

Resilience in aging: literature review

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Abstract *Psychological resilience is comprised of an adaptive functioning standard before the current and accumulated risks of life. Furthermore, it has a comprehensive range of psychological resources which are essential to overcome adversities, such as personal competences, self-beliefs and interpersonal control which interact with the social networks support. The objectives are to show the concepts of psychological resilience in elderly, relative to dominant theoretical models and the main data about psychological resilience in aging, found in an international and Brazilian review from 2007 to 2013. The descriptors “resilience, psychological resilience and aging”, “resiliência e envelhecimento, velhice e velho”, were used in PubMed, PsychInfo, SciELO and PePSIC databases. Fifty three international and eleven national articles were selected. The international articles were classified in four categories: psychological and social coping resources, emotional regulation before stressing experiences, successful resilience and aging and correlates, and resilience measures. The Brazilian articles were grouped in three: psychological and social resources, resilience in carers and theory review. Articles on psychological resources and on emotional regulation prevailed as key factors associated with psychological resilience in aging.*

Key words *Resilience, Coping, Emotional regulation, Elderly*

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Introduction

In physics the term resilience is “a property by which the energy stored in a deformed body is released when elastic deformation ceases”¹. Other fields, including psychopathology, also use the term to refer to the heterogeneity of coping responses utilized by children in face of major life stressors such as disease, socioeconomic difficulties, parental psychopathology and ruptures in the family unit, whereby one succumbs to such experiences, escapes unharmed or becomes stronger². The study of resilience in the field of psychology started around 30 years ago, when development psychologists began to observe that exposure to adversities posed a likely risk for child development³. The attention given to resilience in adult life and old age was influenced by a movement known as positive psychology⁴ and notions such as intra-individual plasticity⁵ and capacity for cognitive reserve⁶.

Currently, the term resilience is used in various academic contexts, including the field of lifespan development, developmental stage theories focussing on adolescence, adult life and old age, recovery from traumatic events, and organizational performance⁷.

A bibliographical review carried out by Souza and Ceverny⁸ of the period 1986 to 2004 utilizing the Medline (Medical Literature Analysis and Retrieval System Online), Lilacs (Latin American and Caribbean Center on Health Sciences Information) and APA (American Psychological Association) databases and using resilience as a keyword, showed that the number of publications tripled in each five-year period. The review also shows that the number of articles addressing resilience in children and adults has increased, particularly in recent years, and that the first article dealing with resilience in the elderly was published in 1999. After 1999, APA's database included themes such as religion, racism, family violence, homosexuality, and terrorism survival⁸. The most common research topics found on the Brazilian databases CAPES (Brazilian Federal Agency for Support and Evaluation of Graduate Education), SciELO (Scientific Electronic Library Online) and Universia (information portal of knowledge and applied research and institutional collaboration between universities and companies) are family, adolescents and children, with only five publications involving adults and five on the elderly⁸.

Laranjeira's⁹ review utilising Medline, Lilacs and the APA database PsycINFO and using the

keywords adaptation, vulnerability, resilience model, the elderly and life events, found 44 articles, in which he identified four central themes: precursors to resilience, resilience and aging, the importance of protective factors, and resilience and successful ageing. In the latter, resilience was associated with a low likelihood of illness, preservation of cognitive and physical functioning and engagement with life, which are described by Rowe and Kahn¹⁰ as indicators of successful ageing.

With reference to essential psychological resources for overcoming adversity and ensuring a return to normal levels of functioning and development after stressful situations, the construct of resilience is defined as patterns of adaptation in face of biological, socioeconomic and psychological risks^{6-9,11-14}. In old age, these risks include exposure to stressful life events such as death of loved ones, accidents, illness and disability, poverty, abandonment, family conflict, domestic and urban violence, chronic tension related to social roles.

Based on the above context, this article presents an updated review of articles on resilience in the elderly published in Brazil and internationally. It has a dual objective: to present the concepts associated with the predominant theoretical models in this field; to present the results of a bibliographical review of related articles published in Brazil and in international journals between 2007 and 2013.

Variations in the construct of resilience in old age

The predominant theoretical models that have formed the foundation of much of our current understanding of resilience are permeated by a classical notion of resilience as a personality trait or as a process¹⁵. As a personality trait, resilience is seen as a stable resource that enables a stable performance when it comes to resisting stress. In this sense, resilience is the tendency to respond to stress in a flexible rather than rigid manner. Based on this view, the construct of hardiness¹⁶ is as a set of traits, such as commitment, control and openness to change, which can be seen as a general disposition to resist stress. It should be noted that this individual-centred approach runs the risk of underestimating the role of variable factors which are external to the event, without offering a description of the event and how it happened. In the view of resilience as process, the construct is seen as a bridge between

the coping and development processes¹⁵. An individual's level of resilience is therefore seen as being based on protective factors (internal and external) which can alter a person's response to given environmental circumstances⁶.

There are two basic underlying conditions of the concept of resilience as patterns of adaptation in the context of situations of risk or adversity: exposure to significant risk, and evidence of positive adaptation to threats to development¹¹. Positive adaptation refers to successful development despite the risks: ability to deal with stress, including the capacity to minimise the effects of the stressful event; capacity for a rapid recovery from a trauma; and, in the long term, ability to contain negative responses and capacity to promote positive consequences and behaviours that enable the individual to overcome adversity¹⁷.

Thus, elderly people are considered psychologically resilient when they do not succumb to adversity, but rather exhibit the capacity for successful adaptation characterised by managing stressful events, or recuperating previous or baseline levels of objective or subjective well-being after exposure to an adverse event. In the face of adversity, the elderly are able to change its meaning, reduce the level of danger caused by stressful events, reduce their exposure to such events, reduce negative reactions, maintain positive self-esteem and self-efficacy and create opportunities to revert the effects of stress¹⁶. These actions oppose vulnerability, understood as the lack of psychological coping resources, and manage the deleterious effects of the risks and threats to adaptation, thereby enabling elderly people who possess such resources to overcome biological, socioeconomic and psychological risk factors.

