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Coping strategies as indicators of resilience in elderly subjects: a methodological study

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Abstract *Coping strategies as components of resilience among the elderly serve three purposes: protection against threats to adaptation, recovery from the effects of adversity, and personal development. The present paper aims to investigate internal and external validity for a coping inventory. 415 elderly subjects (aged 65 and older) answered questions that measure coping, depression, self-rated health and satisfaction with life. Scores were compared with each other as well as according to gender, age and income. Exploratory factor analysis and internal consistency analysis were conducted. Three factors explained 30.8% of the variance: 1. non-adaptive strategies, 2.adaptive strategies, and 3. development strategies. The scale showed moderate internal consistency ($\alpha = 0.541$). Development strategies were positively correlated with self-rated health and with satisfaction with life, and negatively correlated with depression ($p < 0.05$). The explained variance and internal validity were moderate, possibly because the coping inventory does not reflect specific situations of old age, and also because of the complexity of strategy-context relationships, among other reasons. Correlations found with other indicators of resilience encourage further studies.*

Key words *Coping, Psychological resilience, Depression, Elderly*

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Introduction

In old age, adversities and biological, economic and social risks to functioning and well-being become more likely, while personal and social resources that make it possible to manage them or to cope with them start to decline. However, many older individuals keep a good level of functioning and of physical and psychological well-being, which often seem to be inconsistent with the economic, social and health conditions they live in. There are two explanations for this phenomenon. To some authors, it is due to the influence of stable characteristics of resilient people, including self-determination, sense of control and the ability to seek social support[1]; to personality traits such as conscientiousness and neuroticism, associated with adequate or inadequate adjustment in people with diabetes and multiple sclerosis; and to optimism related to a better physical and psychological adjustment in coping with chronic conditions such as coronary disease, cancer and HIVAIDS[2,3]. To others, the influence of self-regulating resources, among them stress coping strategies used in face of physical challenges associated with age and in face of changes in social networks such affective loss[4], would be at play. Resilience would enable the elderly to adapt their individual needs to the demands of the context, to learn and perform adaptive tasks, and to develop the cognitive and behavioral skills necessary for survival in the face of aging stressors[5-7].

In Psychology, the life-span paradigm consecrated the use of the concept of psychological resilience in old age meaning positive adaptation, even in the presence of losses and risks to functioning and to well-being. And it went further, proposing that resilience processes have three functions: (a) protecting the body from the deleterious effects of threats to adaptation; (b) promoting recovery of the body from the deleterious effects of adversity and from the risks to psychological well-being as well as to physical, social and cognitive functions; and (c) keeping and promoting development in selected domains in view of the risks, thus compensating for cumulative and unavoidable losses associated with aging[8]. This point of view has been reinforced by Positive Psychology[9].

In the context of the English Longitudinal Study of Aging, Hildon et al.[10] take up the issue, defending the need to study the positive aspects and the development of psychological resilience in old age. Lerner et al.[7] define psychological resilience as a product of adaptive relationships that are established between context and individuals throughout their life course. To the authors, resilience differs depending on domains and contexts, which means that it is not a stable characteristic or personality trait, and thus one cannot speak of resilient or non-resilient individuals.

Coping strategies, recognized as constituents of the construct psychological resilience, are mirrored in instruments that assess behaviors by which people alter the environment and regulate their cognitions and emotions when challenged by stressful events of different natures. Usually, these tools are based on the categorization of coping strategies into those oriented to problem solving (e.g. making an action plan) and to managing emotions (e.g. expressing an emotion), and those oriented to positive actions (e.g. accepting the problem) and negative actions (e.g., expressing hostility)[11].

Hildon et al.[10] present a view that is consistent with the life-span paradigm proposition on psychological resilience in old age, focusing on coping strategies in terms of adaptation and development. Based on logical and statistical procedures applied to pre-existing instruments grounded on the two-factor model by Lazarus and Folkman[11], the authors describe a new coping model anchored by a structure of 3 latent factors: Factor 1. Avoidance strategies, defined as ways to not get involved with adversities, such as pretending that they are not occurring or hiding feelings, which in the medium and long term can be dysfunctional; Factor 2. Adaptive strategies, defined as ways to integrate adversity into experience, thus teaching oneself how to live with a problem; and Factor 3. Development strategies, characterized by overcoming adversities in a positive way and deriving learning from the latter. Scores on the items from the three coping categories were used to generate indicators of high and low resilience.

