



ELSEVIER

Contents lists available at ScienceDirect

Geriatric Nursing

journal homepage: www.gnjournal.com



Feature Article

The impact of resilience among older adults



Stephanie MacLeod, MS^{a,*}, Shirley Musich, PhD^a, Kevin Hawkins, PhD^a,
Kathleen Alsgaard, RN, BSN, MSA^b, Ellen R. Wicker, MHA^c

^a Advanced Analytics, Optum, 315 E. Eisenhower Parkway, Suite 305 Ann Arbor, MI 48108, USA

^b UnitedHealthcare Medicare & Retirement, P.O. Box 9472 Minneapolis, MN 55440-9472, USA

^c AARP Services, Inc., 650 F. Street, NW, Washington, D.C. 20004, USA

ARTICLE INFO

Article history:

Received 7 December 2015

Received in revised form

5 February 2016

Accepted 15 February 2016

Available online 4 April 2016

Keywords:

Resilience

Older adults

Seniors

Successful aging

Coping

Interventions

ABSTRACT

The purpose of this literature review was to provide an overview of resilience for the purpose of informing potential intervention designs that may benefit older adults. While numerous reviews have focused on various specific aspects of resilience, none have provided the necessary information required to design an effective resilience intervention. Research examining resilience suggests that older adults are capable of high resilience despite socioeconomic backgrounds, personal experiences, and declining health. Thus opportunities to inform interventions in this area exist. Research studies have identified the common mental, social, and physical characteristics associated with resilience. High resilience has also been significantly associated with positive outcomes, including successful aging, lower depression, and longevity. Interventions to enhance resilience within this population are warranted, but little evidence of success exists. Thus this review provides an overview of resilience that may aid in the design of resilience interventions for the often underserved population of older adults.

© 2016 The Authors. Published by Elsevier Inc. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

The American Psychological Association (APA) defines resilience as “the process of adapting well in the face of adversity, trauma, tragedy, threats, or significant sources of stress,” or “bouncing back” from difficult experiences.¹ The APA’s definition of a *process* versus a stable *personality trait* (often termed *resiliency*) suggests that people have the capacity to build and demonstrate resilience, regardless of their socioeconomic backgrounds, personal experiences, or social environments. The debate surrounding resilience as a process versus a trait persists as a research topic, but the more common perspective emphasizes an adaptive process that can be developed.^{2–5}

Most studies of resilience have focused on at-risk children, adolescents, and military veterans who have had prolonged exposure to trauma, difficult sociodemographic environments, or other chronic stressors.⁶ The focus among these various populations has been primarily on suicide risk. Yet with the increased graying of the

population, a growing field of research has emerged on the concept of resilience among older adults and its role in successful aging. Successful aging has several components but is typically defined as freedom from chronic disease and disability, as well as high physical and mental functioning.⁷ Adults age 65 years and older are currently the fastest growing age group in the US, dominated by Baby Boomers (those born between 1946 and 1964), with adults age 80 years and older growing most rapidly. In fact, US Census Bureau population data predict that by 2030, adults age 65 years and older will make up nearly 20% of the US population.⁸ As such, there is growing interest in helping Baby Boomers reach old age with optimal health and minimal disability. Traditionally, in many Western cultures older age has been viewed negatively as a time of frailty, disability, declining function, and greater physical and mental limitations.^{9–11} However, many older adults actually experience high wellbeing and quality of life, low stress, recovery from adversities, and consider themselves to be aging successfully despite the onset of chronic conditions.^{7,9–12} In some studies, adults age 85 and older appear to have the same or greater capacity for resilience as those who are younger,^{10,12–14} suggesting that resilience may also support longevity.

To date, resilience has been primarily a research topic. Researchers have developed numerous scales to measure resilience with different populations.¹⁵ Several common characteristics of

Conflict of interest: The authors declare that there is no conflict of interest regarding the publication of this article.

* Corresponding author. Tel.: +1 612 642 7777.

E-mail address: stephanie.macleod@optum.com (S. MacLeod).

resilience among older adults have been identified, including mental, social, and physical components,^{5,7,10,11,13,14,16–23} indicating that resilience is multi-dimensional. High resilience later in life has been associated with optimal outcomes, such as reduced depression and mortality risk,^{6,7,9,13,16,24–26} as well as better self-perceptions of aging successfully,^{7,25,27} increased quality of life, and improved lifestyle behaviors.^{6,7,9,12,16,21,22,26}

The purpose of this review is to provide an overview of resilience to inform the design of interventions for older adults. This review will examine 1) definitions and measurement scales of resilience; 2) characteristics associated with resilience; 3) positive outcomes; and 4) existing intervention strategies and/or programs to promote resilience.

