**Online Supporting Information: Registered Report**
**"Adult Age Differences in Remembering Gain- and Loss-Related Intentions"**

## Supplement 1: Task Description

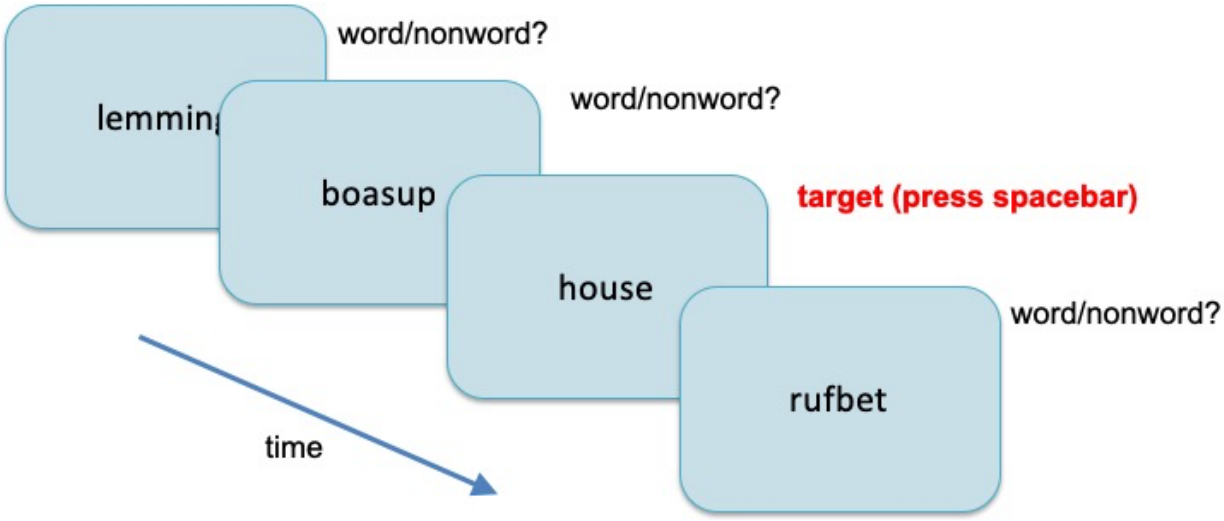


*Figure S1.* Illustration of a non-focal laboratory PM task embedded in an ongoing lexical-decision task. Participants were asked to press the spacebar key (instead of making word/nonword decisions) whenever an item occurred on the computer screen that included a specific initial letter (the letter *h* in the example). The original versions of the tasks were presented in German language; the figures show translated items into English.

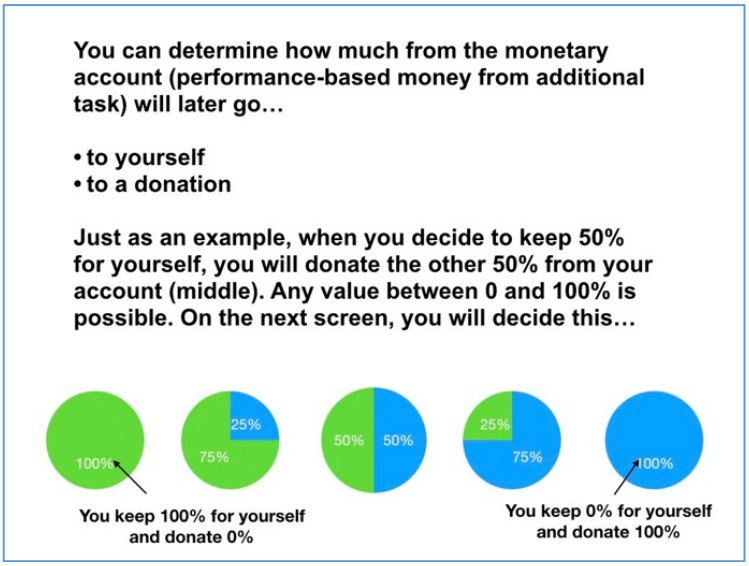


*Figure S2.* Example screen explaining that participants can freely choose the amount (percentage) of the monetary payoff that they later donate or keep for themselves.