The model of Hildon et al.[10] is an interesting contribution to theory and to clinical practice. There are no Brazilian studies that have considered coping mechanisms as indicators of psychological resilience in old age, nor are there studies that are based on a clinical and developmental conception regarding these processes. The present study aimed to investigate evidence of internal and external validity in measuring coping, which is considered a component of psychological resilience in the elderly.

Methods

This study was carried out based on data contained in the electronic database of the Fibra Study (Frailty in Brazilian Elderly), conducted by Unicamp in Parnaíba (Piauí State) and Ivoti (Rio Grande do Sul State), municipalities that comprised the sample of seven cities involved in a multicenter investigation on associations between frailty and sociodemographic, health and psychosocial variables in elderly men and women aged 65 years and over. Based on the distribution of respective census tracts, the size of a probabilistic sample in each city was estimated, with a 95% reliability level and 4% sampling error[12].

Participants

The elderly were recruited at home (484 in Parnaiba and 197 in Ivoti) by community health agents, religious pastoral agents and university students, and were invited to attend a data collection session in a prearranged community setting. Data collection was performed in two phases. At the end of the first, which included sociodemographic, clinical, anthropometric, frailty and cognitive variables, the elderly whose scores in the Mini-Mental State Examination[13] were below cut-off point for the respective levels of schooling, minus one standard deviation, were excluded. By this criterion, 415 elderly individuals (268 in Parnaíba and 147 in Ivoti) advanced to the second set of assessments, which included the variables of interest for the present study.

Variables and measures

Sociodemographic: gender (maleor female), age (number of years) and monthly family income (gross value).

Coping Strategies: Assessed through the Coping Strategies Inventory[14,15], with 19 items and a four-point scale (never = 0, occasionally = 1, almost always = 2 and always = 3). The original instrument was based on the two-factor model of problem-focused coping and emotion-focused coping[11,15,16]; however, in 2008, Fortes-Burgos et al.[14] published a study with a Brazilian sample, whose data were submitted to factor analysis and resulted in five orthogonal factors:1. negative emotions, behavioral excesses and risky behaviors; 2. religiousness; 3. control over the closest environment; 4. avoidance and 5. inhibition of emotions.

Replicating the procedure of Hildon et al.[10], five experts worked independently, and then together, with an absolute agreement (100%) criterion, in the recategorization of the items in the Coping Inventory.This inventory, recategorized by the experts, was then compared with the factors found by Fortes-Burgos[14] in a factor analysis of that same Inventory.

Alternative indicators of psychological resilience. The following items were evaluated: (a) Frequency of depressive symptoms, through the Geriatric Depression Scale - GDS, with 15 dichotomous items[17] and cut-off point $\geq$ 6; (b) Satisfaction with life, through a single item in which the elderly were asked if they felt very, more or less or little satisfied with life; and (c) Health self-assessment, evoked by the question: "On the whole, how would you rate your health at the present time, on a scale of 1 to 5, where 1 = very poor, 2 = poor, 3 = intermediate, 4 = good and 5 = very good?" These five levels were condensed into three - positive, corresponding to very good and good, intermediate, and negative, corresponding to poor and very poor.

At the beginning of the data collection session, participants were briefed on: objectives, duration and content of the interview; the voluntary nature of their participation; the right to secrecy over their identity; the confidentiality of individual data; and the benefits, risks and the right to compensation in case of injury arising from participating.All subjects signed a free and informed consent form (ICF), which was approved together with the present research project by the Research Ethics Committee of the State University of Campinas on 08/27/13.

Data Analysis

Descriptive analyses of all variables were made. Since these were not normal distributions, non-parametric statistical tests were used to analyze the data. In order to test the underlying theoretical structure of the data from the Coping Inventory (internal validity), a content analysis of the instrument was first carried out through categorization of the strategies by five experts, based on the model proposed by Hildon et al.[10]. Results of this categorization were compared with the exploratory factor analysis of the same instrument performed by Fortes-Burgos[14] and with the

factor analysis that was one of the objects of the present study. For the exploratory factor analysis, the principal component method was adopted[18]. The resulting correlation matrix was rotated by the Varimax method, which makes it possible to extract orthogonal factors. In order to analyze internal consistency of Inventory items, Cronbach's alpha coefficient was used.

