Impact of Age, and Cognitive and Coping Resources on Coping

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RÉSUMÉ

Afin d'explorer la valeur prédictive des ressources congnitives et de coping pour le coping centré sur le problème et sur 1'émotion en prenant en compte 1'âge, nous avons recueilli des données auprès d'adultes vivant à domicile et âgés de 20 à 90 ans. Nous avons fait 1'hypothèse que 1'âge, le stress perçu, 1'auto-efficacité, la capacité de mémoire de travail, et la flexibilité mentale sont des facteurs prédisant le coping. Nous avons recueilli des données en utilisant des versions françaises de 1'échelle de stress percu (PSS), d'autoefficacité (GSE) et un questionnaire de coping (WCC). Les évaluations cognitives ont inclus le subtest des empans envers-endroit (WAIS), et les parties A et B du Trail-Making Test (TMT). Dans les analyses multivariées, ni le déficit de mémoire de travail, ni le deficit de la flexibilité mentale ne prédisent significativement le coping centré sur le probleme. L'âge ne prédit que le coping centré sur le problème. L'auto-efficacité prédit le coping centré sur le problème alors que le stress perçu prédit le coping centré sur 1'émotion. Nos resultats ont confirmé que le coping centré sur 1'émotion resterait stable avec 1'âge. Le Coping centré sur le problème augmente avec 1'âge et depend essentiellement de la confiance des participants concernant leur capacité à résoudre des problèmes (i.e., 1'auto-effi cacité).

ABSTRACT

To explore the predictive value of cognitive and coping resources for problem- and emotion-focused coping with age, we collected data from community-dwelling adults between 20 and 90 years old. We hypothesized that age, perceived stress, self-efficacy, working-memory capacity, and mental flexibility were predictors of coping. We collected data using French versions of the Perceived Stress Scale, General Self-Efficacy Scale, and Way of Coping Checklist. Cognitive assessments comprised the WAIS III digit-span subtest and the Trail Making Test parts A and B. In multivariate analyses, neither working-memory nor mental-flexibility deficit predicted problem-focused coping. *Age* was found to predict only problem-focused coping. *Self-efficacy* predicted problem-focused coping, and *perceived stress* predicted emotion-focused coping. Our results confirmed that use of an emotion-focused coping style would not significantly change with age. Problem-focused coping increases with age and depends primarily on participants' confidence in their ability to successfully solve problems (i.e., self-efficacy).

Manuscript received: / manuscrit reçu : 21/05/10

Manuscript accepted: / manuscrit accepté : 09/04/11

Mots clés : vieillissement normal, modélisation par équation structurale, mémoire de travail, flexibilité mentale

Keywords: normal aging, structural equation modeling, working memory, mental flexibility

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Introduction

The effect of age on the way people deal with stress – their style of coping – is at the heart of a controversy. According to some authors, elders tend to adopt more passive forms of coping to deal with stress, avoiding aversive situations and distancing themselves from the problems they encounter (Diehl, Coyle, & Labouvie-Vief, 1996; Folkman, Lazarus, Pimley, & Novacek, 1987). These authors suggest that such strategies are the most effective way to cope with stressors encountered in later life, including chronic stressors, such as medical problems and the loss of friends or relatives (Aldwin, Sutton, Chiara, & Spiro, 1996; Heckhausen, Dixon, & Baltes, 1989; Smith, 2003). However, other researchers

doi:10.1017/S0714980811000456

have argued that age itself does not necessarily influence a style of coping (Aldwin et al., 1996; McCrae, 1982) and that there are no normative changes in coping with age. This view regards changes in elders' coping styles to be adaptive responses to age-related changes in self-beliefs and environmental pressures (Folkman et al., 1987). Hence, age would not directly predict coping; rather, it would constitute a risk factor for changes in self-referred beliefs and the nature of stressors, which in turn prompt changes in coping style.

