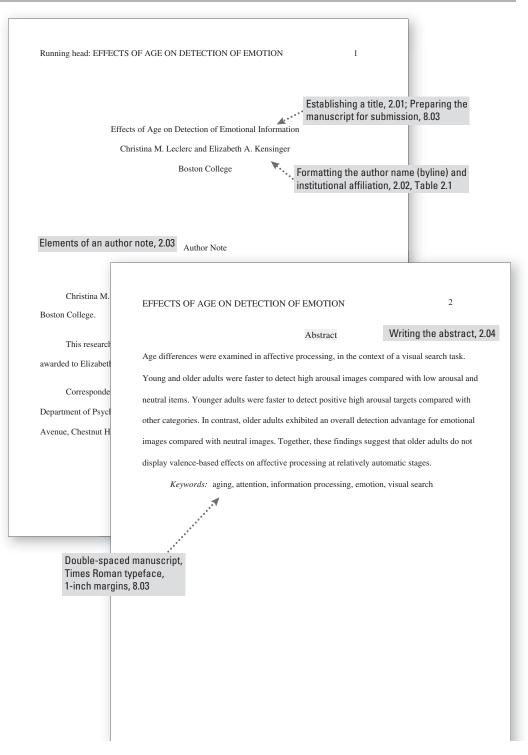
Figure 2.1. Sample One-Experiment Paper (The numbers refer to numbered sections in the *Publication Manual*.)



Paper adapted from "Effects of Age on Detection of Emotional Information," by C. M. Leclerc and E. A. Kensinger, 2008, *Psychology and Aging, 23,* pp. 209–215. Copyright 2008 by the American Psychological Association.

		EFFECTS OF	AGE ON DETECTION OF EMOTION 3							
Writi	na the	introduction								
•			Effects of Age on Detection of Emotional Information							
•••	• • • • • •	Frequer	tly, people encounter situations in their environment in which it is impossible to							
		attend to all ava	ilable stimuli. It is therefore of great importance for one's attentional processes to							
		select only the	most salient information in the environment to which one should attend. Previous							
		research has su	ggested that emotional information is privy to attentional selection in young							
		adults (e.g., Anderson, 2005; Calvo & Lang, 2004; Carretie, Hinojosa, Marin-Loeches, Mecado, Ordering citations within								
		& Tapia, 2004;	Nummenmaa, Hyona, & Calvo, 2006, an obvious service to evolutionary drives							
Selec the co	orrect		varding situations and to avoid threat and danger (Davis & Whalen, 2001; Dolan							
tense	, 3.18		2003; Lang, Bradley, & Cuthbert, 1997; LeDoux, 1995).	Numbers that	represent					
Num		For exa	mple, Ohman, Flykt, and Esteves (2001) presented participants with 3×3 visual	statistical or mathematica functions, 4.31						
Numł expre	ers essed	arrays with ima	ges representing four categories (snakes, spiders, flowers, mushrooms). In half							
in wo	rds, '	the arrays, all n	ine images were from the same category, whereas in the remaining half of the							
4.32		arrays, eight im	ages were from one category and one image was from a different category (e.g.,	Use of hyphenation for						
		eight flowers a		compound wor						
		discrepant stim	ulus. Results indicated that fear-relevant images were more quickly detected than	Table 4.1						
		fear-irrelev								
		were fearfu	EFFECTS OF AGE ON DETECTION OF EMOTION	4						
		attention-gi		7						
		not attende	Calvo & Lang, 2004; Carretie et al., 2004; Juth, Lundqvist, Karlsson, & Ohman	n, 2005;						
		Merikle, 20	Nummenmaa et al., 2006).							
		not limited	d From this research, it seems clear that younger adults show detection benefits for							
		detected ra	arousing information in the environment. It is less clear whether these effects are preserved							
			across the adult life span. The focus of the current research is on determining the	ne extent to which						
		in presentatio	n aging influences the early, relatively automatic detection of emotional informat	ion.						
OT IQ	eas, 3	.05	Regions of the brain thought to be important for emotional detection ren	nain relatively						
			intact with aging (reviewed by Chow & Cummings, 2000). Thus, it is plausible	that the detection						
			of emotional information remains relatively stable as adults age. However, desp	pite the						
			preservation of emotion-processing regions with age (or perhaps because of the	e contrast between						
			the preservation of these regions and age-related declines in cognitive-processin	ng regions; Good						
No capitaliz naming the			et al., 2001; Hedden & Gabrieli, 2004; Ohnishi, Matsuda, Tabira, Asada, & Un		Citing one					
		notion in	2000; West, 1996), recent behavioral research has revealed changes that occur		work by six					
			regulation and processing of emotion. According to the socioemotional selectiv	1. J.	or more authors, 6.1					
			(Carstensen, 1992), with aging, time is perceived as increasingly limited, and as							
			regulation becomes a primary goal (Carstensen, Isaacowitz, & Charles, 1999).							
			socioemotional selectivity theory, age is associated with an increased motivation	-						
			emotional meaning from life and a simultaneous decreasing motivation to expa							
			knowledge base. As a consequence of these motivational shifts, emotional aspects of the							

