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Decision Strategies in Health Care Choices for Self and Others: Older but not Younger Adults Make Adjustments for the Age of the Decision Target

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Participants (*N* = 142 younger and older adults) made health care choices for themselves, a social partner of similar age, or a social partner substantially younger or older than themselves. Using computer-based decision scenarios, participants reviewed positive, negative, or neutral choice criteria before choosing. Older adults who chose for themselves reviewed a greater proportion of positive choice criteria, recalled their choices more positively, and showed more positive emotional responses than did younger adults. Comparable results were found when participants chose for another person of similar age. Older adults who were asked to choose for a young person, however, showed a reduced focus on positive information; in addition, their emotional experience during the review process was less positive. Younger adults' performance was not influenced by the decision target.

Key Words: Age differences—Health care choices—Socioemotional selectivity theory.

SOCIOEMOTIONAL selectivity theory (SST; Carstensen, 2006) holds that age-related constraints on future time cause a shift in motivational priorities from future-oriented information-gathering goals toward present-oriented emotion-regulatory goals. According to SST, age-related goal shifts influence cognitive processing and lead to a "positivity effect"—a disproportionate emphasis on positive information in older adults' attention and memory. This phenomenon has been demonstrated across a wide range of tasks and replicated across multiple laboratories (for a review see Mather & Carstensen, 2005).

Because choices involving difficult trade-offs often create a conflict between well-being and information acquisition (Luce, 1998), it is not surprising that the positivity effect is observed in decision contexts. Löckenhoff and Carstensen (2007) tracked the review of features associated with health care options and found that older adults reviewed and recalled a greater proportion of positively valenced choice criteria than did younger adults (compare Mather, Knight, & McCaffrey, 2005; Mather & Johnson, 2000). In the present study we extend these findings by examining whether effects generalize to scenarios in which participants make choices for other people and by investigating whether a focus on positive material benefits emotional well-being during decision making.

SST maintains that, although advanced age is associated with chronically activated goals to support well-being, contextual influences on motivational states may temporarily override this tendency. In support of this postulate, instructional manipulations that emphasized information-processing goals were found to eliminate the age-related positivity effect in autobiographical memory (Kennedy, Mather, & Carstensen, 2004) and decision-making strategies (Löckenhoff & Carstensen, 2007). Reasoning similarly, we expected that consciously adopting the perspective of another person would activate the goal states perceived in that person and lead to adjustments in processing strategies. Specifically, we hypothesized that when asked to decide for another older person, older people would show a similar positivity effect in review and recall as when choosing for themselves. Yet, when they were making a decision for a younger person, information-processing goals would be activated and positivity would be reduced. We did not expect younger adults to modify their decision processes because they do not have access to the motivational experience of older adults, whereas older adults, by virtue of having been young, would have such knowledge. Finally, we expected that older adults' tendency to focus on positive material would benefit emotional well-being.

Methods

Participants

We recruited participants from undergraduate classes and the surrounding community. Older ($n = 71$; age = 65–92 years, $M = 78.10$, $SD = 6.94$) and younger ($n = 71$; age = 18–29 years, $M = 19.86$, $SD = 1.93$) participants did not differ by gender (63% female) or ethnicity (79% Caucasian), but older adults had more years of education than did young adults [$M_{old} = 15.79$, $SD = 2.35$ vs $M_{young} = 12.66$, $SD = 1.62$, $t(140) = 0.01$, $p < .001$].[1]

Procedure

We employed an Age Group × Decision Target (self, social partner of similar age, social partner of different age) between-subject design. In the self condition, participants made choices for themselves. In the other two conditions, they were asked to think of a close social partner and choose for him or her. In the similar-age condition, participants selected someone matching

Table 1. Mean Review and Recall Scores by Scenario, Age Group, and Instructional Condition