## Supplement 2: Power Analysis

Based on the central prediction for the primary criterion variable (a motivational framing × age interaction in PM performance), we calculated the required total sample size in a multiple regression model (with age, motivational framing, and their interaction, as predictors of PM performance) to detect interaction effects of size $r = .25$ (equivalent to an effect size of $d \approx 0.5$ or $f^2 \approx .06$) with a statistical power of 0.90, given an alpha level of .05. Given these values, an a-priori power analysis with the software G*Power3 (Faul, Erdfelder, Lang, & Buchner, 2007) indicated a required total sample size of $N = 178$ participants to evaluate single regression coefficients (weights) in the model, using two-tailed $t$ tests.

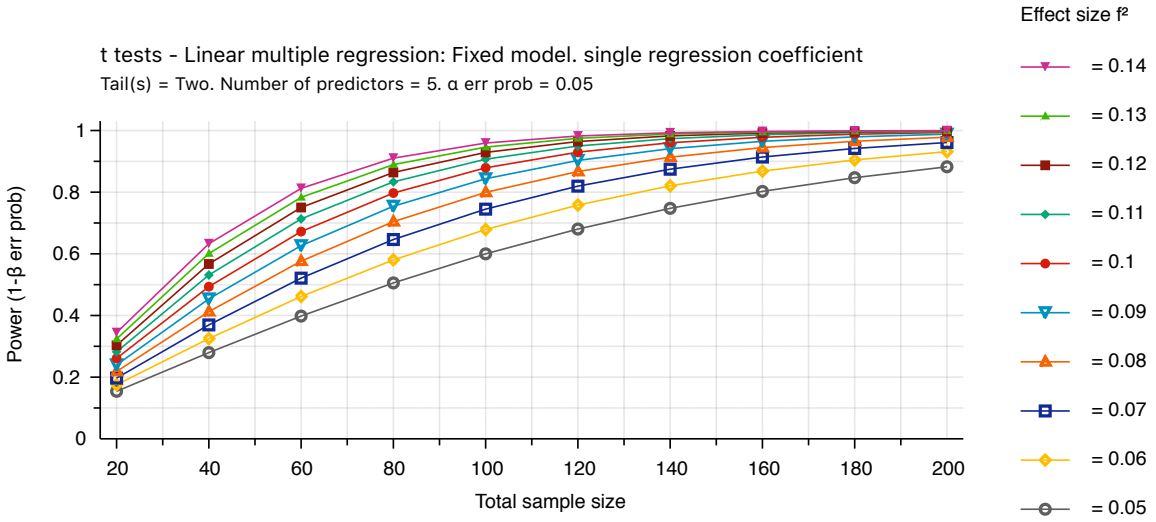


*Figure S3.* Statistical power to test the central prediction for the primary criterion variable, as a function of total sample size $N$ for different potential effect sizes $f^2$. The planned sample size of $N = 180$ allowed us to detect effects of $f^2 > .06$ with a power of at least .90. Graph generated with G*Power3 by Faul et al. (2007).

## Supplement 3: List of Cognitive Tests and Questionnaires Collected During the Study

### Cognitive Speed

Each participant completed an adapted version of a digit-symbol substitution test as an indicator of fluid cognitive ability. This speed test included digit-symbol pairs, followed by a list of digits. Participants were asked to enter under each digit the corresponding symbol. All participants completed as many items as possible within 2 min and the sum of correctly chosen symbols was evaluated.

### Vocabulary

In a spot-a-word choice vocabulary test, participants completed 37 items of increasing difficulty. Each item consisted of one (German) word and four pronounceable nonwords. The task of the participant was to select the word (and to guess if necessary). The sum of correct responses was evaluated.

### Motivational Orientation

Participants were asked to generate a list of three of their most important personal goals in a procedure adapted from Ebner, Freund, and Baltes (2006). To facilitate this task, a brief description of the concept of personal goals was provided. Specifically, participants were instructed to list goals in any life domain they wished in the following way: “Please write down what you wish for personally, what you would like, and what you would not like—at present and in the future”. Participants then rated each of their self-generated goals on an 8-point scale separately for each of the following three dimensions: *growth* (“with this goal, I want to improve something or achieve something new”); *maintenance* (“with this goal, I want to maintain something”); *prevention of loss* (“with this goal, I want to prevent a loss”).

**Task-Specific Motivation and Perceived Task Importance**

To measure participants' perceived importance of the prospective-memory and ongoing tasks, and their motivation to acquire money/points in the lab-based memory task, participants provided self-report rating for the the following items (original German wording is in brackets).

