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Training Family Caregivers on Skills for Behavioral Symptoms

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CONTENTS

Appendixes

Table **Page**

EXECUTIVE SUMMARY

More than 5 million Americans currently live with dementia, a number that is expected to grow to nearly 14 million by 2050. Dementia is characterized by a range of changes in memory, language, and executive function, and behavioral and psychological symptoms. The vast majority of people with dementia experience behavioral and psychological symptoms of dementia (BPSD), sometimes referred to as "challenging behaviors," including depression, apathy, hallucinations, delusions, aggression, agitation, sleep disturbance, and wandering. These symptoms are especially stressful for the family caregivers who are the primary source of support for most people with dementia, who are living at home. The stresses of caring for people with BPSD may result in a loss of caregiver self-efficacy, and depression, anxiety, and cumulative health risk of the caregiver. Further, poor coping among caregivers may result in more symptoms in the person with dementia. The stresses of supporting a family member with BPSD are strongly associated with institutional placement of the person with dementia.

This paper describes a variety of approaches designed to support caregivers of people with dementia to effectively address BPSD. Effective psychosocial interventions that improve self-efficacy and empower the caregiver to address BPSD are essential to maximize the quality of life for both people with dementia and their caregivers. Psychosocial interventions may be designed for use by formal care staff or by informal or family caregivers in the home environment. It cannot be assumed that interventions used by professional staff in institutional settings will work similarly when used by family caregivers at home. Our focus in this report is on those interventions for which there is evidence of their utility for family or other informal caregivers providing support at home. Information contained in this paper was obtained from a review of literature and consultation with an expert in the area of family caregiver training on behavioral symptom interventions. Organizations that support people with dementia and their families may wish to make one or more of these interventions available to the people they serve.

Programs that train family caregivers in techniques for managing BPSD can be designed to achieve a variety of outcomes. Among the programs reviewed, the most frequently intended outcomes were reductions in caregiver depression, burden, and distress. Other, less common outcomes included reductions in caregiver stress or strain, anxiety, and negative feelings such as burnout, sense of vigilance, and anger or hostility. Most training programs address multiple caregiver outcomes. Most of the interventions achieved these outcomes, indicating that caregiver training can successfully address these concerns.

In addition to reducing the negative impacts of caregiving, some trainings seek to improve the caregivers' skills and abilities to manage the demands of caregiving. Self-efficacy and coping skills are important caregiver characteristics to support. Evidence also shows that trainings addressing these skills generally were successful, as were the more limited number of interventions addressing caregiver outcomes such as happiness, well-being, and social support.

Some of the interventions reviewed also sought to improve outcomes in people with dementia. For example, some interventions were designed to reduce the frequency or severity of BPSD. These interventions, however, had limited success in achieving the desired outcome. Other outcomes, such as increasing exercise or engagement in activities by the person with dementia, were attempted in a smaller number of interventions, with some success.

Most of the behavioral training programs reviewed are delivered either in a group setting or in the participant's home. Many of the in-home training programs are supplemented with telephone sessions that provide additional support, reinforce learning, and check on participants' progress. A small number of programs use other approaches that do not require face-to-face interaction with a trainer, either through use of a DVD or online trainings.

The focus of the interventions differs somewhat based on the delivery method. Both group and individual in-home sessions include problem-solving and skill development components. Group sessions tend to focus more on education, and to a lesser extent on self-care and relaxation techniques. Individual in-home sessions all include some level of risk assessment or care planning, often with a detailed plan developed in response to the unique needs of the family. Referrals to other sources of support and assistance, including stress management, exercise, or activities tailored to the person with dementia's capabilities are also often characteristic of the individual sessions. The in-home interventions focus on identifying environmental modifications that could assist with BPSD.

Trainings can take varying amounts of time, generally ranging from 3 weeks to 6 months, with most completed in 2 to 3 months. Almost all of the training programs reviewed include meetings with family caregivers on a weekly basis, although some meet less frequently. Trainings tend to offer family caregivers 4 to 12 sessions, with some offering additional monthly phone support for an extended period. The total amount of training family caregivers receive through these programs varies from 90 minutes through the DVD-based training to 8 hours in other trainings.

The trainings reviewed use a combination of approaches to help family caregivers learn how to better manage BPSD and accompanying caregiver stress. Program components may include needs assessments and action plans, active practice of skills, physical exercise, abilities-based activities, environmental modifications, education, stress management/self-care, counseling, support groups, and referrals to other resources. There are also interventions that focus on using music, either through passive listening or by combining it with other activities, to help address BPSD.

Most of the programs reviewed use clinical psychologists or social workers to provide the training to the family caregivers. Nurses, occupational therapists, physical therapists, educators, music therapists, or others provide training to caregivers in a number of other programs. The choice of trainer is driven by the focus of the intervention and the skills it requires. Although certain professional backgrounds may be helpful for delivering a particular program, in some cases individuals without "credentials" can be taught to deliver the training to caregivers.

Although a range of evidence-based interventions exist, many have not been translated to the community setting. Translation can be a challenging task. It may be difficult to ensure fidelity of the original program design. During translation, deviations from aspects of the original intervention may occur, including but not limited to changes in the qualifications of the people providing the intervention to the family, the approach to identifying participants who may benefit, the number or length of training sessions, and the order in which content is delivered. A key question in translating research to the community is which of these components require strict adherence and which may be modified without reducing the benefits of the program. Limited studies of translation suggest that caregiver training programs may be implemented in the community while maintaining positive outcomes for caregivers and persons with dementia.

Beyond issues of intervention fidelity, organizations seeking to provide training to caregivers must consider other factors that may affect the training success. In particular, organizations must carefully consider their target audience and give consideration to issues such as the cause of the BPSD, caregiver readiness, the stage of the caregiving career, caregiver demographics, and caregiver self-efficacy and coping abilities. These characteristics of the target audience may affect how well any intervention works.

INTRODUCTION AND BACKGROUND

More than 5 million Americans currently have dementia. With the aging of the baby boom generation, this number is expected to grow to 13.8 million by 2050. Alzheimer’s disease is the most common type of dementia, accounting for 60 to 80 percent of all cases of dementia (Alzheimer’s Association, 2015). Dementia is characterized by changes in memory, language, executive function (e.g., planning, problem-solving, abstract thinking, emotional regulation), and behavioral and psychological symptoms that affect a person’s ability to perform everyday activities. Depending on the severity of the dementia, an individual will eventually require assistance with activities of daily living (ADLs) (e.g., eating, grooming, mobility) and instrumental activities of daily living (e.g., meal preparation, shopping, financial and medication management). Most individuals with dementia live at home and are cared for by a family member or friend. These informal and untrained caregivers provided 17.9 billion hours of unpaid care to individuals living with Alzheimer’s disease and other dementias in 2014 (Alzheimer’s Association, 2015).

Behavioral and psychological symptoms of dementia (BPSD), sometimes referred to as “challenging behaviors,” can include depression, apathy, hallucinations, delusions, aggression, agitation, sleep disturbance, and wandering. Between 80 and 90 percent of people with dementia exhibit at least one behavioral or psychological symptom (Alzheimer’s Association, 2015; Lyketsos et al., 2002). Apathy (a lack of initiative) and depression (feelings of sadness, guilt, and hopelessness) are the two most common symptoms, followed by agitation (behaviors related to discomfort or confusion) and aggression (hostile physical or verbal responses) (American Geriatrics Society, 2011; Fauth & Gibbons, 2013; Lyketsos et al., 2002; Wharton & Ford, 2014). Behaviors may be a form of communication for individuals who may have lost other means of expressing their needs. If not addressed appropriately, behaviors can escalate and lead to adverse consequences, such as decline in quality of life for the individual and his or her caregiver, increased caregiver burden, caregiver depression, physical aggression by the caregiver, and the use of chemical or physical restraints (Lyketsos et al., 2002; Rabinowitz et al., 2009; Wharton & Ford, 2014; Yuhas et al., 2006).

BPSD are reported to be more stressful for caregivers than the other changes that may occur with dementia and predict the transition from informal care by a family member into a nursing home or other long-term care facility (American Geriatrics Society, 2011; Farran et al., 2007; Koretz, 2002; Lyketsos et al., 2002; Teri et al., 2012; Wharton & Ford, 2014). Unlike cognitive or functional changes, behavioral and psychological symptoms do not follow a predictable steady decline, resulting in caregivers feeling unprepared and unable to plan for their occurrence (Ornstein & Gaugler, 2012).

Reduced caregiver self-efficacy is associated with psychological and physical health of caregivers, including increases in depression, anxiety, and cumulative physical health risk. Self-efficacy describes a caregiver’s belief in his or her ability to successfully perform specific tasks and relates to a caregiver’s ability to adapt and negotiate every day challenges (Rabinowitz et al., 2009). In relation to BPSD, caregivers who develop nonadaptive strategies in their caregiving role may engender more disinhibition, irritability, agitation, and wandering in the individual with dementia (Yuhas et al., 2006). Effective psychosocial interventions that improve self-efficacy and empower the family caregiver to address BPSD can maximize the quality of life for both people with dementia and their caregivers.

Psychosocial interventions conceptualize behavioral symptoms of dementia as the result of what is going on in the environment, the mismatch between the demand of the environment/task and the capacity of the person with dementia, or the expression of an unmet need (e.g., hunger, pain) (Cohen-Mansfield, 2001). Conceptual frameworks help caregivers understand the meaning of behaviors, identify the triggers of behaviors, and implement strategies to minimize behavioral manifestation and promote function (Volicer & Hurley, 2003). For example, the Competence-Environmental Press Model (Lawton & Nahemow, 1973) suggests that as competency declines in the individual with dementia, an unchanging environment places considerable demands on the individual that may result in BPSD. As the caregiver simplifies components of the physical and social environment to align with the individual's reduced competency, the person with dementia may display fewer behavioral problems. For example, removing unnecessary objects from a room may enhance orientation and reduce confusion and agitation (Gitlin et al., 2001). Similarly, the Progressively Lowered Stress Threshold (Hall & Buckwalter, 1987) asserts that dementia is associated with a reduced threshold to external stimuli and stress, beyond the individual's "comfort zone." BPSD occur as the demands of the environment (stress) accumulate throughout the day and the comfort zone shrinks. As anxious behaviors occur, this model suggests modifying activities and environmental stimuli until the anxiety disappears. The Need-driven Dementia-compromised Behavior model (Algase et al., 1996) proposes that BPSD is an expression of unmet need caused by the interaction between stable factors that cannot change (e.g., personality, stage of dementia) and current factors that can change (e.g., physical environment, thirst). For example, wandering might be the result of changes in wayfinding ability in pursuit of a need or goal. Cognitive impairment might interfere with one's ability to keep a goal or destination in mind.

These frameworks that support psychosocial interventions are based on the premise that caregivers cannot directly alter the progression of dementia, but can influence BPSD by addressing personal factors (e.g., pain, hunger, or thirst), modifying the environment, and implementing strategies that promote meaningful activity engagement. Teaching caregivers to obtain that "just-right fit" between individual capacity and environmental demands can result in reduced frequency or intensity of BPSD, increased activity engagement, and enhanced quality of life for both the individual with dementia and the caregiver.

Depending on the conceptual model underlying the specific psychosocial approach, intervention goals typically include improved outcomes for both the caregiver and the person with dementia. For caregivers, the goals of intervention are to improve caregiver skills and enhance health and wellness. The outcomes of psychosocial interventions for the person with dementia primarily focus on the reduction or elimination of BPSD. Additionally, outcomes may target enhancement of health and wellness and engagement in daily activities. As people with dementia become more engaged in daily activities, caregivers may be able to reduce their level of responsibility.

Psychosocial interventions may be designed for use by formal care staff in agency or institutional settings, or by family caregivers in the home environment. It cannot be assumed that interventions used by professional staff in an institutional setting will work similarly when used by family caregivers at home. Our focus in this report is on those interventions for which there is evidence of their utility for family caregivers providing support at home. As most persons with dementia live at home (Alzheimer's Association, 2015), family caregivers are often responsible for overseeing the daily routine of the persons with dementia, which includes addressing the BPSD that can interfere with function and safety (Farran et al., 2007). Organizations that support people with dementia and their families may wish to make one or more of these interventions available to the people they serve.

METHODOLOGY

This report presents information on ways to help family caregivers learn how to address BPSD. Information contained within the report was collected through a review of literature and consultation with an expert in the area of family caregiver training on behavioral symptom interventions. This was not a comprehensive systematic review of the literature in family caregiver training on behavioral symptom interventions, but presents some of the more common and promising interventions. This paper includes family training interventions solely focused on behavioral symptoms and a selection of more general family training interventions that have a significant behavioral component. For the interventions identified, we addressed the following key questions:

- What are the intended outcomes of the training programs?
- Who participates in the training programs?
- What are the methods for training the family caregiver?
- How much time does the training require?
- What are the components of the training programs?
- Who delivers the training programs?
- What ongoing support is available to the family caregivers?

