Sunk-cost judgements across the child to adult lifespan: Supplementary Material

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1. Deviations from preregistration

Summary of Preregistration Deviations

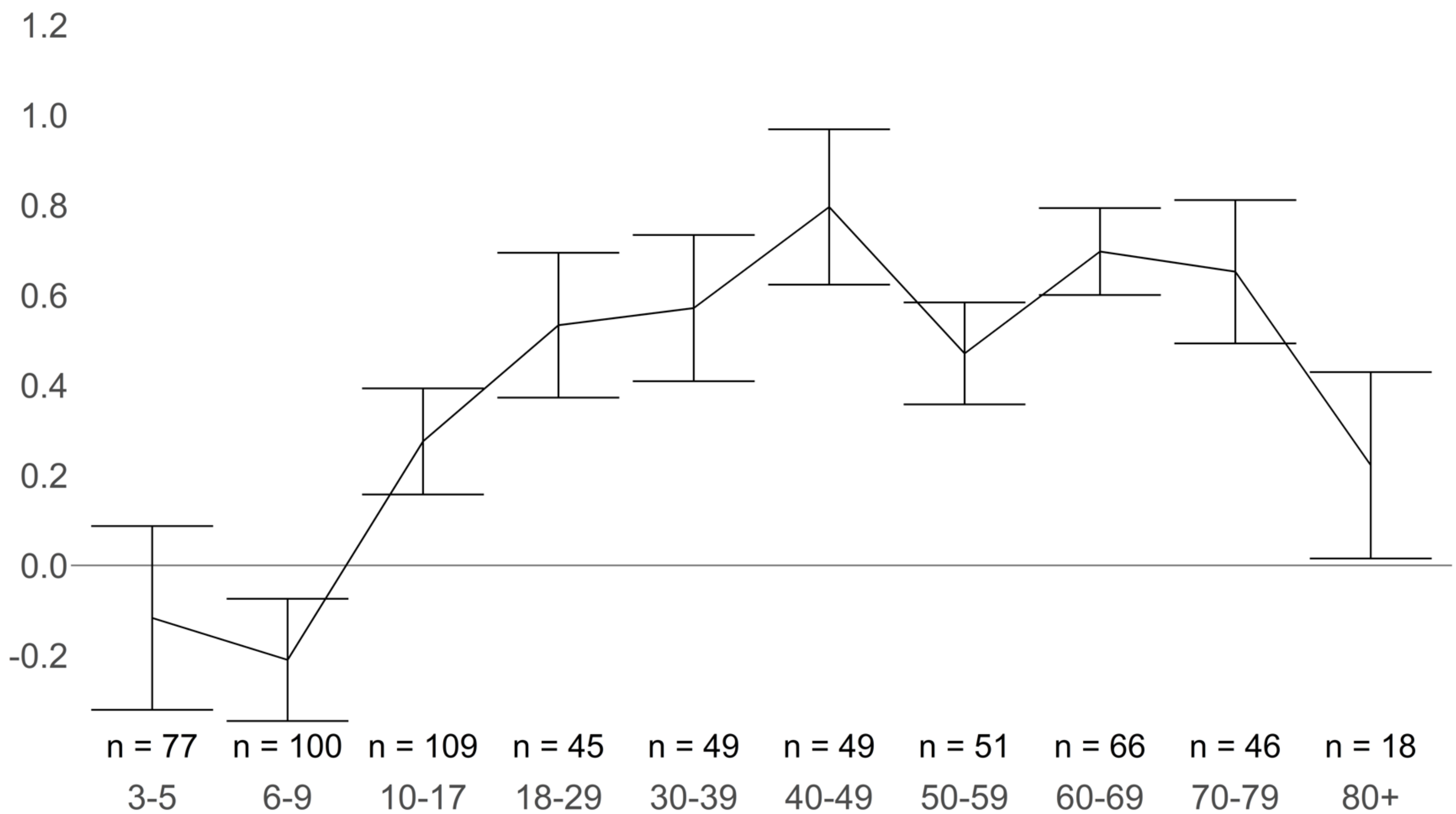
Deviations *No.*		*Details*	*Original Wording*	*Deviation Description*	*Reader Impact*
1	Type Reason Timing	Typo/Oversight Timing of preregistration After results known	"Thus far we conducted one study in 610 individuals ages 3-97 using a single vignette to measure the SCE."	In our preregistration for Experiment 2, we report the Experiment 1 sample size as 610, whereas the final Experiment 1 sample size reported in the manuscript is 682. This discrepancy is due to the fact that Experiment 1 is part of a larger ongoing longitudinal lifespan cognition study, for which data collection continued after the registration of Experiment 2 in 2019. Over the course of conducting Experiment 2 (and multiple manuscript revisions), we obtained a larger Experiment 1 sample than we initially had. Because we had not preregistered Experiment 1, and because our lifespan analyses required as large a sample size as possible (i.e., enough data points across the full age range for a continuous age analysis), we opted to use the current full Experiment 1 sample size available to us at the time of analysis.	The impact of this deviation is minimal—the overall pattern of results at $N = 610$ and $N = 682$ do not qualitatively differ (see figure below table for an analogue of our primary analysis conducted at $N = 610$ for a conference presentation nearer to the time of our initial preregistration). In both analyses, we observed no SCE in young children, an SCE in adolescents and adults, and some evidence for a lower SCE in older adults.
2	Type Reason	Sample Size Preregistered plan not possible or	"We plan to collect a total sample of N = 213."	In our preregistration, our target sample size was $N = 213$ across our three age groups. Our final sample size was	Our decision to collect a larger sample than initially planned was not motivated