For assessing the external validity of the instrument, results from the Coping Inventory applied to the study´s elderly subjects were pondered considering the factor loading of the items, and the calculated values were compared with the variables depressive symptoms, health self-assessment and satisfaction with life, which are considered indicators of psychological resilience[19]. Correlation analyses (Spearman), comparative analyses among groups of gender, age and income (chi-square test), and comparison among strategy use frequency according to the measures considered (Mann-Whitney and Kruskall-Wallis tests) were performed. The adopted significance level for statistical tests was 5% (p <0.05). These analyses were made through SPSS, version 15.1 (SPSS Inc., Chicago, USA), and SAS, version 8.02 (SAS Inst., Cary, USA).

Results

The majority of participants were women (62.5%). The mean age of the sample as a whole was 72 years and 6 months (SD = 5 years and 6 months); 37.6% were between 65 and 69 years of age, 29.9% between 70 and 74, 19% between 75 and 79 and 13% were 80 years old and over. The average household income was 3.5 times the monthly minimum wage (MW) (SD = 2.4); 11.4% had a household income of less than the MW, 54.3% from 1.1 to 3 times the MW, 18.9% from 3.1 to 5 times the MW, and 15.4% had a household income of 5 times the MW or more.

Following the comparison between the factors obtained by Hildon et al.[10] and the strategy classes recategorized according to theoretical criteria by the Brazilian experts, the strategies of avoidance, as called by the English authors, were denominated non-adaptive by the Brazilian experts, who adopted the original definition, that is, non-adaptive strategies are those that do not deal with adversity, including avoidance strategies, and they may become dysfunctional in the medium to long term. For the other two classes of strategies the original definitions were kept: adaptation as ways of integrating adversities into

experience, and development as the overcoming of adversities in a positive way, with new learning.

Chart 1 compares results from content analysis carried out by experts according to definitions by Hildon et al.[10] with the factors presented by Fortes-Burgos et al.[14] Most non-adaptive strategies involved items that clustered together under factor 1, formerly referred to as "negative emotions, behavioral excesses, and risky behaviors." Adaptive strategies involved a mix of strategies considered as control over the external environment, avoidance and religiousness. Development strategies corresponded to strategies involving control over the external environment, avoidance and emotion inhibition.

The Kaiser-Mayer-Olkim (KMO) sampling adequacy index was greater than 0.60, indicating consistency for factor analysis. Using as criterion for selection of factors those with eigen value greater than 1, eight factors that explained 60.4% of the variability of the data were initially obtained. The scree test showed that with three factors the curve stabilized, with a 30.8% cumulative percentage of variance explained. Factor 1 explained 12.5% of total data variability, factor 2 explained 10% and factor 3 explained 8.4%. To constitute the factors, items with a factor loading greater than 0.40 were considered.

The results from factor analysis replicated those of the conceptual analysis carried out by the panel of experts, since the categorization of 14 of its 19 items was coincident. The exceptions were: "Complained or let off steam with someone" (classified as adaptive by the panel and non-adaptive by factor analysis);"Prayed and asked for guidance from some higher entity" (classified as a development strategy by the panel and adaptive by factor analysis); "Relied on others who, in their view, have the ability to solve the problem" (classified as adaptive by the panel and development by factor analysis); "Tried to forget that the problem existed" (classified as non-adaptive by the panel and adaptive by factor analysis); and "Used medication to control anxiety" (classified as adaptive by the panel and non-adaptive by factor analysis).

Factor 1 - Non-adaptive strategies - comprised 8 items; factor 2 - Adaptive Strategies - comprised 6 items; and factor 3 - Development strategies - comprised 5 items. Item 6 ("Tried to entertain themselves, pursuing hobbies, reading or watching television") was the one with the greatest commonality, that is, 52.6% of its variability was explained by the factor. Item 12 ("Concluded that things could have been worse")

Chart 1. Stress Coping Inventory Items14,15 categorized into non-adaptive, adaptive and development strategies by experts and their correspondence with factors based on Fortes-Burgos (2008). PENSA – Estudo dos Processos do Envelhecimento Saudável [Healthy Aging Processes Study],(2002-2003)