This assumption is supported by studies that have shown a significant decrease in the effect of age on coping when the type of problems encountered by subjects was statistically controlled (Aldwin et al., 1996). In a more recent study, Trouillet, Gana, Lourel, and Fort (2009) found that age only predicted changes in coping resources, including declines in social support satisfaction and increases in levels of perceived stress. Social support satisfaction and perceived stress predicted an increased use of emotion-focused coping, that is, attempts to control internal stress by avoiding stressful situations or by positively reappraising aversive situations. Self-efficacy was not affected by age, and it positively predicted the use of problem-focused coping – that is, efforts to actively reduce stress by collecting information, evaluating available means, and determining the ways – to solve problems (Trouillet et al., 2009). If age were a risk factor for the use of emotion-focused coping, elders' abilities to shift from passive to more active forms of coping would ultimately depend on the make-up of their coping resources.

Although most previous studies explained changes in coping with age as reflecting a process of adaptation to changes in the nature of stressors, social relationships, or self-referred beliefs, they underestimated the role of cognitive resources. The present study tested the hypothesis that age, coping resources (i.e., perceived stress, self-efficacy) and cognitive resources (i.e., mental flexibility, working memory) are predictors of coping. In this study, *coping resources* refers to the participants' perceptions of both the stressfulness of their life (i.e., perceived stress) and their ability to successfully solve problems (i.e., self-efficacy). *Cognitive resources* refer to the mental resources needed to achieve effortful mental tasks (discussed later), and *coping* is defined as the person's cognitive and behavioral efforts to deal with current or anticipated negative, demanding, or challenging events (Lazarus & Folkman, 1984). We used structural equation modeling (SEM) to evaluate the fit between our data and this new theoretical model.

Our model combines elements of a recent theoretical model depicting the relationships between age, coping resources, and coping (Trouillet et al., 2009), and the information processing theory of cognitive resources (Park, 2000). Trouillet et al. (2009) proposed a model in which age positively predicted perceived stress but did not significantly predict problem-focused or emotion-focused coping. *Self-efficacy* was unrelated to age. Self-efficacy had been defined as a personal resource factor that may facilitate active and positive forms of coping when actions are pre-shaped and efforts are invested to solve problems (Schwarzer, Boehmer, Luszczynska, Mohamed, & Knoll, 2005). Self-efficacy predicted an increase in problem-focused coping (Luszczynska, Scholz, & Schwarzer, 2005; Trouillet et al., 2009). *Perceived stress* predicted an increase in emotion-focused coping but a decline in problem-focused coping (Cacioppo, Hughes, Waite, Hawkley, & Thisted, 2006; Rascle, 2000).

According to the information processing theory of cognitive resources (Park, 2000), cognitive resources refer to the mental resources needed to carry out effortful mental tasks and everyday activities involving decision making, problem solving, or dealing with unfamiliar problems. Thus any age-related decline in cognitive performance is attributed to general processing inefficiencies (Salthouse, 1988) that affect a number of cognitive resources, including processing speed, working-memory capacity, and inhibitory function.

Coping efforts are assumed to rely on two aspects of information processing – attentional resources and selectivity of attention – therefore, they would solicit the aforementioned types of cognitive resources (Matthews & Wells, 1996). Attentional resources and selectivity of attention enable people to retrieve relevant information from long-term memory and to maintain this information in the working memory, thereby allowing them to select the most suitable way to cope with stressors. Matthews and Wells (1996) have argued that high levels of cognitive resources would predict the use of task-focused coping strategies (the most resource demanding) and that low levels of cognitive resources predict the use of avoidance strategies (the least resource demanding). Such assumptions are supported by studies of patients suffering from traumatic brain injury, in which the efficiency of executive functions (e.g., working memory) was found to predict the use of planful problem-solving coping strategies. A decline in the efficiency of executive functions (e.g., working memory, mental flexibility) predicted an increase in the use of emotion-focused coping (Krpan, Levine, Stuss, & Dawson, 2007). Similarly, the severity of executive (e.g., working memory) and mnemonic (e.g., recall and recognition performance on verbal memory tasks) deficits in schizophrenia were associated with a decline in the use of active forms of coping to adapt to mental illness (Wilder-Willis, Shear, Steffen, & Borkin, 2002).

