Applied Research Quality Life (2014) 9:325–334
DOI 10.1007/s11482-013-9238-6

The Effect of Age and Socio-Cultural Factors on Self-Rated Well-Being and Metacognitive and Mnestic Efficiency Among Healthy Elderly People

Maria Chiara Fastame · Maria Pietronilla Penna · Elena Sara Rossetti · Mirian Agus

Received: 5 February 2013 / Accepted: 16 April 2013 / Published online: 25 April 2013

Abstract The aim of the present research was to investigate the effect of cross-cultural and age-related factors on self-referent metacognitive efficiency, psychological well-being, and mnestic performance in late adulthood. Ninety-three healthy adults recruited in individualistic northwest Italian and collectivistic Sardinian contexts were respectively assigned to the Old (i.e., 65–74 years) and Very Old (i.e., ≥ 75 years) groups and were individually administered a battery of well-being and metacognitive measures and working memory tasks. A series of MANOVAs was carried out on well-being and metacognitive measures and working memory tasks. Sardinians showed greater levels of perceived well-being, less marked psychological distress, and more preserved mnestic functions than the controls from the northwest Italian context. Moreover, participants from the Old group self-referred more coping strategies, emotional competencies, and personal satisfaction, and less depressive symptoms. Then, a hierarchical linear regressions where different socio-demographic, working memory metacognitive and social desirability measures were used as predictors of general psychological well-being shows that socio cultural context, social desirability, visuo-spatial sequential working memory and metamemory measures predict perceived well-being. Socio-cultural contexts emphasizing the positive social role of the elderly seem to promote psychological well-being, that is, life quality in late adulthood.

Keywords Well-being · Working memory · Aging · Metacognition · Social desirability · Sardinian

M. C. Fastame (✉) · M. P. Penna · E. S. Rossetti · M. Agus
Department of Pedagogy, Psychology, Philosophy, University of Cagliari, Via Is Mirrionis 1, 09123 Cagliari, Italy
e-mail: chiara.fastame@unica.it

Since the early 1970s, research has focused on the study of metamemory, a subfield of metacognition referring to personal knowledge, monitoring, and control of appropriate learning and cognitive processes (Dunlosky and Bjork 2008).

There is evidence that the perceived efficiency of the metamnestic processes is strictly related to self-rated measures of psychological well-being and negative mood in late healthy adulthood, that is, the more depressive symptoms the elderly person presents, the more negative his/her metamnestic self-assessment tends to be (e.g., Bandura 1989; Larrabee and Levin 1986). Consequently, lower esteem for the metamemory processes negatively impacts the mnestic performance of older adults (e.g., Hertzog et al. 1990) because negative beliefs about mnestic processes generate an anticipatory anxiety, reducing motivation toward memory tasks (e.g., Valentin et al. 2006). In this regard, the effect of metacognitive and emotional factors on Working Memory (WM) performance risks is greater due to the ageing effect, which is prominent in late adulthood (e.g. Fastame and Cavallini 2011). As a consequence, the life quality of the elderly people tends to be undermined by lower self-efficacy, depression, and limited WM function, which, in turn, are fundamental for temporarily storing and processing information during various cognitive tasks, such as reading, comprehension, and spatial orientation (Baddeley 1986; Bandura 1989; Fastame et al. 2008).

Furthermore, Fastame et al. (2008) and Fastame and Penna (2012) show that self-reported measures of metacognitive efficiency and well-being in late adulthood are also affected by social desirability, a responding style defined by the tendency to make an exaggerated positive impression, to satisfy a need for social approval, and/or to avoid criticism (Paulhus 1984).

The present research was mainly aimed at investigating if and how working memory performance is linked to metacognitive processes and perceived well-being measures in late adulthood. A further goal was to explore the effect of socio-cultural and age-related factors on metacognitive and psychological well-being measures in older Italian healthy populations. Thereby, participants were recruited from the Mediterranean isle of Sardinia, where a collectivist culture considering the elderly as a resource of knowledge and cultural traditions prevails (Yoon et al. 2000) and from an individualistic Northern Italian community, where the social role of the elderly is not highlighted. Indeed, according to Carpiniello et al. (1989) people living in Sardianian rural areas are more likely to have an available social network nearby ready to help, their social relationships are more functional, less superficial and connoted by a strong emotional attachment. In other words, in Sardinian rural villages neighbours represent an excellent source of practical and emotional support preventing the feeling of loneliness and the occurrence of depressive signs. In contrast, Northern Italy seems to be characterized by the prevalence of individualist traits, that is, people are more competitive, more independent by their social network, they tend to distinguish the self from others, focusing attention to the fulfillment of self interests and personal goals over those of society (Martella and Mass 2000).