Literature Search

Project staff performed literature searches in the following databases: PubMed/Medline, CINAHL, PsychInfo, and ScienceDirect. The following search terms were used singularly and in combination, with results limited to the last 10 years: Dementia; Behavior; Therapy; Interventions; Caregiving, Family; Training/Education; Teaching; Education, Nonprofessional; Family Caregiver Self-Efficacy; Harm Reduction; Behavior Modification; Music Therapy And Neurological Diseases; Drumming; Singing. Natural language syntax queries were also used: Dementia Problem Behaviors and Informal Caregiver Training; Family Caregiver Training and Dementia; Alzheimer/Dementia Behavior and Music Therapy, Music and Dementia. To access other grey literature, Google and Google Scholar were searched using the above natural language syntax queries. A total of 423 articles were found; the abstracts of these articles were reviewed to determine their potential relevance to the topic. Based on review of the abstracts, 146 articles were identified as potentially related to this topic and were reviewed for this report. The research team narrowed the search results even further by focusing on evidence-based or evidence-informed training interventions specifically for family caregivers. As a result, 50 articles were carefully reviewed for this report; information was obtained for 21 distinct intervention programs.

Expert Consultation

Authors of this report consulted with a practicing occupational therapist and researcher, Catherine Verrier Piersol, PhD, OTR, who has more than 33 years of experience with a primary focus on family caregiver skill-building on behavioral symptom interventions for persons with dementia. Recent publications include a home health manual for occupational therapists (Piersol & Ehrlich, 2008) and *A Caregiver's Guide to Dementia* that uses activities and other strategies to prevent, reduce, and manage behavioral symptoms (Gitlin & Piersol, 2014).

FINDINGS

Findings from our review are organized by the key questions and are summarized in ***Table 1.*** A detailed description of each of the interventions reviewed is provided in ***Appendix 1***. Additional detail about the studies reviewed and evidence to support the interventions is found in ***Appendix 2***.

What are the Intended Outcomes of the Interventions?

Programs that train family caregivers in techniques for managing BPSD can be designed to have goals of reducing the detrimental psychological, physical, and social effects of the BPSD on the family caregiver, improving the self-efficacy and coping skills of the family caregiver, or helping reduce BPSD among persons with dementia. Several interventions have demonstrated potential to achieve the aforementioned outcomes. In other cases, evidence is lacking, often because the studies conducted were too small in size or too limited in scope to demonstrate statistically significant benefits of the intervention. ***Table 2*** contains a summary of the types of outcomes addressed by the training programs reviewed.

Reduce detrimental effects of BPSD on the caregiver. All of the interventions reviewed, with the exception of the Individualized Music program, were intended to reduce the detrimental effects of caregiving or improve skills for caring for a person with BPSD. The most frequently intended outcomes were a reduction in depression (addressed by 12 interventions), reduction in caregiver burden (the focus of 10 interventions), and a reduction in caregiver distress (addressed by 9 interventions). Other outcomes that were addressed by fewer interventions included reductions in caregiver stress or strain (five interventions), reduction in anxiety (four interventions), and reductions in burnout, feelings of being trapped, unmet needs, frustration, sense of vigilance, and anger or hostility, each of which was addressed by only one of the interventions reviewed. Most of the interventions addressed more than one of these caregiver outcomes. For the most common outcomes (i.e., those addressed by more than one intervention—reduction in depression, burden, distress, stress/strain, or anxiety), a majority of the interventions were found to be successful, indicating that caregiver training can be used to successfully address these concerns.

Table 1. Summary of Interventions Reviewed

	Intended Outcomes							
Intervention	**Caregiver**	**Person with Dementia**	**Target Audience**	**Interventionist**	**Method of Training the Interventionist**	**Method of Training the Caregiver**	**Duration and Schedule of Caregiver Training**	**Follow-up/Ongoing Support for Caregiver**
Caregiver Skill Building (CSB) (Farran)	• ***Reduce distress with BPSD*** • Increase self-efficacy		Caregiver	Nurses or social workers	Received training but no details provided	Five group sessions followed by seven individual phone sessions	Weekly for 12 weeks	Two group booster sessions at 6 and 12 months
Coping with Caregiving (CWC)	• Reduce distress with BPSD • ***Reduce depression*** • ***Improve coping*** • Increase social support		Caregiver	Psychologists, social workers, and other helping professionals, and doctoral students in these fields	Detailed manuals and protocols developed; no details provided on any training	Group training	Weekly 2-hour sessions for 10 weeks	Once a month booster sessions for 8 months
Dialectical Behavior Therapy Skills (DBT Skills) (adapted from Linehan)	• Reduce depression • ***Improve coping*** • Reduce stress • Reduce burden • Improve well-being • Reduce burnout	• Decrease reports to elder protective services	Caregiver	Doctoral students in clinical psychology	Behavioral healthcare for dementia; some had additional training in DBT	Group training	Weekly 2.5-hour sessions for 8 weeks, plus an introductory session	Nine weeks of optional booster sessions started 3 weeks after the end of the initial training
Home-based training program (Huang)	• ***Increase self-efficacy*** • ***Increase knowledge and skills for managing BPSD*** • ***Increase preparedness for caregiving***	• Decrease frequency of physically aggressive behavior	Caregiver	Registered nurses with specialties in geriatric and community nursing	Received training from three gerontology experts	In-home training and phone session	Weekly for 3 weeks; two in-home sessions followed by one phone session	Monthly phone sessions for the remainder of the 6-month intervention period

(continued)

Table 1. Summary of Interventions Reviewed (continued)

Intervention	Intended Outcomes: Caregiver	Intended Outcomes: Person with Dementia	Target Audience	Interventionist	Method of Training the Interventionist	Method of Training the Caregiver	Duration and Schedule of Caregiver Training	Follow-up/Ongoing Support for Caregiver
MESSAGE and RECAPS DVD-based training program (Australia)	• Reduce distress with BPSD • ***Increase knowledge of disease management strategies*** • Decrease burden • Improve perception of caregiving	• Decrease depression • Improve well-being • Decrease frequency of BPSD	Caregiver	DVD	N/A	DVD and booklet using explanation and vignettes to demonstrate memory and communication strategies	Two 45-minute DVDs	No
NYUCI	• Reduce distress with BPSD • ***Reduce depression*** • ***Satisfaction with social support*** • Reduce burden • Reduce perceptions of being trapped in care responsibilities	• Decrease frequency of BPSD	Caregiver and other family members	Social worker, psychologist, or allied professional	Not indicated	In-home sessions; ad hoc counseling via phone, e-mail, or in person; support group	Six in-home sessions over 4 months; frequency of support group sessions not indicated	Ad hoc counseling over the 4-month intervention period
Progressively Lowered Stress Threshold (PLST)	• Improve competence for managing BPSD • Increase knowledge of dementia • Improve health • Reduce burden • Reduce depression **Results not yet published at the time of this study*	• Decrease frequency/ severity of BPSD • Slower decline of functional abilities • Decrease use of psychotropic medications • Improved nutrition	Person with dementia and caregiver	Registered nurses	Not indicated	In-home sessions	Three in-home sessions; two 2-hour sessions and one 1-hour follow-up session	No

(continued)

Table 1. Summary of Interventions Reviewed (continued)

	Intended Outcomes							
Intervention	**Caregiver**	**Person with Dementia**	**Target Audience**	**Interventionist**	**Method of Training the Interventionist**	**Method of Training the Caregiver**	**Duration and Schedule of Caregiver Training**	**Follow-up/Ongoing Support for Caregiver**
Reducing Dementia in Alzheimer's Disease (RDAD)**	• ***Reduce stress*** • ***Reduce unmet needs***	• ***Reduce depression*** • ***Delay institutionalization due to BPSD*** • ***Increase amount of exercise*** • ***Decrease days of restricted activity*** • ***Improve physical function***	Caregiver and person with dementia	Nurse, gerontologist, counselor, physical therapist, or master's-level social worker	Not indicated, but trainers did meet monthly to review progress and discuss problems	In-home	Twelve 1-hour sessions: two per week for 3 weeks, one per week for 4 weeks, then one every other week for 4 weeks	No
REACH II***	• ***Reduce depression*** • ***Reduce burden*** • ***Increase self-care*** • ***Increase social support***	• ***Decrease number of BPSD*** • Delay institutional placement	Caregiver	Minimum of bachelor's degree	Interventionists were certified and received cultural sensitivity training; no other details provided	In-home sessions and individual and group telephone sessions	Twelve sessions over 6 months: nine 1.5-hour in-home sessions; three half-hour telephone sessions; five telephone support group sessions	No
REACH VA***	• ***Reduce depression*** • ***Reduce burden*** • ***Reduce anxiety*** • ***Reduce frustrations*** • ***Reduce stress*** • Improve health • Decrease sense of vigilance	• ***Decrease number of BPSD***	Caregiver	VA mental health staff	Training included detailed manuals and scripts and a certification process, and involved ongoing coaching of interventionists	In-home	Two versions: Twelve individual and five telephone support group sessions Four individual and optional telephone support group sessions	No

(continued)

Table 1. Summary of Interventions Reviewed (continued)

	Intended Outcomes							
Intervention	**Caregiver**	**Person with Dementia**	**Target Audience**	**Interventionist**	**Method of Training the Interventionist**	**Method of Training the Caregiver**	**Duration and Schedule of Caregiver Training**	**Follow-up/Ongoing Support for Caregiver**
Resourcefulness training (Gonzalez)	• Reduce depression • ***Increase resourcefulness*** • ***Reduce anxiety*** • ***Increase sense of preparedness*** • Increase role reward • Reduce strain • Improve quality of relationship with care recipient	• Decrease frequency of BPSD	Caregiver	Registered nurse	Training of the nurse was done by the principal investigator using a one-on-one review of the intervention and required a demonstrated ability to deliver the intervention in a group of three caregivers who were not included in the study	Group training	Weekly 2-hour sessions for 6 weeks	No
Savvy Caregiver*	• ***Increase competence*** • ***Reduce distress with BPSD*** • ***Reduce depression*** • ***Improve coping*** • ***Improve management of meaning/ expectations*** • ***Improve management of comparisons*** • Increase sense of mastery • Improve larger sense of self and illness		Caregiver	Minimum of bachelor's degree; many were social workers	Interventionists were trained via webinar by a lead researcher	Group training	Weekly 2-hour sessions for 6 weeks	No

(continued)

Table 1. Summary of Interventions Reviewed (continued)

Intervention	Intended Outcomes		Target Audience	Interventionist	Method of Training the Interventionist	Method of Training the Caregiver	Duration and Schedule of Caregiver Training	Follow-up/Ongoing Support for Caregiver
	Caregiver	Person with Dementia						
Savvy Caregiver 2*	• ***Increase self-efficacy*** • Reduce distress with BPSD • ***Reduce depression*** • ***Enhance inner growth from caregiving role*** • Improve coping • Improve management of expectations • Improve sense of self/reduce comparisons with others • Increase sense of mastery	• Decrease frequency of BPSD	Caregiver	Staff from community agencies; credentials not specified	Interventionists complete a training session, receive a manual, and co-teach one series before presenting the training independently	Group training	Weekly 2-hour sessions for 4 weeks	No
Skills2Care®***	• Increase self-efficacy • ***Reduce distress with BPSD*** • ***Reduce burden*** • Improve knowledge and skills • Enhance well-being • Increase self-care	• Decrease number of BPSD • Decrease dependence in ADLs • Decrease dependence in instrumental activities of daily living	Caregiver	Occupational therapist	25 hours of training	In-home training; one version of this program also uses telephone support	Two versions: Up to eight sessions over 4 months Five 90-minute home sessions and one 30-minute phone session over 6 months	The version with five home sessions also entails a maintenance phase that was not described

(continued)

Table 1. Summary of Interventions Reviewed (continued)