A second study failed to show such links between executive functions and coping in schizophrenia patients,

https://doi.org/10.1017/S0714980811000456 Published online by Cambridge University Press

but this result had been attributed to methodological shortcomings (Bak et al., 2008). To date, the links between coping and cognitive resources have been empirically tested on clinical populations suffering from mental diseases or brain injuries, and it remains difficult to apply such results to other populations. Our study was designed to address this issue by exploring if age-sensitive cognitive resources depicted as determinants of coping (i.e., working memory and mental flexibility) would affect coping strategies in association with age.

The just-cited studies shed light on the predictive value of two main cognitive resources for coping: working memory efficiency (i.e., the ability to keep active and retrieve information in the long-term memory) and mental flexibility (i.e., the ability to switch from one set of active information to another). These two cognitive resources, which allow people to select the set of cognitions and behaviors needed to successfully cope with stressors, are age sensitive (Charlton et al., 2008). A decline with age in working memory is caused by impairments to specific types of inhibitory processes, including a decline in elders' abilities to suppress, during the recall phase, targets previously learnt in a memory task – as shown by the directed forgetting paradigm (Zacks, Radvansky, & Hasher, 1996). Furthermore, age is associated with a decline in the ability to switch from one type of information to another, as has been shown using switching-tasks in which participants were presented with a list of numbers and asked to work through the list, switching between addition and subtraction. The cost of switching increased with age and was estimated by comparing response latencies for mixed addition and subtraction blocks with response latencies for pure blocks of addition or subtraction (for a review, see Verhaeghen & Cerella, 2002).

To study how age, coping resources, and cognitive resources predicted coping, we tested a structural model combining exogenous variables (i.e., age, self-efficacy, perceived stress, working memory, and mental flexibility) and endogenous variables (i.e., coping strategies). For the purpose of this study, an exogenous variable is conceived as a predictor explaining a part of the endogenous variable's variance. Age was expected to predict a decline in problem-focused coping and an increase in emotion-focused coping (Brandstädter & Rothermund, 2002; Diehl et al., 1996; Folkman et al., 1987). Perceived stress was expected to predict an increase in emotion-focused coping but a decline in problem-focused coping (Yancura, Aldwin, Levenson, & Spiro, 2006). Self-efficacy was expected to positively predict problem-focused coping but negatively predict emotion-focused coping (Rascle, 2000). Problem-focused coping was expected to be negatively predicted by mental flexibility deficit but positively predicted by working-memory capacity (Krpan et al., 2007; Matthews & Wells, 1996; Wilder-Willis et al., 2002). Additionally, given the strength of the links between cognitive resources, working memory was expected to predict a decrease in the deficit of mental flexibility (Oosterman et al., 2010).

Method

Sample and procedure

Participants in the present study were 137 community-dwelling subjects (55 males and 82 females) with a median age of 44 years and a mean age of 46.16 years (SD = 20.55, age range 20–90). We recruited the youngest subjects from a population of French students. The older subjects were neighbors of the students or recruited from organizations for seniors. All participants lived independently in large cities in the south of France. Most were either students (23%) or workers (74%). Of the participants, 54 per cent lived as couples and 46 per cent were single. None of the participants reported having been diagnosed with any psychiatric disorders (e.g., depression), neurodegenerative diseases, or as taking any medical treatments for such disorders.

The changes with age in coping styles were expected to be a response to the changes in stressor prevalence and nature (Aldwin et al., 1996; Smith, 2003). Heckhausen et al. (1989) have described an age-related pattern involving expected gains (i.e., increase in cognitive efficiency) and expected losses (i.e., increase in health problems) across the adult life span. The expected losses increased from 20 to 60 years, remained quite stable from 60 to 69 years of age, and dramatically increased thereafter. Therefore, to study how changes in coping may be related to changes in age and related psychological resources, we needed to recruit participants from 20 to 60 years old and participants aged 70 and older. For this purpose, our sample comprised three subgroups including: (a) young adults (n = 58) from 20 to 38 years old (M = 26.10 years, SD = 5.67); (b) adults (n = 40) from 41 to 59 years old (M = 48.70 years; SD = 6.12); and (c) old adults (n = 39) from 70 to 87 years old (M = 73.38 years; SD = 6.58). Such categories of age were used only for recruitment purposes, and age was treated as a continuous variable in our statistical analyses.