	Physician Scenario			Health Plan Scenario		
Decision Target	Self	SA Other	DA Other	Self	SA Other	DA Other
Proportion of cells reviewed						
Young	.85 (.76, .94)	.77 (.67, .87)	.78 (.69, .87)	.84 (.75, .94)	.85 (.75, .95)	.78 (.69, .87)
Old	.74 (.65, .83)	.84 (.74, .95)	.79 (.70, .88)	.87 (.77, .96)	.76 (.66, .87)	.87 (.78, .96)
Frequency of review						
Young	2.33 (1.52, 3.14)	2.45 (1.56, 3.33)	2.73 (1.97, 3.50)	2.26 (1.61, 2.89)	1.98 (1.28, 2.68)	2.15 (1.55, 2.75)
Old	3.06 (2.25, 3.87)	3.45 (2.54, 4.36)	2.49 (1.71, 3.27)	2.21 (1.57, 2.85)	2.42 (1.70, 3.13)	2.65 (2.03, 3.26)
Positivity index for review						
Young	−.06 (−.18, .07)	−.10 (−.24, .04)	.04 (−.08, .16)	.02 (−.09, .14)	−.02 (−.15, .10)	.01 (−.10, .12)
Old	**.22 (.09, .34)**	**.27 (.13, .41)**	.09 (−.03, .21)	**.11 (.001, .23)**	**.14 (.01, .27)**	**.11 (.001, .23)**
Positivity index for recall						
Young	.07 (−.10, .23)	.05 (−.13, .24)	.11 (−.05, .27)	.03 (−.12, .17)	−.03 (−.19, .13)	.04 (−.10, .17)
Old	**.54 (.36, .72)**	**.50 (.32, .68)**	.15 (−.01, .31)	**.46 (.31, .61)**	**.49 (.33, .65)**	**.37 (.23, .51)**

Note: SA = similar age; DA = different age; 95% confidence intervals are shown in parentheses. For positivity indices in review and recall, bold font indicates values whose confidence interval does not include zero.

their own age group. In the different-age condition, younger or older participants selected a social partner aged 60 years or older, or between 18 and 30 years of age, respectively. All participants respected the specified age ranges, and their relationship to the targets (76% relatives, 21% friends) did not differ across age groups, $\chi^2(N = 94) = 1.26$, *ns*.

We administered two choice scenarios, involving physicians and health plans, in counterbalanced order on an Apple laptop using the Hypercard program. Each decision grid described four choice alternatives (e.g., "Doctor A") on five characteristics (e.g., "education"). Each alternative was rated average on global patient–consumer satisfaction and very good, good, poor, or very poor on the remaining characteristics. There was no obvious "best" choice.[2]

Participants reviewed the decision grids one cell at a time by selecting individual cells with the mouse. Cells could be viewed repeatedly and there were no time limits. Shading provided visual cues for the cells' emotional valence: White = positive information (good or very good); gray = neutral information (average); and dark = negative information (poor or very poor). Thus, participants could selectively seek out positive information or avoid negative information, but the alternatives could not be differentiated based on the cues alone.

A practice scenario concerning vacations familiarized participants with the task. Before the practice scenario and after each of the health care choices, participants indicated on a 7-point Likert scale (from 1 = not at all to 7 = extremely) how much they experienced 8 positive and 11 negative emotions (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000).

We assessed recall by using printouts of each scenario that showed only the row and column headers but none of the cues or ratings. Participants circled the alternative they thought they had chosen and filled in the individual cells of this alternative with the appropriate ratings. As a reminder, possible ratings were shown on a scale ranging from very poor to very good. Participants could assign the same rating multiple times.[2]

Data Reduction

We computed mean scores for self-reported positive and negative emotions at each time of assessment. For each scenario, we computed the proportion of cells in the grid that had been reviewed at least once and the frequency of repeat reviews for these cells. To examine *positivity during review,* we computed the difference between the proportion of negative versus positive cells that had been opened at least once.[3] Scores on this index range from –1 to 1. To capture *positivity during recall*, we assigned numerical scores to the recalled value ratings (e.g., very poor = –2, average = 0, good = 1) and computed the means for each scenario, resulting in scores ranging from –2 to 2. On both indices, positive scores indicate a positivity effect and negative scores indicate a disproportionate focus on negative material. Review and recall indices were moderately correlated (physician scenario, $r = .30$, $p < .01$; plan scenario, $r = .45$, $p < .01$).