***Monetary Motivation.*** "How relevant was it for you to earn further points or money in the study through your performance? Please enter a rating from 0 (not important) to 100 (very important) below." ["Wie relevant war es für Sie, in der Studie durch Ihre Leistung weitere Punkte (bzw. Geld) zu sammeln? Bitte geben Sie unten eine Bewertung von 0 (nicht wichtig) bis 100 (sehr wichtig) ein."]

***Importance of Ongoing Task.*** "How important was it for you to distinguish words from non-words? Please enter a rating from 0 (not important) to 100 (very important) below". ["Wie wichtig war es für Sie, Wörter von Nichtwörtern zu unterscheiden? Bitte geben Sie unten eine Bewertung von 0 (nicht wichtig) bis 100 (sehr wichtig) ein."]

***Importance of Prospective Memory Task.*** "As an additional task, how important was it for you to remember to press the space bar on certain words? Please enter a rating from 0 (not important) to 100 (very important) below." ["Wie wichtig war es für Sie als Zusatzaufgabe, sich daran zu erinnern bei bestimmten Wörtern die Leertaste zu drücken? Bitte geben Sie unten eine Bewertung von 0 (nicht wichtig) bis 100 (sehr wichtig) ein."]

**Loss Aversion**

All subjects participated in a simple lottery choice task that arguably measures loss aversion (Gächter, Johnson, & Hermann, 2007). The task consisted of six hypothetical lotteries; in each lottery, there was a .50 probability of gaining €6 and a .50 probability of losing an amount *X*. Across lotteries, the losses varied from *X* = €2 to €7. Participants indicated for each of

the six lotteries whether or not they wanted to play this lottery (if they rejected a given lottery, their hypothetical payoff for that lottery was zero).

**Social Value Orientation**

To measure the degree of concern that people have for others (i.e., social value orientation), participants completed a six-item scale developed by Murphy, Ackermann, and Handgraaf (2011). Each of the six items required a hypothetical resource-allocation choice over a given continuum of joint payoffs (i.e., payoff for the participant and payoff for another hypothetical person). On a given item, for example, the participant had to choose a value $x$ on a continuum between 50 and 100. The participant's payoff would be $x$, whereas the other person's payoff would be $150 - x$. The participant's task was to indicate a preferred allocation choice by marking a line at the point that defined the most preferred joint payoff distribution.

**Positive and Negative Affect Scale (PANAS)**

Participants completed 20 items of the Positive and Negative Affect Scale (PANAS; Watson, Clark, & Tellegen, 1988). Each item provided an adjective describing a state (e.g., *nervous*) and participants indicated their current mood regarding this item (e.g., how nervous they felt at this moment) on a 5-point scale (1: not at all; 5: extremely).

**Prospective and Retrospective Memory Questionnaire**

To obtain personal estimates of everyday memory performance, participants completed sixteen items of a self-report questionnaire, the Prospective and Retrospective Memory Questionnaire (PRMQ; Smith, Della Sala, Logie, & Maylor, 2000). Participants rated the frequency with which they make particular types of memory errors on a 5-point scale (e.g., "Do you forget to tell someone something you had meant to mention a few minutes ago?" 1: very

often; 5: never). The PRMQ is designed to disentangle self-rated prospective and retrospective memory performance in everyday life.

**Supplement 4: Additional Regression Analysis with Motivational Orientation as Covariates**

**Table S1.** *Regression of Prospective-Memory Performance on Age, Experimental Condition, and Self-Report Ratings of Motivational Orientation.*

| | PM Performance (Criterion) | | | |
|---|---|---|---|---|
| Effect/Predictor Variable | Estimate | *SE* | *t* | *p* |
| Intercept | .02 | .07 | .22 | .826 |
| Age | −.30 | .10 | −3.10 | .002 |
| Gains | .16 | .10 | 1.58 | .117 |
| Losses | .00 | .10 | .00 | .998 |
| Age × Gains | −.27 | .13 | −2.02 | .044 |
| Age × Losses | .13 | .14 | .91 | .364 |
| Gain Orientation | −.14 | .08 | −1.74 | .083 |
| Maintenance Orientation | .06 | .10 | .60 | .546 |
| Loss Orientation | .05 | .11 | .45 | .655 |
| Gains × Gain Orientation | −.21 | .13 | −1.62 | .106 |
| Gains × Maintenance Orientation | .20 | .14 | 1.49 | .137 |
| Gains × Loss Orientation | −.20 | .15 | −1.40 | .164 |
| Losses × Gain Orientation | .14 | .11 | 1.34 | .181 |
| Losses × Maintenance Orientation | −.19 | .15 | −1.32 | .188 |
| Losses × Loss Orientation | .21 | .16 | 1.28 | .204 |