EFFECTS OF AGE ON DETE	SCTION OF EMOTION 5								
To maintain positive of	fact in the face of negative are related shares (a.g. limited time	Using the colon between two grammatically							
	To maintain positive affect in the face of negative age-related change (e.g., limited time two grammatically complete clauses, 4.05 remaining, physical and cognitive decline), older adults may adopt new cognitive strategies. One								
	· · · · · · · · · · · · · · · · · · ·	e							
	such strategy, discussed recently, is the positivity effect (Carstensen & Mikels, 2005), in which								
	tely more time processing positive emotional material and less								
	ional material. Studies examining the influence of emotion on								
	Carstensen, 2003; Kennedy, Mather, & Carstensen, 2004) have								
	ager adults, older adults recall proportionally more positive								
	information and proportionally less negative information. Similar results have been found when Capitalization of words								
	as: Older adults looked at positive images longer than younger	 beginning a sentence after a colon, 4.14 							
adults did, even when no age d	ifferences were observed in looking time for negative stimuli								
(Isaacowitz, Wadlinger, Goren	, & Wilson, 2006). However, this positivity effect has not gone	Hypotheses and their							
uncontested; some researchers	have found evidence inconsistent with the positivity effect (e.g.,	correspondence to researc	h						
Grühn, Smith, & Baltes, 2005;	Kensinger, Brierley, Medford, Growdon, & Corkin, 2002).	design, Introduction, 2.05							
Based on this previousl	y discussed research, three competing hypotheses exist to explain	1							
age differences in emotional pr	rocessing associated with the normal aging process. First,	Using the semicolon	to						
emotional information m		separate two independent							
facilitated detection of er	EFFECTS OF AGE ON DETECTION OF EMOTION	clauses not joined by a conjunction, 4.04	/						
emotional information m	rapidly detect emotional information. We hypothesized that on a								
detection of emotional in	slower to detect information than young adults would be (consis								
principally on positive er	& Gronlund, 2006; Mather & Knight, 2006); the critical question was whether the two age								
not negative, emotional i	groups would show similar or divergent facilitation effects with								
The primary goal	on item detection. On the basis of the existing literature, the first	-							
To do so, we employed a	hypotheses seemed to be more plausible than the third alternativ								
Using the comma between									
elements in a series, 4.03	strategic, elaborative, and emotion regulation processes) rather t								
Punctuation with citations	processing involved in the rapid detection of information (see M	-							
in parenthetical material,,	discussion). Thus, the first two hypotheses, that emotional inform								
6.21	across the life span or that emotional information in general take								
	age, seemed particularly applicable to early stages of emotional								
	Indeed, a couple of prior studies have provided evidence								
	emotional facial expressions with aging. Mather and Knight (20								
Citing references in taut	adults' abilities to detect happy, sad, angry, or neutral faces pres								
Citing references in text, inclusion of year within	Mather and Knight found that like younger adults, older adults d								
paragraph, 6.11, 6.12	quickly than they detected other types of emotional stimuli. Sim	ilarly. Hahn et al. (2006) also							
	found no age differences in efficiency of search time when angr	Pre	efixes and ffixes that						
	array of neutral faces, compared with happy faces in neutral face	do do	not require						
	compared with positive and neutral faces, served as nontarget di	hyp	phens,						
	arrays, however, older adults were more efficient in searching, c	141	ble 4.2						
	,								

