognitions were measured by the 8-item Depressive Cognition Scale (DCS) [58]. The DCS uses a 6-point Likert scale ranging from strongly disagree (0) to strongly agree (5). Because all items on the scale are phrased in a positive direction, all item responses must be reversed to capture depressive cognitions. Thus, the scores may range from 0 to 40 with higher scores indicating more depressive cognitions. The DCS has had reported internal consistency reliability with Cronbach’s alphas ranging between .75 and .90 across

various populations of adults and elders [59-60]. The Cronbach’s alpha in this study was .78. Construct validity of the DCS has been supported by correlations in the expected directions with theoretically related constructs that include caregiver burden, resourcefulness, life satisfaction, and depressive symptoms, adaptive functioning health practices, and quality of life [60]. Factor analyses have consistently revealed a single factor solution with 40% to 58% of the variance explained [59-60].

Negative emotions were measured by the 10-item Emotional Symptom Checklist (ESC) [61-62]. Items comprising the ESC assess the presence of negative emotions within the past 2 weeks using a dichotomous (yes = 1; no = 0) format. The negative emotions include three reflecting anger (anger, restlessness, and irritability), four reflecting anxiety (anxiousness, nervousness, tension, and worry), and three reflecting depression (sadness, loneliness, and unhappiness). Total ESC scores range from 0 to 10, with higher scores indicate the presence of more negative emotions. Internal consistency estimates have ranged from .73 to .80 [61-63]. The Cronbach’s alpha in this study was .78. Factor analysis has confirmed the presence of three factors (anger, anxiety, and depression) that explained 41% of the scale’s variance [61]. Evidence for construct validity included significant correlations with measures of anxiety and depression [61-62].

Procedures

Quantitative data were collected during three face-to-face, structured interviews with a trained data collector who was blinded to the RT intervention, practice methods (journal or recorder), and random versus choice conditions. The data collection interviews, 6 weeks apart, were conducted in a private setting at a mutually agreed-upon time. During the interviews, measures of perceived stress, depressive cognitions, and negative emotions used in the analysis reported here were completed. The caregivers were compensated for their participation.

Resourcefulness training (RT) intervention

Resourcefulness training (RT) was provided to 63 women dementia caregivers. The RT included teaching the eight skills constituting personal and social resourcefulness during a single 40-minute individual session with a trained interventionist, who was either a graduate nursing or social work student. Intervention recipients were given a laminated 3x5 card on which the eight skills were listed. The personal resourcefulness skills included self-help strategies such as organizing daily activities, using positive self-statements, positive reframing, exploring new ideas, and changing from one’s usual reaction. The social resourcefulness skills included relying on family and friends, exchanging ideas with others, and seeking help from professionals and experts.

During the training session, interventionists explained each of the resourcefulness skills. Then, the interventionist and caregiver reviewed each one and discussed potential situations in which the caregiver might use each skill in her daily activities and relationship with the care recipient. After teaching resourcefulness skills, the interventionist explained the use of the daily written journal, recommending 3-5 pages per day, or daily use of the digital voice recorder, recommending 5-7 minutes per day, depending on the

Table 1: Means and standard deviations over time for RT versus no RT and by random versus choice conditions and by journal versus recorder methods.