In current study it was expected that WM performance would be predicted by self-rated metacognitive and emotional measures. Moreover, age-related and socio-cultural effects were hypothesized to be related to psychological well-being and WM efficiency in late adulthood; that is, mnestic functions and perceived well-being were expected to be more preserved among the Old adults than among the Very Old group, and higher levels of wellness and lower depression symptoms were hypothesized to be more evident in the collectivist cultural context.

Method

Participants

Ninety-three healthy adults, 65 to 99 years of age, living where a traditional and unpretentious agro-pastoral lifestyle still prevails, voluntarily participated in the research. These volunteers were assigned to the Old (i.e., 65–74 years) or Very Old (i.e., > 75 years) group. Forty-six elders were recruited from the province of Ogliastra, in the central-eastern part of Sardinia, which is known for the longevity of its inhabitants and the dominance of a collectivist culture (Eller 2011). Forty-seven control subjects were recruited from Grontardo, in northwest Italy, where there is no evidence of the dominance of collectivist cultural values. In order to be selected, participants had to be a native-born, permanent residents in Ogliastra or in the area of Grontardo; descendants of people originally from that area for at least two previous generations; and had to show no signs of cognitive impairment (Table 1).

Materials and Procedure

Participants were tested individually in two experimental sessions that lasted approximately 60 min each. During the first session, the following inventories were presented:

- Socio-demographic interview (Fastame et al. 2011) was developed to collect socio-demographic information about the respondent and, to learn his/her daily life habits and how he/she spend his/her time.
- The mini-mental state examination (MMSE) (Folstein et al. 1975) is a paper-and-pencil inventory assessing global cognitive efficiency. A cut-off of < 24/30 was the criterion used to exclude cognitively impaired participants.
- The Psychological Well-Being and Aging Questionnaire (PWAQ) (De Beni et al. 2007) is composed of 37 items measuring the capacity to adapt oneself to events in a flexible fashion (resilience) and the capacity for problem solving (coping) and personal self-efficacy. Scores are expressed on a 4-point Likert scale ranging from 1 (never) to 3 (often). This inventory provides separate measures of general wellness (PWAQtot) that is expressed by total score (i.e., the maximum is 111), personal satisfaction (PS- PWAQ, defined as the satisfaction level with respect to what was realized in the past, the level of self-appreciation in the present, and the expectations of satisfaction in the future), coping strategies (SC- PWAQ, the capacity to tackle daily life problems and to overcome issues), and emotional competencies (EM- PWAQ, the capacity to recognize and understand emotional status and to establish social relationships).
- The Center of Epidemiological Studies of Depression Scale (CES-D) (Radloff 1977; Italian version, Fava 1983) consists of 20 questions self-rating psychological distress and depressive affects during the past week. Each question has to be rated on a 4-point Likert scale ranging from 0 (rarely or never) to 3 (most days or every day). The maximum total score is 60 and is calculated as the sum of the algebraic value corresponding to each item. The Italian cut-off to diagnose depressive symptoms is a score of 23 or higher.

Table 1 Socio-demographic information and level of cognitive efficiency assessed by the mini-mental state examination collected from all participants who took part in the research. Data are distinguished per age group (Old and Very Old) and geographical provenience of the participants (Ogliastra and Grontardo)