Methods

Inclusion and exclusion criteria

A review of resilience scientific literature indicated no current intervention studies that provided an adequate template for a planned intervention. Thus the purpose of this review was to summarize what is currently known about resilience and to understand what aspects of the construct could be used to inform potential interventions for older adults—currently not often a target for resilience research. Search methods were restricted in order to meet that specific purpose. Online search engines, primarily PubMed, Medline, Google Scholar, and a mainstream Google search, as well as reference lists of relevant articles, were utilized to identify reviews and research studies of resilience among older adult populations. Across these sources, the search focused on articles reporting relevant studies using variations of multiple search terms and phrases, including: *resilience*, *resilience among older adults*, *resilience and seniors*, *resilience and Medicare*, as well as similar combinations of these terms. In addition, search terms related to specific aspects of resilience were included, such as the following topics: *definitions of resilience/defining resilience*, *prevalence of high resilience*, *resilience and health outcomes/outcomes of high resilience*, *characteristics of resilience*, *measuring resilience/measurements of resilience*, *resilience scales*, *developing resilience*, *identifying resilience*, *older women and resilience/resilient older women*, and *resilience interventions/resilience initiatives/resilience programs*.

Results of search

Among the reviews and research studies identified focusing on older adult populations, the majority of articles were published during 2005 or later. A few selected articles providing standard definitions or early groundbreaking work in resilience published earlier were included, such as those from the early 2000s or very late 1990s. Studies conducted in the US as well as international research were considered, although only those published in English. Regarding specific studies describing intervention design and implementation, few interventions focused on older adults with designed evaluations were identified, most of inferior quality lacking rigorous design, implementation, or evaluations. Furthermore, most studies described interventions in development or in informal settings with very small study populations, supplemented with discussions focused on strategies that could be effective in this area rather than programmatic elements per se. Selected studies with smaller study samples that demonstrated promise were included for completion.

The following is a listing of the number of articles for each topic returned through searching PubMed; each search topic included

several specific search terms and phrases. For brevity, only the results from PubMed are described here as it was the primary resource used and provided the vast majority of relevant papers: *Resilience*: 945; *Definitions and Prevalence*: 623; *Characteristics*: 1097; *Outcomes*: 1129; *Measurements*: 1078; and *Interventions and Programs*: 1193.

After a focused review of the articles most relevant to meet the criteria for our intended purpose, the final number of references ultimately included totals 55, with 45 articles published 2005 to present (available at the time of the search) and the remaining 10 published in 2004 or earlier. Although there was clearly some overlap between topics, with all references falling into the general topic of resilience, a distribution of the number of final references selected is shown below for each of the more specific major categories: *Resilience*: 9; *Definitions and Prevalence*: 7; *Characteristics*: 14; *Outcomes*: 10; *Measurements*: 8; and *Interventions and Programs*: 7.

Finally, the search for relevant papers describing proposed resilience interventions or programs relied on a 2010 review of interventions along with updated single research studies; none of the intervention programs reached the level of randomized control studies.

Definitions and measurement scales

Various types and definitions of resilience have been described in the literature, as resilience is applied in different contexts similar to how constructs such as wellbeing are used. For the purpose of this review, establishing a definition of the resilience construct was critical to our purpose. The APA's definition as an adaptive process versus a stable personality trait has been generally accepted as a standard definition of resilience. Elsewhere, resilience has been explained as adaptation in the presence of an adversity or loss; an outcome following a stressful event.²⁸ Resilience has also been defined as the ability to maintain healthy psychological functioning during exposure to stressful life events,²⁹ the ability to retain physical or emotional health after a loss,³⁰ and resistance to psychological disorders while facing stress or trauma.³¹ Several descriptions of resilience are similar to the APA's definition: bouncing back following adversity¹⁴; the adaptive capacity to maintain independent functioning and wellbeing³²; negotiating, managing, and adapting to significant stressors or traumas³³; a pattern of functioning that demonstrates adaptation despite adversity^{3,5}; and possession of perseverance, competence, strength, and protective processes.³⁴

Tools designed to measure resilience are based on the common characteristics aligned with these definitions.^{12–14,16,18,25,30,33,35–37} A comprehensive review of resilience scales suggested that the Brief Resilience Scale, Connor-Davidson Resilience Scale (CD-RISC), and Resilience Scale for Adults (RSA) potentially have the best psychometric ratings and strongest measurement qualities of those studied (Table 1).¹⁵ Nevertheless, in this review, Windle et al determined no true “gold standard” of the measures they evaluated.¹⁵ Furthermore no more recent reviews of resilience scales to update Windle et al (2011) or to identify a gold standard measure of resilience from more recent publications were identified.

Levels of resilience

Resilience is generally defined by selected criteria to establish measures of high or low levels; thus it is appropriate to focus on high resilience and the characteristics associated with definitions of high levels of resilience. The levels of resilience among older adults vary depending upon the population examined and measurement scale used; high resilience has been reported in the range

Table 1
Resilience Measurement Scales.¹⁵

Measurement scale	Target population	Items
Adolescent Resilience Scale	Japanese youth (age 19–23)	21
Brief Resilience Scale	Adults (age 19–62)	6
California Healthy Kids Survey	Primary school children	34
Child and Youth Resilience Measure (CYRM)	Youth at-risk	28
Connor-Davidson Resilience Scale (CD-RISC)	Adults	25
Dispositional Resilience Scale	Adults	45
Ego resiliency (1)	Adults (age 18–48)	20
Ego resiliency (2)	Youth; young adults	102
ER (ego resiliency) 89	Young adults	14
Psychological resilience	Older adults	19
Resiliency attitudes and skills profile	Youth (age 12–19)	34
Resilience Scale for Adolescents (READ)	Youth (age 13–15)	39
Resilience Scale for Adults (RSA)	Adults	37
The Resilience Scale (RS)	Adults	25
Youth Resiliency: Assessing Developmental Strengths (YR:ADS)	Youth (age 12–17)	94