	inappropriate because of data	substantially larger—$N = 378$ participants. There were two reasons for this substantial deviation. First, when we examined the obtained age ranges prior to and at our target sample size, although we had obtained roughly equal *n*s in our three age groups, there were substantial gaps in the *continuous* age range (i.e., we had many children age 3-12, but not many adolescents 13-17). We collected additional data to ensure that the age distribution for Experiment 2 was at least close to the one obtained for Experiment 1. Second, data collection was "messy"—we recruited participants in-person at community centres and a science centre where we could not anticipate the exact number of participants for a given booked day or data collection session (and it was not feasible to do 'live' sample size analyses on-site). Because of this practical constraint, we opted to collect as much data as possible in the in-person sessions. The decision to terminate data collection coincided with the end of our data collection sessions in these facilities. Finally, our pre-registered sample size planning was primarily based on categorical age group analyses. We opted to report only our pre-registered *continuous* age analyses in-text (partly based on cautions against dichotomizing	by results for our primary hypothesis tests (indeed, we did not perform the analyses until data collection for the full sample had been completed). As such, the impact of this deviation is minimal. It is certainly possible that the results may have been different in a smaller sample, but such a sample would have arguably been underpowered to detect effects in a more-appropriate *continuous* age analysis mirroring the one conducted in Experiment 1. And, given the gaps in our age range (particularly around the seemingly-critical period of adolescence), it is likely that such results would have been misleading.
Timing	After data access		

	continuous variables like age, e.g., McCallum et al., 2002, and to better match the reported *non*-preregistered analyses for Experiment 1). For this continuous analysis, we conducted post-hoc, non-preregistered power simulations similar to those conducted for Experiment 1 using our exact sample size, age range, and estimated regression residuals. From these simulations, we determined that we had sufficient power ($\geq .80$) in the 1st-person perspective condition ($n = 209$) to detect a linear age effect of $\lvert\beta\rvert \geq .008$, and assuming that minimum linear age effect, a quadratic age effect of $\lvert\beta\rvert \geq .0005$. There were slightly fewer participants in the 3rd-person perspective condition ($n = 169$), resulting in sufficient power ($\geq .80$) in this condition to detect a linear age effect of $\lvert\beta\rvert \geq .01$, and assuming that minimum linear age effect, a quadratic age effect of $\lvert\beta\rvert \geq .0015$.

Note. Table created using template proposed by Willroth & Atherton (2024)

Analogue of Experiment 1 primary analysis conducted at N = 610



Relevant references:

MacCallum, R. C., Zhang, S., Preacher, K. J., & Rucker, D. D. (2002). On the practice of dichotomization of quantitative variables. Psychological methods, 7(1), 19.

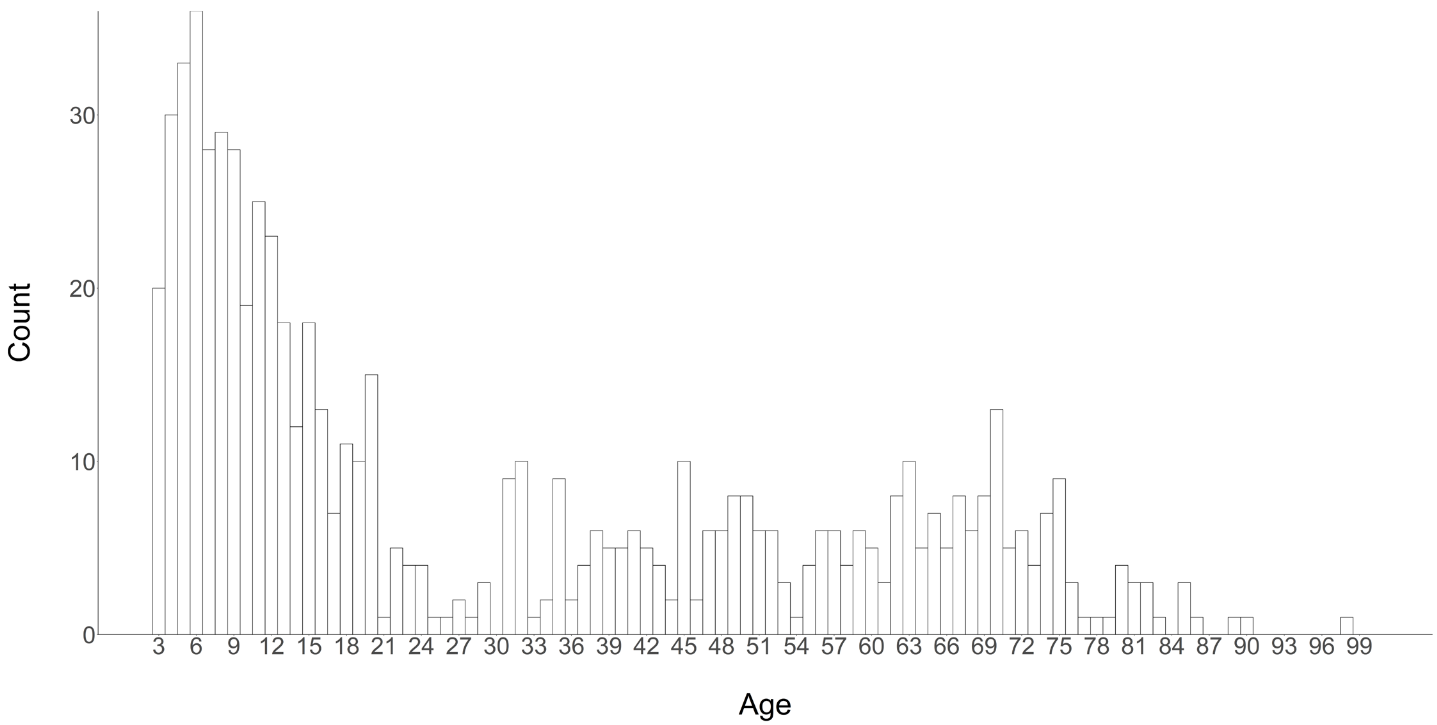
Willroth, E. C., & Atherton, O. E. (2024). Best laid plans: A guide to reporting preregistration deviations. *Advances in Methods and Practices in Psychological Science*, *7*(1), 25152459231213802.