		Very old group (65–74 years)		Very-old group (75–99 years)	
Ogliastra	*n*	23		23	
	genre				
	males	11		11	
	females	12		12	
	Age (years)	*M*=69.55		*M*=81.78	
		(SD=2.74)		(SD=5.95)	
	Mini Mental	*M*=27.07		*M*=27.66	
	State Examination	(SD=1.41)		(SD=1.42)	
	Education (years)				
		Males	Females	Males	Females
	1–8	4	6	5	6
	> 8	7	6	6	6
Grontardo	*n*	24		23	
	genre				
	males	12		11	
	females	12		12	
	Age (years)	*M*=70.75		*M*=84.61	
		(SD=2.33)		(SD=5.18)	
	Mini Mental	*M*=26.67		*M*=26.41	
	State Examination	(SD=1.79)		(SD=1.51)	
	Education (years)				
		Males	Females	Males	Females
	< 8	6	6	5	6
	> 8	6	6	6	6
	Total per age group	47		46	

- The Sensitivity to Memory Questionnaire (SMQ) (Cornoldi and De Beni 2003) is a 34-item pencil-and-paper inventory assessing the propensity to recall, that is, the attitude of people toward the utility of memory processes in recalling events from their own past and to pay attention to personal autobiographical memories. Overall, this questionnaire self-rates one's habit of remembering past events, the frequency and intensity of the recall, one's attitude toward recent personal events and metacognitive sensivity to autobiographical recall, that refers to the tendency to store personal memories and use external supports or mnemonic strategies to help the recovery. Scores are expressed on a 4-point Likert scale, ranging from 0 (never, to assess the frequency of the behavior, and not at all, to self-rate attitudes toward personal memories) to 3 (often and yes). The maximum total score is 102.
- The Cognitive Failures Questionnaire (CFQ) (Broadbent et al. 1982; Italian version, De Beni et al. 2007) consists of 25 items assessing the capacity to resist

irrelevant stimuli while remembering to perform a task. Thereby, the respondent is asked to self-assess how frequently mmnestic or motor functions have failed in his or her daily life during the last six months by using a 5-point Likert scale ranging from 0 (never) to 4 (very often).

- The Marlowe-Crowne Social Desirability Scale (MCSD, Crowne and Marlowe 1960; Italian version for aged people, Fastame and Penna 2012) consists of 33 true/false items describing socially acceptable but unlikely behaviors and socially rejected but likely behaviors. The Italian cut-off to diagnose a socially desirable responding style is a score of 26 or higher for 65–74 aged elders and a score of 30 or higher for ≥75 years old people.

During the second experimental session, participants were individually given the following WM tests:

- The Visual Pattern Test (VPT) (Della Sala et al. 1997) measures simultaneous passive spatial processes. This test requires the immediate recall of an increasing number of stimulus targets located in a matrix varying in size and complexity.
- The Forward and Backward Corsi Block Tapping Tests (Milner 1971) assesses passive and active visuospatial sequential processes. These tests consist of the immediate recovery of spatial pathways in the same or in the reverse order previously pointed out by the experimenter.
- The Jigsaw Puzzle Test (Vecchi and Richardson 2000) is a measure of imagery efficiency because it requires the subject to mentally solve a puzzle of a known object without moving or touching the pieces and to write down on a grid the number corresponding to each fragment that the participant would locate in a certain position to resemble the object.

Results

First, we compared the subjects' responses referring to the two cultural-geographical areas in relation to the management of free time, considered as indicators of well-being. We applied the Bivariate Pearson Chi Square to evaluate whether in two socio-cultural contexts there are different habits related to doing several activities. We highlighted that there is a significant difference in relation to the time spent in reading; that is, compared to participants from Ogliastra those from Grontardo spend more time in reading (χ^2=14.46; df=4; p=.006). Moreover, subjects from Grontardo are less likely to be involved in any recreational/social activities than Sardinian participants (χ^2=15.73; df=4; p=.003). Furthermore, there is evidence that people from Ogliastra dedicate a greater amount of hours for their hobbies than participants from northwestern Italy (χ^2=11.705; df=3; p=.008). Similarly, participants from Ogliastra spend a greater amount of time cultivating the land than participants from Grontardo (χ^2=8.114; df=3; p=.044).

Hence, a hierarchical linear regression was carried out, where as predictors of PWAQtot in the first step we used the socio-demographic variables (i.e., age, years of education, socio-cultural context, the habit of attending the country side), whereas in the second step we inserted the WM measures (i.e., Forward

and Backward Digit Span Tests, Forward and Backward Corsi Block Tapping Tests, Visual Pattern Test, Jigsaw Puzzle Test) the Sensitivity to Memory Questionnaire and MCSD.