EFFECTS OF AGE ON DETECTION OF EMOTION

negative stimuli were not of equivalent arousal levels (fearful faces typically are more arousing than happy faces: Hansen & Hansen, 1988). Given that arousal is thought to be a key factor in modulating the attentional focus effect (Hansen & Hansen, 1988; Pratto & John, 1991; Reimann & McNally, 1995), to more clearly understand emotional processing in the context of aging, it is necessary to include both positive and negative emotional items with equal levels of arousal.

In the current research, therefore, we compared young and older adults' detection of four

categories of emotional information (positive high arousal, positive low arousal, negative high arousal, and negative low arousal) with their detection of neutral information. The positive and* negative stimuli were carefully matched on arousal level, and the categories of high and low arousal were closely matched on valence to assure that the factors of valence (positive, negative) and arousal (high, low) could be investigated independently of one another. Participants were presented with a visual search task including images from these different categories (e.g., snakes, Using abbreviations, 4.22; Explanation cars, teapots). For half of the multi-image arrays, all of the images were of the same item, and for used often in APA journals, 4.25;

the remaining half of the arrays, a sing items was included. Participants were the array, and their reaction times wer differences in response times (RTs) ba categories. We reasoned that if young information, then we would expect sin stimuli for the two age groups. By cor were younger adults, older adults shou emotional items (relative to the neutra

> Identifying subsections within the Method section, 2.06

Using numerals to express numbers representing age, 4.31

Prefixed words that require hyphens, Table 4.3

of abbreviations, 4.23; Abbreviations Plurals of abbreviations, 4.29

8

EFFECTS OF AGE ON DETECTION OF EMOTION

for the arousing items than shown by the young adults (resulting in an interaction between age Elements of the Method

7

section, 2.06; Organizing Method a manuscript with levels of heading, 3.03

Participants

and arousal)

Younger adults (14 women, 10 men, Mage = 19.5 years, age range: 18-22 years) were recruited with flyers posted on the Boston College campus. Older adults (15 women, nine men, Mage = 76.1 years, age range: 68-84 years) were recruited through the Harvard Cooperative on Aging (see Table 1, for demographics and test scores).¹ Participants were compensated \$10 per hour for their participation. There were 30 additional participants, recruited in the same way as described above, who provided pilot rating values: five young and five old participants for the assignment of items within individual categories (i.e., images depicting cats), and 10 young and 10 old participants for the assignment of images within valence and arousal categories. All participants were asked to bring corrective eyewear if needed, resulting in normal or corrected to normal vision for all participants.

Materials and Procedure

Participant (subject) characteristics, Method, 2.06

The visual search task was adapted from Ohman et al. (2001). There were 10 different types of items (two each of five Valence × Arousal categories: positive high arousal, positive low arousal, neutral, negative low arousal, negative high arousal), each containing nine individual exemplars that were used to construct 3 × 3 stimulus matrices. A total of 90 images were used, each appearing as a target and as a member of a distracting array. A total of 360 matrices were presented to each participant; half contained a target item (i.e., eight items of one type and one target item of another type) and half did not (i.e., all nine images of the same type). Within the

EFFECTS OF AGE ON DETECTION OF EMOTION

matrix. Within the 180 target trials, each of the five emotion categories (e.g., positive high arousal, neutral, etc.) was represented in 36 trials. Further, within each of the 36 trials for each emotion category, nine trials were created for each of the combinations with the remaining four other emotion categories (e.g., nine trials with eight positive high arousal items and one neutral item). Location of the target was randomly varied such that no target within an emotion category was presented in the same location in arrays of more than one other emotion category (i.e., a negative high arousal target appeared in a different location when presented with positive high arousal array images than when presented with neutral array images).