2. Experiment 1 Supplementary Results

a. Demographics

Participants in each age group

Age group	n
3-17	348
18-59	204
60+	130



Sample age breakdown

Participant sex (self- or parent-reported)

Sex	n
Female	414
Male	257
Unreported	11

Participant ethnicity (self- or parent-reported)

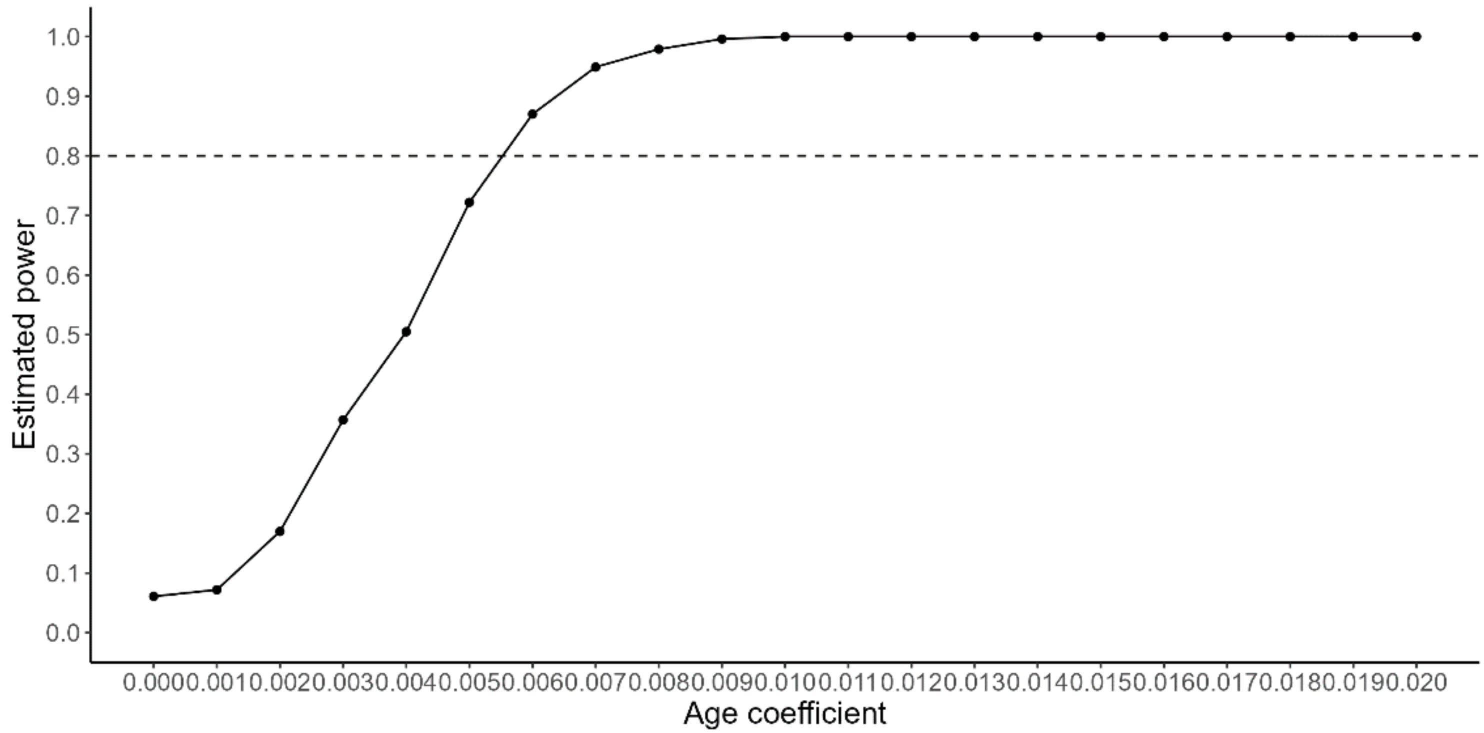
Ethnicity	n
White	243
Asian	129
Unreported	138
South Asian	29
Caucasian	14
Black	12
Indian	11
Hispanic	7
East Indian	6
Other	5
Southeast Asian	5
Arab	3
Asian/white	3
Chinese	3
Filipino	3
Persian	3
1/2 white 1/2 south asian	2
Afghan	2
Asian & White	2
Caucasian-Asian	2
East Asian	2
Indo-Canadian	2