At the first step we confirm the significant effect of socio cultural context, in fact participants living in Ogliastra self-rate a higher level of psychological well-being. This is confirmed at the second step of regression, where there is also evidence that also social desirability, sensitivity to memory and Forward Corsi Block Tapping Tests predict perceived well-being. Table 2 summarizes these results.

A 2 (socio-cultural context: Ogliastra vs. Grontardo) × 2 (age group: Old vs. Very Old) between-subjects multivariate analysis of variance (MANOVA) was carried out on well-being measures (i.e., PWAQtot, PS- PWAQ, SC- PWAQ, and EM- PWAQ), negative mood (CES-D), sensitivity to memory (SMQ) and perceived cognitive efficiency (CFQ) to investigate the impact of age and cross-cultural factors.

The Multivariate tests highlighted a significant main effect only for the socio-cultural variable (Wilks' Lambda = .666, df=7;80, $p<.001$) and for the age group variable (Wilks' Lambda = .832, df=7;80, $p<.05$).

The main effect of socio-cultural context was significant on PWAQtot [$F(1,89)$ = 13.51, $p<.0001$, partial $\eta^2_p=.14$], PS- PWAQ [$F(1,89)$ = 11.97, $p=.001$, partial $\eta^2_p=.12$], SC- PWAQ [$F(1,89)$ = 7.84, $p=.006$, partial $\eta^2_p=.08$], EM- PWAQ scores [$F(1,89)$ = 17, $p<.0001$, partial $\eta^2_p=.16$], CES-D [$F(1,89)$ = 33.27, $p<.0001$, partial $\eta^2_p=.28$] and CFQ [$F(1,89)$ = 3.89, $p=.05$, partial $\eta^2_p=.04$] but not on SMQ [$F(1,89)$ = .97, $p=.33$, partial $\eta^2_p=.01$]. Overall, participants in Ogliastra reported greater subjective well-being, lower levels of cognitive failures and depressive symptoms than the elderly from Grontardo. There was a significant main effect of age group on PWAQtot [$F(1,89)$ = 5.16, $p=.026$, partial $\eta^2_p=.06$], PS- PWAQ [$F(1,89)$ = 4.13, $p=.045$, partial $\eta^2_p=.05$], SC- PWAQ [$F(1,89)$ = 8.34, $p=.005$, partial $\eta^2_p=.09$], and CES-D [$F(1,89)$ = 9.52, $p=.003$, partial $\eta^2_p=.10$] scores. Subjective well-being indices were greater for the Old participants than for the Very Old ones. The main effect of age group on EM- PWAQ [$F(1,89)$ = 1, $p=.32$, partial $\eta^2_p=.01$], SMQ [$F(1,89)$ =.53, $p=.47$, partial $\eta^2_p=.006$] and CFQ [$F(1,89)$ =.01, $p=.92$, partial $\eta^2_p<.0001$] scores was not significant. There were not significant interactions between environment and age group on PWAQtot scores [$F(1,89)$ = .15, $p=.7$, partial $\eta^2_p=.002$], or on PS- PWAQ [$F(1,89)$ = .013, $p=.91$, partial $\eta^2_p<.0001$], SC- PWAQ [$F(1,89)$ = .012, $p=.91$, partial $\eta^2_p<.0001$], EM- PWAQ [$F(1,89)$ = .47, $p=.49$, partial $\eta^2_p=.005$], CES-D [$F(1,89)$ =.35, $p=.55$, partial $\eta^2_p=.004$], SMQ [$F(1,89)$ = .43, $p=.51$, partial $\eta^2_p=.005$] and CFQ scores [$F(1,89)$ =.006, $p=.94$, partial $\eta^2_p<.0001$].

Finally, A 2 (socio-cultural context: Ogliastra vs. Grontardo) × 2 (age group: Old vs. Very Old) between-subjects MANOVA was carried out each WM measures.

The Multivariate tests emphasized a significant main effect merely for the socio-cultural variable (Wilks' Lambda = .894, df=4;85, $p<.05$) and for the age group variable (Wilks' Lambda = .807, df=4;85, $p<.001$).