of 14%–35% (Table 2). In a study of adults age 50 and older, 14.5% of the sample was highly resilient based on General Health Questionnaire (GHQ-12) scores (Fig. 1).¹⁴ Results demonstrated that higher levels of resilience are associated with increasing age, suggesting that the younger old are not always as resilient as those who are older. Rates of high levels of resilience in other studies with older adults using the CASP-19 questionnaire, Connor-Davidson Resilience Scale 10-item (CD-RISC 10), and GHQ-12 range from 31%¹⁶ to nearly 46%.^{7,14,16,39}

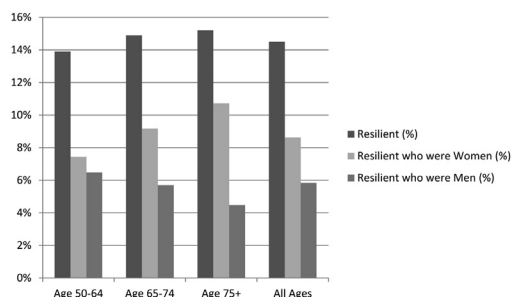
Characteristics of high resilience

The key characteristics of high resilience among adults age 65 and older highlighted in the literature include mental, social, and physical factors (Table 3). Research suggests that adaptive coping styles,^{10,23,25,28,40} optimism and hopefulness,^{7,13,23,25,30,36} positive emotions,^{6,13,24,25,28,30,41} social support and community involvement,^{13,14,18} as well as activities of daily living (ADL) independence¹⁷ and being physically active^{30,42} may have particularly strong associations with high resilience and appear to be among the most frequently studied.

Evidence of the mental characteristics associated with resilience in older adults has been reported in the literature. One study classified adults aged 68–82 years into resilient or vulnerable

Table 2
Levels of resilience in various studies with adults.

Authors	Study population	Rate of high resilience	Measurement tool
Bonanno et al, 2002 ³⁸	Older widows of couples of which husband was 65 or older	45.9%	CES-D Scale (Center for Epidemiologic Studies Depression Scale)
Scali et al, 2012 ³⁹	Women age 18–75 who had a mammogram	35.3%	Connor-Davidson Resilience Scale, 10-item (CD-RISC 10)
Jeste et al, 2013 ⁷	Adults age 50–99	33.6%	Connor-Davidson Resilience Scale, 10-item (CD-RISC 10)
Hildon et al, 2010 ¹⁶	Adults age 68–82	31%	CASP-19 Questionnaire (control, autonomy, self-realization, pleasure)
Netuveli et al, 2008 ¹⁴	Adults age 50+	14.5%	General Health Questionnaire (GHQ-12)

**Fig. 1.** High resilience by age and gender.¹⁴ Percentages of highly resilient women and men calculated from total in each age group.

groups based on CASP-19 (Control, Autonomy, Self-Realization, Pleasure; 19 items) self-reported questionnaire responses.¹⁶ Here, adaptive coping styles were strongly associated with high resilience (Fig. 2), a finding that supports other research^{7,23,25,40} suggesting that adaptive coping styles are critical to older adults' capacity to recover from stressful events. In another study of both young (18–25 years) and older (>64 years) adults, low hopelessness and low depression (i.e., positive emotions, emotional regulation) were reported to be characteristics of high resilience in both age groups.¹³

The opposite effect also occurred: a significant interaction between hopelessness and low resilience, supporting research elsewhere indicating a link between hopelessness and depression with low resilience.^{7,13,43} This study also incorporated the social characteristics of resilience. Neither mental illness nor physical dysfunction predicted low resilience among those with strong social support, congruent with previous work showing that strong social networks may promote resilience.^{14,18} Similarly, social support both before and during an adversity appears to increase the likelihood of high resilience in older adults.¹⁴ Social support has also been linked to positive emotions, with the thought that expressing positive emotions demonstrates an effort to maintain social connections and an interest in forming new ones.²⁸

Meanwhile, physical characteristics that tend to be associated with high resilience include independence in activities of daily living (ADLs),¹⁷ being physically active,⁴² and better physical health with fewer chronic conditions.^{6,17,30,44,45} One study indicated that remaining physically active, with healthy nutrition, can promote resilience and improve the likelihood of high resilience.¹⁷ In another study examining the relationship between weight, physical activity, and resilience, low resilience was strongly associated with obesity; weight management over time was identified as a characteristic of resilience.⁴⁴

Finally, while gender may not always predict resilience, it appears to be a factor. Research studies have demonstrated that

Table 3
Key characteristics of resilience.