Results

Review

Table 1 shows the proportion of cells reviewed, the frequency of review, and the positivity index for review by scenario, age group, and condition. For each scenario, we conducted separate Age Group × Condition between-subject analyses of variance. The proportion of cells reviewed and the frequency of review showed no significant main effects or interactions (*p*s > .15). For positivity during review, both scenarios showed main effects of age, $F(1, 134) > 5.89$, $p < .05$, $\eta^2_p > .04$. There were no main effects of condition, but the physician scenario showed a significant Age × Condition interaction, $F(1, 134) = 3.29$, $p < .05$, $\eta^2_p = .05$. As we predicted, an examination of the confidence intervals (Table 1) revealed that older adults showed a significant positivity effect in the self and similar-age condition but not in the different-age condition, whereas younger adults did not show a positivity effect in any of the conditions. For the plan scenario, there was no Age × Condition interaction. Results did not change when we included the total proportion of reviewed cells or review frequency as covariates.

Recall

In the health plan scenario, older adults were less likely to recall which option they had chosen (52%) than were younger

Table 2. Mean Self-Rated Positive and Negative Emotions by Time of Assessment, Age Group, and Instructional Condition

	Positive Emotions			Negative Emotions		
Choice	Baseline	Choice 1	Choice 2	Baseline	Choice 1	Choice 2
Choice for self						
Young	3.93 (0.91)	3.39 (0.85)	3.03 (0.88)	1.99 (0.64)	1.85 (0.62)	1.84 (0.69)
Old	4.24 (1.10)	3.89 (1.35)	3.95 (1.32)	1.50 (0.53)	1.40 (0.53)	1.50 (0.76)
Choice for other: Similar age						
Young	3.42 (0.91)	2.84 (0.80)	2.72 (0.92)	2.12 (0.79)	2.18 (0.82)	2.04 (0.75)
Old	4.31 (1.20)	3.84 (1.63)	3.81 (1.57)	1.65 (0.78)	1.69 (0.80)	1.55 (0.79)
Choice for other: Different age						
Young	3.18 (1.03)	2.86 (1.18)	2.65 (1.14)	1.64 (0.75)	1.63 (0.69)	1.61 (0.75)
Old	3.85 (1.18)	2.85 (1.23)	2.60 (1.18)	1.23 (0.36)	1.49 (0.71)	1.57 (0.72)

Note: Standard deviations are shown in parentheses. Emotion scores are collapsed across decision scenarios.

adults [74%, $\chi^2(N = 36) = 7.26$, $p < .01$]. In the physician scenario, accuracy did not differ significantly by age (old, 61%; young, 71%).

Table 1 also shows positivity during recall by scenario, age group, and condition. For each scenario, we conducted separate Age × Condition between-subject ANOVAs. Both scenarios showed main effects of age, $F(1, 132) > 20.10$, $p < .0001$, $\eta^2_p = .10$. There were no main effects of condition, but the physician scenario showed a significant Age × Condition interaction, $F(1, 134) = 4.17$, $p < .05$, $\eta^2_p = .06$. As we predicted, an examination of the confidence intervals revealed that older adults showed a significant positivity effect in the self and similar-age condition but not in the different-age condition, whereas younger adults did not show a positivity effect in any condition. For the plan scenario, there was no Age × Condition interaction. Results did not change when we included recall accuracy, review frequency, or proportion of reviewed cells as covariates.

Emotional Responses

Table 2 shows positive and negative emotions (collapsed across scenarios) by age group, condition, and time point. To examine age and condition effects on participants' emotional responses, we computed ANOVAs (with Greenhouse–Geisser corrections, and Bonferroni-corrected post hoc tests), entering age group and condition as between-subject factors, time as a repeated-measures factor, and positive or negative emotions as dependent variables.

For positive emotions, we found main effects of time, $F(1.35, 180.62) = 59.67$, $p < .001$, partial $\eta^2 = .31$, age, $F(1, 134) = 10.83$, $p < .001$, $\eta^2_p = .08$, and condition, $F(2, 134) = 6.35$, $p < .01$, $\eta^2_p = .09$. There were no two-way interactions but the main effects were qualified by a significant three-way interaction, $F(2.70, 180.62) = 5.17$, $p < .01$, $\eta^2_p = .07$. Separate Condition × Time ANOVAs within age groups found that, for younger adults, there was a main effect of time, $F(1.47, 98.76) = 70.16$, $p < .001$, $\eta^2_p = .51$, suggesting declines in positive emotions over time, but no other significant effects. For older adults, there was a main effect of time, $F(1.30, 86.79) = 19.63$, $p < .001$, $\eta^2_p = .23$, a main effect of condition, $F(2, 67) = 4.92$, $p < .01$, $\eta^2_p = .13$, and a Time × Condition interaction, $F(2.59, 86.79) = 3.44$, $p < .05$, $\eta^2_p = .09$, suggesting that their positive emotions declined in the different-age condition but remained stable in the other two conditions. In further support of the postulate that positivity benefits emotional well-being, residualized change in positive emotions (capturing variations in postdecision emotions after accounting for emotions at baseline) was positively correlated with positivity during recall ($r = .20$, $p < .05$), although this effect did not reach significance for positivity during review ($r = .11$, *ns*.).