The main effect of socio-cultural context was significant on Backward Corsi Block Tapping Test [$F(1,89)$ = 4.92, $p=.03$, partial $\eta^2_p=.05$] and Jigsaw Puzzle test [$F(1,89)$ = 4.12, $p=.04$, partial $\eta^2_p=.04$], whereas it approaches significance on VPT score [$F(1,89)$ = 3.65, $p=.059$, partial $\eta^2_p=.00$]. Mnestic performances of participants from Ogliastra were significantly more accurate than those of

Table 2 Hierarchical linear regression (dependent variable PWAQtot) (n=93)

Block	Variables	Beta	t	p
1	Age	−,146	−1,377	,172
	Years of education	,066	,662	,510
R^2=.157	Socio-cultural context	,349	3,543	,001
ES=17.78	Habit of attending the country side	,088	,828	,410
2	Age	−,112	−,984	,328
	Years of education	,099	,908	,367
R^2=.314	Socio-cultural context	,298	2,982	,004
ES=16.03	Habit of attending the country side	,087	,876	,384
	Socially desirable responding style	,334	3,497	,001
	Forward Corsi Block Tapping Tests	,281	1,985	,050
	Backward Corsi Block Tapping Tests	−,165	−1,144	,256
	Forward Digit Span Test	,024	,210	,834
	Backward Digit Span Test	,065	,496	,621
	Visual Pattern Test	,012	,091	,927
	Measure of Sensitivity to Memory Questionnaire	,350	3,736	,000
	Jigsaw Puzzle Test	−,039	−,306	,760

respondents from Grontardo. The main effect of socio-cultural context was not significant on Forward Corsi Block Tapping Test scores [$F(1,89) = .24$, p=.63, partial η^2_p=.003]. There was a significant main effect of age group on Forward Corsi Block Tapping Test [$F(1,89) = 4.51$, p=.04, partial η^2_p=.05], Backward Corsi Block Tapping Test [$F(1,89) = 7.69$, p=.007, partial η^2_p=.08], VPT [$F(1,89) = 10.42$, p=.002, partial η^2_p=.11] and Jigsaw Puzzle Test scores [$F(1,89) = 18.82$, p<.0001, partial η^2_p=.18]. Old group outperformed Very old group in all WM measures. There were not significant interactions between environment and age group on Forward Corsi Block Tapping Test [$F(1,89) = 2.40$, p=.13, partial η^2_p=.03], or on Backward Corsi Block Tapping Test [$F(1,89) = 1.65$, p=.20, partial η^2_p=.02], VPT [$F(1,89) = .08$, p=.78, partial η^2_p=.001] and Jigsaw Puzzle Test measures [$F(1,89) = .01$, p=.92, partial η^2_p<.0001].

Discussion and Conclusions

The purpose of the present study was to investigate the predictors of WM performance and the effect of cross-cultural and age-related factors on perceived metacognitive and psychological well-being as well as on mnestic measures in Italian healthy elderly people.

The results revealed that coping strategies, emotional competencies, and sensitivity to memory are the best predictors of WM performance. However, unlike previous findings (Larrabee and Levin 1986), measures of depressive symptoms did not predict mnestic performance.

Moreover, as expected, greater levels of self-rated psychological wellness and lower levels of depressive symptoms were found in the Old group, perhaps because they maintained active daily lives, which ultimately impacts self-efficacy (Bandura 1989).

In our opinion, a very relevant finding was that the socio-cultural context seems to influence the perception of well-being, that is, participants recruited in Ogliastra, where collectivistic cultural values prevail and the elderly are considered a resource for the community (Carpiniello et al. 1989), showed greater levels of subjective well-being, coping strategies, personal satisfaction, and emotional competencies, and fewer depressive symptoms. These outcomes are strictly associated to the tendency of Sardinian elders to be more involved in social/recreational activities and to be more physically active (i.e., cultivating the land) than controls from northwestern Italy, that instead prefer to spend their free time reading. In our opinion, these effects can be a direct consequence of the valorization of older people within their social network; that is, when the elderly are considered a depository of old traditions and local knowledge, as in Ogliastra (Eller 2011; Fastame and Penna 2012), their social role positively impacts their self-image, hence their perceived psychological wellness was greater than that of the control subjects and even their social activity. A further direct consequence was that the greatest perceived well-being of the participants from Ogliastra corresponded to a better mnestic performance in WM tasks requiring the active manipulation of mental images or spatial stimuli, such as in the Jigsaw Puzzle Test (Vecchi and Richardson 2000) and the Backward Corsi Block Tapping Test (Milner 1971). Overall, present results are consistent with previous findings by Rowe and Kahn (1998), according to which the lack of a disease, the maintenance of high cognitive and physical functioning and being actively engaged with life guarantee successful aging, that is, an adequate life quality in later adulthood.