The rating procedure took place during interviews where the participants were informed that the study was voluntary and anonymous.

Measures

Coping

We used the French version (Cousson, Bruchon-Schweitzer, Quintard, Nuissier, & Rascle, 1996) of the Way of Coping Checklist (WCC) self-questionnaire (Vitaliano, Russo, Carr, Maurio, & Becker, 1985), which

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uses 27 items to rate three dimensions of coping on 4-point Likert scales. Ten items rate problem-focused coping (e.g., "*I planned actions and followed this plan*"); nine items rate emotion-focused coping (e.g., "*I tried to forget everything*"); and eight items rate social-support seeking (e.g., "*I tried to not isolate myself*"). In the study by Cousson et al., internal consistency values were satisfactory for all three dimensions of the questionnaire (Cronbach $\alpha \geq .70$) (Nunnaly, 1978). We performed separate confirmatory factor analyses (CFA) for the problem-focused and emotion-focused scales. Our results showed a good fit between the data and both emotion-focused coping (Bentler Comparative Fit Index [CFI] = .98; root mean square of approximation [RMSEA] = .03) and problem-focused coping (CFI = .99; RMSEA = .01).

Self-efficacy

We used the French version of the General Self-Efficacy Scale (GSE), which comprises 10 items, rated on 4-point Likert scales ranging from "not at all true" to "completely true". The psychometric qualities of this scale are satisfactory (Scholz, Guttiérez-Doña, Sud, & Schwarzer, 2002). In this study, the corrected item-total correlations varied between .39 and .65 and the estimate of internal consistency was satisfactory (Cronbach $\alpha = .82$) (Nunnaly, 1978). The one-dimensional structure of the scale was revealed by exploratory factor analyses and confirmed by confirmatory factor analyses. Our CFA analyses confirmed previous results showing the validity of the GSE (CFI = .99; RMSEA = .01).

Perceived Stress

The Perceived Stress Scale (PSS) was developed by Cohen, Kamarck, and Mermelstein (1983) and validated in French by Koleck, Quintard, and Tastet (2002). The PSS scale provides a global measure of a person's perception of the stressfulness of a number of events. It consists of a 14-item, 5-point Likert-type questionnaire. In the study by Koleck et al., the one-dimensional structure of the scale was revealed by the exploratory factorial analysis, and the estimate of internal consistency was satisfactory (Cronbach $\alpha = .89$). In a study by Cohen et al., concurrent validity was verified by highlighting positive correlations between PSS score, depressive symptomatology ($r = .76$), and a global measure of physical symptoms traditionally viewed as psychosomatic ($r = .65$). Our CFA analysis confirmed the validity of this single-factor solution (CFI = .99; RMSEA = .01).

Mental Flexibility

The Trail Making Test (TMT) is a measure of attention, speed, and mental flexibility. It was originally part of the Army Individual Test Battery and was recently included in the French Groupe de Reflexion pour l'Evaluation des Fonctions Executives (GREFEX) executive functions battery (Godefroy & Le GREFEX, 2008). Participants are first asked to draw lines to connect 25 circled numbers in the correct order (Part A). Task requirements are similar for Part B of the test, except that the participants must alternately connect numbers and letters (e.g., 1-A-2-B). Because the executive component of the TMT is obtained by measuring the decline in performance between parts A and B of the test (Strauss, Sherman, & Spreen, 2006), we needed an index that estimates the cognitive cost of the flexibility instruction. We produced such an index of the mental-flexibility deficit by computing a *T* score from each participant's completion time for each part of the TMT (TMTA * TMTB / TMTA + TMTB).

Working Memory

We used standardized scores for the Wechsler Adult Intelligence Scale (WAIS)-III digit-span subtest (Wechsler, 2000) to assess the efficiency of the participants' working memory. The task involves repeating sets of digits and is divided into two parts. Participants are first asked to repeat a sequence of numbers in the same order as presented (forward span), and then to repeat the same number sequence in reverse order (reversed span). Participants' raw scores are obtained by summing the number of sets correctly repeated in the forward and reversed spans; standardized scores are obtained after controlling for the participant's age.