Mental	Social	Physical
Adaptive coping styles	Community involvement	ADL independence
Gratitude	Contact with family and friends	High mobility
Happiness	Self-rated successful aging	Physical health
Lack of cognitive failures	Sense of purpose	Self-rated successful aging
Mental health	Social support and connectedness	
Optimism/hopefulness	Social support seeking	
Positive emotions/regulation	Strong, positive relationships	

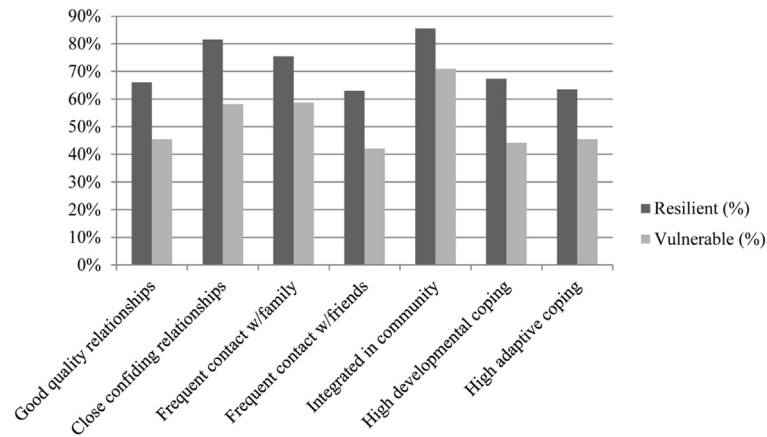


Fig. 2. Social support and coping styles among the resilient.¹⁶ Social support and coping styles are two of the most studied characteristics of resilience. Here, study participants were grouped as resilient or vulnerable based on QOL CASP-19 scores. All analyses were adjusted for age, sex, and income.

women appear to be generally more resilient than men; older women more so than younger women, even following the loss of a spouse.^{14,46} Many older female Baby Boomers have faced multiple past adversities, such as caregiving and financial concerns, which may bolster them to face challenges later in life.¹¹ Furthermore, they have often endured stressful events, such as caring for a family while a spouse was serving in the military, as well as cultural and societal change.²⁰ Older women appear to be particularly skilled at establishing and maintaining social connections, reaching out to help others, and connecting through volunteering and community involvement, all of which seem to support high resilience.^{11,18,20}

Outcomes associated with high resilience

Resilience research suggests a potential association with certain psychological and physical characteristics and optimal outcomes, such as higher quality of life, greater happiness, better mental health and wellbeing, successful aging, lower depression, longevity, and reduced mortality risk. Of these, higher quality of life, greater happiness, and lower depression are common outcomes associated with interventions. The key positive characteristics that have been associated with these positive outcomes of high resilience include strong coping skills,^{10,23,25,28,40} optimism,^{7,13,23,25,30,36} positive thinking and emotions,^{6,13,24,25,28,30,41} a strong social support network,^{13,14,18} and engagement in physical activity.^{30,42}

Studies focusing on the potential health outcomes of having high resilience suggest that high resilience later in life can help older adults to achieve improved quality of life, better mental health, and overall self-perceived successful aging, despite the adversities they may face.^{6,7,21} Other reported psychological outcomes of high resilience include greater happiness, wellbeing, and satisfaction with life; improved resistance to stress; and lower rates of depression.^{5–7,9,13,16,21,25,36,43,47} Positive physical outcomes associated with high resilience include ADL independence, increased longevity, lower mortality risk, and faster cardiovascular recovery.^{2,5,7,12,13,16,17,22,26,30,41,47,48}

The combined psychological and physical characteristics of high resilience have the potential to ultimately impact the process of successful aging.^{7,25} Successful aging has been defined in terms of physical health and functioning, rather than psychological factors (i.e., quality of life, wellbeing), a perspective that essentially excludes those with declining health, multiple chronic conditions, and physical or ADL limitations. However, more recent perspectives suggest that achieving resilience should be the focus of aging,

rather than striving for the traditional definition of successful aging.² Elsewhere, researchers have examined the relationship between resilience, successful aging, and physical activity, finding that those who are highly resilient are more likely to age successfully and thus are more likely to engage in activities often associated with successful aging, such as continuing to be physically active.³⁰ This concept provides further support for the idea that physically active older adults may be able to maintain their health and adapt to the challenges of aging with greater success.^{2,23,45}

Finally, reduced mortality risk and increased longevity have been examined as potential outcomes of resilience.^{26,45} In one sample, researchers found that high resilience scores were significantly associated with lower risk of mortality, even among the very old (85 years and older).²⁶ These findings suggest that interventions to enhance resilience may improve longevity and have other positive effects on health. Resilience has been further examined as a contributor to longevity, with results indicating that resilience is most impactful at very advanced ages.⁴⁸ In this study, respondents aged 94–98 years with high resilience were 43.1% more likely to reach 100 years than those with low resilience. In addition, those aged 100 years and over were the most resilient among the older groups after controlling for confounding variables including health status, suggesting that resilience contributes to longevity among the very old.

Achieving the optimal outcomes tied to high resilience may require consideration of the unique adversities common to later life. The adversities that older adults face vary in number, severity, and significance, from changes in daily routine to loss of a spouse. Some older adults respond to multiple challenges by suffering chronic distress, depression, and declining health, while others are able to adjust with temporary reactions and return to their previous level of normal functioning within a brief period of time.^{17,24} Research suggests that an accumulation of adversities throughout life may offer opportunities for resilience, build confidence in meeting challenges, and thus improve outcomes later in life.^{4,20} Still, it remains unknown why some older people cannot weather life's hardships as well as others,¹⁷ thus it may be beneficial to consider that different adversities influence the types of resilience interventions needed.