As a dependent variable, resilience is understood as a product of the interaction between the nature, quantity and intensity of risk factors and personality traits. As a moderator variable, its role is to mitigate the negative effects of stressful events on adaptation¹⁸.

The field of lifespan development has adopted the concepts of plasticity and capacity for cognitive reserve, seeing resilience as the maintenance of normal development, despite the risks, and recovery from traumatic situations^{5,6}.

Plasticity involves patterns of adaptation, including an increase, decrease or maintenance of the capacity for successful adaptation. In childhood, this concept can be interpreted as maturation and learning, which are driving forces of organic and behavioural changes, while in adult

life and old age it can be seen as flexibility in the face of stressors. The level of biological and behavioural plasticity naturally becomes more limited in old age.

Capacity for reserve is the ability to maintain or recuperate normal levels of functioning through mobilizing latent resources. Coping responses may vary according to the context, moment in time, age, gender and culture, and depend on self-esteem and self-efficacy¹⁹. In old age, resilience depends on affective and cognitive reserves and is manifested in coping resources, emotional regulation, motivation, sense of purpose and self-efficacy. One of the assumptions of the lifespan development approach is that resilience tends to increase in old age, rather than decline, acting as a mediator to achieve successful adaptation, otherwise recognised as successful ageing⁵.

Resilience can also be defined as inner strength, inner growth and personal strength or power²⁰, which are related to a strong sense of coherence, life goals (or purpose in life) and self-transcendence (capacity to extend beyond yourself, towards altruism, dedicate yourself to something, to person you love or to God²¹). In this sense, resilience may encompass the following aspects: feeling competent even after accepting others help; looking at the bright side of life without hiding the dark side; being active, and at the same time relaxed; be the same, even with a new appearance; and live in the present, but also in the past and the future²⁰.

Resilience is also associated with emotional regulation in coping with adversity. The advantages of emotional regulation in old age include the following: greater adaptation of the cardiovascular and immune system; greater cognitive resources, including sense of self-efficacy; increased ability to seek social support; increased capacity to adapt to the intensity of stressful events; greater cognitive and affective integration; more mature defence mechanisms; low neuroticism (personality trait related to symptoms of depression, anxiety and unhappiness); greater awareness; the use of proactive coping strategies; and greater satisfaction with life^{22,23}.

Individual and social coping resources help the elderly to deal with critical events by attributing meaning in light of past experiences, seeking out and maintaining pleasurable activities, performing social roles, adopting coping strategies, and by mobilising social support. Such coping mechanisms promote resilience by alleviating, transforming or denying the impact of adversity²⁴.

Another important aspect of emotional regulation is the intensity of stress. High levels of stress in the elderly accentuate and prolong negative emotional experiences and reduce cognitive flexibility²⁵. Despite emotional regulation in the elderly being equal to or greater than that of young adults, in some cases an elderly person is unable to employ effective strategies, for example in cases such as cognitive impairment, chronic diseases, such as rheumatoid arthritis, osteoarthritis and fibromyalgia²², and loss of family members and friends, which are often associated with depression. Elderly individuals may have the same level of negative affect as young adults who do not have a chronic disease but this advantage disappears in the presence of high stress levels²⁵.

A number of studies demonstrate that the concept of resilience encompasses a multiplicity of protective factors and adaptive processes³. Windle et al.²⁶ carried out a multi-factor analysis of psychological resilience in old age based on data from a representative sample of 1,847 individuals between the age of 50 and 90 years from England, Wales and Scotland who were subjected to an assessment of the following indicators of resilience: self-esteem, interpersonal control, and personal competence. Factorial validity was tested using confirmatory factor analysis which enables the comparison of a wide umbrella of psychological resources which are essential for overcoming adversity, including personal competence, self-esteem, self-efficacy and interpersonal control²⁶. Despite a low correlation between the indicators of resilience and the sociopolitical dimension, a moderate correlation was observed between these indicators and other measures, suggesting that they represent a common construct²⁶.

There has been a convergence of ideas in the literature on resilience regarding the importance of components of the self, such as self-concept, self-esteem and emotional regulation, resources provided by social and family support, and relationships with the community. This interpretation of resilience is in line with the view of resilience as a process in which environmental and individual factors interact. There is also a general acceptance by the literature of the importance of resilience for maintaining functioning, subjective well-being, sense of adjustment, motivation for activity and vital involvement, which play a central role in protecting the individual from the influence of loss, risks and threats to adaptation.

In light of these concepts, the authors carried out the literature study presented in the following pages.

Method

Two searches were carried out: one of Brazilian journals and one of international journals. The search of international journals was carried out using the PubMed and PsycINFO databases and covered the period January 2007 to August 2013, using the following keywords: resilience, psychological resilience and aging. A total of 67 articles were found, of which 53 were analysed. The following articles were excluded: those which included only young adults and made no reference to older adults; those which explored specific resilience-related themes such as post traumatic stress disorder and suicide; and a study about resilience in animals. The remaining 53 articles were analysed to identify the main investigated variables, sample characteristics and main results.

The search of Brazilian journals was undertaken using the SciELO and PePSIC (Digital Psychology Journals) databases covering the same six-year period and using the same criteria mentioned above. Keywords were resilience and ageing, resilience and old age and resilience and elderly.

The international articles were grouped into the following four categories according to focus topics of each study:

Category 1. Psychological and social coping resources: articles related to the control of external and internal stressors using self and cognitive resources and informal social support for the elderly.

Category 2. emotional regulation in face of stressful experiences: articles related to the management of physiological, emotional and behavioural aspects of stress and ratings of positive and negative valence related to internal and external pressures.

Category 3. Resilience and aspects related to successful ageing (well-being, satisfaction with life, quality of life): articles about health, activity, productivity, satisfaction and well-being as factors that promote resilience and about the successful ageing and resilience paradigms.

Category 4. Resilience measures: methodological articles about the validation of measures of resilience in adults and the elderly.