The items within each category of grayscale images shared the same verbal label (e.g., mushroom, snake), and the items were selected from online databases and photo clipart packages. Each image depicted a photo of the actual object. Ten pilot participants were asked to write down the name corresponding to each object; any object that did not consistently generate the intended response was eliminated from the set. For the remaining images, an additional 20 pilot participants rated the emotional valence and arousal of the objects and assessed the degree of visual similarity among objects within a set (i.e., how similar the mushrooms were to one another) and between objects across sets (i.e., how similar the mushrooms were to the snakes).

Valence and arousal ratings. Valence and arousal were judged on 7-point scales (1 = *negative valence* or *low arousal* and 7 = *positive valence* or *high arousal*). Negative objects received mean valence ratings of 2.5 or lower, neutral objects received mean valence ratings of 3.5 to 4.5, and positive objects received mean valence ratings of 5.5 or higher. High arousal objects received mean arousal ratings greater than 5, and low arousal objects (including all neutral stimuli) received mean arousal ratings of less than 4. We selected categories for which both young and older adults agreed on the valence and arousal classifications, and stimuli were

Italicization of anchors of a scale, 4.21

overall similarity of the object categories (ps > .20). For example, we selected particular

mushrooms and particular cats so that the mushrooms were as similar to one another as were the cats (i.e., within-group similarity was held constant across the categories). Our object selection also assured that the categories differed from one another to a similar degree (e.g., that the mushrooms were as similar to the snakes as the cats were similar to the snakes).

Procedure

Each trial began with a white fixation cross presented on a black screen for 1,000 ms; the matrix was then presented, and it remained on the screen until a participant response was recorded. Participants were instructed to respond as quickly as possible with a button marked *yes* if there was a target present, or a button marked *no* if no target was present. Response latencies and accuracy for each trial were automatically recorded with E-Prime (Version 1.2) experimental

Latin abbreviations, 4.26

9

Numbers expressed in words at beginning of sentence, 4.32

10 positive high arousal h arousal. tween-categories exemplars (e.g., a set the rest of the ripants made these sual dimensions in ated how similar ilar the mushrooms equated on withins well as for the

	EFFECTS OF AGE ON DETECTION OF EMOTION	11	
	software. Before beginning the actual task, participants performed 20 practice trials t	to assure	
	compliance with the task instructions.	nents of the	
	Results - Results	ults section, 2.0	17
	Analyses focus on participants' RTs to the 120 trials in which a target was pr	esent and	
	was from a different emotional category from the distractor (e.g., RTs were not inclu	ided for	
bbreviations	arrays containing eight images of a cat and one image of a butterfly because cats and	l butterflies	
iccepted as	are both positive low arousal items). RTs were analyzed for 24 trials of each target en		
vords, 4.24	category. RTs for error trials were excluded (less than 5% of all responses) as were F		mbols, 4.45; umbers, 4.31
	were 25SD from each participant's mean (approximately 1.5% of responses). Media	in RTs were	
	then calculated for each of the five emotional target categories, collapsing across array	ay type (see	
	Table 2 for raw RT values for each of the two age groups). This allowed us to examine	ne, for	
Nouns followed	* example, whether participants were faster to detect images of snakes than images of	mushrooms,	
by numerals or	regardless of the type of array in which they were presented. Because our main interest	est was in	
etters, 4.17	examining the effects of valence and arousal on participants' target detection times,	we created	
	scores for each emotional target category that controlled for the participant's RTs to	detect	
	neutral targets (e.g., subtracting the RT to detect neutral targets from the RT to detect	t positive	Reporting
	high arousal targets). These difference scores were then examined with a $2 \times 2 \times 2$ (4)	Age [young,	<i>p</i> values, decimal
	older] × Valence [positive, negative] × Arousal [high, low]) analysis of variance (AN	VOVA). This	fractions,
	ANOVA revealed only a significant main effect of arousal, $F(1, 46) = 8.41$, $p = .006$	$, \eta_p^2 = .16,$	4.35
	with larger differences between neutral and high arousal images ($M = 137$) than betw	veen neutral St	tatistical sym
	and low arousal images ($M = 93$; i.e., high arousal items processed more quickly acro	oss both age 4.	46, Table 4.5
	groups compared with low arousal items; see Figure 1). There was no significant mat	in effect for	
	valence, nor was there an interaction between valence and arousal. It is critical that the	he analysis	
	Numbering and discussing		
	figures in text. 5.05		

