

**Supplemental Materials For “Motives Matter More with Age: Adult Age Differences
in Response to Sociomoral Violations”**

Study 1: Nonverbal Emotion Endorsement Results

Nonverbal Emotion Endorsements

Anger. Participants endorsed angry facial expressions to a greater extent in the desire/no consequence condition ($M = 4.86$, $SD = 1.24$, 95% CI [4.62, 5.10]) compared to the no desire/consequence condition ($M = 3.20$, $SD = 1.41$, 95% CI [2.94, 3.45]), $F(1, 220) = 53.64$, $p < .001$, $\eta_p^2 = .032$. Neither the main effect of age group ($p = .494$) nor the interaction ($p = .334$) was significant.

Disgust. Participants endorsed disgust facial expressions to a greater extent in the desire/no consequence condition ($M = 4.02$, $SD = 1.46$, 95% CI [3.73, 4.30]) compared to the no desire/consequence condition ($M = 3.20$, $SD = 1.56$, 95% CI [2.92, 3.48]), $F(1, 220) = 16.74$, $p < .001$, $\eta_p^2 = .010$. Neither the main effect of age group ($p = .755$) nor the interaction ($p = .095$) was significant.

Neutral. Participants endorsed neutral facial expressions to a lesser extent in the desire/no consequence condition ($M = 2.64$, $SD = 1.60$, 95% CI [2.33, 2.95]) compared to the no desire/consequence condition ($M = 3.60$, $SD = 1.26$, 95% CI [3.37, 3.82]), $F(1, 220) = 28.02$, $p < .001$, $\eta_p^2 = .017$. Older adults ($M = 2.78$, $SD = 1.35$, 95% CI [2.53, 3.04]) endorsed neutral expressions less than younger adults ($M = 3.53$, $SD = 1.55$, 95% CI [3.24, 3.82]), $F(1, 220) = 15.17$, $p < .001$, $\eta_p^2 = .009$. The two-way interaction was significant, $F(1, 220) = 5.56$, $p = .019$, $\eta_p^2 = .003$. Specifically, the mean-level age difference in the desire/no consequence condition was significantly different from the no desire/consequence condition, estimate = 0.86, $SE = 0.37$, $t = 2.36$, $p = .019$. Results from the simple slopes analysis indicated that younger adults ($M = 3.26$, $SD = 1.71$, 95% CI [2.77, 3.74]) endorsed neutral facial expressions significantly more than older

adults ($M = 2.05$, $SD = 1.22$, 95% CI [1.72, 2.39]) in the desire/no consequence condition, $b = 1.16$, $SE = 0.27$, $t = 4.27$, $p < .001$, but not in the no desire/consequence condition ($p = .23$).

Summary. The patterns generally indicate that anger and disgust endorsements were higher, but neutral endorsements were lower, when the perpetrator desired to harm another even though no harm occurred (relative to when harm occurred accidentally without malicious desire). Interestingly, older adults endorsed neutral expressions less than younger adults – especially when there was a desire to cause harm to another, even though no harm occurred.

Results from Analyses on Pooled Data

Data Analysis Strategy

In an attempt to address the inconsistent findings across Studies 1-3, we conducted the same analyses on our five dependent variables of interest with the pooled data from the desire/no consequence and no desire/consequence conditions in all three studies. Specifically, we conducted multilevel regressions accounting for participant, scenario, and study. For each outcome, we included dummy coded age (ref = older adults), dummy coded condition (ref = no desire/consequence), and the Age group x Condition interaction. Significant two-way interactions were decomposed using a simple slopes analysis. Results can be found on our OSF page. In the pooled analyses, there were 548 older adults and 577 younger adults. There were 337 participants in the no desire/consequence condition ($n_{OA} = 158$, $n_{YA} = 179$), and 332 participants in the desire/no consequence condition ($n_{OA} = 166$, $n_{YA} = 166$).

Moral Judgments

Person judgments. Participants reported harsher person judgments in the desire/no consequence condition ($M = 5.74$, $SD = 1.24$, 95% CI [5.69, 5.78]) relative to the no desire/consequence condition ($M = 2.95$, $SD = 1.16$, 95% CI [2.91, 2.99]), $F(1, 663.08) = 1015.14$, $p < .001$, $\eta_p^2 = .117$. Older adults ($M = 4.41$, $SD = 1.99$, 95% CI [4.33, 4.48]) reported harsher person judgments compared to younger adults ($M = 4.26$, $SD = 1.69$, 95% CI [4.20, 4.33]), $F(1, 663.33) = 17.55$, $p < .001$, $\eta_p^2 = .004$.