The Brazilian articles were grouped into the following three categories:

Category 1. Psychological and social coping resources (identical to the definition adopted for international articles).

Category 2. Resilience of carers of the elderly: articles related to care of the elderly.

Category 3. Theoretical reviews: articles containing bibliographical reviews.

Results

International Journals

A total of 54 articles were found on the PubMed database and 19 articles on the PsycINFO database. Six articles were found on both databases, giving a final total of 67 articles, of which 53 were selected for analysis.

The yearly average number of publications in the categories psychological and social coping resources, and emotional regulation was 3.14 and 2.43 articles, respectively. Production of articles remained relatively constant after an increase in the number produced between 2007 and 2008 (increase of seven articles). An average of 7.57 articles a year was produced in the last six years and the largest production was in 2009 and 2011. The lowest production was in the resilience measures category (data not shown in tables).

The term resilience appeared in the title of 23 of the 53 international articles, while in the rest of the articles it appeared in the text. Twenty-two articles were included in *Category 1. Psychological and social coping resources*; 17 in *Category 2. Emotional regulation*; 10 in *Category 3. Aspects related to successful ageing*; and four in *Category 4. Resilience measures*. Charts 1, 2, 3 and 4 show the authors and a brief description of the objectives, sample and results of the articles by category.

In *Category 1. Psychological and social coping resources* (Chart 1), greater resilience was associated with good quality relationships, integration into the community, high use of coping methods to solve problems, and coping directed at development (for example, dealing with adversity in a positive manner)²⁴. Creative engagement in social networks may have a neuroprotective effect for the elderly, including those with dementia²⁷. In a qualitative study involving elderly people in a community in a rural area in the United States, resilience is described as being associated with a frugal lifestyle, social support and acceptance²⁸. Social support is also associated with resilience in the elderly living in urban areas, and those affiliated to churches, members of retired people's organisations and those frequenting nutrition clinics. A study using multivariate regression analysis found an association between resilience and the desire to seek help for symptoms of depression²⁹.

The relation between resilience and the impact of personal and social resources is evident in more recent studies, such as that carried out by Mertens et al.³⁰ which found an association between high levels of resilience (defined as mastery) and physical, mental and social functioning among 361 elderly in the Netherlands aged 60 years and over, where high social support and income levels among individuals with diabetes contributed to successful ageing. A study carried out by Gooding et al.³¹ showed that older individuals were more resilient, especially in relation to problem solving and capacity for emotional regulation, while resilience among younger individuals was associated with the availability of social support.

Religiosity and spirituality were mentioned by five articles (four in category 1 and one in category 2), where spirituality among women was significantly associated with resilience, low income, low level of education and being married⁴². Spiritual and religious beliefs are used as a form of coping with suffering and are associated with better self-perceived health⁴⁰. A qualitative study with 84 black women living in the United States showed that aspects of faith and spirituality, including identity and belief, religious affiliation, involvement, practices and benefits, are protective resources for coping with adversity related to homelessness³⁶.

A study which compared 398 survivors of cancer to 796 individuals which had no history of cancer, showed that social well-being, resilience, spirituality and sense of personal growth was greater among cancer survivors, and that older individuals were more resilient than younger individuals⁴¹.

Two studies found that satisfaction with life was associated with individual and social coping resources. One study with a sample of 2,144 German men showed a strong association between resilience and satisfaction with life, presence of a partner, positive self-esteem, adequate level of income, absence of depression and living in the eastern states³⁸. A study with 2,540 German women aged between 18 and 70 years found that satisfaction with life was associated to resilience, presence of a partner, absence of anxiety and depression, having a job, positive self-esteem, religious affiliation and being younger³³.

The 17 articles involving emotional regulation (Chart 2) address daily stressors, presence of emotions and affections (positive and negative) in old age, attitudes in the face of adversity and the complexities of emotional responses.

Chart 1. Category 1. Psychological and social coping resources. Review of international literature on resilience in the elderly (2007-2013).

Authors/year	Objectives	Participants	Results
Forstmeir and Maercker (2008) ³²	Investigate the association between motivational skills and cognitive status, well-being in the elderly.	147 elderly, 60-94 years, without dementia.	Motivational reserve acquired throughout life acts as a protective factor for cognitive impairment.
Hildon et al. (2008) ²⁴	Study the relationship between resilience and adversities.	32 elderly, 70-80 years, who had experienced one or more adversities.	Resilient participants exhibited individual and social resources in face of adversity, especially maintenance of social roles and social support. Resilience also depends on level of impact of the adverse experience.
Beutel et al. (2009) ³³	Assess the relationship between satisfaction with life, mental disorders and ageing, and individual and social resources, under stress.	2,540 German women, 18-70 years.	Strong association between satisfaction with life and resilience, having a partner, absence of anxiety and depression, having a job, positive self-esteem, religious affiliation and being younger.
Black and Rubistein (2009) ³⁴	Investigate experiences of racism in stories of suffering.	Afro-American males over 80 years	Relation between suffering and generativity is manifested in: enrooted generativity, experience redemption in relation to suffering and religious beliefs attenuate suffering.
Costanzo et al. (2009) ³⁵	Investigate if survivors of cancer exhibit deficits, resilience or growth responses.	398 survivors of cancer and 796 with a negative history of cancer.	Mental health, humour and aspects of well-being of survivors of cancer compromised, however they exhibited resilience, social well-being, spirituality and personal growth. Older survivors more resilient than younger survivors.
Dorfman et al. (2009) ²⁸	Identify stressors associated with historical events and coping strategies.	25 elderly American women living in rural areas.	Frugality, social support and acceptance enhance resilience.
Smith (2009) ²⁹	Investigate the relationship between individual resilience and seeking help to care for symptoms of depression.	121 African women and 37 African men.	Resilience linked to a disposition to seek help among elderly with symptoms of depression.

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Old age was associated with reduced exposure to daily stressors and negative affects^{48,49} and greater emotional regulation (reduced anxiety and symptoms of depression)⁵⁰.