	Intended Outcomes							
Intervention	**Caregiver**	**Person with Dementia**	**Target Audience**	**Interventionist**	**Method of Training the Interventionist**	**Method of Training the Caregiver**	**Duration and Schedule of Caregiver Training**	**Follow-up/Ongoing Support for Caregiver**
STAR-Caregivers (STAR-C)**	• ***Reduce distress with BPSD*** • ***Reduce depression*** • ***Reduce burden*** • Reduce stress • Increase competence • Improve quality of life • Improve sleep quality	• ***Decrease frequency and severity of BPSD*** • ***Improve quality of life***	Caregiver	Master's degree in counseling, psychology, social work plus clinical experience with older adults	Training included orientation, a manual, a second training session, and successful completion of a pilot case	In-home training and telephone sessions	Eight weekly sessions and four monthly phone calls	No
Stress-Busting Program (SBP)	• ***Reduce depression*** • ***Reduce burden*** • ***Reduce stress*** • ***Reduce anxiety*** • ***Reduce anger/hostility*** • ***Improve health*** • ***Improve mental health*** • ***Increase vitality*** • ***Improve social function***		Caregiver	Not indicated	Not indicated	Group setting	Nine weeks of 1.5-hour sessions	No
Tailored Activity Program (TAP)	• ***Increase self-efficacy using activities*** • Reduce depression • ***Decrease burden*** • ***Enhance skills*** • ***Increase sense of mastery***	• Decrease frequency of BPSD • Increase engagement with activities • Reduce depression • Improve quality of life	Caregiver and person with dementia	Occupational therapists	25 hours of training	In-home and via phone	Six 1.5-hour home visits and 2 15-minute phone contacts over 4 months	No

(continued)

Table 1. Summary of Interventions Reviewed (continued)

	Intended Outcomes							
Intervention	**Caregiver**	**Person with Dementia**	**Target Audience**	**Interventionist**	**Method of Training the Interventionist**	**Method of Training the Caregiver**	**Duration and Schedule of Caregiver Training**	**Follow-up/Ongoing Support for Caregiver**
				Music Trainings				
Creative Caregiver Training Modules	• Reduce depression • Reduce anxiety • Improve quality of life	• Improve quality of life • Reduce depression • Reduce anxiety	Caregiver	Master Teaching Artists of the National Center for Creative Aging	Professional artists	Online training module	Unlimited access by caregiver	Available on website but not solicited
Home-based Music Therapy Strategies	• ***Increase relaxation*** • ***Enhance comfort*** • ***Increase happiness***	• Increase relaxation • Enhance comfort • Increase happiness	Caregiver	Credentialed Music Therapist	Credentialed Music Therapist	In person in the home	Two-hour training	Able to ask questions during intervention period
Music and Memory iPod Project	• Reduce distress • ***Increase confidence***	• Reduce depression	Caregiver	N/A	N/A	Online PDF on playlist creation, use of iPods	N/A	No
Individualized Music		• ***Reduce agitation***	Caregiver and person with dementia	Nurse	Not specified	Two in-home training sessions using Gerdner's consumer version of individualized music	Second session at least 1 week after first session	Weekly home visits to answer questions

NOTE: Evidence exists that the intervention has a statistically significant impact on the outcomes shown in ***bold italics***.

*Originates from the Minnesota Family Workshop (MFW)

**Originates from the Seattle Protocols

***Originates from REACH (formally the Environmental Skill-building Program)

Table 2. Behavior-Related Outcomes Tracked by Family Caregiver Training Programs

Intervention	Frequency/ Severity of Behaviors	Caregiver Distress/Upset with Behaviors	Caregiver Skill/Self-Efficacy in Managing Behaviors
Caregiver Skill Building (CSB)		◆	◆
Coping with Caregiving (CWC)		◆	
Dialectical Behavior Therapy Skills		◆	◆
Home-based training (Huang)	◆		◆
MESSAGE and RECAPS	◆	◆	◆
NYUCI	◆	◆	
Progressively Lowered Stress Threshold (PLST)	◆		◆
Reducing Dementia in Alzheimer's Disease (RDAD)	◆	◆	
REACH II	◆	◆	
REACH VA	◆		
Resourcefulness training	◆		◆
Savvy Caregiver		◆	◆
Savvy Caregiver 2		◆	◆
Skills2Care™	◆	◆	◆
STAR-C	◆	◆	◆
Stress-Busting Program		◆	
Tailored Activity Program (TAP)	◆	◆	◆
Creative Caregiver Training Modules		◆	
Home-based Music Therapy Strategies		◆	
Music and Memory iPod Project	◆	◆	◆
Individualized Music	◆		

Improve caregiving skills. In addition to reducing the negative impacts of caregiving, some trainings seek to improve the caregivers' skills and abilities to manage the caregiving tasks. Self-efficacy and coping abilities are important caregiver characteristics to consider when designing interventions, as both can affect the ways that caregivers handle and are affected by BPSD. Caregivers with higher levels of self-efficacy (belief that they have the ability to manage difficult behaviors) tend to be less depressed (Rabinowitz et al., 2009), as are caregivers with better coping strategies (Mausbach et al., 2006). Several of the interventions reviewed are designed to improve self-efficacy (five interventions) or improve coping skills (three interventions). Other interventions sought to increase caregivers' sense of mastery and confidence (four interventions), concepts that are related to self-efficacy. Some interventions were specifically designed to improve competence by increasing caregivers' knowledge and skills for managing BPSD and dementia in general (six interventions). The available literature showed that most of these interventions were successful in achieving their aims.

A more limited number of interventions addressed a range of other caregiving skills and caregiver outcomes, including such things as caregiver health, well-being, quality of life, social support, resourcefulness, relaxation, mental health, sleep quality, quality of the relationship with the person with dementia, and caregiver happiness. Each of these issues was addressed by only one or two interventions and, in many cases, the interventions successfully achieved their goals.

Improve outcomes for people with dementia. In addition to seeking to help caregivers, several of the interventions seek to improve outcomes for people with dementia. The most frequent outcome addressed for people with dementia was to decrease the frequency or severity of BPSD. This outcome was a focus of 10 of the interventions, with fewer than half (4) achieving success in the effort. Other outcomes addressed by several interventions include decreasing depression in the person with dementia (successful in one of five interventions); slowing functional decline or improving functional ability of the person with dementia (successful in one of three interventions); and delaying institutionalization of the person with dementia (successful in one of two interventions). A variety of other outcomes were addressed by single interventions, including several that were successful in achieving outcomes such as increasing exercise, reducing days of restricted activity, increasing engagement in activities, increasing relaxation, or increasing comfort.

Who Participates in the Training Programs?

Behavior-focused interventions for family caregivers that were reviewed for this paper were almost all targeted exclusively to care recipients living at home or in a community setting with a moderate level of cognitive impairment (e.g., ambulatory, with some behavioral symptoms, but not bedbound or otherwise incapacitated). Most of the training programs for managing dementia-related behaviors reviewed for this paper focus on helping caregivers understand the disease, learn new skills, modify the environment, employ stress management techniques, or draw on available resources for support. Primary caregivers are usually the sole participants in the intervention. Only one program, New York University Caregiver Intervention (NYUCI), involves other family members. This intervention includes family members in some of the counseling sessions, with the aim of increasing levels of social support for the primary caregiver and improving relations among family members (Gaugler et al., 2015).

Four programs target the caregiver/care recipient dyad. Progressively Lowered Stress Threshold involves the dyad through ongoing education about the disease process, simplifying daily care tasks, assisting with problem solving, and providing ongoing emotional support (Gerdner et al., 1996). Reducing Disability in Alzheimer's Disease provides a physical exercise program for the person with dementia that the caregiver can help guide (Logsdon et al., 2005; Menne et al., 2014; Teri et al., 2003). The Tailored Activity Program also directly engages the person with dementia by identifying activities that are enjoyable and that build on existing abilities, and by developing a plan for incorporating these activities into daily life with the help of the caregiver (Gitlin et al., 2008). The Individualized Music program also works with the caregiver/care recipient dyad, including both in identifying music of interest to the care recipient (Gerdner, 2012).

What are the Methods for Training Family Caregivers?

Most of the behavioral training programs reviewed are delivered by an interventionist either in a group setting or in the participant's home, with an equal number of interventions using each approach. Those interventions not requiring professional delivery include a DVD program in Australia used to demonstrate specific caregiver skills (MESSAGE/RECAP) and two online trainings in the use of music-based approaches (Creative Caregiving Training Modules and Music and Memory iPod Project). Family caregivers can download instructions for the iPod playlist construction and use without further training, and can view and use the Creative Caregiving Training Module videos as frequently as desired. These interventions provide no opportunity for interaction between caregivers and interventionists. Interventions that do not require an interventionist may assist caregivers who work or are too burdened by caregiving to participate in a face-to-face program (Kwok et al., 2014).

Many of the in-home, one-on-one interventions are supplemented with telephone sessions that provide additional support, reinforce learning and check on participants' progress (Home-based training, NYUCI, REACH II, REACH VA, Skills2Care, STAR-C, Tailored Activity Program). One group training intervention, Caregiver Skill Building (CSB), includes individual phone sessions: the group meets for 5 weeks, and the individual phone sessions are conducted weekly for the following 7 weeks. Typically group sessions range in size from 2 to 17 participants and average 5 to 7 members per group.

The focus of interventions differ based on the delivery method. Both group and individual in-home sessions include problem-solving and skill development components. However, group sessions tend to focus more on education, and to a lesser extent on self-care and relaxation techniques. Individual in-home sessions all include some level of risk assessment or care planning. This typically results in the development of a detailed plan that meets the unique needs of the family (Home-based training, REACH II, REACH VA, Reducing Disability in Alzheimer's Disease, Skills2Care, STAR-C, Tailored Activity Program). In the case of some music interventions, an individualized plan is developed in response to the unique musical interests of the person with dementia. In-home sessions also frequently include identification of unmet needs and referrals to available supports and assistance. Some in-home interventions also include stress management skill building, exercise, or activities tailored to the person with dementia's capabilities. The in-home interventions focus on identifying environmental modifications that could assist with BPSD.

How Much Time Does the Training Require?

The amount of time required by an intervention depends varies, with interventions differing in their duration (time from start to finish), the number of sessions that occur during that period, and the total hours spent. The duration of the interventions reviewed ranges between 3 weeks and 6 months. Most interventions are completed over a 2- to 3-month period, with some lasting 4 to 6 months. A few interventions are completed within 1 month—the Home-based training program, Progressively Lowered Stress Threshold, Savvy Caregiver 2, Home-based Music Therapy Strategies, and Individualized Music.

Almost all of the behavior training programs reviewed report meeting with participants on a weekly basis. A few interventions, such as REACH II and Tailored Activity Program, meet only every other week. Two versions of Skills2Care™ were studied: one includes eight meetings over 4 months, and the other includes five in-home sessions and one phone session over 6 months. NYUCI provides six in-home sessions over 4 months and participation in a support group.

In terms of the number of sessions offered, nearly half of the interventions involve 6 to 12 sessions. A few interventions require two to four visits (Home-based training program [Huang], Progressively Lowered Stress Threshold, REACH-VA, and Savvy Caregiver 2). Depending on the intervention, these visits may take place in the home or in a group setting, or by telephone. The Home-based training program offers monthly follow-up phone sessions for an additional 5 months. REACH-VA was initially delivered through 12 individual in-home sessions plus five telephone support group meetings. When the program was rolled out nationally, it was modified to provide greater flexibility to staff and to address availability concerns, while still maintaining important components of education, support, skill building, and problem solving (Nichols et al., 2014). The condensed version of the intervention provides four visits over a 2- to 3-month period and allows for greater flexibility as to where the services are delivered. Telephone support groups that had been a program standard are offered in conjunction with one-on-one visits, on their own, or not at all, at the discretion of the program delivery site. The Savvy Caregiver 2 program is offered to those caregivers who have already completed the original 6-week Savvy Caregiver curriculum; its 4-week program provides advanced information to help caregivers address changes as the disease progresses. Programs focused on the use of music tended to have shorter in-home training periods, with ongoing support available. The Home-based Music Therapies and Individualized Music programs require only one and two in-home sessions, respectively.

Finally, the number of formal hours that participants spend engaged in each program varies greatly by the program and nature of the intervention. The content of the DVD program is covered in 90 minutes; however, all of the other interventions last at least 8 hours. Many of the studies reviewed did not provide details on how many hours each session lasts—only the number of meetings or sessions and how frequently they occurred. In a few cases, the total number of intervention hours varied by participant.

What are the Components of the Training Programs?

The family training interventions reviewed use a combination of approaches to help family caregivers learn how to better manage BPSD and the accompanying caregiver stress. Program components may include needs assessments and action plans, active practice of skills, physical exercise, abilities-based activities, environmental modifications, education, stress management/self-care, counseling, support groups, and referrals to other resources. The MESSAGE and RECAPS intervention focused solely on conveying memory and communication skills through a DVD format, while all other programs used some combination of the methods listed.