Group	N	Perceived Stress			Depressive Cognitions			Negative Emotions		
		M(SD)@T1	M(SD)@T2	M(SD)@T3	M(SD)@T1	M(SD)@T2	M(SD)@T3	M(SD)@T1	M(SD)@T2	M(SD)@T3
RT	63	27.52 (7.66)	24.05 (6.64)	23.65 (7.26)	8.25 (5.62)	5.71 (3.66)	5.03 (3.52)	6.21 (2.73)	4.52 (2.47)	4.21 (2.37)
No RT	63	27.27 (7.23)	25.75 (6.41)	25.75 (7.53)	8.48 (5.14)	7.90 (5.09)	7.62 (4.81)	6.25 (3.07)	6.13 (2.84)	6.27 (2.46)
Random	32	27.69 (7.11)	24.66 (6.64)	23.78 (6.76)	8.19 (5.73)	6.09 (3.47)	5.03 (3.14)	6.22 (2.85)	4.72 (2.37)	4.44 (2.36)
Choice	31	27.35 (8.30)	23.42 (6.70)	23.52 (7.85)	8.32 (5.61)	5.32 (3.87)	5.03 (3.92)	6.19 (2.65)	4.32 (2.59)	3.97 (2.40)
Journal	36	27.44 (8.31)	23.83 (6.61)	23.50 (7.42)	8.19 (4.69)	5.61 (3.45)	5.00 (3.26)	6.19 (2.66)	4.39 (2.59)	4.11 (2.50)
Recorder	27	27.63 (6.84)	24.33 (6.80)	23.85 (7.17)	8.33 (6.76)	5.85 (3.99)	5.07 (3.89)	6.22 (2.87)	4.70 (2.33)	4.33 (2.22)

condition to which the caregiver chose or was randomly assigned. Journals and recorders were provided for the caregiver's use for the 4-week intervention period. Before journaling or recording each day, caregivers were asked to review the laminated card to reflect on the eight resourcefulness skills. Then, in their journals or recordings, caregivers were to describe their use of the skills over the next 4 weeks, which occurred between the baseline (T1) and second (T2) data collection interviews. This process of reflection on caregivers' practice of the resourcefulness skills was used to reinforce the skills. In addition, weekly reminder phone calls were made by the interventionist during the 4-week intervention period.

Comparison conditions

Because journaling and voice recording are forms of expressive disclosure, which research has shown is effective in reducing negative emotions, managing stress, and improving health and well-being [35,36,37], we planned to disentangle those effects from the effects of RT, which incorporates the use of a journal or recorder for practice and reinforcement and not for the therapeutic purpose of expressive disclosure. Accordingly, 63 women caregivers were either randomly assigned or chose to complete a daily journal or voice recording. To maintain consistency, the same number of pages for journaling and minutes for recording as for the RT conditions were recommended. Journals or recorders were provided for all caregivers to use during the 4-week intervention period. However, 63 caregivers were not taught the eight resourcefulness skills and their journaling or recording involved writing or recording daily events, and thoughts and feelings about their day with their care recipient for the 4 weeks between the T1 and T2 data collections. As with the caregivers in the RT group, an interventionist made weekly reminder phone calls to these caregivers during this 4-week period.

Data analysis

Data were analyzed from the 126 women caregivers for whom we had no missing data over the three data-points (T1 to T3); 63 caregivers received RT and 63 participated in the comparison groups. Repeated measures analysis of variance (RMANOVA) was used to examine the effects of RT versus no RT, random versus choice conditions, and journal versus recorder methods. Of interest was examination of effects on perceived stress, depressive cognitions, and negative emotions. Prior to conducting the RMANOVAs, assumptions were tested. Violations to Mauchley's test of sphericity indicated a need to adjust F statistics. If sphericity is violated either a Greenhouse-Geisser or Huynh-Feldt adjustment was used. The Huynh-Feldt adjustment is reported if the Greenhouse-Geisser score was $>.75$ [64].

Results

Sample characteristics

The ages of the women caregivers ranged from 25 to 89 years with an average age of 56 years. The sample was 54% Caucasian, 38% African American, and 8% other/mixed races/ethnicities. Twenty-seven percent were single, 45% were married/cohabitating; 4% were separated; 18% divorced; 6% were widowed. In terms of education, 1% completed junior high school, 10% completed high school or G.E.D., 30% completed some college, 12% completed as associate degree, 27% had a bachelor's degree, 17% had a Master's degree, and 3% had a doctorate. Of those who reported their income (9% did not), 56% reported an income $<$ \$30,000, 25% reported an income between \$30,001 and \$50,000, and 19% reported an income $>$ \$50,001. Overall, the study participants were in good health; the most frequently reported health problems were hypertension (29%), osteoporosis (19%), respiratory disorders (12%), and diabetes (9%). Most care recipients were women (72%); 28% were men. Care recipient ages ranged from 65 to 100 with an average age of 82 years. Caregivers spent between 4 to 24 hours per day providing care with an average of 14 hours. The length of time providing care ranged from 6 to 276 months (23 years), with an average time of 55 months (4.5 years).