Iranian	2
Melanesian (Pacific Islander)	2
Mixed	2
Multi-Ethnic	2
Punjabi	2
South Asian + White	2
Whtie	2
1/2 Black 1/2 White	1
1/2 white + 1/2 hispanic	1
3/4 Black 1/4 Irish	1
50% white, 50% hispanic	1
Acadian/Mohowk	1
Afghan-Iranian	1
African	1
African (Egyptian)	1
Arabic	1
Asian Panjab (India)	1
Asian/ Black, Indian, White	1
Asian/Indian, Black, White	1
Asian/White	1
Asian/white mix	1
Biracial	1
British/Vietnamese	1
Caucasian (English)	1
Egyptian	1
English & Chilean	1
First Nations, Asian English	1
First Nations, Irish	1
Half Asian / White	1
half Romanian, quarter japanese, quarter english	1
Hispanic, White	1

Hispanic, White,French, Aboriginal	1
Indian, Pakistani, African	1
Indigenous	1
Indigenous (Cree)	1
Metis	1
Middle East	1
mixed (white/asian)	1
Originally from Egypt but he Born in Canada	1
Pacific Islander	1
Pacific Islander/Melanesian	1
Sikh	1
White-caucasian	1
White & Jewish	1
White&Jewish	1
White(Caucasian	1
White/Aboriginal	1
White/First nations	1
White/Indian	1