The studies show that capacity for emotional regulation varies⁵⁰. Individuals who are more able to regulate their emotions are less susceptible to

anxiety and depression, and are more optimistic than those who are less able. A study involving 239 individuals aged between 18 and 89 years which examined the association between daily stressors and negative affect using coherence of self-concept, age and sense of control as indicators of resilience found that younger individuals

Chart 1. continuation

Authors/year	Objectives	Participants	Results
Washington et al. (2009) ³⁶	Investigate the importance of faith and spirituality in relation to homelessness.	84 homeless Afro-American women.	Aspects of religiosity can help coping with homelessness (beliefs, involvement, etc).
Wells (2009) ³⁷	Investigate the relationship among resilience and sociodemographic factors, social networks and health status.	105 volunteers aged 65 years and over in a rural community in New York state.	Resilience related to good physical health; mental health status most robust predictor.
Beutel et al. (2010) ³⁸	Assess impact of vulnerability factors, individual and social resources on satisfaction with life and stress.	2144 male Germans.	Strong association between satisfaction with life and resilience, having a job, having a partner, positive self-esteem, absence of anxiety and depression, and living in states in the east of Germany.
Hildon et al. (2010) ³⁹	Investigate the relationship among quality of life, resilience and exposure to adverse events.	174 elderly English aged between 68 and 82 years.	Resilience associated with quality of relationships, integration into the community and adaptive coping strategies.
McFadden and Basting (2010) ²⁷	Analyse the relationship between creative engagement in social networks and resilience.	Elderly individuals with and without dementia.	Participation in social networks through creative activities is a protective factor.
Krause and Bastida (2011) ⁴⁰	Investigate religious beliefs regarding suffering and health.	1,005 elderly Mexicans.	Improvements in health outcomes associated with faith.
Fankhauser et al. (2010) ⁴¹	Investigate the impact of interpersonal and social resources on adjustment disorders (intrusion, deviation, failure to adapt after critical event).	121 adults aged between 65 and 97 years.	Motivational variables mediated the relation between social recognition as a victim and adjustment disorder symptoms, however, they did not mediate the relation between reluctance to exposure.
Vahia et al. (2011) ⁴²	Investigate the association among spirituality and optimism, resilience, health, depression and quality of life.	1,973 elderly individuals.	Spirituality associated with high levels of resilience, low levels of income and education and being married.

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and individuals with a more incoherent self-concept (greater evidence of discrepancy between measures of self representation in different roles and situations) showed higher average negative affect⁵¹. Although individuals, especially younger individuals, showed higher negative affect in the presence of less sense of control, reactivity to

stress did not differ between ages and remained the same regardless of coherence of self-concept⁵¹.

A study which investigated the relationship between daily stressors and emotional experience over the course of a week among 101 relatively healthy women aged between 63 and 93 years

Chart 1. continuation

Authors/year	Objectives	Participants	Results
Shrira et al. (2011) ⁴³	Compare aspects of resilience and vulnerability among middle-aged descendants of survivors of the holocaust and other individuals.	364 middle-aged; descendants of survivors of the holocaust and a group of Israelis.	The descendants whose parents had survived, had a greater sense of well-being compared to the others but had more physical health problems.
Sargent-Cox et al. (2012) ⁴⁴	Examine the influence of psychological resources on positive self-perceptions of ageing in the face of declining health (longitudinal study).	1,569 elderly aged 65 year and over.	Self-esteem and expectancy of personal control may attenuate the effects of a decline in activities of daily living on perceptions of ageing.
Lou and Ng (2012) ⁴⁵	Investigate resilience factors that help elderly Chinese to live with a sense of loneliness (qualitative study).	13 elderly individuals living alone in the community.	Themes: resilience, cognitive competence, self, personality and resilience, family orientation, coping.
Tomás et al. (2012) ⁴⁶	Investigate the effects of coping strategies and resilient coping on well-being using a structural model.	225 elderly at home (Valencia, Spain).	Resilience was shown to be an important predictor of variance of well-being, without requiring coping strategies.
Mertens et al. (2012) ³⁰	Assess the impact of resources such as social support, income and personal mastery on physical, social and mental functioning.	361 Dutch men and women aged 60 years and over.	Significant association between high mastery (resilience) and physical, mental e social functioning. High levels of social support and income make a significant contribution to successful ageing.
Gooding et al. (2012) ³¹	Investigate the effects of psychological resilience on depression, despair and general health.	60 elderly living in the community aged 65 years and over, and 60 young students aged between 18 and 25 years.	Older individuals were more resilient, especially in relation to emotional regulation and solving problems. Younger individuals were more resilient in terms of social support.
Tummala-Narra et al. (2013) ⁴⁷	Examine vulnerability and resilience related to elderly (Semistructured interviews).	8 elderly Indian men and 10 elderly Indian women.	Four categories of analysis: 1. Life changes in the United States; 2. Give and receive care in the family; 3. Reflecting present and future circumstances; 4. Coping.

shows that reduced negative affect in old age is partially due to a reduction in the frequency of daily stressors⁴⁸. However, the same study found that positive affect decreases with increasing age, probably because the elderly were engaged in few

experiences and involved in avoiding unforeseeable situations⁴⁸. Furthermore, positive events did not attenuate reactivity to daily stressors, in contrast to current literature which suggests that positive events attenuate stress. According to the

Chart 2. Category 2. Emotional regulation in the face of stressful experiences. Review of international literature on resilience in the elderly (2007-2013).