RT versus no RT

We conducted a repeated measures analysis of variance (RM-ANOVA) to compare perceived stress, depressive cognitions, and negative emotions in the caregivers who were randomly assigned to RT ($N = 63$) to those who participated in the comparison groups that did not receive RT ($N = 63$) regardless of practice method (journal versus recorder) and irrespective of random or choice conditions. We expected that the caregivers who received RT would experience lower stress, fewer depressive cognitions, and fewer negative emotions than those in the no RT group. Mean scores overtime on perceived stress, depressive cognitions, and negative emotions for the RT intervention group and the comparison group that was not taught the resourcefulness skills (no RT) appear in Table 1.

Mean scores on perceived stress varied significantly over three time points ($F_{\text{Huynh-Feldt}}(1.82, 225.64) = 24.92, p < .001$). The test of within-subjects contrasts indicated a downward linear trend across the three measurement points ($F(1,124) = 30.48, p < .001$). The interaction between group and time also was significant ($F_{\text{Huynh-Feldt}}(1.82, 225.64) = 4.36, p < .02$). For the RT group, T1 scores on perceived stress averaged 27.52 and declined by T2 (mean=24.05) and by T3 (mean=23.65). In the no RT group, the mean score was 27.27 at T1, it declined by T2 (mean=25.75), and remained unchanged at T3 (mean=25.75). Thus,

Table 2: Repeated measures analysis for RT effects on perceived stress, depressive cognitions, and negative emotions over time.

RQ #1: Analysis of RT versus no RT (N = 126)						
Effects	Perceived Stress		Depressive Cognitions		Negative Emotions	
	df	F	df	F	df	F
Time	1.82, 225.64	24.92 ^{a**}	1.64, 203.08	30.95 ^{a**}	1.74, 215.12	22.15 ^{a**}
Group	1, 124	1.01	1, 124	4.59 ^a	1, 124	8.08 ^a
Group x Time	1.82, 225.64	4.36 ^{a*}	1.64, 203.08	10.93 ^{a**}	1.74, 215.12	20.48 ^{a**}
RQ #2: Analysis of random versus choice conditions for RT recipients (N = 63)						
Effects	Perceived Stress		Depressive Cognitions		Negative Emotions	
	df	F	df	F	df	F
Time	2, 122	22.70 ^{a**}	1.60, 97.38	29.66 ^{a**}	1.47, 89.47	40.25 ^{b***}
Group	1, 61	0.13	1, 61	0.05	1, 61	0.26
Group x Time	2, 122	0.37	1.60, 97.38	0.61 ^a	1.47, 89.47	0.49 ^b
RQ #3: Analysis of journal versus recorder methods for RT recipients (N = 63)						
Effects	Perceived Stress		Depressive Cognitions		Negative Emotions	
	df	F	df	F	df	F
Time	2, 122	21.89 ^{a**}	1.61, 98.34	28.74 ^{a**}	1.46, 89.20	38.43 ^{b***}
Group	1, 61	0.04	1, 61	0.02	1, 61	0.10
Group x Time	2, 122	0.03	1.61, 98.34	0.02 ^a	1.46, 89.20	1.82 ^b

^ap < .05 ^{*}p < .01 ^{**}p < .001^a Huynh-Feldt correction ^bGreenhouse-Geisser correction.

the mean scores on perceived stress for the RT group declined over time dropping nearly 4 units by T3, while the mean scores in the no RT group leveled off starting at T2 and dropped only 1.5 units from T1 to T3. The test of between subjects effects was not significant. Post hoc analysis revealed that caregivers who received RT reported significantly lower perceived stress over time than those who did not receive RT. Repeated measures analysis for perceived stress for the RT intervention group versus the no RT group appear in Table 2.