Statistical Analyses

All SEM analyses were based on the maximum likelihood method and were carried out using AMOS software, version 6.0. Several fit-indexes were used to estimate the models' adjustment to data. They include the χ^2 statistic which is used as a test of significance of the difference between the measurement model and its just-identified version. If a non-significant value of the χ^2 statistic is desired, it can be significant in the case of a large sample while the measurement model fits well to the data. For this purpose, we included the χ^2/df statistic. In addition, we used the CFI to test the improvement of the adjustment to the data of the researcher's model in comparison to a null model. A CFI value > .90 is indicative of a well-fitting model. Moreover, we used the RMSEA to evaluate the fit of the hypothesized model to sample data. An RMSEA value of less than .05 indicates a good fit, and values ranging from .05 to .08 represent reasonable errors of approximation (Byrne, 2010). The disturbance associated with observed variables represents error of the prediction of one variable from a second variable. The disturbance is noted as *d* in the figures.

Given our sample size, the measurement models and path analyses were evaluated separately. We first

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designed a measurement model for each variable included in the study in order to ensure the variable's construct validity. In other words, we carried out several separate CFAs to check for links between each psychological construct (factor) and the multiple measures associated with it. Because of the small sample size and only for the purpose of the CFAs, we randomly aggregated the items of the PSS scales in agreement with previous studies (e.g., Trouillet et al., 2009). This way, the number of observed variables was adjusted to our sample number, and we obtained valid model identifications. For the PSS, we created seven groups of two items. The CFA results are summarized in Table 1. We then performed a path analysis for the model described above.

Results

Correlations of Model Variables

Most of the bivariate correlations were as expected (see Table 2). Age was positively associated with mental flexibility deficit. Problem-focused coping was positively associated with self-efficacy but negatively with perceived stress and mental-flexibility deficit. Emotion-focused coping was negatively associated with self-efficacy but positively with perceived stress. Self-efficacy was negatively associated with perceived stress and mental-flexibility deficit. Perceived stress was positively associated with mental-flexibility deficit. Finally, mental-flexibility deficit was negatively associated with working-memory capacity.

Path Analyses

The fit between the initial model (Figure 1) and the sample data was poor (CFI = .38; RMSEA = .26) (see Table 3). To improve the fit, we modified the model in agreement with the modification indices (MI) provided by the software. We selected the following MIs because of their meaning and their values. We first looked at the co-variances to be added in the model. The co-variance between self-efficacy and perceived stress was associated with the highest decrease in the χ^2 value and was supported by the postulated predictive value of self-efficacy for changes in stressor appraisal (Bandura, 2001). The co-variance between age and the error term associated with the mental-flexibility deficit was associated with the second highest decrease in the χ^2 value. This co-variance was supported by the postulated effect of age on cognitive resources not measured in this study and predicting the mental-flexibility capacity (e.g., executive functions, speed processing) (Oosterman et al., 2010). Adding these two co-variances improved the model adjustment to the data but a few adjustment indices remained unsatisfactory (CFI = .92, RMSEA = .10). Second, we turned to the regression weights to be added in the model. We retained the path between mental-flexibility deficit and perceived stress because of the deleterious effect of perceived stress on mental flexibility (Renner & Beversdorf, 2010). This model (see Figure 2) exhibited satisfactory adjustment indices (CFI = .96, RMSEA = .06).

Analyses of the path coefficients (see Table 4) showed that age positively predicted problem-focused coping but did not significantly predict emotion-focused coping. Self-efficacy was found to positively predict problem-focused coping. In addition, perceived stress positively predicted emotion-focused coping and mental-flexibility deficit. Perceived stress did not significantly predict problem-focused coping. In terms of cognitive resources, working memory negatively predicted mental-flexibility deficit. Yet neither working-memory capacity nor mental-flexibility deficit significantly predicted problem-focused coping. The squared multiple correlations (R^2) showed that the predictors of each endogenous variable accounted for 22 per cent of the emotion-focused coping variance and 18 per cent of the problem-focused coping variance.