	EFFECTS OF AGE ON DETECTION OF EMOTION	12			
	revealed only a main effect of age but no interactions with age. Thus, the arousal-mediated				
	effects on detection time appeared stable in young and older adults.				
	The results described above suggested that there was no influence of age on the				
	influences of emotion. To further test the validity of this hypothesis, we submitted the RTs	to the			
	five categories of targets to a 2×5 (Age [young, old] \times Target Category [positive high arou	usal,			
atistics text, 4.44	positive low arousal, neutral, negative low arousal, negative high arousal]) repeated measure ANOVA. ² Both the age group, $F(1, 46) = 540.32, p < .001, \eta_p^2 = .92$, and the target categories of target categori	and pu	ng, alignment, unctuation of matical copy, 4		
	$F(4, 184) = 8.98, p < .001, \eta_p^2 = .16$, main effects were significant, as well as the Age Grou				
	Target Category interaction, $F(4, 184) = 3.59, p = .008, \eta_p^2 = .07$. This interaction appeared	l to	aliza offacta		
	reflect the fact that for the younger adults, positive high arousal targets were detected faster		alize effects riables when		
	targets from all other categories, $ts(23) < -1.90, p < .001$, with no other target categories	,	they appear with multiplication signs, 4.20		
	differing significantly from one another (although there were trends for negative high arous	1			
	and negative low arousal targets to be detected more rapidly than neutral targets ($p < .12$). I	For			
	older adults, all emotional categories of targets were detected more rapidly than were neutr	al			
	targets, $ts(23) > 2.56$, $p < .017$, and RTs to the different emotion categories of targets did not	ot			
	differ significantly from one another. Thus, these results provided some evidence that older	r			
	adults may show a broader advantage for detection of any type of emotional information,				
	whereas young adults' benefit may be more narrowly restricted to only certain categories or	f			
	emotional information. Elements of the Discussion set				
	As outlined previously, there were three plausible alternatives for young and older a	adults'			
	performance on the visual search task: The two age groups could show a similar pattern of				
	enhanced detection of emotional information, older adults could show a greater advantage	for			

EFFECTS OF AGE ON DETECTION OF EMOTION

emotional detection than young adults, or older adults could show a greater facilitation than young adults only for the detection of positive information. The results lent some support to the first two alternatives, but no evidence was found to support the third alternative.

In line with the first alternative, no effects of age were found when the influence of valence and arousal on target detection times was examined; both age groups showed only an arousal effect. This result is consistent with prior studies that indicated that arousing information can be detected rapidly and automatically by young adults (Anderson, Christoff, Panitz, De Rosa, & Gabrieli, 2003; Ohman & Mineka, 2001) and that older adults, like younger adults, continue to display a threat detection advantage when searching for negative facial targets in arrays of positive and neutral distractors (Hahn et al., 2006; Mather & Knight, 2006). Given the

Clear statement of support or nonsupport of hypotheses, Discussion, 2.08

14

relative preservation of & Bennett, 2004; Jennin to take advantage of the

However, despit age groups, the present age-related enhancement the five categories of enhigh arousal images (as advantage for detecting suggests a broader influfor the hypothesis that a It is interesting of that the positivity effect