For negative emotions, there was a main effect of age, $F(1, 134) = 11.38$, $p < .001$, $\eta^2_p = .08$, suggesting that older adults felt less negative, and a main effect of condition, $F(2, 134) = 3.23$, $p < .05$, $\eta^2_p = .05$, which was qualified by a Time × Condition interaction, $F(3.48, 233.34) = 3.20$, $p < .05$, $\eta^2_p = .05$. Repeated-measures ANOVAs examining time effects in each condition suggested that negative emotions showed a marginally significant increase over time in the different-age condition, $F(1.98, 101.17) = 3.01$, $p = .05$, $\eta^2_p = .06$, but not in the other conditions. The remaining interactions and the correlations between residualized change in negative emotions and positivity during review ($r = -.11$) and recall ($r = -.09$) were not significant ($ps > .2$).[4]

Discussion

Our primary goal was to examine whether the positivity effect that had been observed in older adults' health care choices (Löckenhoff & Carstensen, 2007) would extend to choices made for others. As we predicted, choices for a person of similar age were comparable with the choices individuals made for themselves. Thus, merely taking the perspective of another person did not sway older adults' tendency to focus on positive material. However, the positivity effect was reduced when older adults chose for a younger social partner, suggesting some implicit knowledge that motivational states are different for younger adults. As we expected, this came at an emotional cost. In the different-age condition, older adults showed a decline in positive emotions, whereas their emotions remained stable when choosing for themselves or a similarly aged target. Younger adults, in contrast, reviewed equal portions of positive and negative material and experienced a decline in positive emotions regardless of who they were choosing for—presumably because they had no personal experience with age-related motivational changes.

Our findings are theoretically relevant because they elucidate the mechanisms that underlie age differences in emotional processing; they are practically relevant because they reveal

biases that may influence surrogate decisions in medical contexts (e.g., Ditto et al., 2001). Nevertheless, several open questions remain. The predicted influence of age and condition on emotional experience was found for positive but not for negative emotions, which likely was due to a floor effect in negative emotions. Second, the fact that all of the younger adults were students limits the generalizability of our findings. However, findings from the control condition in the present study replicate results from a previous study that used a non-student sample of younger adults (Löckenhoff & Carstensen, 2007). This earlier study also controlled for a variety of cognitive variables, self-efficacy, and prior experience. None of these variables accounted for age differences in positivity.

Another important caveat is that although we observed a main effect of age on positivity in both scenarios, we observed the predicted Age × Condition interaction only in the physician scenario. It is possible that participants' perspective-taking efforts were more successful when they were choosing among persons than among more abstract concepts such as health plans. However, additional research is needed to confirm the reliability of these results and to specify the conditions when the positivity effect is most likely to appear. Finally, our findings are limited by the specific format of the present choices (i.e., shaded decision grids presenting comparison ratings). Future research must examine whether findings generalize beyond hypothetical choices to real-life decisions and whether positivity influences decision accuracy and quality.

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End Notes

1. We initially recruited 71 older and 119 younger adults. To account for discrepancies in gender and ethnicity, we selected a younger sample matching the older sample in those characteristics. Findings are comparable when using the full sample or limiting analyses to Caucasians.
2. For a detailed description of the task, see Löckenhoff and Carstensen (2007).
3. We did not analyze neutral cells because the information was redundant (i.e., all gray cells contained the label "average"). This became obvious during the practice scenario, so there was no further incentive to open neutral cells.
4. Supplemental analyses that separately examined emotional responses to the physician versus the health plan scenario yielded results that were comparable to the pattern of effects for averaged emotion scores. Given that review and recall strategies showed differences across scenarios, this finding was somewhat surprising. However, because of the counterbalanced decision order, the emotional responses to a given scenario may have been influenced by the scenario that was presented right beforehand. This could account for the similarity in results.