Table 1: Confirmatory factorial analysis (CFA) results

	No. of items	χ^2	*df*	*p* value	χ^2/df	CFI	RMSEA
WCC							
Problem-focused	10	30.56	30	.44	1.02	.99	.01
Emotion-focused	9	22.28	20	.33	1.11	.98	.03
GSE	10	30.59	30	.44	1.02	.99	.01
PSS	7	6.65	11	.83	0.61	.99	.01

CFI = **comparative fit index**
df = **degree of freedom**
GSE = **self-efficacy**
PSS = **perceived-stress** (**the number of items reflects the number of item-groups comprising two original items each**)
RMSEA = **root mean square of approximation**
WCC = **way of coping**

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Table 2: Correlations among variables included in the model ($n = 137$)

Variables	1.	2.	3.	4.	5.	6.	7.
1. Age	–						
2. Problem-focused Coping	.07	–					
3. Emotion-focused Coping	–.04	–.04	–				
4. Self-Efficacy	–.15	.38***	–.36***	–			
5. Perceived Stress	–.01	–.31***	.47***	–.65***	–		
6. Mental-flexibility Deficit	.43***	–.18*	.13	–.30**	.19*	–	
7. Working-memory Capacity	–.11	.03	.06	.05	–.003	–35***	–

***p* < .05; ****p* ≤ .001; *****p* ≤ .0001

Discussion

This research was designed to study the predictive value of age, as well as coping and cognitive resources, for emotion-focused and problem-focused coping. This project was prompted by the lack of knowledge about the role of cognitive resources in the changes experienced in older adults' coping with age. First, we performed bivariate correlation analyses revealing that the use of problem-focused coping was associated with coping resources (i.e., a decline in perceived stress and an increase in self-efficacy) and a cognitive resource enabling the switch from one set of active information to another. Emotion-focused coping was related only to coping resources including a decrease in self-efficacy beliefs and an increase in perceived stress. Results from the SEM analyses confirmed that emotion-focused coping was predicted by perceived-stress level while problem-focused coping was predicted by age and self-efficacy. Cognitive resources did not significantly predict these two forms of coping.

The results from our study on the predictive value of coping resources for the two forms of coping are in line with the findings of previous studies. Each form of coping was predicted either by self-efficacy or by perceived stress (Cacioppo et al., 2006; Jopp & Rott, 2006; Rascle, 2000; Trouillet et al., 2009). Our results also confirm the direct relationship between a person's ability to successfully solve a problem (i.e., self-efficacy) and the use of problem-focused coping (Bandura, 1977). However, the higher the person's level of perceived stress (i.e., perceiving a problem and its context as a threat), the greater was their recourse to emotion-focused coping. We did not confirm the previously reported link between problem-focused coping and perceived stress (Yancura et al., 2006). However, we cannot compare these studies because in the present study we assessed the problem-focused coping dimension (i.e., efforts to actively reduce stress and determine the ways of solving problems). Yancura et al. focused on positive coping and negative coping, each method comprised of items with similar emotional valence but reflecting different forms of coping strategies (e.g., positive-action coping comprised problem-focused coping items such as "*Focused on managing the problem*" and emotion-focused items such as "*Told myself to calm down*").