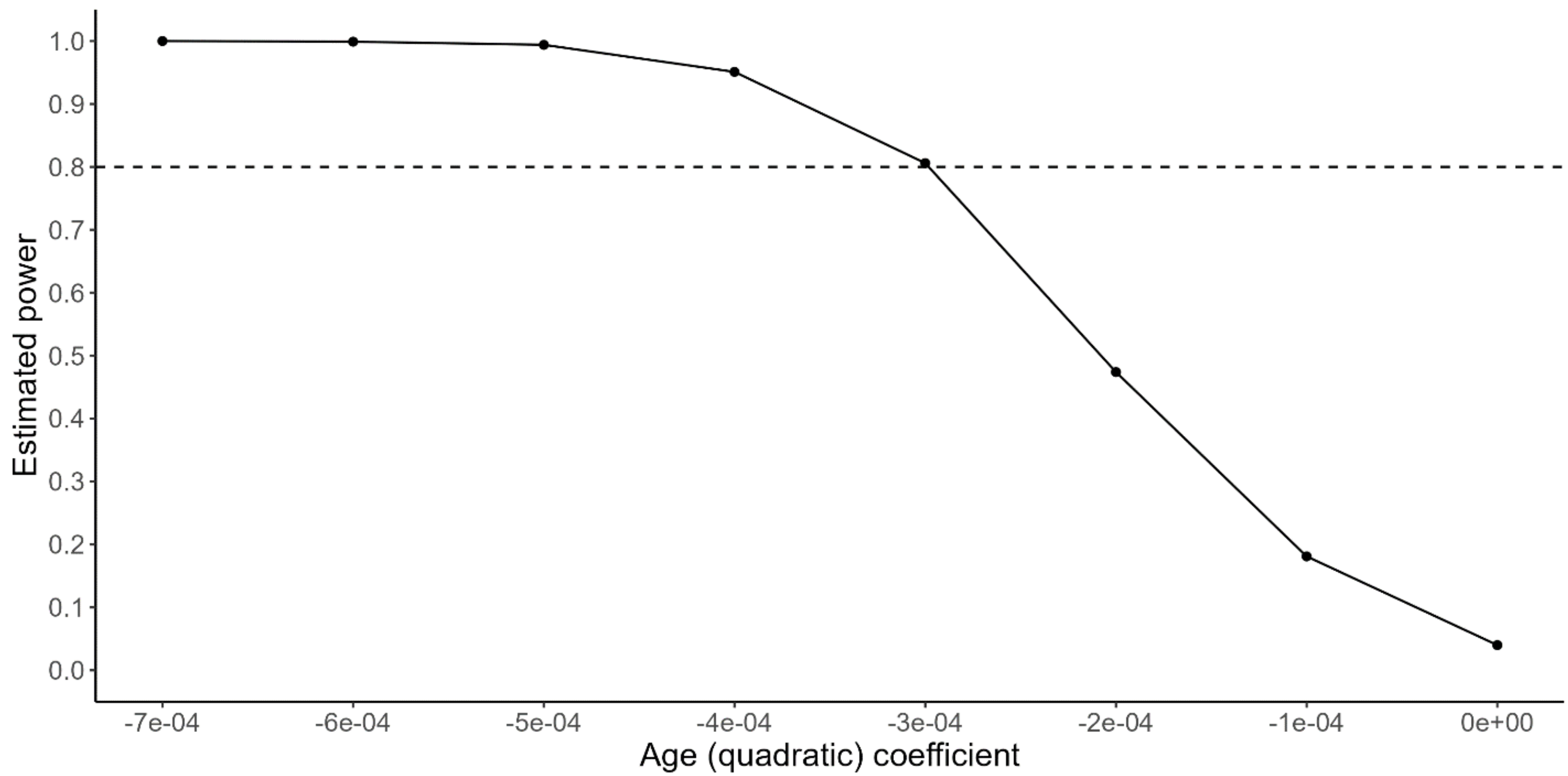
b. Sensitivity Analysis

Power curve for linear age effect



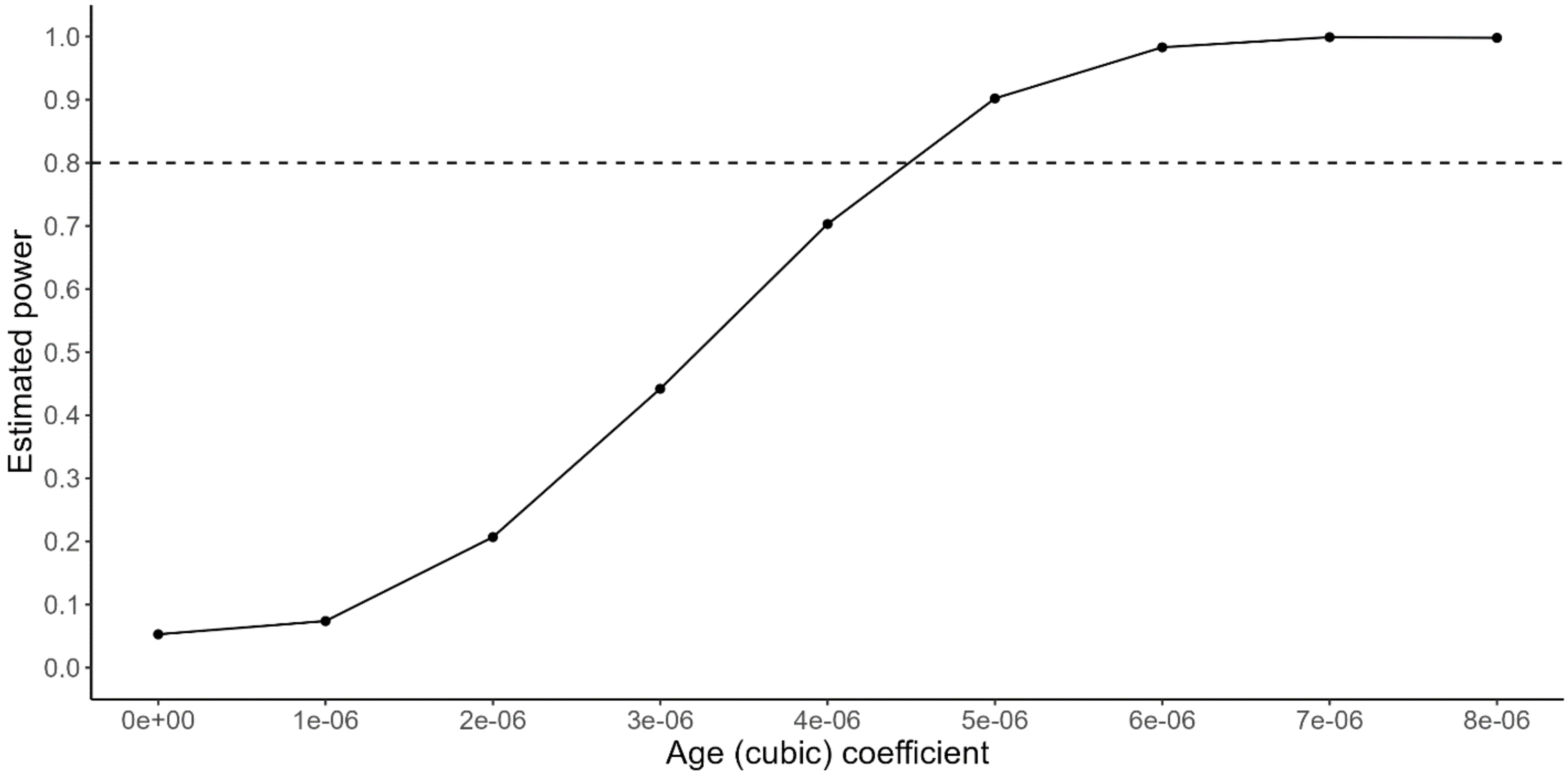
Simulations using Experiment 1 data and obtained regression coefficients. Observed linear $\beta = .01$

Power curve for quadratic age effect



Simulations using Experiment 1 data and obtained regression coefficients (i.e., the observed linear β). Observed quadratic β = -.0007.

Power curve for cubic age effect



Simulations using Experiment 1 data and obtained regression coefficients (i.e., the observed linear and quadratic βs). Observed cubic β = .000007.

c. Sunk-cost decision type analyses

We were also interested in the relationship between age and specific response types in sunk-cost vignettes (i.e., Heuristic, Analytic, Other). The table below shows descriptive statistics of decision types for children/adolescents, adults and older adults.