Use of an em dash to indicate an interruption in the continuity of a sentence, 4.06; Description of an em dash, 4.13

EFFECTS OF AGE ON DETECTION OF EMOTION

processing, given that no effects of valence were observed in older adults' detection speed. In the present study, older adults were equally fast to detect positive and negative information, consistent with prior research that indicated that older adults often attend equally to positive and negative stimuli (Rosler et al., 2005). Although the pattern of results for the young adults has differed across studies in the present study and in some past research, young adults have shown facilitated detection of positive information (e.g., Anderson, 2005; Calvo & Lang, 2004; Carretie et al., 2004; Juth et al., 2005; Nummenmaa et al., 2006), whereas in other studies, young adults have shown an advantage for negative information (e.g., Armony & Dolan, 2002; Hansen & Hansen, 1988; Mogg, Bradley, de Bono, & Painter, 1997; Pratto & John, 1991; Reimann & McNally, 1995; Williams, Mathews, & MacLeod, 1996)—what is important to note is that the older adults detected both positive and negative stimuli at equal rates. This equivalent detection

13

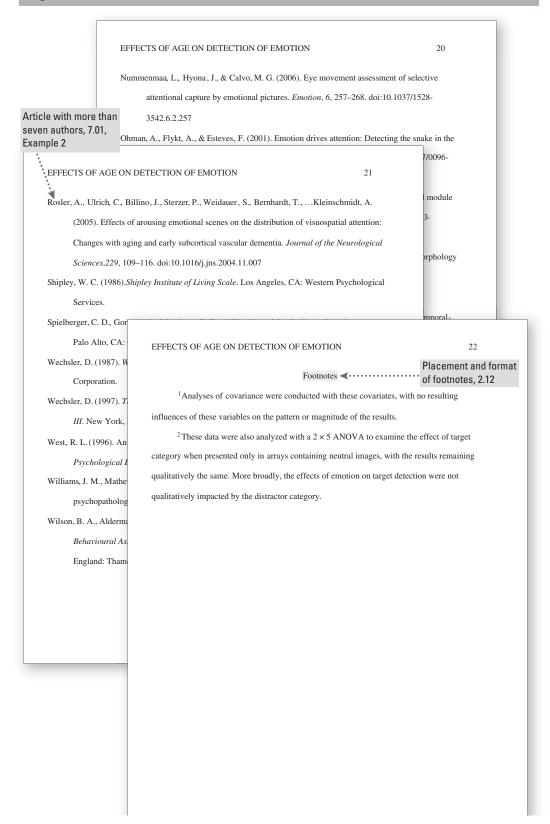
of positive and negative information provides evidence that older adults display an advantage for the detection of emotional information that is not valence-specific.

Thus, although younger and older adults exhibited somewhat divergent patterns of emotional detection on a task reliant on early, relatively automatic stages of processing, we found no evidence of an age-related positivity effect. The lack of a positivity focus in the older adults is in keeping with the proposal (e.g., Mather & Knight, 2006) that the positivity effect does not arise through automatic attentional influences. Rather, when this effect is observed in older adults, it is likely due to age-related changes in emotion regulation goals that operate at later stages of processing (i.e., during consciously controlled processing), once information has been attended to and once the emotional nature of the stimulus has been discerned.