Item	Conceptual domains according to Hildon et al.10	Factors according to Fortes-Burgos (2008)*
	Non-adaptive strategies	
1	Accepted the situation or thought it happened because it was supposed to happen.	EN
2	Thought the situation arose due to others.	EN
4	Concluded that there was nothing to be done.	EQ
7	Expressed hostility.	EN
9	Isolated himself/herself.	EN
11	Kept his/her feelings to himself/herself.	IE
13	Drank too much or overate to compensate for or to forget what was happening	EN
17	Tried to forget that the problem existed.	EQ
19	Shouted and cursed.	EN
	Adaptive strategies	
3	Complained or let off steam with someone.	IE
6	Tried to entertain himself/herself, pursuing hobbies, reading or watching television.	EQ
10	Relied on others who, in their view, have the ability to solve the problem.	CA
12	Concluded that things could have been worse.	EQ
16	Tried to relax or to take a break when the situation seemed to pose too heavy a burden.	CA
18	Used medication to control anxiety or depression.	EN
	Development strategies	
5	Waited until he/she had more information before taking action or making a decision.	CA
8	Prayed and asked for guidance from some higher entity.	RL
14	Strengthened his/her bonds with other people.	CA
15	Trusted God or some higher entity or force.	RL

*EN = Factor 1. Negative emotions, behavioral excesses and risky behaviors. RL = Factor 2. Religiousness. CA = Factor 3. Control over the closest environment. EQ = Factor 4. Avoidance. IE = Factor 5. Inhibition of emotions.

had the lowest commonality (12.3% explanation). Items 4 "Concluded that there was nothing to be done" (reversed item) and 12 "Concluded that things could have been worse" had factor loadings of less than 0.30 but were kept in the model for exploratory purposes. To avoid interpretation problems, negatively loaded items should be interpreted in the opposite way to what is described. For example, in the item "accepted the situation", considered a non-adaptive strategy, the negative loading indicates that the description of the item is the opposite, that is, "did not accept the situation" (Table 1).

Internal consistency Analysis of the Coping Inventory based on the new model resulted in a moderate alpha coefficient ($\alpha = 0.541$).Internal consistency was calculated after items 1, 4 and 11,which were negatively loaded, were removed. Their removal caused a modest increase in inter-

nal consistency (0.568 and 0.359), which is why these items were kept in the model (Table 2).

Eighteen percent of the elderly subjects scored above cutoff point on the Geriatric Depression Scale (M = 3.2 and SD = 2.5); 71.6% declared to be very satisfied with life, 24% moderately satisfied and 3.4% poorly satisfied; 22.5% evaluated their own health as very good or good, 30.7% as intermediate and 46.8% as poor or very poor. No significant differences in the use of coping strategies were observed regarding gender, age groups or income groups.

Correlation analysis of the scores of the elderly in the Coping Inventory and in the three instruments adopted as external parameters resulted in low but statistically significant figures. The higher the scores on non-adaptive strategies, the lower the scores on health self-assessment and satisfaction with life, and the higher the

Table 1. Factor structure resulting from the exploratory factor analysis applied to the Coping Strategies Inventory. Fibra Study, Unicamp. Brazil, Elderly, 2008-2009.

No.	Strategies	Factor loadings			λ^2
		Factor 1	Factor 2	Factor 3	
	Non-adaptive				
2	Thought the situation arose due to others.	0.581			0.358
7	Expressed hostility.	0.522			0.3288
13	Drank too much or overate to compensate for or to forget what was happening.	0.519			0.278
19	Shouted and cursed.	0.501			0.265
3	Complained or let off steam with someone.	0.457			0.429
18	Used medication to control anxiety or depression.	0.454			0.229
9	Isolated himself/herself.	0.407			0.178
1	Accepted the situation or thought it happened because it was supposed to happen (reversed item).	-0.457			0.275
	Adaptive				
6	Tried to entertain himself/herself, pursuing hobbies, reading or watching television.		0.724		0.526
16	Tried to relax or to take a break when the situation seemed to pose too heavy a burden.		0.710		0.508
17	Tried to forget that the problem existed.		0.562		0.486
8	Prayed and asked for guidance from some higher entity.		0.428		0.276
15	Trusted God or some higher entity or force.		0.424		0.276
12	Concluded that things could have been worse.		0.292		0.123
	Development				
10	Relied on others who, in their view, have the ability to solve the problem.			0.535	0.287
14	Strengthened his/her bonds with other people.			0.475	0.295
5	Waited until he/she had more information before taking action or making a decision.			0.421	0.200
4	Concluded that there was nothing to be done. (reversed item)			-0.263	0.166
11	Kept his/her feelings to himself/herself. (reversed item)			-0.552	0.382

Main Component Method. λ^2 = commonality of the item (percentage of variability explained by the item). Items with loading higher than 0.40 were considered to comprise the factors.