Experiment 1 Decision Types by Age-Group

Age Group	2-17 yrs.	18-59 yrs.	60+ yrs.
Heuristic	33%	47%	58%
Analytic	36%	44%	31%
Other	31%	9%	11%

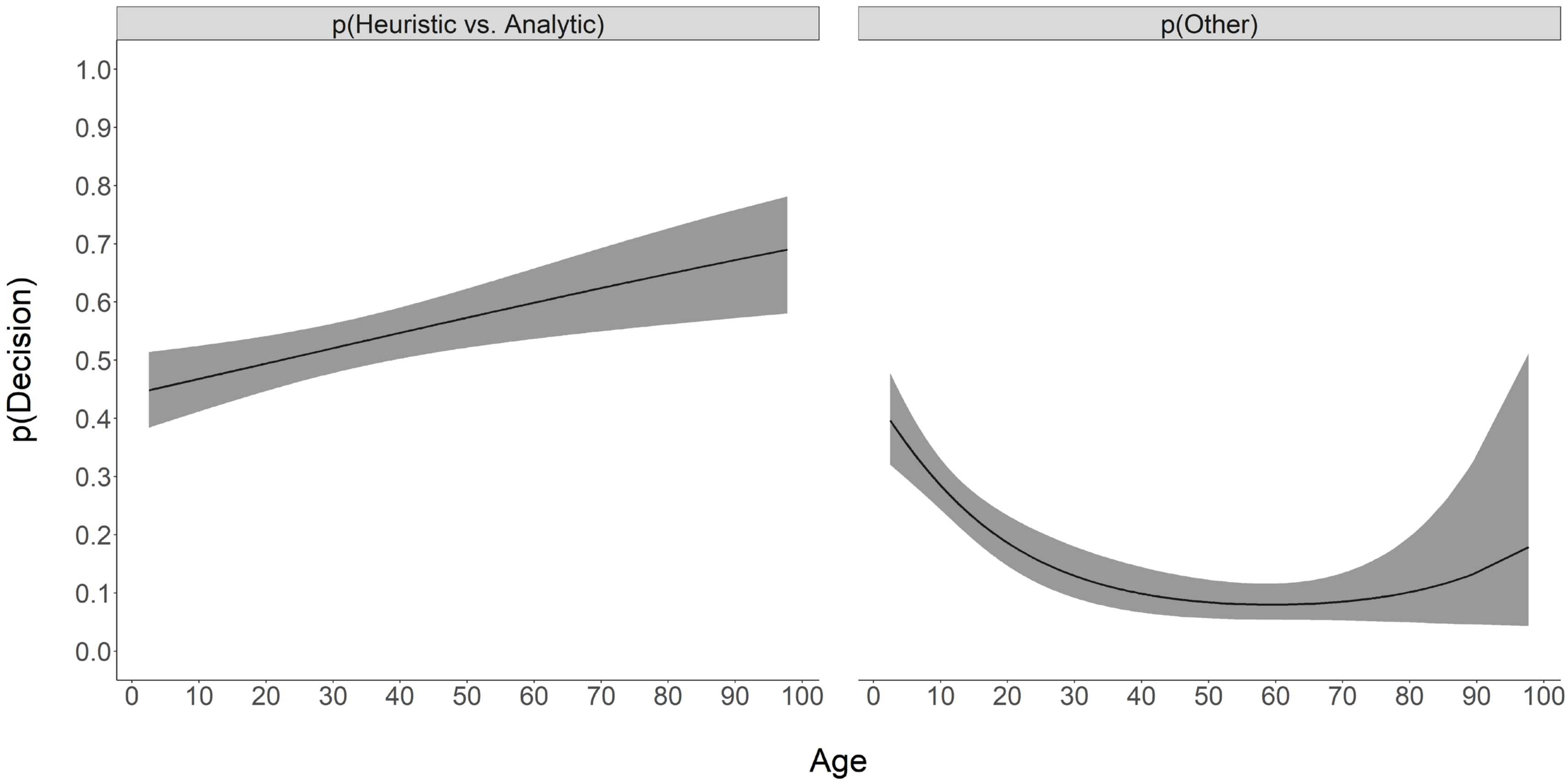
Note. Table presents the percentage of participants in three age-groups that made Heuristic (eat more costly than free pizza), Analytic (eat the same amount of costly and free pizza) and Other decisions (eat more free than costly pizza). Two- to seventeen-year-olds are the only age group that makes all three decisions with equal frequency

To formally test age-related differences in these response types (i.e., whether the probability of making each response type increases and/or decreases with age), we conducted binomial logistic regressions—regressing the response types on polynomial transformation of age. Because we were primarily interested in the probability of making a Heuristic versus Analytic response, and how this probability changed with age, we conducted two separate logistic regressions. The first predicted the probability of a Heuristic versus Analytic response (excluding Other responses), and the second predicted the probability of making an Other response versus any other response types[1].

As with continuous age, we predicted relative response probabilities from linear, quadratic, and cubic age. The probability of making a Heuristic response relative to an Analytic response (excluding participants who made an Other response) increased linearly with age, $z(538) = 3.11$, $p = .002$ (neither quadratic nor cubic terms were significant, *z*s < .76, *p*s > .45). The probability of making an Other response (relative to any other response type) was highest in early childhood and

[1] We conducted these two analyses instead of three separate regressions (i.e., predicting each decision type as a “Yes”/”No” dichotomous variable from age) because the three decision types were not fully independent (i.e., if a participant made a Heuristic decision, they could not have made an Other decision).