Although we cannot conclusively say that the current task relies strictly on automatic processes, there are two lines of evidence suggesting that the construct examined in the current

EFFECTS OF AGE ON	DETECTION OF EMOTION 15						
research examines relati	ively automatic processing. First, in their previous work, Ohman et al. Use of parallel construction						
	with coordinating conjunctions						
the number of images p	the number of images presented in the arrays were found. Second, in both Ohman et al.'s (2001)						
study and the present st	udy, analyses were performed to examine the influence of target location						
on RT. Across both stud	lies, and across both age groups in the current work, emotional targets						
were detected more quie	ickly than were neutral targets, regardless of their location. Together,						
these findings suggest th	hat task performance is dependent on relatively automatic detection						
processes rather than on	controlled search processes. Discussion section ending						
Although further	r work is required to gain a more complete understanding of the age importance of findings, 2.08						
related changes in the ea	arly processing of emotional information, our findings indicate that						
young and older adults							
study provides further e	EFFECTS OF AGE ON DETECTION OF EMOTION 16 Construction of an accurate and						
of emotional images are	References ≪····· complete reference list, 6.22;						
(Fleischman et al., 2004	General desciption of references, 2.7 Anderson, A. K. (2005). Affective influences on the attentional dynamics supporting awareness.						
although there is evider	Journal of Experimental Psychology: General, 154, 258-281. doi:10.1037/0096-						
information (e.g., Carst	3445.134.2.258						
present results suggest	Anderson, A. K., Christoff, K., Panitz, D., De Rosa, E., & Gabrieli, J. D. E. (2003). Neural						
tasks require relatively	correlates of the automatic processing of threat facial signals. Journal of Neuroscience,						
	23, 5627–5633.						
	Armony, J. L., & Dolan, R. J. (2002). Modulation of spatial attention by fear-conditioned						
	stimuli: An event-related fMRI study. Neuropsychologia, 40, 817-826.						
	doi:10.1016/S0028-3932%2801%2900178-6						
	Beck, A. T., Epstein, N., Brown, G., & Steer, R. A. (1988). An inventory for measuring clinical						
	anxiety: Psychometric properties. Journal of Consulting and Clinical Psychology, 56,						
	893-897. doi:10.1037/0022-006X.56.6.893						
	Calvo, M. G., & Lang, P. J. (2004). Gaze patterns when looking at emotional pictures:						
	Motivationally biased attention. Motivation and Emotion, 28, 221-243. doi:						
	10.1023/B%3AMOEM.0000040153.26156.ed						
	Carretie, L., Hinojosa, J. A., Martin-Loeches, M., Mecado, F., & Tapia, M. (2004). Automatic						
	attention to emotional stimuli: Neural correlates. Human Brain Mapping, 22, 290-299.						
	doi:10.1002/hbm.20037						
	Carstensen, L. L. (1992). Social and emotional patterns in adulthood: Support for socioemotional						
	selectivity theory. Psychology and Aging, 7, 331-338. doi:10.1037/0882-7974.7.3.331						
	Carstensen, L. L, Fung, H., & Charles, S. (2003). Socioemotional selectivity theory and the						