Mean scores on depressive cognitions varied significantly over three time points ($F_{\text{Huynh-Feldt}}(1.64, 203.08) = 30.95, p < .001$). The test of within-subjects contrasts indicated a downward linear trend across the three measurement points ($F(1, 124) = 40.21, p < .001$). The interaction between group and time was significant ($F_{\text{Huynh-Feldt}}(1.64, 203.08) = 10.93, p < .001$). For the RT group, the average score on depressive cognitions at T1 was 8.25. It declined by T2 (mean= 5.71) and by T3 (mean=5.03). The no RT group had a mean score of 8.48 at T1 and declined slightly by T2 (mean=7.90) and by T3 (mean=7.62). However, the mean scores on depressive cognitions in the RT group steadily declined over time dropping nearly 3 units by T3, while the mean scores in the no RT group declined over time dropping only 1 unit by T3. In addition, the test of between subjects effects was significant ($F(1, 124) = 4.59, p < .03$). Post hoc analysis revealed that caregivers who received RT reported significantly fewer depressive cognitions over time than those who did not receive RT. Repeated measures analysis for depressive cognitions for the RT intervention group versus the no RT group appear in Table 2.

Mean scores on negative emotions varied significantly over three time points ($F_{\text{Huynh-Feldt}}(1.74, 215.12) = 22.15, p < .001$). The test of within-subjects contrasts indicated the presence of a downward linear trend across the three measurement points ($F(1, 124) = 26.65, p < .001$). The interaction between group and time also was significant ($F_{\text{Huynh-Feldt}}(1.74, 215.12) = 20.48, p < .001$). For the RT group, the mean score on negative emotions was 6.21 at T1, steadily declined by T2 (mean= 4.52) and by T3 (mean=4.21). The mean score in the no RT group was 6.25 at T1. It also declined slightly by T2 (mean=6.13) but increased by T3 (mean=6.27). Thus, the mean score on negative

emotions in the RT group declined over time dropping 2 units by T3, while the mean score in the no RT group was unchanged. In addition, the test of between subjects effects was significant ($F(1, 124) = 8.08, p < .01$). Post hoc analysis revealed that caregivers who received RT reported significantly fewer negative emotions over time than those who did not receive RT. Repeated measures analysis for negative emotions for the RT versus the no RT group appear in Table 2.

Random versus choice conditions

In a second set of RM-ANOVAs, we compared perceived stress, depressive cognitions, and negative emotions in the caregivers who received the RT intervention who were randomly assigned to journal or recorder ($n = 32$) with those who chose between the two practice methods ($n=31$). We expected that the caregivers who had a choice of practice method (journal or recorder) would experience lower stress, less depressive cognition, and fewer negative emotions than those who were randomly assigned. Mean scores for the random versus choice conditions on perceived stress, depressive cognitions, and negative emotions are summarized in Table 1.

Mean scores on perceived stress varied significantly over the three time points ($F(2, 122) = 22.70, p < .001$). The test of within-subjects contrasts indicated the presence of a downward linear trend across the three measurement points ($F(1, 61) = 34.28, p < .001$). The interaction between group and time and the test of between subjects effects were not significant. Post hoc analysis revealed that caregivers who had a choice between journal and recorder were similar to those who were randomly assigned in reporting lower perceived stress over time. Repeated measures analysis for perceived stress for the random versus choice conditions appear in Table 2.