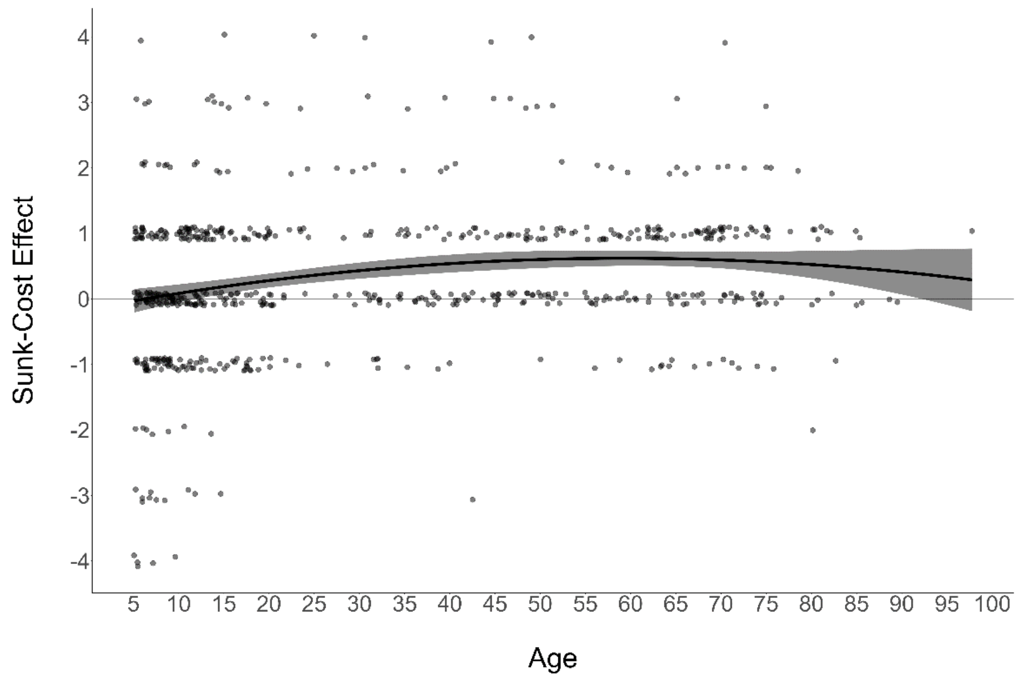
decreased with age, with significant linear ($z(678) = 5.71$, $p < .001$) and quadratic ($z(678) = 2.68$, $p = .007$), but not cubic ($z(678) = .41$, $p = .68$) terms. For further interpretation of these analyses, see the figure below for a plot of predicted logistic regression lines for the final chosen response models.



Note. Regression band = 95% CIs on the fit lines. For the left panel, higher values on the vertical axis indicate a higher probability of making a Heuristic response versus an Analytic one. For the right panel, higher values on the vertical axis indicate a higher probability of making an Other response (versus a Heuristic or Analytic one). The probability of making a

Heuristic decision (vs. an Analytic decision) increased with age, and the probability of making an Other decision decreased with age.

d. Exploratory analysis excluding participants age <5

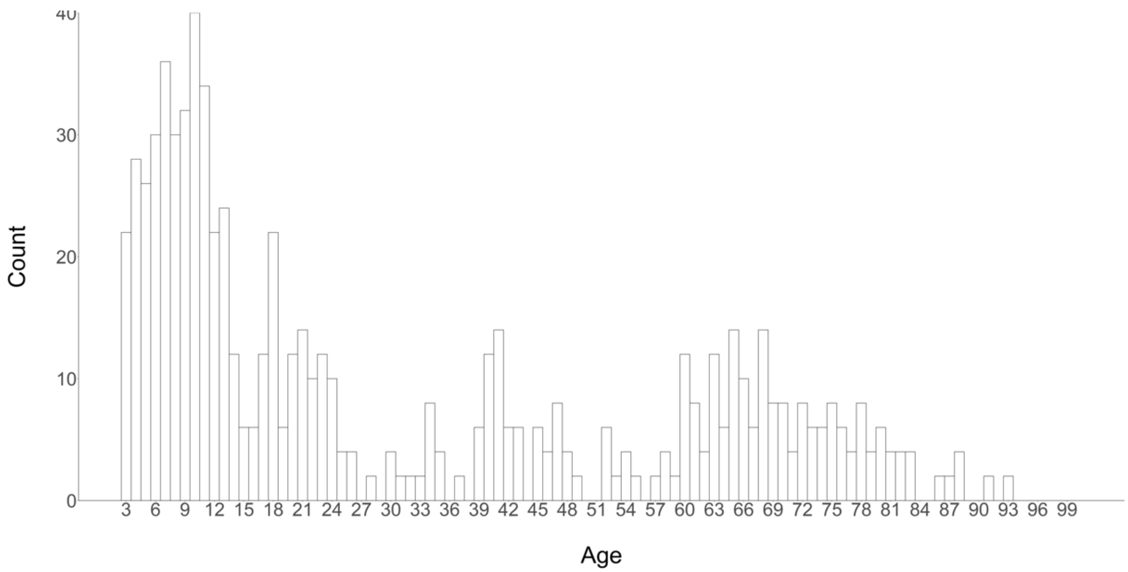


In Experiment 1, under-5s accounted for roughly 5% of the sample. In this exploratory analysis, we excluded these participants and examined the continuous age trajectory again, specifically noting whether there were differences in when the SCE "emerged" (i.e., regression band lower-bound first excluded 0/*no SCE*) and if at all, "disappeared" (i.e., when the regression band lower-bound includes 0/*no SCE* after being previously positive). When excluding these participants, the SCE 'emerged' at 12 and disappeared at 92, similar to what we observed in the analysis *which included* these participants.