*Note. df* = 165 for tests of model coefficients. The included predictors accounted for significant variability in prospective memory performance, $R^2 = .15$, $F(14, 165) = 2.07$, $p = .016$; continuous predictor variables were *z*-transformed in all analyses; categorical predictors were effect-coded. This regression can be interpreted as a moderator analysis, in which the relation between age and memory performance can be moderated by (a) experimental incentives and (b) people's motivational orientation. The findings indicate moderation by experimental incentive condition, but not by motivational orientation.

## Supplement 5: Additional Analyses with Task-Specific Monetary Motivation

### Regression with Monetary Motivation as Covariate

**Table S2.** *Regression of Prospective-Memory Performance on Age, Experimental Condition, and Ratings of Monetary Motivation*

| | PM Performance (Criterion) | | | |
|---|---|---|---|---|
| Effect/Predictor Variable | Estimate | *SE* | *t* | *p* |
| Intercept | .01 | .09 | .07 | .947 |
| Age | −.22 | .09 | −2.49 | .014 |
| Gains | .06 | .09 | .67 | .505 |
| Monetary Motivation | .26 | .09 | 2.90 | .004 |
| Age × Gains | −.26 | .09 | −2.89 | .005 |
| Age × Monetary Motivation | .04 | .09 | .46 | .645 |
| Gains × Monetary Motivation | −.09 | .09 | −.99 | .323 |
| Age × Gains × Monetary Motivation | −.03 | .09 | −.39 | .698 |

*Note.* Analysis of participants in gains and loss conditions, in which performance-contingent payoff was provided; monetary motivation = self-report ratings of the personal relevance to achieve further points/money in the memory task; $df$ = 110 for tests of model coefficients; monetary motivation scores from three participants were unavailable; the included predictors accounted for significant variability in prospective memory performance, $R^2$ = .21, $F(7, 110)$ = 4.28, $p < .001$; continuous predictor variables were $z$-transformed in all analyses; categorical predictors were effect-coded (−1 = losses; +1 = gains).

### Monetary Motivation Accounts for Age-Related Variability in Memory Performance

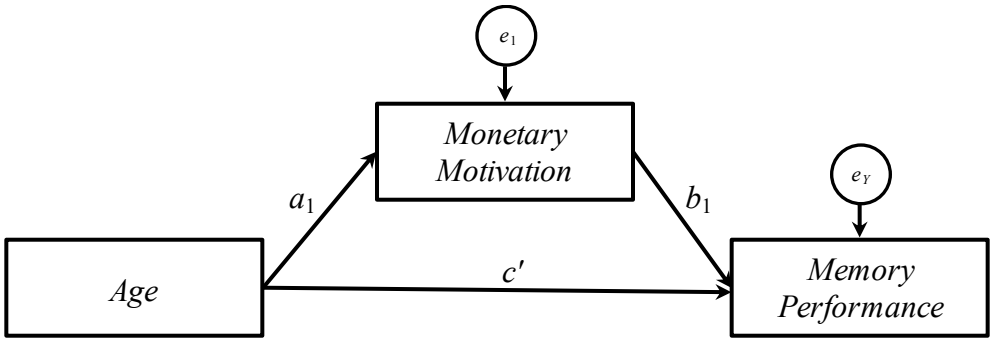


*Figure S4.* Diagram of a correlational model accounting for age differences in memory performance through people's task-specific monetary motivation (in the gain/loss conditions with performance-contingent incentives). The corresponding model coefficients are in Table S3.