Table 2. Internal consistency analysis of the coping strategies scale by three factors of factor analysis (n = 415).

Rotation / Factor	Nº of Items	Coefficient α Cronbach's	Items with lower consistency	Correlation with total*	Coefficient α (after removal)**
Orthogonal or Oblique / Factor 1	8	0.570	---	---	---
Orthogonal or Oblique / Factor 2	6	0.547	12	0.141	0.568
Orthogonal orOblique / Factor 3	5	0.345	4	0.092	0.359

* Correlation of the item with the total in its respective domain, without considering the item in the total score. ** Coefficient α Cronbach' after consecutive removal of the items with lower consistency. Reversed items: 1, 4 and 11.

scores on depressive symptoms. The higher the scores on development strategies, the higher the scores on health self-assessment and satisfaction with life, and the lower the scores on depressive symptoms (Table 3).

There was no statistically significant difference between the frequency of use of non-adaptive strategies by men and by women, but women subjects reported making more frequent use of adaptive and development strategies than men

did. Among the elderly subjects who scored above cutoff point in GDS, reported use of non-adaptive strategies was more frequent than in the group that scored below cutoff point in that instrument. Subjects with scores below cutoff point in GDS used more development strategies than those that scored above cutoff point. Among the elderly with negative health self-assessment, the frequency of use of non-adaptive strategies was higher than among those with positive health assessment, who, in turn, reported using more development strategies. Those with high satisfaction with life used more development strategies and less non-adaptive strategies than those who reported to have intermediate level of satisfaction. Those poorly satisfied with life used more non-adaptive strategies and less development strategies than subjects who reported to be very satisfied with life (Table 4).

Discussion

Characterizing coping strategies from the perspective of adaptation and development makes important contributions, particularly pertaining to the description of strategies that are beneficial to controlling and preventing anxiety and depression, adapting to chronic illness and to widowhood, and maintaining quality of life among the elderly. Resilient coping implies an increase in cognitive skills that are considered self-regulating, including the ability to plan, to choose a course of action, to set limits to material resources, to analyze problems and to make decisions[20].

The few differences that were found between factor analysis results and the results from content analysis of the items in the Coping Inventory can be explained by the weight of the theoretical assumptions used by experts for categorization. For example, taking medication may be associated with agreeing to receive treatment, and therefore may have been considered adaptive by experts, while in factor analysis it is merged with other non-adaptive strategies, possibly related to avoidance.

In describing the functionality of strategies not only to deal with the here and now but also to go beyond the problem - development strategies included - the model transcends the classic typology of coping (focus on the problem and on emotion).The present study used coping measurement as a component of psychological resilience. According to Leipold and Greve[21], resilience can be understood as a theoretical bridge between coping and development processes, and it is more than a set of coping strategies. The authors define it as a combination of individual responses, given a certain situation and a particular social context. If the coping episode results in success, stability or progressive positive change, it is then considered resilience. Thus, the difference between coping

Table 3. Correlations between scores on coping strategies and psychological indicators of resilience - FIBRA Study, Unicamp, Brazil. Elderly, 2008-2009.

Variables	Parameters	Coping Strategies		
		Non-adaptive (Factor 1)	Adaptive (Factor2)	Development (Factor 3)
Age	r	0.011	-0.039	-0.102
	p	0.821	0.434	0.038
	n	415	415	415
Family Income	r	-0.007	-0.059	0.090
	p	0.895	0.266	0.087
	n	361	361	361
Depressive Symptoms	r	0.326	0.072	-0.194
	p	< 0.001	0.143	<0.001
	n	414	414	414
Health Self-Assessment	r	-0.138	-0.002	0.140
	p	0.005	0.974	0.004
	n	414	414	414
Satisfaction with Life	r	-0.194	0.026	0.134
	p	< 0.001	0.598	0.007
	n	413	413	413

r = Spearman correlation coefficient; p = p value; n = number of participants.