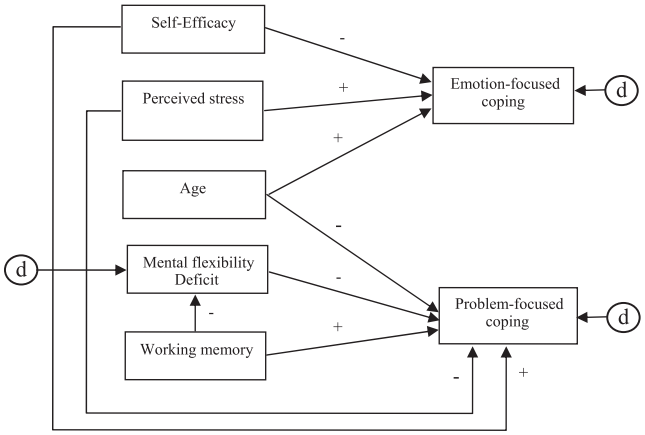

Figure 1: Hypothesized model of emotion- and problem-focused forms of coping

Our results indicated that the use of emotion-focused coping was not significantly predicted by age whereas problem-focused coping increased with age. This last effect highlights that people are not condemned to use only passive or emotion-focused coping strategies but that elders may keep the ability to actively solve stressful problems. Yet, determining the way that age would predict the use of coping implies the need to control several confounding variables including life events (Aldwin et al., 1996) and the nature of the problems to be solved (e.g., elders tended to use more-passive strategies when facing socioemotional problem situations in comparison to more instrumental strategies – for a review, see Blanchard-Fields, 2010). It is possible that we failed to find a significant contribution of age to emotion-focused coping because our sample was too young. It has previously been argued that shifting towards a more emotion-focused coping profile would increase as people age beyond the 70-year mark (Rothermund & Brandtstädter, 2003). In this

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Table 3: Adjustment to data indicators from path analyses for the initial model and the modified model

Model	χ^2	*df*	*p* value	χ^2/df	CFI	RMSEA
Initial model	126.78	12	$p < .0001$	10,56	.38	.26
Modified model	16.57	9	$p = .06$	1,84	.96	.06

period of life, they frequently face a significant decline in their physiological and psychological resource availability and need to rely on emotional forms of coping to confront uncontrollable problems. Consequently, the use of emotion-focused forms of coping would only increase when people age past 70 years in order to be more flexible in their goals and to more efficiently deal with daily strains (for a discussion, see Aldwin, Yancura, & Boeninger, 2007). Therefore, the effect of age on emotion-focused coping should increase as participants reach age 70 and beyond.

The present study did not confirm a predictive value of cognitive resources for the two forms of coping. Unlike previous studies on coping and cognitive resources, which have focused on subjects with clinical problems ranging from traumatic brain injury to schizophrenia (Krpan et al., 2007; Wilder-Willis et al., 2002), our study was based on community-dwelling people. Thus, our results show that the deleterious effects of age on cognitive resources (Charlton et al., 2008; Verhaeghen & Salthouse, 1997; Zacks & Hasher, 1997) are not strong enough to modify elders' daily activities and coping capabilities. Psychiatric and neurological diseases are likely to significantly increase cognitive impairments, thereby promoting more-passive ways of coping and revealing the involvement of cognitive resources in the ability to cope with stressors. Such results could additionally highlight methodological limits concerning the assessment of coping by the use of questionnaires, which we will discuss.

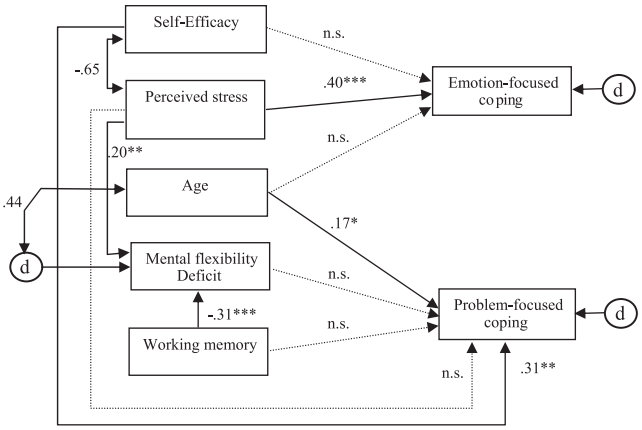

Figure 2: Revised model of emotion- and problem-focused forms of coping
***p* ≤ .05; **p* ≤ .01 ; ****p* ≤ .001**

Table 4: Relationships among age, cognitive resources, coping resources, and problem- and emotion-focused forms of coping from the modified model path analysis (as shown in Figure 2)

Effect	B	S.E.	C.R.	*p*	β
WCC-P Age	.05	.03	2.03	.04	.17
WCC-E Age	–.01	.02	–.62	n.s.	–.05
WCC-P PSS	–.06	.08	–.75	n.s.	–.08
WCC-P GSE	.34	.11	3.01	.003	.31
TMT PSS	1.56	.56	2.80	.005	.20
WCC-E PSS	.37	.08	4.04	.0001	.40
WCC-P WM	–.03	.17	–.20	n.s.	–.02
WCC-P TMT	–.02	.01	–1.61	n.s.	–.15
TMT WM	–6.07	1.41	–4.31	.0001	–.31