Finally, as expected from previous findings (e.g., Fastame et al. 2002; Fastame and Cavallini 2011), WM performance is related to the age effect, that is, subjects in the Old group outperformed those in the Very Old group, especially in tasks requiring visuospatial information processing.

In our opinion present outcomes are consistent with studies on cognitive vitality, a construct referring to 'the ability to exploit cognitive resources for active information processing and interaction with the environment in practical everyday activities' (Walter-Ginzburg et al. 2008, p. 7, cit. in Poon and Cohen-Mansfield 2011).

In conclusion, our study suggests that the maintenance of cognitive and metacognitive functioning together with a positive social connection and active physical activity contribute massively in promoting perceived well-being and therefore quality of life. Furthermore, although, to our knowledge ours was the first cross-cultural investigation among Italian elderly people, it suggests that mnestic performance, metacognitive efficiency, and psychological well-being seem to be preserved by the dominance of collectivistic cultural values as well as by physical and social activities. Future research should clarify this aspect by replicating, for instance, this study in other Italian collectivistic and individualistic cultural contexts.

This work was supported by grant number CRP2_7 from Regione Autonoma Sardegna, given to the first author according to regional law 7/2007, 'Promotion of the scientific research and technological innovation in Sardinia' within the European Programme PO Sardegna European Social Fund (FSE) 2007–2013.

References

Baddeley, A. D. (1986). *Working memory*. Oxford: Oxford University Press.

Bandura, A. (1989). Regulation of cognitive processes through perceived self-efficacy. *Developmental Psychology, 25*, 729–735. doi:10.1037/0012-1649.25.

Broadbent, D. E., Cooper, P. F., Fitzgerald, P., & Parkes, K. R. (1982). The Cognitive Failure Questionnaire (CFQ) and its correlates. *British Journal of Clinical Psychology, 21*, 1–16. doi:10.1111/j.2044-8260.1982.tb01421.x.

Carpiniello, B., Carta, M. G., & Rudas, N. (1989). Depression among elderly. *Acta Psychiatrica Scandinavica, 5*, 445–450. doi:10.1111/j.1600-0447.1989.tb03004.x.

Cornoldi, C., & De Beni, R. (2003). Leopardisti. Gli amanti della memoria [Leopardists. Memory lovers]. *Psicologia Contemporanea, 1*, 4–11.

Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology, 24*, 349–354. doi:10.1037/h0047358.

De Beni, R., Borella, E., Carretti, B., Marigo, C., & Nava, L. A. (2007). *BAC: Benessere e Abilità Cognitive nell'età Adulta e Avanzata. [BAC: Wellness and Cognitive Abilities in the Advanced and Adult Age]*. Firenze: Organizzazioni Speciali.

Della Sala, S., Gray, C., Baddeley, A. D., & Wilson, L. (1997). *Visual pattern test*. Bury St. Edmunds: Thames Valley Test Company.

Dunlosky, J., & Bjork, R. A. (2008). The integrated nature of metamemory and memory. In J. Dunlosky & R. A. Bjork (Eds.), *Handbook of metamemory and memory* (pp. 11–28). New York: Psychology Press.

Eller, C. (2011). *The myth of a matriarchal prehistory*. Boston: Beacon.

Fastame, M. C., & Cavallini, E. (2011). Working memory functions in the healthy elderly people: the impact of institutionalization and advancing age on mnestic efficiency. *Clinical Gerontologist, 34*(3), 207–219. doi:10.1080/07317115.2011.555909.