The mean scores on depressive cognitions varied significantly over three time points ($F_{\text{Huynh-Feldt}}(1.60, 97.38) = 29.66, p < .001$). The test of within-subjects contrasts indicated the presence of a downward linear trend across the three measurement points ($F(1, 61) = 36.94, p < .001$). The interaction between group and time and the test of between subjects effects were not significant. Post hoc analysis revealed that caregivers who had a choice between journal

and recorder were similar to those who were randomly assigned in reporting less depressive cognition over time. Repeated measures analysis for depressive cognitions for the random versus choice conditions appear in Table 2.

Mean scores on negative emotions varied significantly over three time points ($F_{\text{Greenhouse-Geisser}}(1.47,89.47) = 40.25, p < .001$). The test of within-subjects contrasts indicated the presence of a downward linear trend across the three measurement points ($F(1,61) = 47.76, p < .001$). The interaction between group and time and the test of between subjects effects were not significant. Post hoc analysis revealed that caregivers who had a choice between journal and recorder were similar to those who were randomly assigned in reporting fewer negative emotions over time. Repeated measures analysis for negative emotions for the random versus choice conditions appear in Table 2.

Journal versus recorder

We conducted a third set of RM-ANOVAs to compare perceived stress, depressive cognitions, and negative emotions in caregivers who received RT with journaling ($n = 36$) and those who received RT with recording ($n = 27$) irrespective of random versus choice conditions. The goal was to determine whether the two methods for practicing the resourcefulness skills had similar effects on perceived stress, depressive cognitions, and negative emotions. Mean scores for the journal versus recorder methods on perceived stress, depressive cognitions, and negative emotions are summarized in Table 1.

Mean scores on perceived stress varied significantly over three time points ($F(2,122) = 21.89, p < .001$). The test of within-subjects contrasts indicated the presence of a downward linear trend across the three measurement points ($F(1,61) = 33.40, p < .001$). The interaction between group and time and the test of between subjects effects were not significant. Post hoc analysis revealed that caregivers who used the journal and those who used the recorder were similar in reporting lower perceived stress over time. Repeated measures analysis for perceived stress for the journal versus recorder conditions appear in Table 2.

The mean scores on depressive cognitions varied significantly over three time points ($F_{\text{Huynh-Feldt}}(1.61,98.34) = 28.74, p < .001$). The test of within-subjects contrasts indicated the presence of a downward linear trend across the three measurement points ($F(1,61) = 36.27, p < .001$). The interaction between group and time and the test of between subjects effects were not significant. Post hoc analysis revealed that caregivers who used the journal and those who used the recorder similar in reporting less depressive cognition over time. Repeated measures analysis for depressive cognitions for the journal versus recorder conditions appear in Table 2.

Mean scores on negative emotions varied significantly over three time points ($F_{\text{Greenhouse-Geisser}}(1.46,89.20) = 38.43, p < .001$). The test of within-subjects contrasts indicated the presence of a downward linear trend across the three measurement points ($F(1,61) = 45.63, p < .001$). The interaction between group and time and the test of between subjects effects were not significant. Post hoc analysis revealed that caregivers who used the journal and those who used the recorder similar in reporting fewer negative emotions over time. Repeated measures analysis for negative emotions for the journal versus recorder conditions appear in Table 2.

Discussion

Analysis of the effects of resourcefulness training (RT) in women caregivers of elders with dementia provides evidence that when dementia caregivers are taught the skills constituting personal (self-help) and social (help-seeking) resourcefulness, they experience better psychological health outcomes, including lower stress, and fewer depressive cognitions and negative emotions. The RT intervention with use of journaling or voice recorder methods for reinforcement / practice of RT skills for four weeks was compared with the use of journaling or voice recording as methods for expressive disclosure (without knowledge of RT skills). We found that RT with either reinforcement / practice method was more effective than the two expressive disclosure comparison conditions in affecting the three psychological health outcomes. This finding is consistent with the theory of resourcefulness that suggests that personal and social resourcefulness are associated with process regulators, which have affective and cognitive components [65]. Although the method of delivering the RT may differ in other studies, this finding is consistent with those reported in other populations, such as older adults [44-46,66] and caregivers [47-49,67], including dementia caregivers [50-51].