Key:
β = standardized regression coefficients
B = regression coefficients
C.R. = critical ratios
GSE = self-efficacy
n.s. = non-significant
***p* = *p* values**
PSS = perceived stress
S.E. = standard errors
SSQ = social-support satisfaction
TMT = Mental-flexibility deficit
WCC-E = emotion-focused coping
WCC-P = problem-focused coping
WM = Working memory

Bivariate correlations revealed that problem-focused coping was negatively associated with deficits in mental flexibility, but this link was not significant in our multivariate analysis. Thus, it would be too simplistic to conceive of coping as unrelated to cognitive resources in a community-dwelling population, although the links between coping and mental flexibility may be explained by additional variables. In our model, age significantly predicted problem-focused coping and was a co-variate for the error term of mental-flexibility deficits. Therefore, we ask if the link between mental flexibility and problem-focused coping would be in part explained by age and additional age-sensitive cognitive resources not encompassed in this study but which predict mental-flexibility capacity (e.g., speed of processing). Moreover, our results highlight the limited predictive value of cognitive resources for coping. Blanchard-Fields (2010) reported that oldest people tend to more frequently use passive and emotional strategies when they must cope with interpersonal problems such as retirement, the deaths of friends, or nursing home placement decisions, and oldest people more frequently face such problems (Aldwin et al., 2007). We can hypothesize that changes with age in coping may be prompted by increases in the prevalence of such socioemotional problem situations. Therefore, our results argue in favor of a socio-cognitive approach to coping in aging.

https://doi.org/10.1017/S0714980811000456 Published online by Cambridge University Press

One of the most important limitations of our current study is the ratio of sample size to the number of variables in the model. This ratio is satisfactory (Kline, 1998), but increasing both the sample size and the power effect of the independent variables on the dependent variables in the model would give larger path coefficients. Furthermore, it would be necessary to increase the number of participants older than age 70 to reveal the effects of age and related cognitive resources on coping. In addition, although our results confirmed many of the results reported by Trouillet et al. (2009), the present research can only be regarded as an exploratory study of how cognitive resources predict coping in association with age. Consequently, our results need to be confirmed by further studies to estimate the fit between the model and the data when age is treated as a categorical variable, and to examine changes in path coefficients across distinct age groups (from young people to older adults).

Moreover, an exploratory study by de Souza-Talarico, Chaves, Nitrini, and Caramelli (2009) found that Alzheimer's disease patients tend to select emotion-focused coping, whereas patients with better cognitive performance tend to select problem-focused coping. Hence, future studies should perform a cross-validation using two groups of participants (i.e., healthy elders vs. patients with Alzheimer's disease) to determine if cognitive resources become significant predictors of coping with the deleterious effects of Alzheimer's disease on high-level cognitive processes.

In this study, we used a self-report measure of coping (the Way of Coping Checklist or WCC) as this method is to date commonly used to measure coping and shows very satisfactory psychometric properties (for the French version of the WCC, see Cousson et al., 1996). However, several results have shown that, when completing retrospective self-assessments of coping, people tend to over-report their behavioural responses but under-report their use of cognitive coping responses (for a review, see Robinson & Clore, 2002). Stone et al. (1998) argued that momentary assessment (e.g., ecological momentary assessment) of coping would be much more relevant as this permits participants to almost immediately report the way they deal with the events they are currently experiencing. By including such methods, future studies could explore how cognitive and coping resources differ in predicting how people believe they have coped with stress – as assessed by retrospective questionnaires – and how they effectively cope with stress – as assessed by momentary assessments. Finally, SEM cannot prove that a model is true; it can only be used to reject false models (Kline, 1998). Consequently, SEM models, including ours, can only be viewed as simple approximations of reality.

In conclusion, our study confirms that the use of emotion-focused coping remains quite stable with age but the use of problem-focused coping tends to increase with age. We highlight the limits of the cognitive model to explain the changes with age in coping and argue in favor of a socio-cognitive approach. Finally, we suggest that age only impedes the ability to actively cope when the decline in cognitive resources reaches a clinical threshold, as is the case in patients suffering from neurodegenerative diseases, such as Alzheimer's disease (de Souza-Talarico et al., 2009).

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