Many interventions work with the caregiver to comprehensively assess needs and then develop action plans. For example, during the initial home visit of Skills2Care™, the occupational therapist conducts an assessment of multiple domains, including caregiver well-being, communication, care coordination, ADLs, home safety, activities, wandering, and incontinence. The occupational therapist also observes the caregiver in action or has the caregiver engage in role-play to show how he or she currently approaches problems. The therapist provides education about dementia and helps caregivers learn how to identify problems and strategize solutions involving environmental simplification, communication, task simplification, activities, and stress reduction. REACH II and REACH-VA are tailored to address the caregiver's most pressing concerns using a thorough assessment. The interventionists use that information to help caregivers devise specific solutions for managing BPSD and their own stress.

Other interventions such as the Home-based training program and Resourcefulness training do not conduct a comprehensive needs assessment, but do work with caregivers to identify behavioral or psychological symptoms that are causing challenges and to problem-solve on how to manage those situations. For example, the Home-based training program focuses on nurse-caregiver collaboration, with the two parties working together to identify the causes of BPSD and develop plans for reducing environmental stresses, while also identifying available community resources for the caregiver (Huang et al., 2013). Resourcefulness training also uses nurses as interventionists to help caregivers identify BPSD, set attainable goals, gain optimism about their ability to employ new skills, set realistic expectations, brainstorm solutions to current challenges, implement a solution(s), and evaluate its success (Gonzalez et al., 2014).

The Tailored Activity Program does not directly focus on identifying BPSD, but rather the abilities, daily routines, and interests of the person with dementia are assessed by an occupational therapist. The information from the assessment is used to determine activities in which the person with dementia can participate. Interventionists assess the person with dementia and craft detailed written activity prescriptions that are carried out by the caregiver. The plans specify the activity, techniques for implementing the activity, and goals (Gitlin et al., 2008). Two other programs, Savvy Caregiver and STAR-C, also focus on helping caregivers find activities that can be incorporated into the care recipient's regular routine (Kally et al., 2014; Samia et al., 2014a; Teri et al., 2005).

The original research on the REACH program suggested that training techniques that actively involve caregiver participants, such as role-play or other interactive practice, are more effective at improving caregiver outcomes than is simply presenting information (Belle et al., 2003). Several of the family training interventions use similar approaches to help caregivers develop new behavioral symptom management skills, including Dialectical Behavior Therapy, Progressively Lowered Stress Threshold, REACH II, Resourcefulness training, Savvy Caregiver 2, Skills2Care™, STAR-C, and Tailored Activity Program. For example, Savvy Caregiver 2 helps caregivers identify current behavioral challenges, develop possible solutions, and test these solutions with care recipients over the course of the week. Participants report back to the group on how the strategies worked and get feedback that can be used to further refine their approach (Samia et al., 2014b). In STAR-C, caregivers identify three problem areas that they monitor throughout the course of the program, keeping a weekly diary of care recipient behaviors and responses to problem-solving skills that they develop during in-home sessions (Teri et al., 2005). Tailored Activity Program is designed for the caregiver—or if possible the care recipient—to select an activity to focus on and then practice through demonstration or role-play (Gitlin et al., 2008).

Reducing Disability in Alzheimer’s Disease (RDAD), STAR-C, and the Skills2Care™ programs employ the ABC technique for identifying and modifying behavior. Using this approach, caregivers learn to identify the challenging behavior (B), along with the antecedents or activators (A) and consequences (C) of that behavior (Teri et al., 1997). The caregiver then works with the interventionist to determine ways to modify the causes or consequences of the behavior to help reduce its occurrence.

The RDAD program aims to improve the person with dementia’s physical and emotional well-being through exercise. Physical exercises are practiced by the care recipient with assistance from the caregiver. The intervention also incorporates dementia education and BPSD management training for caregivers (Logsdon et al., 2005; Menne et al., 2014; Teri et al., 2003).

In addition to providing dementia education and problem-solving techniques for BPSD, Skills2Care™ instructs caregivers on the impact of the home environment and ways to modify it to reduce difficulties for both the care recipient and the caregiver. Occupational therapists teach caregivers ways to simplify tasks and communication, such as using short verbal instructions and creating a daily routine. They also identify ways to make the physical environment more manageable, including installation of grab bars or similar equipment, removing extraneous items to reduce overstimulation, or positioning items in a way that helps care recipients use them (Gitlin et al., 2003, 2010). This approach is based on a conceptual framework that modifying and reducing stressful elements can affect the behavior of persons with dementia (Huang et al., 2013). The Home-based training program employs a similar method, using nurses to help caregivers identify and modify environmental stressors in the home (Huang et al., 2013). Education on home modifications is also included in both RDAD and Savvy Caregiver.

The music-focused interventions teach caregivers techniques that range from passive listening to recorded music (Music and Memory iPod project and Individualized Music) to combining listening with interactive activities. Such activities can include reminiscing or talking about the music, moving with the music, singing, playing along with rhythm instruments, or other techniques for engaging such as drawing and visual imagery. Most music programs help caregivers learn to identify preferred music and choose when and how to use it to achieve the desired behavioral effects (reduced agitation, increased connection, and improved mood), and to support specific activities such as bathing or sleep. The Individualized Music training includes a specific tool, the Assessment of Personal Music Preference (Gerdner, 2000) to identify the importance of music and preferences of people with dementia.

Several programs reviewed in this paper go beyond teaching underlying reasons for behavior and behavior management skills. Other topics addressed include the progression and treatment of dementia, the impact on the person with the disease and the family, home safety, financial and legal matters, advance care planning, and end of life decisions. Almost all interventions that offer this kind of training do so in conjunction with more individualized information and action planning. NYUCI provides education in concert with individual and family counseling and encouragement of the use of available social supports (Gaugler et al., 2015). Research from Gonzalez et al. (2014) suggests that information alone may actually increase caregiver anxiety and emphasizes the importance of coupling education with skills and support for the caregiver.

Stress management and self-care techniques can directly affect a person with dementia's behavior (e.g., a calm caregiver may elicit a different response than one who is stressed and anxious) and can also bolster caregiver quality of life. Stress management is the Stress-Busting Program's primary focus, while Coping with Caregiving, Dialectical Behavior Therapy, REACH II and REACH VA, STAR-C, Skills2Care™ and Tailored Activity Program all incorporate stress management and self-care into their larger curriculum. Breathing, stretching, meditation, and incorporation of pleasant events for the caregiver are common approaches.

Behavior training interventions for family caregivers also attempt to mitigate the effects of BPSD through supportive activities like counseling, support groups, and referrals to available resources. Coping with Caregiving, Dialectical Behavior Therapy, REACH VA, and Resourcefulness training all include some form of cognitive therapy to help caregivers reduce negative thoughts, manage grief, develop a sense of optimism about their caregiving abilities, or manage their depression and other emotions.

The NYUCI uses individual and family counseling sessions to minimize negative impacts of caregiving, increase support for the caregiver, and improve family interactions. Referral to a support group is a component of the NYUCI, while telephone support groups are offered as part of the REACH II and REACH VA programs. The Stress-Busting Program is delivered in a group setting that includes psychoeducational support—a combination of education, counseling and peer support—in addition to stress management techniques.

Several interventions also emphasize the use of other supports to reduce the stress and labor of caregiving. For example, REACH II helps caregivers access community resources and develop skills in asking for help to minimize the isolation that they might be experiencing (Belle et al., 2006; Nichols et al., 2008). Progressively Lowered Stress Threshold underscores the importance of regularly scheduled respite care and case management (Gerdner et al., 1996). Home-based training, NYUCI, Progressively Lowered Stress Threshold, REACH VA, Savvy Caregiver 2, and Skills2Care™ all include some form of referral to social and community resources.

Who Delivers Training Programs?

The interventionists who deliver the family caregiver trainings come from a range of disciplines. Trainings were most commonly conducted by clinical psychologists or social workers, followed by nurses and occupational therapists. Physical therapists, educators, or bachelor's-level workers provided training in a few interventions. Music-focused interventions were conducted by a music therapist in one case and by a professional artist trainer in another; but in two cases, the intervention is provided by health professionals. The Music and Memory iPod intervention provides family caregivers with a self-guided learning tool. The training consists of a downloadable PDF with instructions for creating and using a playlist of preferred music.

The design or focus of certain interventions requires a specific skill set for delivery. Both Skills2Care™ (Gitlin et al., 2003, 2010), which emphasizes environmental modifications, and Tailored Activity Program (Gitlin et al., 2008), which identifies appropriate activities for the care recipient, are delivered by occupational therapists who are trained in making these types of assessments and care plans. The NYUCI, which consists mostly of individual and family counseling, is delivered by persons trained in psychology or social work (Gaugler et al., 2015). Progressively Lowered Stress Threshold, delivered by registered nurses, focuses on the effect of milieu in the care of the person with dementia (Gerdner et al., 1996). Similarly, interventions that focus on cognitive behavioral skills or ABC behavior modification, like Dialectical Behavior Therapy Skills (Drossel et al., 2011) and STAR-C (Teri et al., 2005), are typically implemented by psychologists or social workers.

Although certain credentials may be helpful for delivering a particular program, in some cases with the appropriate training, materials can be taught effectively by other professionals. Home-based training focuses on ways to reduce environmental stresses and modify the environment, but in one research study nurses with specialties in geriatric or community nursing provided the intervention, rather than occupational therapists (Huang et al., 2013). Similarly, Resourcefulness training, which teaches cognitive-behavioral skills in BPSD problem-solving, was also delivered by a nurse rather than a mental health practitioner (Gonzalez et al., 2014). The CSB intervention was provided by both nurses and social workers (Farran et al., 2007). Reducing Disability in Alzheimer's Disease was delivered by either a physical therapist or a mental health professional in the two research studies reviewed. Researchers suggest that "exercise can be encouraged, taught, and monitored by a variety of home health providers, as long as they are knowledgeable about dementia symptoms, behavior management techniques, and exercise" (Logsdon et al., 2005, p. 93).

Some interventions employ practitioners from a range of backgrounds. Savvy Caregiver trains staff with a variety of credentials and affiliations, many are employees of Alzheimer's Association chapters, Aging & Disability Resource Centers (ADRCs) or Area Agencies on Aging (AAAs) (Kally et al., 2014; Samia et al., 2014a). A project in Maine that implemented Savvy Caregiver statewide originally had a goal of using some volunteer trainers with dementia knowledge and experience, but that strategy was not successful, partially because of the time commitment involved (Samia et al., 2014a). To be certified, Savvy trainers go through a 1-day workshop, observe a 6-week Savvy Caregiver session, and co-lead Savvy Caregiver training before becoming eligible to train independently (Samia et al., 2014a).

What Ongoing Support is Available to Family Caregivers?

A few family caregiver behavior trainings offer continued support or follow-up after the primary intervention sessions are complete. Of the in-home programs, the Home-based training program, STAR-C, and Skills2Care™ interventions offer some level of follow-up. The Home-based training program consists of three initial sessions—two in-home and one phone session, offered 1 week apart—that are then followed by monthly phone sessions for the remainder of the 6-month intervention period. STAR-C provides eight weekly in-home sessions, followed by four monthly phone calls (Huang et al., 2013). Skills2Care™ has been offered in two ways: up to eight in-home sessions over 4 months, and as five 90-minute home sessions plus one phone session over 6 months (Gitlin et al., 2003, 2010). The latter version of the program also entails a "maintenance phase," but the details of the ongoing support portion were not described in the literature reviewed.

Four of the trainings offered in a group setting also include some level of ongoing support. Caregiver skill building consists of five group sessions followed by seven individual phone sessions; participants then attend two booster sessions, one at 6 months and one at 12 months (Farran et al., 2007). Coping with Caregiving takes place over 10 weeks, with 2-hour sessions each week followed by booster sessions once a month for 8 months (Gallagher-Thompson et al., 2003). Finally, Dialectical Behavior Therapy Skills provides 8 weeks of 2.5-hour trainings; 9 weeks of optional booster sessions begin 3 weeks after the end of the initial training (Drossel et al., 2011). The online training offered by the Creative Caregiver allows people unlimited access to the training.

TRANSLATING EVIDENCE-BASED INTERVENTIONS TO THE COMMUNITY

A large number of interventions have been tested through randomized control trials with family caregivers and shown to be effective, but few of those programs have been translated to the community setting where they can become accessible to the millions of caregivers who need them (Gitlin et al., 2015). A few of the research articles reviewed for this report describe efforts to translate proven programs, including Skills2Care™, Reducing Disability in Alzheimer's Disease, REACH VA, STAR-C, NYUCI, and Savvy Caregiver. These studies report positive participant outcomes similar to the original research, suggesting that caregiver training programs may be translated to the community while achieving relevant outcomes for caregivers and persons with dementia. The studies also note some challenges to translation (Gitlin et al., 2010; Menne et al., 2014; Mittelman & Bartels, 2014; Nichols et al., 2014; Samia et al., 2014a; Teri et al., 2005, 2012).