**Table S3.** *Model Coefficients (Criterion: Prospective Memory Performance)*

| Effect/Description | |
|---|---|
| Total effect of Age: $c$ (total effect Age → Memory) | −.30 [−.47, −.12] |
| Direct effect of Age: $c'$ (direct effect Age → Memory) | −.22 [−.40, −.05] |
| Indirect effect (Mediation): $a_1 \times b_1$ (via Monetary Motivation) | −.07 [−.15, −.02] |

*Note.* Coefficients in the model (see Figure S4) are standardized regression weights; 95% confidence intervals are in brackets and indicate significant effects if an interval does not include zero; $c$ is the total effect of age on the criterion variable (when potential mediators are ignored); $c'$ is the direct effect of age when a mediator is concurrently considered; $a_i \times b_i$ is the indirect effect of age on the criterion through the mediator; indirect-effect estimates are based on bootstrapping (using $N$ = 10,000 samples).

## Supplement 6: Additional Regression Analysis with Payoff Type (Money Kept vs. Donated)

**Table S4.** *Regression of Prospective-Memory Performance on Age, Experimental Condition, and Payoff Type.*

| | PM Performance (Criterion) | | | |
|---|---|---|---|---|
| Effect/Predictor Variable | Estimate | *SE* | *t* | *p* |
| Intercept | .04 | .08 | .45 | .650 |
| Age | −.31 | .08 | −3.83 | .000 |
| Gains | .02 | .08 | .19 | .853 |
| Payoff Type (% retained) | −.16 | .08 | −2.02 | .045 |
| Age × Gains | −.21 | .08 | −2.55 | .012 |
| Age × Payoff Type | −.20 | .08 | −2.47 | .015 |
| Gains × Payoff Type | .17 | .08 | 2.04 | .043 |
| Age × Gains × Payoff Type | .22 | .08 | 2.67 | .009 |

*Note.* Analysis of participants in the gains and loss conditions, in which performance-contingent payoff was provided; $df = 109$ for tests of model coefficients. The included predictors accounted for significant variability in prospective memory performance, $R^2 = .28$, $F(7, 109) = 6.06$, $p < .001$; continuous predictor variables were $z$-transformed in all analyses; categorical predictors were effect-coded (−1 = losses; +1 = gains).

**Supplement 7: Relations Between Age, Cognitive Speed, and PM Performance**

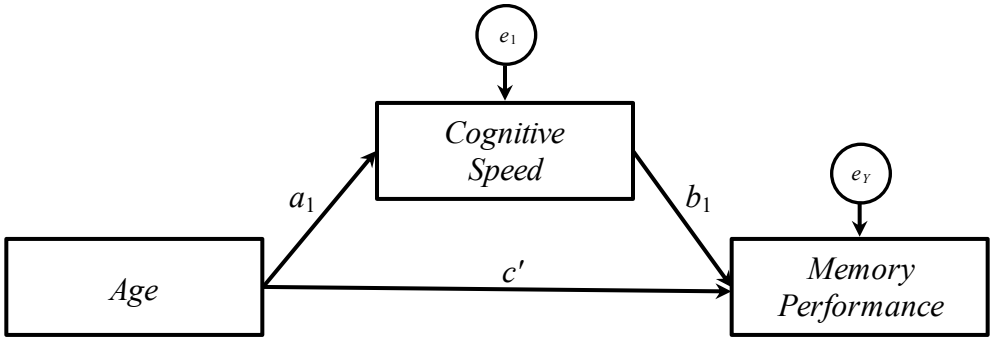


*Figure S5.* Diagram of a correlational model accounting for age differences in memory performance through cognitive speed (people's scores in a digit-symbol substitution test). The corresponding model coefficients are in Table S5.

**Table S5.** *Model Coefficients (Criterion: Prospective Memory Performance)*

| Effect/Description | |
|---|---|
| Total effect of Age: $c$ (total effect Age → Memory) | −.23 [−.38, −.09] |
| Direct effect of Age: $c'$ (direct effect Age → Memory) | −.08 [−.11, +.26] |
| Indirect effect (Mediation): $a_1 \times b_1$ (via Cognitive Speed) | −.31 [−.43, −.20] |

*Note.* Coefficients in the model (see Figure S5) are standardized regression weights; 95% confidence intervals are in brackets and indicate significant effects if an interval does not include zero; $c$ is the total effect of age on the criterion variable (when potential mediators are ignored); $c'$ is the direct effect of age when a mediator is concurrently considered; $a_i \times b_i$ is the indirect effect of age on the criterion through the mediator; indirect-effect estimates are based on bootstrapping (using $N$ = 10,000 samples).

**References Online Supplement**

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