Authors/year	Objectives	Participants	Results
Chow et al. (2007) ⁵⁷	Examine the relation between positive and negative emotion and cognition in individuals that perform complex cognitive tasks.	63 young adults and 52 older adults.	Unidirectional coupling from negative emotion to cognitive performance among the elderly; and from negative emotion to positive emotion, and from cognitive performance to both positive and negative emotions in younger adults.
Ostir et al. (2008) ⁵⁸	Longitudinal study regarding emotional resilience during three months of rehabilitation after a cerebrovascular accident (CVA).	856 individuals aged 55 years and over.	One third of the patients showed a high frequency of positive emotions during the three months after the CVA, indicating emotional resilience.
Stawiski et al. (2008) ⁴⁹	Examine differences in the perception of overall stress, exposure and reactivity to daily stressors.	67 young adults (average age 20 years); 116 elderly (average age 80 years).	Exposure to daily stressors decreased in old age. However, emotional reactivity did not differ between ages. Perception of overall stress in the elderly was associated with greater exposure to daily stressors. Younger individuals showed higher negative affect associated with daily stressors.
Kessler and Staudinger (2009) ⁵⁹	Investigate the relationship between affect regulation and resilience in different age groups.	277 Participants age between 20 and 80 years.	Affect regulation in the face of difficulties associated with age emerges as central component of resilience in the elderly.
Diehl and Hay (2010) ⁵¹	Investigate the associations among daily stressors, negative affect, incoherent self-concept and resilience	239 young, middle-aged and elderly adults. Average age 49.6 years.	Association between daily stressors and negative affect was greater on days in which adults showed less control. Reactivity to stressors did not differ between ages or different levels of incoherent self-concept.
Charles et al. (2010) ⁴⁸	Examine differences in daily stressors according to age, positive events and their relation with emotional experience.	101 elderly women aged between 63 and 93 years.	Old age was associated with few stressors and a decreased negative affect. No significant association was found between positive affect and positive events were less frequent with age.
Montpetit et al. (2010) ⁶⁰	Investigate the relationship between daily stressors and affect.	42 elderly men. Average age 78.8 years.	The most resilient individuals mentioned that they experienced less stress and reactivity to stress and recovered more rapidly.
Ong et al. (2010) ⁶¹	Examine how much positive emotion after losing one's wife varies depending on the strength of the marriage relationship and personality traits related to loss before the loss.	Adults from the National Survey of Midlife Development (MIDUS).	Widowers exhibited a decline in positive emotion in the first three years following their loss compared men who had not lost their wives. No significant difference was found in widowers with strong personality traits before the loss or a strong marriage relationship.

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Chart 2. continuation

Authors/year	Objectives	Participants	Results
Ong et al. (2010) ⁶²	Examine the role of psychological resilience and positive emotions in the day-to-day experience of chronic pain during 14 days.	95 men and women with chronic pain.	Regardless of levels of neuroticism, negative emotions, pain intensity, income and age, individuals with enhanced levels of resilience experienced positive emotions with greater frequency and less intense chronic pain, in comparison to less resilient individuals.
Vahia et al. (2011) ⁴²	Analyse the impact of underestimated depression on positive psychological functioning (optimism and resilience), cognitive functioning and complaints and quality of well-being.	1,979 elderly women living in the community.	Underestimated depression led to: more negative self-perception of aging, worse physical health and emotional functioning, and greater anxiety.
Emler et al. (2011) ⁶³	Examine the life experiences of elderly with AIDS and the relationship between resilience and coping with the disease (qualitative study).	25 adults aged 50 years and over with AIDS.	Emergent themes: self-acceptance to live with the negative effects of the disease and the complexities of ageing; optimism to cope with the disease and ageing; the desire to live, despite the debilitating nature of the disease; generativity (educational actions, counselling with younger people).
Jackson and Bergeman (2011) ⁶⁴	Assess the mediating effects of sense of control on the relation between religiosity/spirituality and well-being.	529 adults aged between 31 and 88 years.	Mediating effects were evident through the significant interaction between sense of control and spiritual experiences throughout the whole sample, between sense of control and religious coping throughout the whole sample, and between sense of control and religious practices in the oldest age group.
Brassen et al. (2012) ⁶⁵	Investigate the effects of unsuccessful and successful feedbacks from chosen responses on regret-related behaviour among young adults and elderly using a psychophysiological model (resonance mechanisms and tasks involving win or loss events).	Three groups: 21 young adults (average age: 25.4), 20 emotionally healthy elderly (average age: 65.8), and 20 elderly with depression (average age: 65.6).	Healthy emotional ageing is related to a reduction in regret responses involving a greater activation of structures involved in emotional regulation (anterior cingulate cortex).

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authors, this occurs because the benefits of positive events exercise a significant influence over individuals who are experiencing chronic stress, which did not happen in this sample made up of healthy individuals who were not subjected to such conditions. On the other hand, illness and

poor health status, especially in the early and final stages of old age may cancel out the advantages of greater affect⁴⁸.

With regard to the *Category resilience and successful ageing* (Chart 3), the elderly describe ageing in terms of decline and coping⁵². Resilience is

Chart 2. continuation

Authors/year	Objectives	Participants	Results
Ó'Hara et al. (2012) ⁶⁶	Investigate whether the 5-HTTLPR short allele is associated with weak emotional resilience, through resilience measures, successful ageing, cognition and health.	99 older adults from the community	No association was found between the 5-HTTLPR short allele and emotional resilience. The carriers of this genotype showed diminished cognitive functioning and reports of ageing.
Rosado-Medina et al. (2012) ⁶⁷	Investigate which internal factors of resilience are associated with living to be 100 years of age.	23 100-year-olds: 15 men and eight women from Porto Rico.	Emotional stability, optimism, behavioural factors and emotional and behavioural skills are factors associated with successful aging.
Deboeck and Bergman (2013) ⁶⁸	Describe emotional regulation using a differential equation model based on the water reservoir concept.	Elderly from the Notre Dame Study on Aging.	The metaphor of a water reservoir, where the water level depends on the quantity of water that enters and leaves, and the quantity of liquid in the reservoir corresponds to life stressors which accumulate throughout life, while coping actions dissipate the effect of the stressors.
Randall (2013) ⁶⁹	Describe the value of narratives that constitute "striking and good stories" about resilient ageing.	Theoretical article	Reflect on life stories (integrative reminiscences, a life review) may contribute to coping with life changes in old age.

associated with a pragmatic acceptance of reality by the elderly in rural areas⁵³ and general and daily well-being in a study involving 125 elderly widowed individuals⁵⁴. In a study involving 174 individuals without dementia aged between 60 and 94 years resilience is associated with motivational skills acquired throughout life and thus considered a protective factor for cognitive impairment and psychological well-being³².