Table 4. Scores on coping strategies, according to psychological indicators of resilience, age and gender. FIBRA - Unicamp, Brazil. Elderly, 2008-2009.

Variables		Strategies	Average(SD)	P Value*
Gender	Male	Non-adaptive	1.62 (0.45)	p = 0.120
		Adaptive	2.88 (0.71)	**p = 0.037**
		Development	2.33 (0.70)	**p = 0.012**
	Female	Non-adaptive	1.71(0.51)	
		Adaptive	3.04(0.64)	
		Development	2.51(0.69)	
Age	65-69	Non-adaptive	1.64(0.50)	p = 0.127
		Adaptive	2.98(0.69)	p = 0.811
		Development	2.50(0.71)	p = 0.202
	70-74	Non-adaptive	1.74(0.47)	
		Adaptive	3.02(0.66)	
		Development	2.48(0.66)	
	75-79	Non-adaptive	1.70(0.50)	
		Adaptive	2.97(0.66)	
		Development	2.35(0.72)	
	>=80	Non-adaptive	1.62(0.49)	
		Adaptive	2.92(0.68)	
		Development	2.30(0.72)	
Health self-assessment	Negative	Non-adaptive	1.73(0.52)	**p = 0.048**
		Adaptive	3.00(0.69)	p = 0.824
		Development	2.34(0.70)	**p = 0.006**
	Intermediate	Non-adaptive	1.65(0.45)	
		Adaptive	2.95(0.64)	
		Development	2.47(0.67)	
	Positive	Non-adaptive	1.59(0.46)	
		Adaptive	2.99(0.68)	
		Development	2.61(0.71)	
Depressive symptoms	<6	Non-adaptive	1.61(0.45)	**p<0.001**
		Adaptive	2.97(0.67)	p = 0.697
		Development	2.49(0.71)	**p = 0.005**
	≥6	Non-adaptive	1.96(0.56)	
		Adaptive	3.02(0.68)	
		Development	2.23(0.63)	
Satisfaction with life	Poor	Non-adaptive	1.76(0.47)	**p<0.001**
		Adaptive	3.09(0.71)	p = 0.621
		Development	1.99(0.60)	**p = 0.008**
	Intermediate	Non-adaptive	1.83(0.51)	
		Adaptive	2.93(0.66)	
		Development	2.34(0.68)	
	High	Non-adaptive	1.62(0.47)	
		Adaptive	3.00(0.67)	
		Development	2.50(0.71)	

* P value from the Mann-Whitney test for comparison between 2 groups and from the Kruskal-Wallis test for comparison among 3 or more groups.

and resilience is much more a hierarchical conceptual issue than an empirical one.

Traditional research on coping strategies does not refer to them as intrinsically good or bad, since the qualities of the process can only be assessed in specific situations[22]. From the standpoint of resilience, when investing in their own development, elderly individuals tend to pri-

oritize emotional experiences with family and friends as well as human values, and to put aside strategies aimed at expansion or related to a concern for the future[5]. Incidentally, factor analysis included "trust other people" and "strengthen affective ties with other people" in the development strategies group, suggesting that such strategies fulfill adaptation and development functions, thus contributing to improve health and well-being. Likewise, items related to problem solving ("seeking information before taking action", "finding that it is possible to exercise control over situations") were grouped together; this data is in line with data published in other studies, according to which problem solving and emotional regulation skills are critical components of resilience as an adaptation and development process[23-26]. Emotional regulation remains relatively preserved or even increases with age[5].

Factor analysis grouped under adaptive strategies those related to religious coping ("prayed and asked for guidance from some higher entity", "trusted God or some higher entity or force"), to cognitive reassessment ("concluded that things could have been worse") and to reducing stress ("tried to entertain himself/herself " and "tried to relax or to take a break"). Factor analysis also grouped under development strategies "relied on other people" and "strengthened his/her bonds with other people," thus illustrating the notion that such strategies promote adaptation and development. Emotional well-being and stress are crucially dependent on social relationships. As they age, the elderly may experience greater satisfaction with their social networks and more positive emotions with family members than do young adults[7]. Positive adaptation to stressors implies: competence to deal with stress, including the ability to minimize the effects of stressful events; ability to recover quickly after trauma; and, in the long term, containment of negative responses and ability to provide positive outcomes to behaviors that involve overcoming adversity[27].