Skills2Care™ was translated to the community by integrating the program into the services of an existing occupational therapy home care practice (Gitlin et al., 2010). By focusing the goals of the intervention on outcomes of the person with dementia, the program was able to obtain reimbursement through Medicare Part B. This approach could help to ensure program sustainability. Relying on Medicare funding posed challenges to the intervention, however, because treatment timelines were determined by the patient's functioning and need for occupational therapy services as allowed by Medicare, rather than by the caregiver's need for supportive services.

Minnesota implemented a multiyear translation of NYUCI. The intervention was delivered by community agencies and nonprofit organizations including the Alzheimer's Association, and was funded by three Alzheimer's Disease Supportive Services Program (ADSSP) grants (Paone, 2014). The Minnesota translation project demonstrated reductions in caregiver depression, improved reactions to behavioral symptoms, and increase in caregiver satisfaction with social support. For caregivers who completed at least four of the six sessions, the time to nursing home placement for the person with dementia was significantly delayed. However, almost a quarter of participants discontinued the program before completing at least four sessions, compared to less than 2 percent of participants in the original research. The Minnesota participants' largely rural demographics and implementation of the program outside of a controlled research study were both cited as possible reasons for the lower completion rates (Mittelman & Bartels, 2014).

The STAR-C program was translated to the community in three counties in Oregon, with 95 dyads participating. The intervention was administered by community mental health care professionals working in primary care or private practice (Teri et al., 2005). Interventionists were required to attend a 2-hour orientation, review and discuss training materials, satisfactorily complete a pilot case, and meet weekly with a clinical supervisor. This study found that, "consultant adherence to the STAR-C treatment protocol was very high, despite the fact that consultants varied widely in their previous exposure to, and understanding of, research procedures and behavioral theory" (Teri et al., 2005, p. 809). In a subsequent ADSSP-funded STAR-C translation project, AAA case managers delivered the program to 70 dyads and demonstrated fidelity to the intervention, even though many of those delivering the program did not have prior experience or training in dementia. The success in maintaining fidelity was attributed to clear, detailed protocols and ongoing conversations between researchers and agency staff as to which aspects could and could not be altered (Teri et al., 2012).

RDAD was implemented statewide in Ohio through Alzheimer's Association chapters. At the time the research was published, 405 caregivers had participated (Menne et al., 2014; Teri et al., 2012). Interventionists included physical therapists and social workers, who traditionally have delivered the program, and people from other professional backgrounds. Although the first round of interventionists was trained by RDAD researchers, subsequent staff trainings have been conducted by the agency itself, supporting the sustainability of the program within the community. The project was funded through an ADSSP grant and showed promising results in obtaining positive caregiver outcomes.

An ADSSP grant in Maine set a goal of delivering the Savvy Caregiver workshop to participants statewide, with a special emphasis on rural populations (Samia et al., 2014a). The project was successful in reaching caregivers in every county. Overall, 61 percent of attendees lived in rural areas, which is reflective of the state's population. The program was delivered by individuals from a variety of professional backgrounds at AAAs, ADRCs, the Department of Health and Human Services, a private nonprofit dementia care agency, and the Alzheimer's Association. Organizations with greater resources and commitment and that were well established in the community were more successful in program marketing and recruitment. The experience of this Savvy Caregiver expansion effort suggest that successful translation requires significant time for planning and a multifaceted approach to monitoring and fidelity, including resources devoted to regular communication with interventionists and retraining as necessary.

The goal of a Savvy Caregiver translation project in California was to determine whether the intervention would achieve the same outcomes when delivered to Hispanic, African American, and Asian/Pacific Islander English-speaking caregivers. The program, which was funded by an ADSSP grant and delivered by five Alzheimer's Association chapters throughout the state, reported achieving the same outcomes as the original intervention, including improvements in caregiver depression, reaction to behavioral symptoms, self-efficacy, and coping (Kally et al., 2014).

All of these translation studies reported maintaining adherence to core principles of the given intervention. Deviations from the original intervention design occurred in the areas of interventionist qualifications, diagnosis requirements for participants, number or length of sessions, or the order of content. One key question in translating research is which components can be modified and which require strict adherence. For example, the multisite REACH VA translation project reduced the number of sessions from 12 in REACH II to four and still reported similar caregiver outcomes (Nichols et al., 2014). However, a study by Chee et al. (2007) found that the number of training sessions correlates with adherence to a training program. The translational studies reviewed for this paper monitored fidelity to the original intervention, with varying results. Reducing Disability in Alzheimer's Disease, STAR-C, and Savvy Caregiver reported high levels of adherence to content and protocols (Samia et al., 2014a, Teri et al., 2005, 2012), while Skills2Care™ found inconsistency in the occupational therapists' use of problem-solving strategies (but still reported significant improvement in caregiver outcomes) (Gitlin et al., 2010). NYUCI researchers reported that the Minnesota translation project adhered to the core components of the intervention, while also acknowledging that the additional training and ongoing case supervision provided might have resulted in greater levels of fidelity than would otherwise be obtained (Mittelman & Bartels, 2014). Continued translational research efforts are vitally important to promote and sustain the delivery of evidence-based interventions.

DISCUSSION

Family caregivers play a significant role in enabling individuals with dementia to remain in their homes and communities. Numerous studies have demonstrated the effectiveness of family caregiver training for treating BPSD, which are the symptoms most closely linked to caregiver decisions to institutionalize a person with dementia (Brodaty, 2012). Home and community-based organizations providing services to people with dementia and their caregivers may wish to adopt programs to help families address these behavioral concerns. When choosing a program to translate into their community, organizations should consider the needs and preferences of the people they serve, and their mission and capacity, because these programs vary along several dimensions.

> ***The desired goals.*** Training programs are designed to accomplish a variety of goals. Some emphasize reducing the frequency and severity of behaviors, while others are designed to improve caregiver skills for managing behaviors or to reduce caregiver stress.
>
> ***The intended audience.*** Most of the training programs are designed for the primary caregiver, but some are designed to engage the caregiver/person with dementia dyad. One program also involves family members beyond the primary caregiver. Some interventions require specific levels of physical or mental health in the family caregiver or of the person with dementia.
>
> ***The training methods.*** About half of the training programs reviewed are conducted in a group setting, with most of the other programs delivered in the family caregiver's home. A few other interventions are offered through other means including approaches that do not require a trainer, through a DVD or by online trainings, or a one-on-one counseling approach. Several programs also provide supplemental training and support by telephone.
>
> ***Time investment.*** Training programs vary in how many trainings sessions are required, over what period of time, and with what frequency.
>
> ***Components of training.*** Some trainings include a needs assessment, which may be conducted by an occupational therapist or other program staff person during a visit to the home. Many trainings provide caregivers with information about dementia and associated behaviors and assist them in developing skills for

problem-solving and for addressing the behaviors. Trainings also may provide caregivers with self-care and stress management techniques.

Interventionist skills. Many trainings are conducted by professional staff including social workers, clinical psychologists, nurses, and occupational therapists. Although some interventions may require certain credentials, in some cases, appropriately trained individuals can implement programs. The DVD-based and online trainings do not require a trainer.

Organizations seeking to identify a training to use with the people they serve should consider all of these issues. ***Exhibit 1, Appendix 2*** summarizes the research literature on the interventions reviewed. Given the state of the research literature, interventions without evidence of statistically significant impacts should not necessarily be ruled out. In many cases, the evidence does not yet exist, or the studies conducted have been too small to generate significant findings. At the same time, interventions with evidence of success are not guaranteed to be successful in all environments. Beyond the nature of the intervention itself, the outcomes may be affected by the unique needs and characteristics of the caregivers and people with dementia.

Organizations that are selecting an intervention for the people they serve should consider the following, which may affect the success of any intervention:

Cause of behavioral symptoms. Behavior is often a form of communication that people with dementia use as they lose the ability to express their needs verbally, but also may vary based on the type of dementia. Some behavioral symptoms, such as a delirium, will not respond to caregiver intervention and may indicate a condition requiring medical intervention (American Geriatrics Society, 2011).

Caregiver readiness. The success of the intervention is likely to vary based on the readiness and ability of the caregiver to engage in and adhere to training. Caregiver readiness may be affected by a variety of factors.

- *Functional status of the person with dementia*. Readiness has been found to be greater among those caring for people with low cognitive status and more behavioral symptoms (Gitlin & Rose, 2013). Adherence to trainings was found to be higher among caregivers who report higher numbers of problem behaviors with the person with dementia. It may be, though, that the causal relationship is reversed: those participants who participate most actively in the program are also more likely to notice and report more behavior problems (Chee et al., 2007).

- *Caregiver health*. Caregivers who are in poorer physical health may be less likely or able to implement the training strategies. Chee et al. (2007) found that caregivers who reported being in poor physical health were less likely to implement the strategies presented in the Skills2Care™ intervention than those who described themselves as healthy. Some training programs discussed in this paper have specifically incorporated topics of self-care, healthy behaviors, and relaxation to help caregivers improve their health. It may be that addressing caregiver health also has the potential to affect other program outcomes.

- *Caregiver depression*. The stresses of caregiving are strongly associated with an increased risk of depression, and depression may in turn affect the degree to which caregivers are prepared to engage in and benefit from training programs. Gitlin and Rose (2013) found that caregivers with lower levels of depression showed greater readiness. However, they also found that depressed caregivers were able to increase their readiness during the course of the program.

- *Caregiver financial status*. Gitlin and Rose (2013) found that caregivers with financial difficulties were less likely than those of greater financial means to show readiness at the start of the program and were less likely to change their level of readiness over the course of the program.

Stage of the caregiving "career." Caregivers' needs and experiences are likely to change throughout different stages of the caregiving "career," reflecting shifts in roles, duties, and concerns (Samia et al., 2012). Little research exists that would help identify the type of training that is most effective for people at different stages of caregiving, but it is likely that training needs will differ.

Caregiver demographics. Much remains to be understood about the relationship between caregiver demographics (e.g., age, race, or ethnicity; relationship to the person with dementia; urban or rural location). Implementing a program that was tested in specific populations does not ensure that it will work similarly in other populations. For instance, a randomized control trial of the Skills2Care™ program found varying levels of program adherence, self-efficacy, and upset with behaviors based on gender, race, and type of familial relationship between the caregiver and care recipient (Gitlin et al., 2001). The NYUCI program, which was originally developed for spousal caregivers, was adapted and tested with adult child caregivers, with the finding that they used the intervention differently, taking longer to complete the sessions and preferring more individual rather than family counseling sessions. Two studies that examined results among different racial or ethnic groups found that effects of the interventions were generally similar across the racial/ethnic groups (Belle et al., 2006; Kally et al., 2014). The one exception was a difference in the quality of life benefits for nonspousal African Americans compared with white/Caucasian and Hispanic/Latino caregivers using the REACH II Intervention (Belle et al., 2006).

Caregiver self-efficacy and coping abilities. Self-efficacy and coping abilities are other caregiver characteristics that are important to consider when choosing interventions, because both can affect the ways that caregivers are affected by BPSD. Caregivers with higher self-efficacy or more constructive coping behaviors may be in a better position to benefit from the interventions. Teaching caregivers positive techniques for coping with behaviors may help reduce caregiver depression, improve self-efficacy, and, by extension, improve the ability of the caregiver to benefit from subsequent BPSD intervention training.

Organizations seeking to provide family caregivers with support to address behavioral concerns of people with dementia should consider each of these dimensions when choosing an intervention. Consideration must be given to the organization's resources, goals, and key audience, as well as the investment required to provide the training. The information provided in this report can help support this decision making process.

The characteristics of the target audience may affect how well any intervention works. Organizations should be prepared to evaluate the interventions they use and make changes as appropriate to meet the needs of their particular constituents. Different types of interventions may be used to address caregivers at different stages of the caring “career,” or to help caregivers build on skills acquired over time.

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APPENDIX 1
DESCRIPTIONS OF TRAINING PROGRAMS REVIEWED

TITLE: Caregiver skill building (CSB)

SOURCE: Farran, C., Gilley, D., McCann, J., Bienias, J., Lindeman, D., & Evans, D. (2007). Efficacy of behavioral interventions for dementia caregivers. *Western Journal of Nursing Research, 29*(8) 944-960.