Carstens	Carstensen, L. L. & Mikels, J. A. (2005). At the intersection of emotion and cognition: Aging				
	and the positivity effect. Current Directions in Psychological Science, 14, 117–121. doi:				
	0.1111/j.0963-7214.2005.00348.x				
	S. T., Mather, M., & Carstensen, L. L. (2003). Aging and emotional memory: The				
	orgettable na				
	<i>Sychology:</i> C EFFECTS OF AGE ON DETECTION OF EMOTION	18			
Chow, T	C. W., & Cum Grühn, D., Smith, J., & Baltes, P. B. (2005). No aging bias favoring memory	for positive			
A	Aggleton (Ed. material: Evidence from a heterogeneity-homogeneity list paradigm to	using emotionally			
C	Oxford Unive toned words. Psychology and Aging, 20, 579–588. doi:10.1037/0882	-7974.20.4.579			
Davis, M	1., & Whalen Hahn, S., Carlson, C., Singer, S., & Gronlund, S. D. (2006). Aging and visua	d search: Automatic			
	,	doi:			
Г	EFFECTS OF AGE ON DETECTION OF EMOTION 19				
E F	 Kensinger, E. A., Brierley, B., Medford, N., Growdon, J. H., & Corkin, S. (2002). Effects of normal aging and Alzheimer's disease on emotional memory. <i>Emotion</i>, 2, 118–134. doi: 10.1037/1528-3542.2.2.118 Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1997). Motivated attention: Affect, activation, and action. In P. J. Lang, R. F. Simons, & M. Balaban (Eds.), <i>Attention and orienting:</i> 	Digital object identifier a article identifier, 6.31; Example of reference to periodical, 7.01			
C 1	Sensory and motivational processes (pp. 97–135). Mahwah, NJ: Erlbaum.	Example of reference to book chapter, print veris no DOI, 7.02, Example 29			
	American Psychological Association, Washington, DC.	Aging,			
	LeDoux, J. E. (1995). Emotion: Clues from the brain. Annual Review of Psychology, 46, 209-				
	235. doi:10.1146/annurev.ps.46.020195.001233				
	Mather, M., & Knight, M. (2005). Goal-directed memory: The role of cognitive control in older adults' emotional memory. <i>Psychology and Aging</i> , 20, 554–570. doi:10.1037/0882- 7974.20.4.554	s: 379–395.			
1	Mather, M., & Knight, M. R. (2006). Angry faces get noticed quickly: Threat detection is not impaired among older adults. <i>Journals of Gerontology, Series B: Psychological Sciences</i> , 61B, P54–P57.	-related			
1	Mogg, K., Bradley, B. P., de Bono, J., & Painter, M. (1997). Time course of attentional bias for				
	threat information in non-clinical anxiety. Behavioral Research Therapy, 35, 297-303.				
1	Nelson, H. E. (1976). A modified Wisconsin card sorting test sensitive to frontal lobe defects.				
	Cortex, 12, 313-324.				



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23

		Table 1						
		Participant Characteristics						
		Measure	Young M	ger group SD	<u>Olde</u> M	<u>r group</u> SD	F (1, 46)	n
		Years of education	13.92	1.28	16.33	2.43	18.62	<.001
		Beck Anxiety Inventory	9.39	5.34	6.25	6.06	3.54	.066
Cala atin m		BADS-DEX	20.79	7.58	13.38	8.29	10.46	.002
0	effective	STAI–State	45.79	4.44	47.08	3.48	1.07	.306
presentat		STAI-Trait	45.64	4.50	45.58	3.15	0.02	.963
Logical a	nd effective	Digit Symbol Substitution Generative naming	49.62 46.95	7.18 9.70	31.58 47.17	6.56 12.98	77.52 .004	<.001 .951
table layo	out, 5.08	Vocabulary	33.00	3.52	35.25	3.70	4.33	.043
		Digit Span–Backward	8.81	2.09	8.25	2.15	0.78	.383
		Arithmetic	16.14	2.75	14.96	3.11	1.84	.182
		Mental Control	32.32	3.82	23.75	5.13	40.60	<.001
	DEDECTO	Self-Ordered Pointing	1.73	2.53	9.25	9.40	13.18	.001
	EFFECTS	WCST perseverative errors	0.36	0.66	1.83	3.23	4.39	.042
	T 11 0	Note. The Beck Anxiety Invent	tory is from	Beck et al	(1088)· f	e Behavior	al Accessme	nt of the
	Table 2							
	Raw Respo	Dysexecutive Syndrome—Dys						
	Category	(1996); the State–Trait Anxiety				-	-	
	Positive h Positive le	and the Digit Symbol Substitut						
	Neutral	Intelligence Scale—III and We						
	Negative Negative	Generative naming scores repre-			-			
	Note. Valu	F, A, and S. The Vocabulary m	easure is fr	om Shiple	y (1986); tl	he Mental C	Control measu	ire is
	of the same	from Wechsler (1987); the Self	-Ordered F	ointing me	easure was	adapted fro	m Petrides a	nd Milner
	positive hi	(1982); and the Wisconsin Car	d Sorting T	ask (WCS	T) measure	e is from Ne	elson (1976).	
	-	All values represent raw, nonst	andardized	scores.			••••	
	arousal, an						Elen	nents of
	recorded ir						table	e notes, 5.16