The relationship between depression and non-adaptive coping strategies found in the present study replicates that observed by Fortes-Burgos et al.[14], where strategies focusing on the expression of negative emotions, on behavioral excesses and on risky behaviors (in the present paper, grouped as non-adaptive) were strongly correlated to depression. A systematic review of coping and depression involving elderly people over 60 shows that despite the diversity of contexts and instruments used, the results point to an unequivocal relationship between coping strategies and depressive symptoms, especially the use of active and religious coping, high levels of internal coherence and inner orientation towards control[28].

Health self-assessment, described as an important indicator of well-being, is significantly correlated with depression, with a comparable effect to that of physical health[29]. In the present study, health self-assessment was used as a component of psychological resilience, assuming that a better subjective assessment of health would be reflected in the use of coping strategies aimed at adaptation and development. In fact, negative health self-assessment was more frequent among those who use non-adaptive strategies, and positive health self-assessment among those who use development strategies.

In a study of community-dwelling centenarians (95 to 107 years old), participants were reported to have high cognitive functioning, good health, and low levels of depression. Logistic regression analysis indicated that individual differences in depression were associated with health self-assessment, instrumental activities of daily living, and family support[30].

Additionally, in the present study those most satisfied with life used more development strategies and, less frequently, non-adaptive strategies than those with an intermediate level of satisfaction. Indicators of well-being, including happiness, positive affects and satisfaction with life, are related to low morbidity, fewer depressive symptoms and less pain, and increased longevity, functioning as a buffer against the impact of change and diversity on adaptation[6].Resilience was associated with satisfaction with life in a German study investigating relationships between the impact of vulnerability factors (such as anxiety and depression and aging) and of personal and social resources on satisfaction with life. Satisfaction with life was associated with resilience and also with the variables employment, presence of a companion, positive self-esteem, and absence of anxiety and depression[31].

Instrument reliability analysis showed a moderate internal consistency coefficient for the inventory, similarly to what was previously observed by Fortes-Burgos et al[14]. High reliability indicators are not necessarily appropriate to coping inventories and are possibly related to the fact that the use of a single strategy might be sufficient to reduce stress with no need to use other responses of the same or of different categories[22]; however, strategies are seldom unidimensional[14],

since coping processes are not isolated phenomena and reflect interactions among people as well as their environment, and the relationship between them.

Some limitations of this study have to be mentioned. First, there was no characterization of the risks to which the elderly who composed the sample were exposed. On the contrary, the study was based on the assumption that old age entails experiences of decline and normative losses, which per se pose risks to adaptation and to development. Future research studies should clearly establish the risks and adversities to which a particular sample is exposed, so that threats to resilience as well as demand for resources of the self are characterized. Symptoms suggestive of depression, health self-assessment and satisfaction with life were used as indicators of resilience, but since the present study was cross-sectional, no repeated measures of these outcomes were made so that that their explanatory role could be demonstrated. Given that the stress coping inventory was used as a measure of resilience within a new theoretical conception of strategies, it would be advisable to compare this instrument with other measures of resilience.

Conclusion

The use of valid and reliable instruments to assess coping in the face of stressors by the elderly makes it possible for health professionals, both within the clinical environment and within the scope of public health, to choose psychoeducational strategies and initiatives that may be more effective in promoting subjective well- being and improving the health of the elderly in the context of resilient aging.

The variance explained by the instrument and the internal validity indicator were modest. Such results may reflect the complexity inherent to the relationship between coping strategies and context. On the other hand, these data results can be attributed to the fact that the coping inventory does not refer to specific situations in old age. Nevertheless, the correlations found between coping data and the other indicators of resilience, which were the object of the present investigation, encourage further studies. We suggest that the obtained factor solution be submitted to confirmatory factor analyses carried out with data from other samples of elderly subjects.

Collaborations

AP Fontes and AL Neri planned the study and wrote the article. AL Neri, coordinator of the Fibra study at Unicamp, reviewed the final version of the paper.

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