Interventions to build and strengthen resilience

Research suggests that opportunities exist to help older adults improve resilience late in life.^{22,30} To date, however, much of the

research has focused on developing measurement scales and identifying characteristics of resilience as summarized above; no longitudinal studies found to date have tracked changes in resilience over time among older adults. One review examining programs to promote resilience identified very few peer-reviewed publications describing resilience interventions.⁴⁹ The programs described target primarily at-risk or disadvantaged younger age groups, with minimal attention given to older adults (Table 4).⁴⁹ As an example, one intervention aiming to promote resilience and achieve positive mental and physical outcomes targeted middle and high school students impacted by the 9/11 terrorist attacks. Designed as an outreach campaign, this program was delivered by bringing together small groups at community events to strengthen bonds with others and to share coping strategies to enhance resilience. Another program, also using a structured, small-group format, sought to improve coping skills in children and teenagers to build higher resilience and thereby reduce anxiety and depression. Neither program has been validated with older adults. Furthermore, to date, interventions targeting resilience in various populations have been primarily pilot programs, with small sample sizes and little if any evaluations of participant outcomes. These authors could find no published randomized trials for resilience interventions. Finally, this review of the literature identified no other comprehensive reviews of resilience interventions than Windle et al (2010), although more recent single study publications are included.

Most programs targeting resilience recommend approaches that could be successful rather than developing, implementing, and evaluating interventions per se. Some of these strategies take a public health approach by suggesting general ways to prepare for challenges before they occur, rather than individual assistance for those who have already experienced adversities. One example is the APA's campaign to increase awareness of and provide resources for building resilience.¹ The APA's Resilience Tool Kit recommends approaches to building resilience, including maintaining strong relationships and social support; becoming active in the community; thinking positively; and maintaining hopefulness. The APA's program, like others, has not been evaluated for its impact on resilience.

Although older adults appear to be an underserved population in terms of resilience interventions, research with specific groups of older adults facing adversities may be useful in developing interventions. A study examining resilience among older US veterans suggested that multi-dimensional approaches incorporating a focus on social support to achieve an outcome of reduced depression may be appropriate for building resilience with other high-risk elderly populations.⁵¹ Elsewhere, a review of suicide interventions identified 19 studies evaluated for use with adults age 60 years and older, most of which focused on reducing risk factors such as depression and isolation rather than on more positive aspects of positive thinking, coping skills, and/or social support.⁵² The interventions reviewed used various outreach formats, including: education and support; interpersonal psychotherapy; small-group,

community workshops; depression screenings; group activities; and individual counseling.⁵²

Interventions emphasizing optimism and positive emotions may be particularly effective in building resilience.^{13,24,34} Research highlights the importance of increasing positive emotions, such as through cognitive behavioral therapy (CBT), mindfulness, and focused activities to enhance happiness, with the conclusion that doing so can improve resilience and boost wellbeing more effectively than reducing negative behaviors.^{3,6,13,24,25,28,30,41,43} Some studies with children and adolescents⁴⁹ have recommended small-group therapy or coaching to enhance participants' problem-solving and adaptive coping skills and optimistic thinking to improve wellbeing. However, similar group interventions with older adults have not been reported so it remains unknown whether this approach is translatable to other populations. These interventions also included resilience programs targeting older adults (age 65+) but only in a peer-support pilot program format in which older volunteers provided social support to bolster emotional resilience.⁴⁹

Elsewhere, research has focused on building resilience through older adults' ability to savor positive experiences; activities to encourage anticipation of future events; and tools to strengthen relationships that trigger feelings of happiness.^{6,19} A review examining the relationship between happiness and resilience demonstrated that interventions to boost happiness through optimism, gratitude, and positive emotions also have the potential to build resilience.¹⁹ These studies have used a range of activities to boost happiness, from behavioral, such as by writing about feelings of gratitude, to motivational, such as by developing specific goals.¹⁹ Interventions to increase happiness have asked participants to count their blessings and practice an act of kindness toward another person.¹⁹ The same research group conducted an intervention demonstrating that making journal entries of gratitude was associated with higher wellbeing. Elsewhere, a series of happiness studies found that students who directly dealt with negative experiences by writing or talking about them were able to cope successfully and subsequently reported increased wellbeing and physical health.^{19,53} Most of these happiness interventions have targeted younger populations with a high risk of suicide. However, research suggests that successful happiness-boosting strategies are similar to those suggested for older adults and may serve to increase resilience, as well.^{6,19,54}

Incorporating physical activity may be an effective alternative for supporting resilience among older adults.^{30,54} Engagement in physical activity is a characteristic of resilient individuals, and resilience in turn has been shown to improve healthy lifestyle behaviors.^{9,30} However, no designed interventions to test the impact of physical activity and other lifestyle behaviors on resilience among older adults were identified.

Finally, research indicates that personalizing resilience interventions, rather than using a one-size-fits-all approach, has the best potential for older adults.^{24,28,54} For example, interventions may include adjusting daily schedules and activities, building

Table 4
Examples of resilience interventions and programs.