These main effects were qualified by a significant two-way interaction, $F(1, 663.08) = 43.58$, $p < .001$, $\eta_p^2 = .009$. In the no desire/consequence condition, older adults ($M = 2.73$, $SD = 1.18$, 95% CI [2.67, 2.81]) reported more lenient person judgments compared to younger adults ($M = 3.14$, $SD = 1.14$, 95% CI [3.08, 3.20]), $b = 0.42$, $SE = 0.10$, $t = 4.19$, $p < .01$. In the desire/no consequence condition, older adults ($M = 6.01$, $SD = 1.10$, 95% CI [5.94, 6.06]) reported harsher person judgments compared to younger adults ($M = 5.47$, $SD = 1.31$, 95% CI [5.40, 5.54]), $b = -0.52$, $SE = 0.10$, $t = -5.14$, $p < .01$.

Act judgments. Participants reported harsher act judgments in the no desire/consequence condition ($M = 5.21$, $SD = 1.17$, 95% CI [5.17, 5.26]) compared to the no desire/consequence condition ($M = 3.66$, $SD = 1.31$, 95% CI [3.61, 3.71]), $F(1, 663.47) = 347.46$, $p < .001$, $\eta_p^2 = .068$. Older adults ($M = 4.41$, $SD = 1.53$, 95% CI [4.35, 4.47]) reported more lenient act judgments compared to younger adults ($M = 4.45$, $SD = 1.41$, 95% CI [4.41, 4.50]), $F(1, 663.39) = 9.28$, $p = .002$, $\eta_p^2 = .002$.

These main effects were qualified by a significant two-way interaction, $F(1, 663.09) = 7.99$, $p = .005$, $\eta_p^2 = .002$. In the no desire/consequence condition, older adults ($M = 3.51$, $SD = 1.35$, 95% CI [3.44, 3.59]) reported more lenient act judgments

compared to younger adults ($M = 3.78$, $SD = 1.27$, 95% CI [3.72, 3.85]), $b = 0.28$, $SE = 0.09$, $t = 3.05$, $p < .01$. However, older adults' ($M = 5.26$, $SD = 1.17$, 95% CI [5.21, 5.32]) and younger adults' ($M = 5.17$, $SD = 1.16$, 95% CI [5.11, 5.23]) act judgments did not differ in the desire/no consequence condition, $b = -0.09$, $p = .34$.

Emotion Ratings

Anger ratings. Participants reported higher anger ratings in the desire/no consequence condition ($M = 4.74$, $SD = 1.82$, 95% CI [4.67, 4.81]) compared to the no desire/consequence condition ($M = 2.87$, $SD = 1.87$, 95% CI [2.81, 2.94]), $F(1, 664.70) = 171.58$, $p < .001$, $\eta_p^2 = .035$. Older adults ($M = 3.70$, $SD = 2.16$, 95% CI [3.62, 3.79]) reported lower anger ratings compared to younger adults ($M = 3.89$, $SD = 2.01$, 95% CI [3.81, 3.96]), $F(1, 664.51) = 9.41$, $p = .002$, $\eta_p^2 = .002$.

These main effects were qualified by a significant two-way interaction, $F(1, 663.50) = 4.95$, $p = .026$, $\eta_p^2 = .001$. In the no desire/consequence condition, older adults ($M = 2.61$, $SD = 1.84$, 95% CI [2.51, 2.71]) reported lower anger ratings compared to younger adults ($M = 3.10$, $SD = 1.87$, 95% CI [3.01, 3.21]), $b = 0.49$, $SE = 0.16$, $t = 3.07$, $p < .01$. However, in the desire/no consequence condition, older adults' ($M = 4.74$, $SD = 1.92$, 95% CI [4.64, 4.85]) and younger adults' ($M = 4.73$, $SD = 1.73$, 95% CI [4.64, 4.82]) anger ratings did not significantly differ, $b = -0.01$, $p = .93$.

Disgust ratings. Participants reported higher disgust ratings in the desire/no consequence condition ($M = 4.82$, $SD = 1.83$, 95% CI [4.75, 4.89]) compared to the no desire/consequence condition ($M = 2.53$, $SD = 1.82$, 95% CI [2.46, 2.60]), $F(1, 665) = 253.87$, $p < .001$, $\eta_p^2 = .051$. Older adults ($M = 3.66$, $SD = 2.26$, 95% CI [3.58, 3.75])

reported lower disgust ratings compared to younger adults ($M = 3.67$, $SD = 2.05$, 95% CI [3.59, 3.78]), $F(1, 665) = 6.24$, $p = .013$, $\eta_p^2 = .001$ ¹.