Chart 4 describes the following resilience measures: the Connor-Davidson Resilience Scale (CD-RISC)¹⁹; the Wagnild and Young Resilience Scale⁵⁵; and the Brief Resilience Scale⁵⁶.

Brazilian Journals

This search, using the keywords *resilience and ageing*, *resilience and old age* and *resilience and the elderly*, resulted in 11 studies, two of which were a review. No articles were found on the PeP-SIC database using the same keywords. However, when only the keyword resilience was used, four

articles appeared: one of these articles was also found on the Scielo database; two were unclear as to whether the study involved the elderly, ageing or old age; and one was a theoretical review carried out during the period 2000 to 2006. Only the latter article was retained for analysis.

The Brazilian articles were grouped into the three categories described above: Category 1. Psychological and social coping resources; Category 2. Resilience of carers of the elderly; and Category 3. Theoretical reviews (see summaries in Chart 5).

Discussion

The studies highlight the multidimensional nature of resilience, reflecting a complex interaction between individual and environmental dimensions which involves a combination of risk factors (individual, environmental and cumulative) and protective factors (personal attributes,

Chart 3. Category 3. Resilience and aspects related to successful ageing (well-being, satisfaction with life, quality of life). Review of international literature on resilience in the elderly (2007-2013).

Authors/year	Objectives	Participants	Results
Harris (2008) ⁷⁰	Theoretical discussion involving two case studies about resilience in people with dementia.	Two elderly individuals with early stages of dementia.	Author suggests that the concept of successful ageing should be replaced by the concept of resilience.
Kleinspehn-Ammerlahn et al. (2008) ⁷³	Examine self-perceptions of aging, subjective age and satisfaction with aging change during old age.	Elderly participants of the Berlin Aging Study, aged between 70-104 years.	Age contributes for a major decline in satisfaction with ageing change. Increase in the discrepancy between self-perception of age and real (average of 13 years under real age). A large number of illnesses on the baseline attenuate discrepancy between ages.
Rothrauff et al. (2009) ⁷⁴	Assess the association among parental style and psychological well-being, symptoms of depression and drug use.	1,995 middle-aged and elderly adults.	Greater psychological well-being associated to memories of parental style with authority, compared to memories of authoritative parents and parents without bonds. Parental style may be associated with resilience, flexibility and malleability.
Leipold and Greve (2009) ¹⁵	Propose an explicative model in which resilience constitutes a bridge between coping and development within a successful ageing perspective.	Theoretical study.	Individuals who adapt to adverse conditions seek support coping processes involving assimilation and accommodating postures influenced by individual situational conditions.
Chu and Leasure (2010) ⁷²	Investigate quality of life in elderly Vietnamese immigrant women (ethnographical study)	33 elderly immigrants.	Security and resilience are the most common themes. Quality of life is related to health, social support and functionality.

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interpersonal relations and support), and results in successful adaptation, avoidance of disorders, psychological well-being, and recovery^{3,70-72}.

With respect to gerontology, an analysis of a group of articles shows the predominance of constructs associated with the life-span model, which views resilience as being related to development, the notion of individual plasticity, the potential for personal change, flexibility and resistance in dealing with the limitations and losses which occur throughout life^{5,6}. There exists a predominance of gerontological concepts, such as successful ageing, psychological well-being, social support, satisfaction with life, and religiosity and spirituality, which are seen as being asso-

ciated with resilience. The review highlights that psychological and social coping resources and emotional regulation are central components of adaptation processes.

With respect to Category 2. *Emotional regulation in the face of stressful experiences*, it is important to highlight that people differ in their capacity for emotional regulation – an important theoretical aspect of the construct of resilience – since resilience involves a complex interaction between the individual and his or her dispositional resources and environment supports. Thus, aspects of an individual that promote a resilient disposition such as optimism, sense of control, self-concept, and capacity for emotional

Chart 3. continuation

Authors/year	Objectives	Participants	Results
Lacruz et al. (2010) ⁷⁵	Investigate psychosocial, somatic and behavioural predictors of successful ageing despite adverse experiences.	Subsample of 1,079 participants), part of the Kora Cohort.	Description of the research protocol used to investigate resilience and fragility which includes assessment of mental health, resilience, neuroendocrine profiles, related to successful adaptation
Terril and Gullifer (2010) ⁵³	Investigate ageing experiences in women (interviews).	Eight Anglo-Australian women living in rural areas aged between 65 and 75 years.	Thematic analysis: liberty to choose the activities that women like to do; pragmatic acceptance of ageing (resilience); and narratives of growth and stagnation.
Hahn et al. (2011) ⁵⁴	Investigate well-being and use of time among widows.	125 married women and 75 widows.	Widows were resilient during daily life activities. No differences in overall and daily well-being between married women and widows. Small differences in relation to use of time.
Phoenix and Smith (2012) ⁵²	Analyse narratives given by the elderly about age-associated decline.	13 individuals aged between 50-73 years that practice weight training	Participants described ageing as "natural", not stereotyped in relation to decline and deterioration. Individual differences regarding how much and in what way they resisted decline.
Jeste et al. (2013) ⁷⁶	Assess physical, cognitive and psychological aspects of self-reported successful ageing.	1,006 elderly from the community aged between 50 and 99 years.	30% of variance in self-reported successful ageing related to resilience, depression, physical functioning and age (in this order).

regulation^{50,51}, can explain differences in levels of resilience between individuals.