Intervention/Program	Objective	Target	Evaluation
APA road to resilience campaign ¹	To promote general resilience within communities	General public	No
Arizona State University Resilience Workshops ⁵⁰	To improve health by strengthening people through community connections; to examine resilience through healthy aging	General public; baby boomers	No
Kuwert et al, 2014 ⁵¹	To examine loneliness and resilience among older US veterans	US veterans	Yes
Stewart-Knox et al, 2012 ⁴⁴	To examine BMI, obesity, and resilience	Adults age 43+	Yes

adaptive coping skills, and/or focusing on emotional regulation to ease bereavement for surviving spouses.²⁸ Other effective interventions may emphasize the strengths of older adults, including the ability to establish and maintain social connections, willingness to help others, and desire to engage in the community.³ Volunteering and other social or community involvement, perhaps through organized senior center activities, may be particularly effective with older adults who experience loneliness or a desire for social interaction.^{44,55} Senior centers bring groups of people together to engage in a wide range of social activities, such as day trips, meals, cooking classes, and exercise classes, and thus are well positioned to connect older adults with peers who have similar interests. Very little research has been published on the role of senior centers, but this approach holds strong potential for resilience interventions targeting seniors.

Discussion

Although resilience remains primarily a research topic, certain areas, such as the definitions, characteristics, and outcomes, are coming to a consensus. Numerous tools have been designed for measurement, but of the scales available, no true gold standard has been determined. Based on the evaluation of 15 resilience scales described earlier¹⁵ as well as findings in this review (Table 1), a few of these scales do have strong properties (i.e., reliability, validity, internal consistency) and potential for wider application. Among the scales presented, the Brief Resilience Scale may be the most highly recommended for the purpose of informing resilience interventions, based on its appropriateness, short length, and reliability.

Various studies have demonstrated that mental, social, and physical characteristics all play an important role in maintaining high resilience. The strongest evidence indicates that mental factors including adaptive coping, optimism, and positive emotions as well as social support/connectedness are necessary aspects of maintaining high resilience and would be critical to an effective intervention.^{6,7,10,13,14,16,18,24,25,28,30,40} Finally, many researchers agree that physical characteristics play a role in resilience, although not as significantly as do the mental and social aspects.

Designed resilience interventions specifically targeting older adults generally do not exist per se. The majority of existing initiatives have targeted high-risk younger adults or military veterans at risk for suicide; most have been strictly academic research studies with methodological weaknesses, small numbers, no evaluations or outcome measures, and are not scalable or validated for older adults (Table 4). In related research, interventions focusing on expression of optimism, positive emotions, and gratitude have shown promise in increasing happiness as an outcome to subsequently boost resilience,^{49,53} yet these too lack strong methodology, evaluations, and have minimal documented success. However, positive emotions appear to be the critical mechanism for increased wellbeing in these happiness interventions and could potentially have the same effect in resilience interventions by improving coping ability, optimism, and enabling people to face challenges more effectively.^{49,53} Meanwhile, this review found no tested interventions incorporating physical activity to build resilience among older adults, despite research suggesting that physical activity is an important factor of resilience.^{30,44,45}

Despite the lack of critically designed and evaluated resilience interventions, there are valuable learnings from aspects of these programs, such as the focus on expressing positive emotions, gratitude, and optimism, the role of social support, and coping with negative experiences by writing or talking about them. Research studies focused on improving adaptive coping skills, for instance, have shown promise in this approach to building resilience and thereby reducing anxiety and depression as key outcomes. The role

of positive emotions and optimism, primarily through expression of gratitude and kind acts in happiness interventions, is also notable and may be effective with older adult populations, as well. Key outcomes highlighted in these existing studies include greater wellbeing and happiness as well as reduced depression and anxiety, along with better physical health. As such, interventions designed for older adults may benefit from identifying these outcomes as important measures of success. The lack of evaluations of current programs illustrates the need to critically evaluate each intervention design with identified outcomes, such as those described here, in order to make significant progress of the understanding of how to enhance resilience among older adults.

Future considerations

Considering the types of interventions that may be effective with older adults, examining senior centers as an appropriate setting for resilience interventions is a logical recommendation for developing initiatives for this population. Senior centers are likely well positioned to implement resilience interventions for groups of seniors but are often faced with barriers of lack of staffing to deliver programs and effective recruitment strategies for seniors who may benefit most from planned activities. Research also indicates a need for multi-dimensional interventions to address resilience including mental, social, and physical aspects critical to developing resilience.^{51–53} In addition, researchers need agreement on a brief, effective measure with concise questions to provide evidence that resilience can change over time. Establishing a standard tool would facilitate the design, testing, and evaluation of interventions across the scientific literature, enhancing study comparisons and facilitating intervention designs to improve resilience among older adults.

Conclusions

This review of existing research examined resilience among older adults for the purpose of informing a designed intervention. Findings revealed that resilience is most often viewed as a process rather than a personality trait; as such many older adults are capable of improving their resilience later in life. The key characteristics of highly resilient individuals have been demonstrated in various studies and include mental, social, and physical factors that lead to optimal outcomes of improved quality of life, happiness, and wellbeing as well as reduced depression. Designed interventions to enhance resilience among older adults to date generally do not exist; however, there are opportunities to benefit from the adaptation of effective strategies from other psychological interventions targeting this population.