These main effects were qualified by a significant two-way interaction, $F(1, 665) = 8.16$, $p = .004$, $\eta_p^2 = .002$. In the no desire/consequence condition, older adults ($M = 2.32$, $SD = 1.74$, 95% CI [2.22, 2.41]) reported lower disgust ratings compared to younger adults ($M = 2.72$, $SD = 1.87$, 95% CI [2.63, 2.82]), $b = 0.41$, $SE = 0.16$, $t = 2.50$, $p = .01$. However, in the desire/no consequence condition, older adults' ($M = 4.95$, $SD = 1.94$, 95% CI [4.84, 5.05]) and younger adults' ($M = 4.71$, $SD = 1.70$, 95% CI [4.60, 4.79]) disgust ratings were not significantly different, $b = -0.25$, $p = .12$.

Sympathy ratings. Participants reported lower sympathy ratings in the desire/no consequence condition ($M = 2.62$, $SD = 1.38$, 95% CI [2.56, 2.67]) compared to the no desire/consequence condition ($M = 3.09$, $SD = 1.68$, 95% CI [3.02, 3.15]), $F(1, 663.29) = 32.37$, $p < .001$, $\eta_p^2 = .007$. The main effect of age group was not significant, $p = .856$.

The two-way interaction was significant, $F(1, 663.06) = 10.20$, $p = .001$, $\eta_p^2 = .002$. In the no desire/consequence condition, older adults' ($M = 3.06$, $SD = 1.63$, 95% CI [2.97, 3.15]) and younger adults' ($M = 3.11$, $SD = 1.72$, 95% CI [3.02, 3.21]) sympathy ratings were not significantly different, $b = 0.02$, $p = .86$. However, in the desire/no consequence condition, older adults ($M = 2.31$, $SD = 1.21$, 95% CI [2.23,

¹ The fact that the effect was significant may be surprising, given that older and younger adults' mean disgust judgments – collapsed across condition – are incredibly close. However, significance tests do not speak to the strength of the effect. The main effect of age group account for only .1% of the variance, so although it is significant, it is not entirely meaningful, especially when this factor is included in higher order interactions. Moreover, although the standard deviations are similar, standard deviations are not the only estimate used in significance tests. Standard deviations are used to estimate standard errors (standard deviation divided by the square root of the sample size), and the standard errors are used to calculate the t-values. Thus, for standard error, when sample size increases, the denominator increases, and the standard error gets smaller. Taken together, when the standard error is smaller with more observations, the significance test (t test) can be significant with even a small coefficient, so long as the standard error is smaller.

2.36]) reported lower sympathy ratings compared to younger adults ($M = 2.94$, $SD = 1.47$, 95% CI [2.86, 3.02]), $b = 0.63$, $SE = 0.14$, $t = 4.69$, $p < .01$.

Exploratory Correlations

To further demonstrate the dynamic relationship between emotional reactions and moral judgments for older and younger adults, we conducted a series of correlations using the “`diffcor.two()`” function in the *diffcor* package in R (Blötner, 2023), which tests whether the correlation between two variables differs across two independent studies/samples. The output provides the compared correlations, test statistic as z-score, p-values, confidence intervals of the empirical correlations, and the effect size Cohens q . Please refer to Figure S1 for the correlation matrix for older (Panel A) and younger (Panel B) adults.

To start, person and act judgments were positively and strongly correlated for both older adults ($r = .77$, 95% CI [.73, .80]) and younger adults ($r = .73$, 95% CI [.69, .77]), but they were not significantly different from each other, $p = .063$. The correlations between person judgments and the emotion ratings were stronger for older relative to younger adults. Specifically, the correlation between person judgments and disgust ratings was stronger for older adults ($r = .76$, 95% CI [.72, .79]) than it was for younger adults ($r = .64$, 95% CI [.59, .67]), $z = 3.98$, $p < .001$, Cohen’s $q = 0.24$. The correlation between person judgments and anger ratings was also stronger for older adults ($r = .68$, 95% CI [.63, .72]) than for younger adults ($r = .61$, 95% CI [.56, .66]), $z = 2.01$, $p = .022$, Cohen’s $q = 0.12$. In addition, the correlation between person judgments and sympathy ratings was stronger for older adults ($r = 0.37$, 95% CI [.31, .44]) than for younger adults ($r = -.22$, 95% CI [-.31, -.14]), $z = 10.23$, $p < .001$, Cohen’s $q = 0.61$.