The literature which specifically addressed old age in relation to the process of emotional regulation as an advantage of age suggests that the elderly experience a small reduction in well-being after the age of 60, probably due to an increase in illnesses, and adopt a more accommodating posture⁵⁹ in the face of unavoidable interpersonal tensions and stressful situations as a complex emotional response which values the positive and negative aspects of the experience¹¹. This capacity for emotional regulation may be associated with processes of adaptive selection which allow the elderly to save psychological, physiological, social and cognitive resources, reducing the number of bonds and cultivating only those which result in

affective closeness, an increase in comfort and improvements in subjective well-being²⁵.

The articles produced on emotional regulation during recent years (2011 to 2013) emphasise the importance of positive emotions of ageing, such as being optimistic about living to be 100 years of age⁶⁷, self-acceptation, desire to live, self-control and quality relationships, for coping with diseases such as AIDS⁶³. Furthermore, a study involving 529 individuals aged between 31 and 88 years suggests that sense of control has a mediating effect on the relation between religiosity/spirituality and well-being⁶⁴. It is important to note that, although resilience is associated with the individual resources outlined here, the conceptualisation of this phenomenon requires an integrative approach in which the concept is

Chart 4. Category 4. Resilience measures. Review of international literature on resilience in the elderly (2007-2013).

Authors/year	Objectives	Participants	Results
Lamond et al. (2008) ⁷⁹	Investigate adaptation skills in face of adversities in elderly in the community using the Connor-Davidson Resilience Scale (CD-RISC).	1,359 elderly in the community, over the age of 60 years.	The CD-RISC has good internal consistency. Main predictors of resilience: high level of emotional well-being, optimism, self-reported successful ageing, social engagement and few cognitive complaints.
Windle et al. (2008) ²⁶	Identify common psychological resources to the concept of resilience, using factor analysis.	1,847 elderly between the age of 50 and 90 years from England, Wales and Scotland.	Self-esteem, personal competence and control are identified as common elements.
Resnick e Inguito (2011) ⁸⁰	Investigate the psychometric and clinical properties of the Wagnild and Young Resilience Scale (1993).	Elderly individuals aged between 80 and 90 years. Average of three medical comorbidities.	The use of the scale can identify elderly with low resilience. Revisions are recommended.
Tomás et al. (2012) ⁵⁶	Examine the validity of the Brief Resilience Scale	133 elderly individuals from an association of retired people in Spain.	The Brief Resilience Scale (four items) showed internal consistence and met validity criteria Validated for use in a clinical context.

Chart 5. Review of Brazilian literature on resilience in the elderly (2007-2013).

Category 1. Resilience of carers of the elderly			
Authors/year	Objectives	Participants	Results
Gaioli et al. (2012) ⁸¹	Describe sociodemographic and health variables in carers of the elderly with Alzheimer's, associated with care related to resilience.	101 carers aged over 18 years, caring for the elderly in primary care facilities and public hospital in 2009.	Majority of carers was women without depression receive help from other people and achieved a high score on the resilience scale. Significant association between resilience and related people; use of medicines; tiredness, exhaustion and lethargy, medical treatment.
Oliveira and Furegato (2012) ⁸²	Identify characteristics of daily living and care received under the health system by an elderly couple and schizophrenic children using interviews.	Elderly couple and four schizophrenic children.	Categories identified: understanding of schizophrenia as a limitation; tiredness and overburdening compromises quality of life; uncertainty in relation to the future and resilience strengthened by faith in God. Satisfaction in relation to care received.

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Chart 5. continuation

Category 2. Psychological and social coping resources			
Authors/year	Objectives	Participants	Results
Fortes et al. (2009) ⁸³	Investigate resilience in the elderly and association with sociodemographic and cognitive functioning variables.	86 elderly, aged between 60 and 90 years	No association was found between resilience and sociodemographic variables. High number of subjective memory complaints corresponding to a low level of resilience. Significant correlation between resilience scale results and the Mini Mental State Examination (MEEM).
Resende and Neri (2009) ⁸⁴	Investigate the relationship between sense of psychological adjustment and view of old age in young adults and the elderly with a physical disability.	90 people of both sexes aged between 25 and 84 years.	Moderate and high adjustment rates, women had lowest scores. Individuals with congenital disabilities and more psychologically adjusted had a more positive view of old age.
Resende et al. (2010) ⁸⁵	Investigate subjective well-being; resilience perception of social support and analyse the relationship between these variables.	12 participants from a theatre group.	Participants reported subjective well-being and resilience in face of life events and perceive available social support (emotional and practical). Resilience greater with older age.
Ferreira et al. (2012) ⁸⁶	Assess resilience self-esteem social support in the elderly (exploratory study).	65 elderly treated on the public health service in Natal, Rio Grande do Norte. Average age: 71 years.	The elderly exhibited satisfactory levels of resilience, positive self-esteem and perceived social support. Moderate positive correlation between resilience and self-esteem.
Rodrigues and Neri (2012) ⁸⁷	Investigate the relationship among social vulnerability; individual vulnerability and programmatic vulnerability (e.g. access to health services)	688 elderly in Campinas, São Paulo, Brazil (FIBRA).	Variables related to variability: access and use of health services, indicators of dependence on the health system and social vulnerability and family income. Covariation between social conditions and family income and individual vulnerability in old age.

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expressed as a constellation which combines individual resources (capacities, competences, attributes), social conditions (social support, for example) and developmental problems or changes (for example, obstacles and losses)⁴.

Considering that resilience goes beyond self resources and encompasses resources related to social support, certain studies^{24,27,28,39} highlight the relevance of social resources, or “social capital” as Hildon calls it^{24,39}, such as social support,

quality of relationships and integration into the community.