References

1. American Psychological Association. *The Road to Resilience*. ©, <http://www.apa.org/helpcenter/road-resilience.aspx>; 2015. Accessed 08.05.15.
2. Harris PB. Another wrinkle in the debate about successful aging: the undervalued concept of resilience and the lived experience of dementia. *Intl J Aging Hum Dev*. 2008;67(1):43–61.
3. Luthar SS, Cicchetti D. The construct of resilience: implications for interventions and social policies. *Dev Psychopathol*. 2000;12(4):857–885.
4. Manning LK. Navigating hardships in old age: exploring the relationship between spirituality and resilience in later life. *Qual Health Res*. 2013;23(4):568–575.
5. Ong AD, Bergeman CS, Boker SM. Resilience comes of age: defining features in later adulthood. *J Pers*. 2009;77(6):1777–1804.
6. Smith JL, Hollinger-Smith L. Savoring, resilience, and psychological well-being in older adults. *Aging Ment Health*. 2015;19(3):192–200.
7. Jeste DV, Savla GN, Thompson WK, et al. Older age is associated with more successful aging: role of resilience and depression. *Am J Psychiatry*. 2013;170(2):188–196.
8. Vincent GK, Velkoff VA. *The next four decades: the older population in the United States: 2010 to 2050*. US Census Bureau; May 2010.