Excluding the studies that examined use of group process methods for reinforcing RT skills, rather than individualized methods, such as journaling or digital voice recording [44-46,51,66], the results from the study reported here replicate the findings of studies in which individualized methods for practicing and reinforcing RT skills were tested using similar psychological outcomes. These findings are consistent with another study [49] where no significant differences were found between the use of journaling versus digital voice recording as reinforcement / practice methods within RT. This non-significant finding is important as it indicates that both methods of reinforcing / practicing the skills taught during RT are equally effective in promoting positive psychological health outcomes. It also may suggest that other methods for reinforcement of practice may be effective and worthy of testing in future trials. For example, there has been a recent movement toward testing online rather than paper journaling for RT [47-48]; and, current research is examining the feasibility of emailing, voice mailing, and texting using mobile devices.

Because previous research (corroborated by this study) showed no difference between journaling and voice recorder methods [49], indicates the possibility that providing a choice between practice methods to intervention recipients might lead to better psychological health outcomes than random assignment to practice method. Indeed, a hallmark of person / family-centered health care planning includes the involvement of individuals in decisions about issues related to their care. Further, the sustainability of caregiver self-management interventions directed toward promoting psychological well-being is greatly dependent on individual tailoring of interventions to meet the needs and preferences of the intervention recipient [22]. However, the findings from this study revealed no significant differences in effects on perceived stress, depressive cognitions, or negative emotions, between the dementia caregivers who were given a choice between the journal or voice recorder and those who were randomly assigned to one or the other method. Thus, although this

finding provides support for the continued examination of RT within traditional RCTs, where randomization to treatments is requisite, it also shows that allowing the dementia caregivers to choose between reinforcement / practice methods is equally effective.

Despite encouraging results on the effectiveness of RT, there were few limitations to this study. The caregivers were recruited only from northeastern Ohio, were all women, and were primarily white and African American RT needs to be tested with other samples, including male and other minority caregivers. In addition, the sample was well educated and it is unknown whether less educated persons would learn and apply resourcefulness skills in the same way. Although a priori power analysis indicated that we would be able to detect medium to small effects, a larger and more diverse sample of dementia caregivers may yield different results in terms of reinforcement / practice methods and random versus choice conditions. Finally, the inability to detect significant differences between reinforcement / practice methods or by random versus choice conditions may have been affected by the measurement of RT effects up to 6 weeks post-RT. To determine longer term effects and sustainability of the RT intervention and practice / reinforcement methods, future research should examine effects of RT over a longer time frame (e.g., over 1 or 2 years) and explore whether booster sessions may be needed to maintain the effects..

Not with standing study limitations, the RT intervention shows great promise for improving the mental health of caregivers of elders with dementia. Previous research shows that women dementia caregivers perceive a need for learning resourcefulness skills [43], and that the RT intervention is acceptable and feasible for them [68]. This individualized, tailored, self-management intervention is grounded in principles of adult learning and subscribes to the philosophy that merely teaching skills is insufficient; intervention recipients must practice and use the skills to reinforce the and to incorporate them within their own personal repertoire of skills for coping, adaptation, and health promotion. RT involves a minimal investment of time and resources and therefore may be cost-effective. The RT intervention can be made available for caregivers within the community, including senior centers and health clinics as well as online delivery. However, further research to identify the long term and beneficial effects of RT within a randomized clinical trial that incorporates the use of tailoring the RT to meet the needs and preferences of a larger, more diverse sample of dementia caregivers is recommended.

Author's Notes

Funding for the study was provided by the National Institutes of Health, National Institute of Nursing Research (R21-NR-010368) awarded to Dr. Jaclene A. Zauszniewski.

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