Although studies on successful ageing do not always focus on resilience and its related aspects, they reveal that psychological well-being and maintaining affective and cognitive functioning are important indicators of adaptation in the face of adversity. Positive psychological functioning leads to improved neuroendocrine regulation and acts as a protective factor for physical (illness

Chart 5. continuation

Authors/year	Objectives	Participants	Results
Andrade et al. (2013) ⁸⁸	Describe the sociodemographic and economic profile of survivors of cancer according to level of resilience (Pesce et al. 2005) frequenting the Pelotas hospital school, Rio Grande do Sul.	264 survivors of cancer. Medical assessment between March and June 2010 (Hospital School).	Predominance of women (67.8%), elderly (47.4%), married (52.6%), white (83.3%), main income pension (75.4%). Highest level of resilience was in men (47.1%), the elderly (44.8%), single individuals (47.9%), non-whites (52.3%) and those with a job (55.6%).
Ribeiro et al. (2009) ⁸⁹	Characterise elderly with chronic kidney failure using haemodialysis; identify level of depression	61 patients from a hospital school.	Average score using the Geriatric Depression Scale (GDS) was 10.43. Correlation between income and level of education, GDS score and being illiterate, suggesting less resilience to the disease among illiterate individuals.
Category 3. Theoretic review			
Laranjeira (2007) ⁹	Investigate scientific production on resilience in indexed journals, between 1994 and 2004, using the following keywords: adaptation, vulnerability, resilience model, elderly and life events	44 articles.	Four central themes: resilience and ageing; relevance of protective factors; and resilience and successful ageing. Literature on resilience and ageing is still scarce.
Oliveira et al. (2008) ⁹⁰	Carry out a bibliographic survey of research on resilience in the period 2000 and 2006.	43 articles.	Prevalence of studies with adults - 21 empirical studies (42.8%). Development of this concept is still under discussion, but is directly related to protective factors and risk factors.

or disability) and economic and educational adversity. Strong sense of purpose of life, personal growth and positive personal relationships are associated with low cardiovascular risk, adequate levels of cholesterol and cortisol and improved glycemic control⁷¹. Greater psychological well-being and higher levels of education were identified as predictors of low levels of Interleukin 6 (IL-6), a marker of inflammation⁷⁷. The importance of positive psychological functioning and well-being for psychosocial adaptation is also highlighted by Harris⁷⁰ who proposes that the construct of successful ageing should be substituted with that of resilience, based on two case studies of patients diagnosed with early-stage

Alzheimer's taking into consideration their ageing trajectories.

An important aspect of the Brazilian literature is that the majority of articles (seven out of 11) describe psychological and social coping resources, reflecting the trend in the international literature. Furthermore, six of the articles use the Resilience Scale to assess resilience⁷⁸, which is an adaptation of the Wagnild and Young Resilience Scale⁵⁵.

The Brazilian articles grouped into *Category 2. Resilience of carers of the elderly* shows an interest in care relationships as a new topic in research involving the elderly. One of these articles found a significant association between resilience and

the following factors: relationship (children and spouses exhibit a medium to high level of resilience in comparison to brothers and sisters, and brothers and sisters-in-law); use of medicines (use is greater in individuals with a low resilience score); tiredness, exhaustion and lethargy (greater in individuals with low and medium levels of resilience), medical treatment (prevalence of treatment was greater in individuals with low resilience)⁸¹.

Articles dealing with clinical practice were not found. However, it is known that one of the main objectives of clinical practice is to increase capacity for coping with adverse conditions. In this respect, methods which increase emotional resilience, such as biofeedback, relaxation, cognitive restructuring, and distraction are seen as effective strategies for strengthening skills for coping with chronic pain and promoting well-being²². Practices such as exploring life stories, individual development and personal circumstances may contribute towards increasing an individual's resilience by identifying successful past experiences which can be used promote resilience in adverse situations⁹¹.

From a methodological point of view, the use of statistical analysis is more prevalent than qualitative studies in the international literature^{28,34,36,45,47,52,53}. The studies carried out by Hildon²⁴ and Rosado-Medina et al.⁶⁷ use both qualitative and quantitative methods. The majority of studies in Brazil used quantitative methods, reflecting the tendency of international studies.

The present literature review has certain limitations related to the scope of analysis of each article, which focussed only on the objectives, sample and main results, possibly to the detriment of other information, such as study methodology, country of origin, operational model used, and whether resilience was used as a dependent or independent variable.

Conclusion

This literature review highlights a number of important ideas of resilience. First, resilience is maintained during old age, thus providing a foundation for continuity of functioning and development through successful coping with the deleterious effects of life's risks and adversities. This is one of the principles or assumptions of

the life-span paradigm and one which is repeatedly confirmed by research in this area.

The second idea is that coping is understood as the management, resistance to and recovery from the negative effects of stressors. In old age, adversities or risks may take the form of experiencing the illness and death of a loved one, illness and accidents, loss of prestige and even uncontrollable past events affecting relatives.

The third important notion is that effective coping with risks and adversity requires individual resources, such as good health, maintenance of activity, functioning, optimism, positive affect, high self-esteem, flexibility, purpose, sense of meaning, interpersonal control and religiosity/spirituality, and social resources, such as integration into the community, maintaining a social role, social involvement and the social resources offered by relationship networks. Health, vital involvement, social participation and psychological well-being are also highlighted as dependent and independent variables related to resilience.

The production of research articles on resilience in the elderly has increased in Brazil over the last two years. The resilience of family carers of ailing elderly appears to be a new line of research, possibly because this phenomenon has gained more visibility over recent years as increasing life expectancy in Brazil means that the need for care has become more palpable in clinics and families.

However, despite the increase in the number of studies, advances in theory and methodology and overlapping topics of international research, Brazilian research involving the elderly remains relatively scarce, particularly in relation to health and functioning, and suffers from a lack of measurement instruments, theoretical grounding and robust lines of long term research. It therefore repeats the tendency of research in the sphere of gerontology in the country, a new field which, despite receiving few resources from universities and research funding agencies, is growing in response to current population and social trends.

The Brazilian literature also highlighted the importance of population-based studies that encompass sociocultural and economic conditions and the interaction between lifelong biological and individual processes to determine associations with vulnerability and resilience. Despite the above, there is still a long road ahead for research in this area.

Collaborations

AP Fontes designed the study and wrote the paper. AL Neri designed the study, wrote the paper and revised the final version of the paper.

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