PROGRAM OVERVIEW: The goal of CSB is to help caregivers address behaviors that are most distressing by understanding the causes of the behaviors, determining the care receiver's abilities and needs, and working through possible responses. The main topics addressed include: prevention of behavioral symptoms during personal care, particularly verbal and physical aggression; management of restless behaviors; and management of hallucinations, delusions, and paranoid or suspicious behaviors.

TRAINING DESCRIPTION: A social worker or nurse meets with a group of family caregivers weekly for five weeks, and then conducts weekly telephone sessions with each participant over the following seven weeks to enable greater focus on the specific concerns and needs of each caregiver. The sessions start with simpler and less distressing behavioral symptoms and move on to those that are more upsetting and complex to address, such as agitation and aggression. Group booster sessions take place at 6 months and 12 months, and ongoing telephone contacts are provided as needed.

TITLE: Coping with Caregiving (CWC)

SOURCE: Gallagher-Thompson, D., Coon, D., Solano, N., Ambler, C., Rabinowitz, Y., & Thompson, L. (2003). Change in indices of distress among Latino and Anglo female caregivers of elderly relatives with dementia: Site-specific results from the REACH national collaborative study. *The Gerontologist*, *43*(4), 580-591. doi:10.1093/geront/43.4.580

PROGRAM OVERVIEW: Coping with Caregiving is a psycho-educational intervention that teaches caregivers relaxation skills, assertive communication to improve interactions with providers and others in their social networks, daily pleasant event scheduling to bolster mood and activity, ways for caregivers to appraise their loved one's behavior more realistically and intervene more appropriately, and strategies to change how caregivers think about their caregiving situations. Its goal is to help caregivers cope by reducing sources of negative feelings and bolstering sources of positive mood.

TRAINING DESCRIPTION: Training is provided to family caregivers in a group setting. Weekly 2-hour sessions take place over 10 weeks, followed by monthly booster sessions for 8 months. Interventionists are generally psychologists, social workers or other mental health professionals. Key components of workshops include: stress management, behavior problem management, communication skills, mood management strategies, and basic education about dementia and caregiving.

TITLE: Dialectical Behavior Therapy Skills Training (DBT Skills)

SOURCE: Drossel, C., Fisher, J., & Mercer, V. (2011). A DBT skills training group for family caregivers of persons with dementia. *Behavior Therapy*, *42*(1), 109-119. doi:10.1016/j.beth.2010.06.001

PROGRAM OVERVIEW: Dialectical Behavior Therapy Skills uses a type of cognitive behavioral psychotherapy to help caregivers develop mindfulness, improve dementia communication skills, increase pleasant events and self-care, and develop distress tolerance skills. The main goals of this program were to reduce the risk for elder abuse and to improve quality of life for both the caregiver and the person with dementia.

TRAINING DESCRIPTION: The program is targeted to the caregiver and lasts 9 weeks, including regular individual psychotherapy sessions using the Dialectical Behavior Therapy approach as well as a series of nine weekly 2.5-hour group sessions. The first session provides an introduction to the approach and to the group; after that there are two sessions dedicated to each module: (1) mindfulness; (2) interpersonal effectiveness; (3) emotional regulation; and (4) distress tolerance. Two graduate student therapists lead each group. Three weeks after the end of the training, optional booster sessions begin and last for an additional nine weeks.

TITLE: Home-based training program

SOURCE: Huang, H., Shyu, Y., Chen, S., & Hsu, W. (2009). Caregiver self-efficacy for managing behavioural problems of older people with dementia in Taiwan correlates with care receivers' behavioural problems. *Journal of Clinical Nursing*, *18*(18), 2588-2595. doi:10.1111/j.1365-2702.2008.02547.x

PROGRAM OVERVIEW: This program is designed to help reduce the environmental demands and stress experienced by the person with dementia as a means of minimizing behavior challenges. An ABC approach is used to identify causes and consequences of specific behaviors and then to plan changes in care accordingly. A strong emphasis is placed on the cooperative partnership between the caregiver and the nurse delivering the intervention, with a goal of increasing caregivers' self-efficacy and competence.

TRAINING DESCRIPTION: Two training sessions take place in the caregiver's home, one week apart, and are conducted by registered nurses with specialties in geriatric and community nursing. One week later, caregivers receive a follow-up phone consultation, followed by monthly phone calls for a total intervention period of 6 months. The intervention includes health education and an assessment of the person with dementia, the family, the environment, and the need for community resources. Specific behavior problems are also reviewed and a care plan is developed, which is then reviewed on subsequent calls.

TITLE: MESSAGE and RECAPS (DVD-based training program)

SOURCE: Liddle, J., Smith-Conway, E., Baker, R., Angwin, A., Gallois, C., & Copland, D. et al. (2012). Memory and communication support strategies in dementia: Effect of a training program for informal caregivers. *International Psychogeriatrics*, *24*(12), 1927-1942. doi:10.1017/s1041610212001366

PROGRAM OVERVIEW: The MESSAGE and RECAPS program uses education to increase knowledge and positive perceptions of caregiving, reduce burden, and reduce distress associated with difficult behaviors. The brief DVD format is intended to reach busy caregivers.

TRAINING DESCRIPTION: This training is delivered to caregivers in their own home and on their own schedule via a DVD presentation that describes and demonstrates the use of memory and communication strategies through explanation and vignettes. There are two 45-minute DVDs: the first session consists of communication strategies while the second session covers strategies for managing behavioral symptoms of dementia such as environmental modifications, routines, and breaking tasks into simple steps. There is accompanying written material that summarizes the content in the form of a booklet and reminder card listing strategies.

TITLE: New York University Caregiver Intervention (NYUCI)

SOURCE: Gaugler, J., Reese, M., & Mittelman, M. (2015). Effects of the Minnesota adaptation of NYU caregiver intervention on primary subjective stress of adult child caregivers of persons with dementia. *The Gerontologist*, 1-14.

Mittelman, M., & Bartels, S. (2014). Translating research into practice: Case study of a community-based dementia caregiver intervention. *Health Affairs, 33*(4), 587-595. doi:10.1377/hlthaff.2013.1334

Paone, Deborah. (2014). Using RE-AIM to evaluate implementation of an evidence-based program: a case example from Minnesota. *Journal of Gerontological Social Work, 57*(6-7), 602-25. doi: 10.1080/01634372.2014.907218

PROGRAM OVERVIEW: NYUCI has a goal of reducing negative impacts of caregiving and delaying nursing home placement for the person with dementia. The sessions focus on providing education and psychosocial support, addressing issues raised by the participants, encouraging utilization of social support, and improving interactions among family members. There is a strong focus on strategies for managing difficult behavior. Other family members are included to improve support for the caregiver.

TRAINING DESCRIPTION: The NYUCI program consists of four components: (1) individual counseling sessions with the primary caregiver; (2) family counseling sessions with the caregiver and other family members; (3) encouragement to attend weekly support group sessions; and (4) ongoing ad hoc contact with the counselor to provide additional information and referrals as necessary. The six counseling sessions, conducted by master's level psychologists, take place in the caregiver's home or another community setting over a period of 4-6 months and address specific challenges that the primary caregiver or family is encountering, emphasize communication skills in conveying the caregiver's needs to others, and encourage seeking support from family and friends.

TITLE: Progressively Lowered Stress Threshold (PLST)

SOURCE: Gerdner, L., Hall, G., & Buckwalter, K. (1996). Caregiver training for people with Alzheimer's based on a stress threshold model. *Image: The Journal of Nursing Scholarship, 28*(3), 241-246. doi:10.1111/j.1547-5069.1996.tb00358.x

Hall G. R., & Buckwalter, K. C. (1987). Progressively lowered stress threshold: A conceptual model for care of adults with Alzheimer's disease. *Archives of Psychiatric Nursing, 1*, 399–406.

PROGRAM OVERVIEW: PLST model proposes that a person with dementia can become increasingly anxious and agitated due to environmental stressors such as unnecessary noise and internal stressors such as pain. The PLST intervention aims to reduce stress by modifying the environment and therefore, promotes adaptive behavior and a decrease in anxiety, wandering and agitation.

TRAINING DESCRIPTION: PLST sessions take place in the home of the person with dementia and include both the person with dementia and the caregiver as active participants. The nurse interventionist provides education about the disease process, assists with strategies that promote adaptive behavior, simplify daily tasks, assist with problem solving strategies over the course of the illness as abilities change, locate resources and provide support, and assume a case management role. Training takes place over two 2 hour sessions and one 1 hour session a week later.

TITLE: Reducing Disability in Alzheimer's Disease (RDAD)

SOURCE: Logsdon, R., McCurry, S., & Teri, L. (2005). A home health care approach to exercise for persons with Alzheimer's disease. *Care Management Journals*, *6*(2), 90-97. doi:10.1891/152109805780650689

Menne, H., Bass, D., Johnson, J., Primetica, B., Kearney, K., & Bollin, S. et al. (2014). Statewide implementation of "reducing disability in Alzheimer's disease": Impact on family caregiver outcomes. *Journal of Gerontological Social Work*, *57*(6-7), 626-639. doi:10.1080/01634372.2013.870276

Teri, L., Gibbons, L., McCurry, S., Logsdon, R., Buchner, D., & Barlow, W. et al. (2003). Exercise plus behavioral management in patients with Alzheimer disease. *JAMA*, *290*(15), 2015. doi:10.1001/jama.290.15.2015

Teri, L., McKenzie, G., Logsdon, R., McCurry, S., Bollin, S., Mead, J., & Menne, H. (2012). Translation of two evidence-based programs for training families to improve care of persons with dementia. *The Gerontologist, 52*(4), 452–459. doi:10.1093/geront/gnr132

PROGRAM OVERVIEW: Reducing Disability in Alzheimer's Disease is designed to increase exercise and physical activity in persons with dementia and to instruct caregivers in approaches to reducing behavioral and psychological symptoms using an ABC approach. Outcomes of interest include physical functioning, depression, and behavioral symptoms in the person with dementia.

TRAINING DESCRIPTION: Reducing Disability in Alzheimer's Disease sessions take place in the home of the person with dementia and include both the person with dementia and the caregiver as active participants. The interventionist, who may be a physical therapist, social worker, or other aging services professional trained in the intervention, guides the person with dementia through a series of exercises while the caregiver observes. The caregiver is also provided with dementia education and instructed in behavior management through problem-solving. Topics covered include: disease symptoms and progression, home safety and environmental modifications, and legal and financial issues. Training takes place over 12 1-hour sessions, which occur more frequently initially (2 sessions/week for the first 3 weeks, then once/week for 4 weeks, then bi-weekly for 4 weeks).

TITLE: REACH II

SOURCE: Belle, S. H., Burgio, L., Burns, R., Coon, D., Czaja, S. J., Gallagher-Thompson, D., Gitlin, L. N., Klinger. J., Koepke, K. M., Lee, C. C., Martindale-Adams, J., Nichols, L., Schulz, R., Stahl, S., Stevens, A., Winter, L., & Zhang, S. (2006). Enhancing the quality of life of dementia caregivers from different ethnic or racial groups: A randomized control trial. *Annals of Internal Medicine*, 145(10), 727-38.

Nichols, L., Chang, C., Lummus, A., Burns, R., Martindale-Adams, J., & Graney, M. et al. (2008). The cost-effectiveness of a behavior intervention with caregivers of patients with Alzheimer's disease. *Journal of the American Geriatrics Society*, *56*(3), 413-420. doi:10.1111/j.1532-5415.2007.01569.x

PROGRAM OVERVIEW: The overall objectives of REACH II are to identify and reduce risk factors among family caregivers, enhance quality of care for the person with dementia, and enhance the well-being of the caregiver. The REACH II intervention focuses on five areas linked to caregiver stress: safety, self-care, social support, emotional well-being; and problem behaviors. A risk appraisal is used to determine which areas need the greatest focus.

TRAINING DESCRIPTION: Caregiver training and counseling are provided over a 6-month period in 9 1.5-hour sessions in the person's home, 3 half-hour telephone calls, and 5 telephone support group sessions. The first two sessions focus on conducting a risk assessment and instructing the caregiver in self-care and healthy behaviors. Remaining sessions are dedicated to developing the caregiver's ability to assess and manage problem behaviors and manage their own stress and well-being. The interventionist works with the caregiver to define the problem, create specific objectives, and develop an action plan. Action steps are practiced through role-play, and caregivers report back later on their use of these strategies so the plan can be modified as needed. The training also includes practicing strategies to reduce the burden of care (for example, taking a break from caregiving activities) and techniques for stress management such as breathing and stretching. Caregivers also practice mood management techniques and strategies for increasing pleasant events. The social support component focuses on helping caregivers receive support for decision making, managing caregiving tasks, and reducing problems with social isolation. Caregivers receive information on how to access community resources and strategies/skills related to social support and communication. The 5 telephone-based support group sessions reinforce the information presented during the one-on-one intervention sessions and provided caregivers an opportunity to interact with each other.