Fastame, M. C., & Penna, M. P. (2012). Does social desirability confound the assessment of self-reported measures of wellness and metacognitive efficiency in young and older adults? *Clinical Gerontologist, 35*(3), 239–256. doi:10.1080/07317115.2012.660411.

Fastame, M. C., Cavallini, E., & Vecchi, T. (2002). The evaluation of processing functions in working memory. In S. P. Shohov (Ed.), *Advances in psychology research* (pp. 3–27). New York: Nova Science Publishers, Inc.

Fastame, M. C., Mammarella, I. C., Carretti, B., & Meneghetti, C. (2008). The continuous architecture of working memory: Evidence from learning disabilities and genetic syndromes. In N. B. Johansen (Ed.), *New research on short-term memory* (pp. 283–313). Hauppauge (NY): Nova Science Publishers Inc. Huntinghton.

Fastame, M. C., Penna, Leone, B., & Puddu, C. (2011). The role of social desirability in the assessment of mnestic and metacognitive efficiencies in adulthood: a preliminary study. *European Psychiatry, 26*(Suppl. 1), 1175. doi:10.1016/S0924-9338(11)72880-2.

Fava, G. A. (1983). Assessing depressive symptoms across cultures: Italian validation of the CES-D self-rating scale. *Journal of Clinical Psychology, 39*, 249–251. doi:10.1002/1097-4679(198303)39:2<249:AID-JCLP2270390218>3.0.CO;2-Y.

Folstein, M. F., Folstein, S. E., & McHugh, P. R. (1975). Mini-mental state. A practical method for grading the cognitive state of patients for the clinician. *Journal of Psychiatric Research, 12*, 189–198. doi:10.1016/0022-3956(75)90026-6.

Hertzog, C., Dixon, R. A., & Hultsch, D. F. (1990). Relationships between metamemory, memory predictions, and memory task performance in adults. *Psychology and Aging, 5*, 215–227. doi:10.1037/0882-7974.5.2.215.

Larrabee, G. J., & Levin, H. S. (1986). Memory self-ratings and objective test performance in a normal elderly sample. *Journal of Clinical and Experimental Neuropsychology, 8*, 275–284. doi:10.1080/01688638608401318.

Martella, D., & Maass, A. (2000). Unemployment and life satisfaction: the moderating role of time structure and collectivism. *Journal of Applied Social Psychology, 30*, 1095–1108. doi:10.1111/j.1559-1816.2000.tb02512.x.

Milner, B. (1971). Interhemispheric differences in the localization of psychological processes in man. *British Medical Bulletin, 27*, 272–277.

Paulhus, D. L. (1984). Two-component models of socially desirable responding. *Journal of Personality and Social Psychology, 46*, 598–609. doi:10.1037/0022-3514.46.3.598.

Poon, L. W., & Cohen-Mansfield, J. (2011). *Understanding well-being in the oldest-old*. Cambridge: University Press.

Radloff, L. S. (1977). The CES-D Scale: a self-report depression scale for research in the general population. *Applied Psychological Measurement, 1*, 385–401. doi:10.1177/014662167700100306.

Rowe, J. W., & Kahn, R. L. (1998). *Successful aging*. New York: Pantheon/Random House.

Valentijn, S. A. M., Hill, R. D., Van Hooren, S. A. H., Bosma, H., Van Boxtel, M. P. J., Jolles, J., et al. (2006). Memory self-efficacy predicts memory performance: results from a 6-year follow-up study. *Psychology and Aging, 21*(2), 165–172. doi:10.1037/0882-7974.21.2.165.

Vecchi, T., & Richardson, J. T. E. (2000). Active processing in visuo-spatial working memory. *Cahiers de Psychologie Cognitive, 19*, 3–32.

Walter-Ginzburg, A., Shmotkin, Eyal, N., & Guralnik, J. M. (2008). Can cognitive vitality reduce incident disability? Evidence from the Cross-Sectional and Longitudinal Aging Study (CALAS) of old-old Israelis. Unpublished manuscript

Yoon, C., Hasher, L., Feinberg, F., Rahhal, T. A., & Winocur, G. (2000). Cross-cultural differences in memory: the role of culture-based stereotypes about aging. *Psychology and Aging, 15*, 694–704. doi:10.1037/0882-7974.15.4.694.