9. Bowling A, Iliffe S. Psychological approach to successful ageing predicts future quality of life in older adults. *Health Qual Life Outcomes*. 2011;9(13).
10. Hamarat E, Thompson D, Steele D, Matheny K, Simons C. Age differences in coping resources and satisfaction with life among middle-aged, young-old, and oldest-old adults. *J Genet Psychol*. 2002;163(3):360–367.
11. Kinsel B. Resilience as adaptation in older women. *J Women Aging*. 2005;17(3):23–39.
12. Nygren B, Alex L, Jonsen E, Gustafson Y, Norberg A, Lundman B. Resilience, sense of coherence, purpose in life and self-transcendence in relation to perceived physical and mental health among the oldest old. *Aging Ment Health*. 2005;9(4):354–362.
13. Gooding PA, Hurst A, Johnson J, Tarrier N. Psychological resilience in young and older adults. *Int J Geriatr Psychiatry*. 2012;27:262–270.
14. Netuveli G, Wiggins RD, Montgomery SM, Hildon Z, Blane D. Mental health and resilience at older ages: bouncing back after adversity in the British Household Panel Survey. *J Epidemiol Community Health*. 2008;62:987–991.
15. Windle G, Bennett KM, Noyes J. A methodological review of resilience measurement scales. *Health Qual Life Outcomes*. 2011;9(8).
16. Hildon Z, Montgomery SM, Blane D, Wiggins RD, Netuveli G. Examining resilience of quality of life in the face of health-related and psychosocial adversity at older ages: what is “right” about the way we age? *Gerontologist*. 2010;50(1):36–47.
17. Gill TM, Robison JT, Tinetti ME. Predictors of recovery in activities of daily living among disabled older persons living in the community. *J Gen Intern Med*. 1997;12:757–762.
18. Lamond AJ, Depp C, Allison M, et al. Measurement and predictors of resilience among community-dwelling older women. *J Psychiatr Res*. 2008;43(2):148–154.
19. Lyubomirsky S, Della Porta MD. Boosting happiness, buttressing resilience: results from cognitive and behavioral interventions. In: Reich JW, Zautra AJ, Hall J, eds. *Handbook of Adult Resilience: Concepts, Methods, and Applications* NY: Guilford Press [in press]
20. Manning LK. Enduring as lived experience: exploring the essence of spiritual resilience for women in late life. *J Relig Health*. 2014;53(2):352–362.
21. Netuveli G, Blane D. Quality of life in older ages. *Br Med Bull*. 2008;85:113–126.
22. Wells M. Resilience in rural community-dwelling older adults. *J Rural Health*. 2009;25(4):415–419.
23. Wu G, Feder A, Cohen H, et al. Understanding resilience. *Front Behav Neurosci*. 2013;7(10).
24. Mancini AD, Bonanno GA. Resilience in the face of potential trauma: clinical practices and illustrations. *J Clin Psychol*. 2006;62(8):971–985.
25. Martin AS, Distelberg B, Palmer BW, Jeste DV. Development of a new multidimensional individual and interpersonal resilience measure for older adults. *Aging Ment Health*. 2015;19(1):32–45.
26. Shen K, Zeng Y. The association between resilience and survival among Chinese elderly. *Demogr Res*. 2010;23(5):105–116.
27. Montross LP, Depp C, Daly J, et al. Correlates of self-rated successful aging among community-dwelling older adults. *Am J Geriatr Psychiatry*. 2006;14(1):43–51.
28. Mancini AD, Bonanno GA. Predictors and parameters of resilience to loss: toward an individual differences model. *J Pers*. 2009;77(6):1805–1832.
29. Stein MB, Campbell-Sills L, Gelernter J. Genetic variation in 5HTTLPR is associated with emotional resilience. *Am J Med Genet B Neuropsychiatr Genet*. 2009;150B(7):900–906.
30. Resnick BA, Inguito PL. The resilience scale: psychometric properties and clinical applicability in older adults. *Archives Psych Nurs*. 2011;25(1):11–20.
31. Bonanno GA. Loss, trauma, and human resilience: have we underestimated the human capacity to thrive after extremely aversive events? *Am Psychol*. 2004;59(1):20–28.
32. Staudinger UM, Marsiske M, Baltes PB. Resilience and levels of reserve capacity in later adulthood: perspectives from life-span theory. *Dev Psychopathol*. 1993;5(4):541–566.
33. Wagnild G, Young HM. Resilience among older women. *Image J Nurs Sch*. 1990;22(4):252–255.
34. Southwick SM, Bonanno GA, Masten AS, Panter-Brick C, Yehuda R. Resilience definitions, theory, and challenges: interdisciplinary perspectives. *Eur J Psychotraumatology*. 2014;5:25338.
35. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The brief resilience scale: assessing the ability to bounce back. *Int J Behav Med*. 2008;15(3):194–200.
36. Connor KM, Davidson JRT. Development of a new resilience scale: the Connor-Davidson resilience scale (CD-RISC). *Depress Anxiety*. 2003;18:76–82.
37. Friborg O, Hjemdal O, Rosenvinge JH, Martinussen M. A new rating scale for adult resilience: what are the central protective resources behind healthy adjustment? *Int J Methods Psychiatric Res*. 2003;12:65–76.
38. Bonanno GA, Wortman CB, Lehman DR, et al. Resilience to loss and chronic grief: a prospective study from preloss to 18-months postloss. *J Pers Soc Psychol*. 2002;83(5):1150–1164.
39. Scali J, Gandubert C, Ritchie K, Soulier M, Ancelin ML, Chaudieu I. Measuring resilience in adult women using the 10-items Connor-Davidson Resilience Scale (CD-RISC). Role of trauma exposure and anxiety disorders. *PLoS One*. 2012;7(6):e39879.
40. Golant SM. Residential normalcy and the enriched coping repertoires of successfully aging older adults. *Gerontologist*. 2015;55(1):70–82.
41. Tugade MM, Fredrickson BL. Resilient individuals use positive emotions to bounce back from negative emotional experiences. *J Pers Soc Psychol*. 2004;86(2):320–333.
42. Childs E, de Wit H. Regular exercise is associated with emotional resilience to acute stress in healthy adults. *Front Psychol*. 2014;5(161). <http://dx.doi.org/10.3389/fpsyg.2014.00161>.
43. Fiske A, Wetherell JL, Gatz M. Depression in older adults. *Annu Rev Clin Psychol*. 2009;5:363–389.
44. Stewart-Knox B, Duffy ME, Bunting B, Parr H, Vas de Almeida MD, Gibney M. Associations between obesity (BMI and waist circumference) and socio-demographic factors, physical activity, dietary habits, life events, resilience, mood, perceived stress and hopelessness in healthy older Europeans. *BMC Public Health*. 2012;12:424.
45. Rantanen T, Masaki K, He Q, Ross GW, Willcox BJ, White L. Midlife muscle strength and human longevity up to age 100 years: a 44-year prospective study among a decedent cohort. *Age*. 2012;34:563–570.
46. Hahn EA, Cichy KE, Almeida DM, Haley WE. Time use and well-being in older widows: adaptation and resilience. *J Women Aging*. 2011;23(2):149–159.
47. Whitson HE, Thielke S, Diehr P, et al. Patterns and predictors of recovery from exhaustion in older adults: the cardiovascular health study. *J Am Geriatr Soc*. 2011;59(2):207–213.
48. Zeng Y, Shen K. Resilience significantly contributes to exceptional longevity. *Curr Gerontology Geriatrics Res*; 2010; <http://dx.doi.org/10.1155/2010/525693>. Epub 2010 Dec 6.
49. Windle G, Salisbury K, Ciesla M. *Interventions to Promote Resilience. Prepared for the Resilience Network, Challenges and Healthy Ageing: The Role of Resilience Across the Life Course*; March 2010.
50. Arizona State University Department of Psychology Resilience Solutions Group. Resilience Workshops. <https://psychology.clas.asu.edu/lab/resilience-solutions-group> [Accessed 11.06.15].
51. Kuwert P, Knaevelsrud C, Pietrzak RH. Loneliness among older veterans in the United States: results from the national health and resilience in veterans study. *Am J Geriatr Psychiatry*. 2014;22(6):564–569.
52. Lapierre S, Erlangsen A, Waern M, et al. International Research Group for Suicide Among the Elderly. A systematic review of elderly suicide prevention programs. *Crisis*. 2011;32(2):88–98.
53. Lyubomirsky S, Sousa L, Dickerhoof R. The costs and benefits of writing, talking, and thinking about life's triumphs and defeats. *J Personality Soc Psychol*. 2006;90:692–708.
54. Saxena S, Jane-Llopis E, Hosman C. Prevention of mental and behavioural disorders: implications for policy and practice. *World Psychiatry*. 2006;5(1):5–14.
55. Felix HC, Adams B, Cornell CE, et al. Barriers and facilitators to senior centers participating in translational research. *Res Aging*. 2014;36(1):22–39.