TITLE: REACH VA

SOURCE: Nichols, L., Martindale-Adams, J., Burns, R., Zuber, J., & Graney, M. (2014). REACH VA: Moving from translation to system implementation. *The Gerontologist*. doi:10.1093/geront/gnu112

PROGRAM OVERVIEW: REACH VA is a translation of the REACH II program that has involved nationwide implementation through the VA system. The core focus and goals of the program are the same as that of REACH II, but some details of implementation have been modified to meet the needs of the VA service providers.

TRAINING DESCRIPTION: REACH VA has been implemented using two different approaches: the first was delivered through 12 individual sessions, primarily in the home, and 5 telephone support group sessions over 6 months, as in REACH II. In a later translation phase, the VA shortened the length of the program to 4 core sessions over a period of 2-3 months; these sessions could be offered in-home, in a clinic, or over the phone. Support group participation also became an optional portion of the intervention that was offered as a complementary program by some VA centers. The modified intervention is still based on a Risk Priority Assessment that targets the main caregiving risk areas and incorporates the core evidence-based components of the original REACH model.

TITLE: Resourcefulness training (Gonzalez)

SOURCE: Gonzalez, E., Polansky, M., Lippa, C., Gitlin, L., & Zauszniewski, J. (2014). Enhancing resourcefulness to improve outcomes in family caregivers and persons with Alzheimer's Disease: A pilot randomized trial. *International Journal of Alzheimer's Disease*, *2014*, 1-10. doi:10.1155/2014/323478

PROGRAM OVERVIEW: Resourcefulness training aims to reduce caregiver strain and depression, increase preparedness and reduce problem behaviors using a cognitive-behavioral approach. The program uses dementia education to help caregivers understand disease-related changes, reframe thinking about caregiving issues, and use problem-solving and coping skills.

TRAINING DESCRIPTION: Resourcefulness training sessions include 5-7 caregivers and meet weekly for 2 hours, led by a registered nurse. Participants are guided through a process of finding facts about the situation, setting a realistic goal, developing optimism about the ability to manage the problem, using creativity to brainstorm solutions, considering which to implement, and evaluating how effective that solution was.

TITLE: Savvy Caregiver

SOURCE: Samia, L., Aboueissa, A., Halloran, J., & Hepburn, K. (2014). The Maine Savvy Caregiver project: Translating an evidence-based dementia family caregiver program within the RE-AIM framework. *Journal of Gerontological Social Work*, *57*(6-7), 640-661. doi:10.1080/01634372.2013.859201

Kally, Z., Cote, S., Gonzalez, J., Villarruel, M., Cherry, D., & Howland, S. et al. (2014). The Savvy Caregiver program: Impact of an evidence-based intervention on the well-being of ethnically diverse caregivers. *Journal of Gerontological Social Work*, *57*(6-7), 681-693. doi:10.1080/01634372.2013.850584

PROGRAM OVERVIEW: Savvy Caregiver is a psycho-educational program designed to train family and professional caregivers in the basic knowledge, skills, and attitudes needed to handle the challenges of caring for a family member with Alzheimer's disease and to be an effective caregiver. Targeted outcomes include caregiver knowledge, confidence, self-efficacy, and depression and development of meaningful activities for the person with dementia.

TRAINING DESCRIPTION: This is a 12-hour training program that is delivered in a group setting, typically in 2-hour sessions over a 6-week period. Interventionists may come from a variety of professional backgrounds; train-the-trainer materials and resources are available. Session content covers dementia, the cognitive changes that are occurring and how they impact behaviors, establishing realistic caregiving goals, gauging the care recipient's abilities, designing appropriate activities for the person with dementia, and using a problem-solving approach to manage behavioral symptoms.

TITLE: Savvy Caregiver 2 (Savvy 2)

SOURCE: Samia, L., Merchant, C., O'Sullivan, A., & Fallon, K. (2014). The Maine Savvy Caregiver Project-Enhanced for Caregivers of Persons with Alzheimer's Disease and Related Dementias: Translation Report. Office of Aging and Disability Services, Maine's Department of Health and Human Services.

PROGRAM OVERVIEW: Savvy Caregiver 2 was developed to provide advanced training to those family caregivers who have already completed the original Savvy Caregiver program. It addresses issues that caregivers are likely to face as the disease progresses, and shares similar goals of reducing caregiver depression and increasing self-efficacy and competence through a workshop format.

TRAINING DESCRIPTION: This is a 4-week program that focuses on the challenges that are likely to be faced over time as dementia progresses and addresses activities of daily living (ADLs), advanced behavior guidance (with increased emphasis on the effect the environment can have on the PWD), caregiver self-care, future planning to prepare for the challenges ahead, problem solving, and care team enhancement. Interventionists may come from a variety of professional backgrounds, but because the curriculum for Savvy 2 is less structured and covers more complex situations, the developers indicate that interventionists need to have strong problem-solving skills and the ability to think on their feet.

TITLE: Skills2Care®

SOURCE: Gitlin, L. N., Winter, L., Corcoran, M., Dennis, M., Schinfeld, S., & Hauck, W. (2003). Effects of the home environmental skill-building program on the caregiver-care recipient dyad: 6-month outcomes from the Philadelphia REACH initiative. *The Gerontologist*, *43*(4), 532-546. doi:10.1093/geront/43.4.532

Gitlin, L. N., Jacobs, M., & Earland, T. (2010). Translation of a dementia caregiver intervention for delivery in homecare as a reimbursable Medicare service: Outcomes and lessons learned. *The Gerontologist*, *50*(6), 847-854. doi:10.1093/geront/gnq057

PROGRAM OVERVIEW: Skills2Care® (formerly known as the Environmental Skill-building Program, or ESP) is a home-based environmental intervention designed to help family caregivers of persons with dementia modify their living space to be a more supportive environment such that the person with dementia will exhibit fewer disruptive behaviors and experience a slower rate of decline. It is grounded in five treatment principles: client centered (areas targeted for intervention are caregiver identified); problem solving (caregivers learn how to identify concerns and strategies); tailoring (dose, intensity, and strategies are customized to person–environment configurations); action-oriented (caregivers learn skills by practicing with therapists); and cultural relevance (therapists identify values guiding care decisions to assure appropriateness of tailored strategies).

TRAINING DESCRIPTION: There are two versions of this training: one includes up to 8 in-home sessions over a period of 4 months; the other consists of 5 90-minute in-home sessions and 1 30-minute phone session over a period of 6 months. Based on assessments and prioritization of caregiver-identified concerns, occupational therapists tailor disease education, instruction in problem solving, and implementation of strategies. Strategies introduced include environmental simplification (decluttering and safety proofing), communication (tactile and verbal cueing), task simplification, engaging patient in activities, and stress reduction. The occupational therapist conducts a systematic needs assessment and a walk-through of the home to assess environmental factors. The occupational therapist and caregiver then work together to develop a targeted plan. Education about the disease is offered as well as referral to other community resources. Strategies introduced in subsequent sessions are tailored to fit the caregiver's preferences, and the therapist and caregiver engage collaboratively to find solutions.

TITLE: STAR-Caregivers (STAR-C)

SOURCE: Teri, L., McCurry, S., Logsdon, R., & Gibbons, L. (2005). Training community consultants to help family members improve dementia care: A randomized controlled trial. *The Gerontologist*, *45*(6), 802-811. doi:10.1093/geront/45.6.802

Teri, L., McKenzie, G., Logsdon, R., McCurry, S., Bollin, S., Mead, J., & Menne, H. (2012). Translation of two evidence-based programs for training families to improve care of persons with dementia. *The Gerontologist, 52*(4), 452–459. doi:10.1093/geront/gnr132

PROGRAM OVERVIEW: STAR-C, one of the Seattle Protocols, is a behavioral intervention designed to decrease depression and anxiety in individuals with Alzheimer's disease and their family caregivers. Treatment components include: general education about Alzheimer's disease, practice using a systematic approach to identifying and reducing behavior problems in dementia (the ABC model of behavior change), communication skills training, information about the relationship between mood and pleasant events, and caregiver support.

TRAINING DESCRIPTION: The intervention is delivered over a 6-month period by community clinicians with a master's degree in counseling, psychology, social work, or a related field. The interventionist meets with a family caregiver in the home once a week for eight weeks for about an hour. In the first meeting, the consultant provides information about behavioral challenges and works with the family caregiver to identify three behavioral symptoms that are causing difficulty. In the second and third meetings, the consultant teaches the caregiver the "ABC" approach and helps brainstorm strategies to reduce behavioral symptoms. The remaining five meetings focus on how to communicate with a person with Alzheimer's disease, how to create pleasant events for the person, and other issues that concern the caregiver. Between meetings, caregivers record behavioral symptoms and the strategies he or she used to address them. After the in-home meetings, the consultant follows up with the caregiver through four monthly telephone calls. These calls are intended to help the caregiver develop strategies to address new behavioral symptoms. They also help to reinforce previous learnings.

TITLE: Stress-Busting Program

SOURCE: Lewis, S. L., Miner-Williams, D., & Novian, A. (2009). A stress-busting program for family caregivers. *Rehabilitation Nursing*, 34:4, 151-159.

PROGRAM OVERVIEW: The Stress-Busting Program provides caregivers with education, stress management, problem solving and support, including strategies on how to care for themselves while caring for a loved one with dementia. The goal is to improve caregiver health, mental health, and social support and to decrease anger, anxiety, burden, stress and depression.

TRAINING DESCRIPTION: The program consists of 90-minute sessions that occur once a week for 9 weeks. The program is conducted in a small group setting with two group facilitators. Participants are provided many resources including a handbook covering class material, a meditation CD, and a relaxation strategies DVD. Session topics include: unique caregiver stressors; physical and emotional effects of stress; creating a relaxing environment; grief, loss and depression; coping skills; managing BPSD; positive thinking and cognitive restructuring; healthy living; and creating a plan.

TITLE: Tailored Activity Program (TAP)

SOURCE: Gitlin, L. N., Winter, L., Burke, J., Chernett, N., Dennis, M., & Hauck, W. (2008). Tailored activities to manage neuropsychiatric behaviors in persons with dementia and reduce caregiver burden: A randomized pilot study. *American Journal of Geriatric Psychiatry*, *16*(3), 229-239. doi:10.1097/jgp.0b013e318160da72

PROGRAM OVERVIEW: The Tailored Activity Program (TAP) seeks to reduce behavioral disturbances and depression in the person with dementia by using occupational therapy techniques to identify patients' existing abilities and previous interests and devise activities that build on them.

TRAINING DESCRIPTION: Tailored Activity Program includes six 90-minute home visits and two brief telephone contacts by occupational therapists over 4 months. Contacts are spaced to provide caregivers opportunities to practice using activities independently. In the first two sessions, interventionists meet with caregivers to discern daily routines and previous/current activity interests. They assess the person with dementia and the home environment and observe communication between the caregiver and person with dementia. In subsequent sessions, interventionists identify three activities and developed 2–3 page written plans for each, including an activity (completing a puzzle form board) and goal (engage in activity for 20 minutes each morning after breakfast) and specific implementation techniques. Activities are introduced through role-play or direct demonstration with the person with dementia. Caregivers are also instructed in stress reducing techniques such as deep breathing to help establish a calm emotional tone. Caregivers practice using the activity between visits, and once an activity is mastered, another is introduced.

TITLE: Individualized Music

SOURCE: Park, H., & Pringle Specht, J. (2009). Effect of individualized music on agitation in individuals with dementia who live at home. *Journal of Gerontological Nursing*, *35*(8), 47-55. doi:10.3928/00989134-20090706-01

PROGRAM OVERVIEW: This pilot program is designed to reduce agitation in persons with dementia by selecting music based on their personal preferences and integrating the music into their daily lives. The music is intended to trigger positive memories in order to reduce anxiety and agitation. Key elements of the training are guidance for family caregivers in selecting culturally appropriate music for the person with dementia and in choosing the best timing for playing the music to reduce agitation. Additional benefits may include positive affect, meaningful interaction with others, expression of satisfaction and reduction of anxiety, but these have not been tested in the home setting.