With respect to the correlations between act judgments and the emotion ratings, the correlations were somewhat significantly different for older versus younger adults. Specifically, the correlation between act judgments and anger ratings was no different for older ($r = .74$, 95% CI [.70, .78]) and younger ($r = .73$, 95% CI [.69, .77]) adults, $p = .358$. The correlation between act judgments and disgust ratings was stronger for older adults ($r = .76$, 95% CI [.722, .793]) than for younger adults ($r = .71$, 95% CI [.67, .75]), $z = 1.82$, $p = .034$, Cohen's $q = 0.11$. The correlation between act judgments and sympathy ratings was stronger for older adults ($r = -.33$, 95% CI [-.40, -.25]) than for younger adults ($r = .10$, 95% CI [.02, .18]), $z = -7.41$, $p < .001$, Cohen's $q = -0.44$.

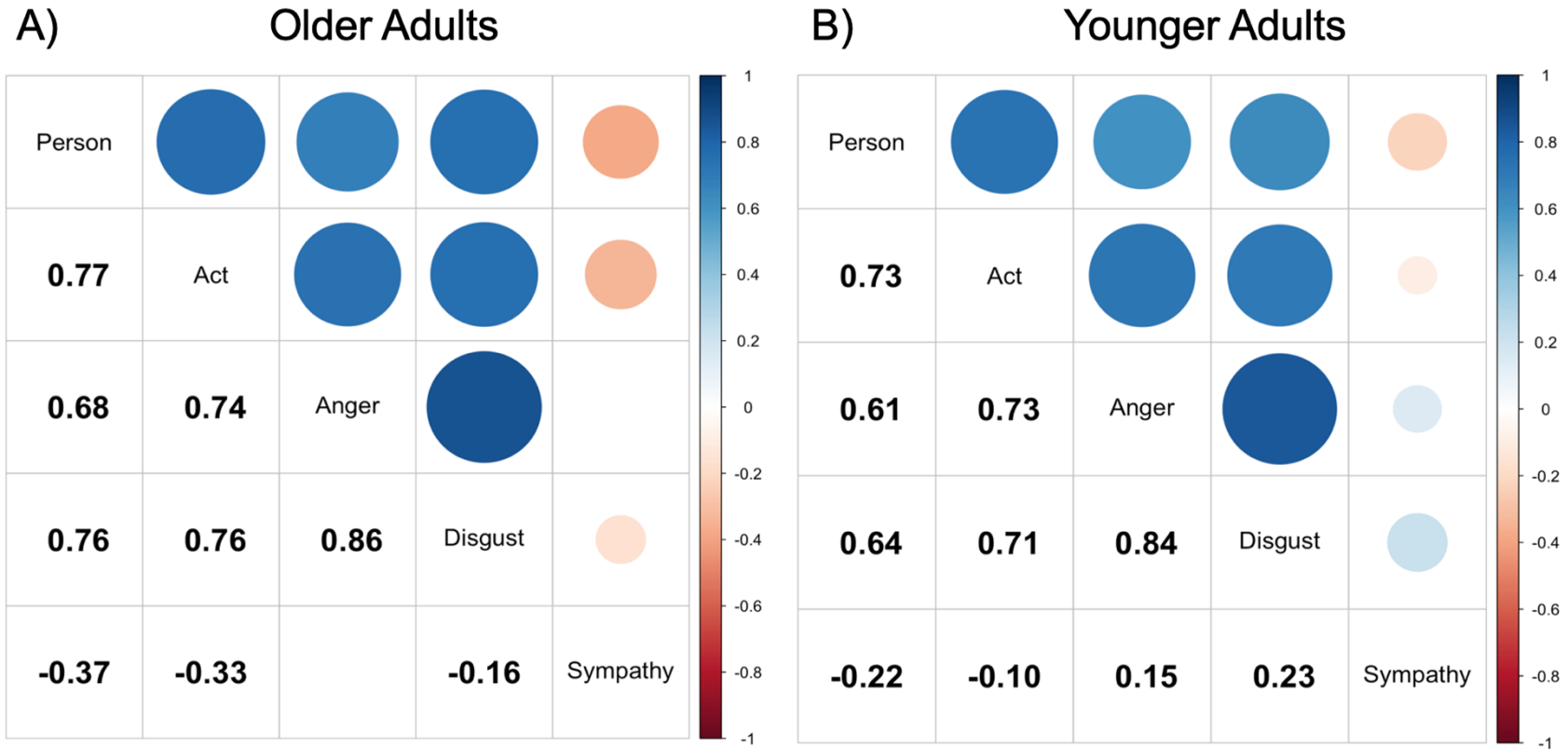


Figure S1. Pearson correlations for the older adults (Panel A) and younger adults (Panel B) from the pooled data are presented above. Correlations with p-values greater than .01 are considered insignificant and are indicated by empty cells. The legend on the right side of each correlation matrix shows the correlation coefficients and corresponding colors. Positive correlations are displayed in blue, and negative correlations are in red. The color intensity and size of the circles are proportional to the correlation coefficients.