TRAINING DESCRIPTION: The nurse trainer visits the family twice, one week apart, to train the family caregiver in use of individualized music, selection and preparation of the person with dementia's choices of music on a CD (the CD and CD player were provided by the researcher) using the author's Assessment of Personal Music Preference (APMP). The nurse also assesses the person with dementia's daily patterns of agitation. For two weeks the family caregiver plays 30 minutes of individualized music for the person with dementia a minimum of thirty minutes prior to peak agitation times. The family caregiver measured agitation levels 30 minutes before, during, and after playing music. Following a two-week break without music, the researcher then repeated the cycle for a total of eight weeks of intervention. The nurse visited the family once a week during music-playing weeks to answer caregiver questions.

TITLE: Music and Memory iPod Project

SOURCE: Williams, A., Peckham, A., Rudoler, D., Tam, T., & Watkins, J. (2014). *Evaluation of the Alzheimer Society of Toronto iPod project: Final report*. Balance of Care (BoC) Research & Evaluation Group.

PROGRAM OVERVIEW: This program is designed to stir positive memories associated with music by having persons with dementia listen to their favorite music on an iPod or other device. The positive emotions induced can trigger memories of lyrics and experiences with the music that are often spared even into late stage dementia, and may head off agitation. Favorite music often has a calming effect, allowing persons with dementia to regain a connection with others in the present moment. Caregivers (and other family and friends) can create favorite music selections on iPods to help improve the mood of the person with dementia and refocus their attention.

TRAINING DESCRIPTION: Following instructions provided in a PDF document, the caregiver prepares a playlist of the person with dementia's favorite music. Sample questions help the caregiver prompt the person with dementia to recall favorite music; if the person with dementia is not able to assist, other friends or family may help identify preferred music. The instructions include specific steps in downloading tunes (including copyright cautions), costs involved, and creating playlists using iPods. The protocol includes playing music up to several times each day, and weekly at a minimum, indefinitely. The listening periods may spawn shared reminiscence and conversation afterwards, and may provide respite for caregivers. Some music may trigger other emotions, so caregivers are advised to make a judgment call as to when to change the selection, for instance, stopping music that causes agitation but allowing sadness or tears, which may be appropriate and meaningful.

TITLE: Creative Caregiving Training Modules

SOURCE: National Center for Creative Aging (NCCA) (http://www.creativeaging.org) and the NCCA Creative Caregiving Initiative (http://www.creativeaging.org/programs-people/ncca-creative-caregiving-initiative)

PROGRAM OVERVIEW: The web-based NCCA Creative Caregiving Guide© and seven Creative Caregiving Training Modules are anticipated to launch on October 13, 2015. Developed for family (and professional) caregivers of adults with dementia, the short, self-administered modules are designed to equip busy caregivers with research-based caregiving exercises using creative arts activities that help the caregiver and the person with dementia flourish in the art of daily caregiving, enhancing positive emotion, engagement and relationship, meaning and mastery. Expected outcomes include enhanced quality of life and decreased depression and anxiety for persons with dementia as well as caregivers, but the program evaluation is not yet completed.

TRAINING DESCRIPTION: Caregivers (family or professional) will be able to view the training modules online at their convenience as frequently as desired, but the modules are not downloadable. Each 10- to 15-minute module features a master teaching artist demonstrating specific techniques with a person with dementia and a family caregiver. The modules incorporate self-care for the caregiver (such as conscious breathing), call-and-response and movement, a creative caregiving practice, and encourage the dyad to "savor the moment." The caregiver may watch the video first alone, or may include the person with dementia. At their own pace and comfort level, caregivers may begin using the techniques with the person with dementia as demonstrated by the teaching artists. Most of the modules either focus on music (Sing Like a Bird, Love Duets, Mirror Dance) or include music in the activities (Tree Poems, Starry Night) demonstrated by the master teaching artist. Future plans include making more modules with broader cultural diversity and developing modules in Spanish. The NCCA also plans to develop mechanisms for caregiver feedback about the modules and sharing experiences among caregivers.

APPENDIX 2
SUMMARY OF REVIEWED RESEARCH

Intervention	Study Design	# Articles Reviewed	Sample Size(s)	Special Audience(s) Studied	Intended Outcomes Statistically significant changes shown in bold italics		Research Translated to Community Practice?
					Caregiver	Person with Dementia	
Caregiver skill building (CSB) (Farran)	Randomized control trial (subset of participants)	1	295	Care receivers with baseline agitation	• Increase self-efficacy • ***Reduce distress with BPSD***		No
Coping with Caregiving (CWC)	Pre/post assessment	1	213	Latino and Caucasian female caregivers	• Reduce distress with BPSD • ***Reduce depression*** • ***Improve coping*** • Increase social support		
Dialectical Behavior Therapy Skills (DBT Skills) (adapted from Linehan)	Pre/post assessment	1	16	Caregivers at risk of elder abuse	• Reduce depression • ***Improve coping*** • Reduce stress • Reduce burden • Improve well-being • Reduce burnout	• Decrease reports to elder protective services	This study was conducted at a community clinic
Home-based training program (Huang)	Randomized control trial	1	129	Taiwanese caregivers	• ***Increase self-efficacy*** • ***Increase knowledge and skills for managing BPSD*** • ***Increase preparedness for caregiving***	• Decrease frequency of physically aggressive behavior	No

Intervention	Study Design	# Articles Reviewed	Sample Size(s)	Special Audience(s) Studied	Intended Outcomes Statistically significant changes shown in bold italics		Research Translated to Community Practice?
					Caregiver	Person with Dementia	
MESSAGE and RECAPS DVD-based training program (Australia)	Pre/post assessment	1	29	n/a	- Reduce distress with BPSD - ***Increase knowledge of disease management strategies*** - Decrease burden - Improve perception of caregiving	- Decrease depression - Improve well-being - Decrease frequency of BPSD	No
NYUCI	Randomized control trial; pre/post assessment	2	107[a] 228[b]	Adult child caregivers	- ***Reduce distress with BPSD*** - ***Reduce depression***[b] - ***Satisfaction with social support***[b] - Reduce burden - Reduce perceptions of being trapped in care responsibilities	- Decrease frequency of BPSD	Yes, statewide in Minnesota[b] (reviewed here) and in CA, FL, GA, UT, WI
Progressively Lowered Stress Threshold (PLST)	Randomized control trial	1	240	Caregivers in 4 states	- Improve competence for managing BPSD - Increase knowledge of dementia - Improve health - Reduce burden - Reduce depression **Results were not yet published at the time of this study*	- Decrease frequency/severity of BPSD - Slower decline of functional abilities - Psychotropic medications - Improved nutrition	

Intervention	Study Design	# Articles Reviewed	Sample Size(s)	Special Audience(s) Studied	Intended Outcomes Statistically significant changes shown in bold italics		Research Translated to Community Practice?
					Caregiver	Person with Dementia	
Reducing Dementia in Alzheimer's Disease (RDAD)**	Randomized control trial	2	153[a] 219[b]	Moderate to severe dementia[a] Any diagnosis of dementia[b]	• ***Reduce stress***[b] • ***Reduce unmet needs***[b]	• ***Reduce depression***[a] • ***Delay institutionalization due to BPSD***[a] • ***Increase amount of exercise***[a] • ***Decrease days of restricted activity***[a] • ***Improve physical function***[a]	Yes, statewide in Ohio[b]
REACH II***	Randomized control trial Cost-effectiveness	2	642 112	Tested with different racial/ethnic groups	• ***Reduce depression*** • ***Reduce burden*** • ***Increase self-care*** • ***Increase social support***	• ***Decrease number of BPSD*** • Delay institutional placement	Yes, through REACH VA – see next entry
REACH VA***	Pre/post assessment	1	125	Caregivers of VA patients	• ***Reduce depression*** • ***Reduce burden*** • ***Reduce anxiety*** • ***Reduce frustrations*** • ***Reduce stress*** • Improve health • Decrease sense of vigilance	• ***Decrease number of BPSD***	Yes – this program is a translation of REACH II used throughout many VA facilities nationwide

Intervention	Study Design	# Articles Reviewed	Sample Size(s)	Special Audience(s) Studied	Intended Outcomes Statistically significant changes shown in bold italics		Research Translated to Community Practice?
					Caregiver	Person with Dementia	
Resourcefulness training (Gonzalez)	Randomized control trial	1	102	White and African-American women caregivers	• Reduce depression • ***Increase resourcefulness*** • ***Reduce anxiety*** • ***Increase sense of preparedness*** • Increase role reward • Reduce strain • Improve quality of relationship with care recipient	• Decrease frequency of BPSD	No
Savvy Caregiver*	Pre/post assessment (both)	2	319[a] 676[b]	• Hispanic, Black/ African-American, and Asian/Pacific Islander English-speaking caregivers[a] • Caregivers statewide, including rural[b]	• ***Increase competence*** • ***Reduce distress with BPSD*** • ***Reduce depression*** • ***Improve coping*** • ***Improve management of meaning/expectations*** • ***Improve management of comparisons***[b] • Increase sense of mastery • Improve larger sense of self and illness[b]		Yes, statewide in California[a] and Maine[b]

Intervention	Study Design	# Articles Reviewed	Sample Size(s)	Special Audience(s) Studied	Intended Outcomes Statistically significant changes shown in bold italics		Research Translated to Community Practice?
					Caregiver	**Person with Dementia**	
Savvy Caregiver 2*	Pre/post assessment	1 (ADSSP grant final report)	187	Completers of Savvy Caregiver	• ***Increase self-efficacy*** • Reduce distress with BPSD • ***Reduce depression*** • ***Enhance inner growth from caregiving role*** • Improve coping • Improve management of expectations • Improve sense of self/reduce comparisons with others • Increase sense of mastery	• Decrease frequency of BPSD	No
Skills2Care®	Randomized control trial Pre/post assessment	2	255[a] 41[b]	White and African-American caregivers Caregivers who were over-whelmed, burdened or in need of disease management skills[a]	• Increase self-efficacy • ***Reduce distress with BPSD***[a] • ***Reduce burden***[a] • Improve knowledge and skills • Enhance well-being • Increase self-care *Note: Second study did not present statistical significance*	• Decrease number of BPSD • Decrease dependence in ADLs • Decrease dependence in IADLs	Yes, the second study incorporated Skills2Care into an existing homecare practice of occupational therapists

Intervention	Study Design	# Articles Reviewed	Sample Size(s)	Special Audience(s) Studied	Intended Outcomes Statistically significant changes shown in bold italics		Research Translated to Community Practice?
					Caregiver	Person with Dementia	
STAR-Caregivers (STAR-C)**	Randomized control trial	1	95	n/a	• ***Reduce distress with BPSD*** • ***Reduce depression*** • ***Reduce burden*** • Reduce stress • Increase competence • Improve quality of life • Improve sleep quality	• ***Decrease frequency and severity of BPSD*** • ***Improve quality of life***	Yes, this study used health care professionals practicing in community settings; an ADSSP grant utilized AAA case managers to deliver the intervention (outcomes not available)
Stress-Busting Program (SBP)	Pre/post assessment	1	209	n/a	• ***Reduce depression*** • ***Reduce burden*** • ***Reduce stress*** • ***Reduce anxiety*** • ***Reduce anger/hostility*** • ***Improve health*** • ***Improve mental health*** • ***Increase vitality*** • ***Improve social function***		no

Intervention	Study Design	# Articles Reviewed	Sample Size(s)	Special Audience(s) Studied	**Intended Outcomes Statistically significant changes shown in bold italics**		Research Translated to Community Practice?
					Caregiver	**Person with Dementia**	
Tailored Activity Program (TAP)	Randomized control trial	1	60	n/a	• ***Increase self-efficacy using activities*** • Reduce depression • ***Decrease burden*** • ***Enhance skills*** • ***Increase sense of mastery***	• ***Decrease frequency of BPSD*** • ***Increase engagement with activities*** • Reduce depression • Improve quality of life	No
Creative Caregiver Training Modules	Beta testing of training modules	None published yet	35	Not available	• Reduce depression • Reduce anxiety • Improve quality of life	• Improve quality of life • Reduce depression • Reduce anxiety	No
Home-based Music Therapy Strategies	Pre/post feasibility study	1	8 completed data collection	Mostly Caucasian in sample; PWD mod-severe dementia	• ***Increase relaxation*** • ***Enhance comfort*** • ***Increase happiness***	• ***Increase relaxation*** • ***Enhance comfort*** • Increase happiness	No
Music and Memory iPod Project	Mixed methods, pre/post	1 Report	120	Canadian	• Reduce distress • ***Increase confidence***	• Reduce depression	No
Individualized Music	Pre/post	1	15	PWD with agitation		• ***Reduce agitation***	No

Statistical evidence exists to support the impact of the intervention on the outcomes shown in ***bold italics***.

When two articles were reviewed for a given intervention, information pertaining to only one article/study is indicated with ^{a} or ^{b}