3. Experiment 2 Supplementary Results

a. Demographics

Age group	n
3-17	180
18-59	105
60+	93



Sample age breakdown

Participant gender (self- or parent-reported)

Gender	n
Female	218
Male	156

Non-binary/other	2
Unreported	2

Participant ethnicity (self- or parent-reported)

Ethnicity	n
white	200
White	156
asian	56
Asian	38
W	24
white	20
White	20
other	12
a	8
asian	8
w	8
	6
black	6
caucasian	6
Caucasian	6
caucasian	6
Indian	6
mixed (asian and white)	6
Canadian	4
east indian	4
hispanic	4
Hispanic	4
O	4
south asian	4
0	2
A	2

a6	2
Aboriginal	2
aboriginal, viking,	2
Anglo saxon	2
AsiamNN	2
Asian	2
Asian and middle eastern and white	2
asian and white	2
Asian and white	2
asian caucaisian	2
asian causaisian	2
asian hispanic	2
Asian white	2
asian, middle eastern and white	2
Asian/white	2
Asiian	2
Australia	2
Black	2
Canada	2
Canadian	2
Caucasian	2
Caucasion	2
caucasuian	2
Causasian	2
Chinese	2
chinese and russian	2
East Indian	2
east indian	2
east indian cauacasian	2
Eurasian	2
european	2

farsi	2
Female	2
Fidst nations and white	2
fijian	2
first nation	2
First nation and white	2
First nations	2
half asian half swedish	2
half asian half white	2
Half asian half white	2
Hispanic	2
indian	2
indian	2
indo canadian	2
Indo Canadian	2
Jewish	2
M	2
Middle eastern	2
Mixed	2
Mixed (European/Asian)	2
mixed (south asian and persian)	2
mixed (white and asian)	2
Mixed asian white	2
Mixed filipino hungarian	2
nepalise, indian, scotish	2
New Zealand European	2
Other	2
Persian	2
Punjabi	2
South Asian	2
South Asian (india) but european citizen	2

South Indian Fijian/White	2
Very mixed.	2
whiTE	2
White and Hispanic	2
white, asian, hispanic	2
Whte	2

b. Post-hoc power simulations

Because our sample size for Experiment 2 was smaller than that of Experiment 1, our power analyses were based on our primary pragmatic objective of detecting the presence versus absence of age effects in each of our Vignette × Perspective conditions (e.g., whether there was no *age-SCE* relation in any of our four Vignette × Perspective conditions).Via post-hoc power simulations similar to those conducted for Experiment 1[2] using our exact sample size, age range, and estimated regression residuals, we determined that we had sufficient power (≥ .80) in the 1st-person perspective condition (n = 209) to detect a linear age effect of $|\beta| \geq .008$, and assuming that minimum linear age effect, a quadratic age effect of $|\beta| \geq .0005$. There were slightly fewer participants in the 3rd-person perspective condition (n = 169), providing sufficient power (≥ .80) in this condition to detect a linear age effect of $|\beta| \geq .01$, and assuming that minimum linear age effect, a quadratic age effect of $|\beta| \geq .0015$. Our pre-registered sample size planning was primarily based on categorical age group analyses. Because we opted to report only our pre-registered analyses in-text, we conducted these post-hoc, non-pre-registered power simulations[3]. These power analyses suggested that our Experiment 2 sample size was adequately powered to detect age effects slightly smaller than the effects observed in Experiment 1. Thus, any null age effects in Experiment 2 can be interpreted as a failure to replicate the patterns we observed in Experiment 1.

[2] Our pre-registered sample size planning was primarily based on categorical age group analyses. Because we opted to report only our continuous age analyses in-text, we conducted these post-hoc, non-pre-registered power simulations to provide context for the results.

[3] Code for these simulations can be found in our Experiment 2 analysis script file.

c. Preregistered categorical age analysis

i. NHST linear models

Descriptive statistics by Age Group, Vignette, & Perspective

Age Group	Vignette	Perspective	N	SCE m	SD	SE	CI
3-17	Pizza	3rd-person	80	0.4875000	1.4582263	0.1630347	0.3245124
3-17	Pizza	1st-person	100	0.1900000	1.4750107	0.1475011	0.2926741
3-17	Puzzle	3rd-person	80	-0.0250000	1.5342091	0.1715298	0.3414215
3-17	Puzzle	1st-person	100	0.2500000	1.2339884	0.1233988	0.2448501
18-59	Pizza	3rd-person	47	1.2553191	1.4813050	0.2160705	0.4349274
18-59	Pizza	1st-person	58	0.7758621	1.4270950	0.1873868	0.3752355
18-59	Puzzle	3rd-person	47	0.4042553	1.5415911	0.2248642	0.4526281
18-59	Puzzle	1st-person	58	0.3793103	1.3089112	0.1718685	0.3441607
60+	Pizza	3rd-person	42	1.4523810	1.3828634	0.2133805	0.4309306
60+	Pizza	1st-person	51	0.9019608	1.0247907	0.1434994	0.2882270
60+	Puzzle	3rd-person	42	0.5000000	1.4356098	0.2215194	0.4473675
60+	Puzzle	1st-person	51	0.3921569	0.9813956	0.1374229	0.2760220

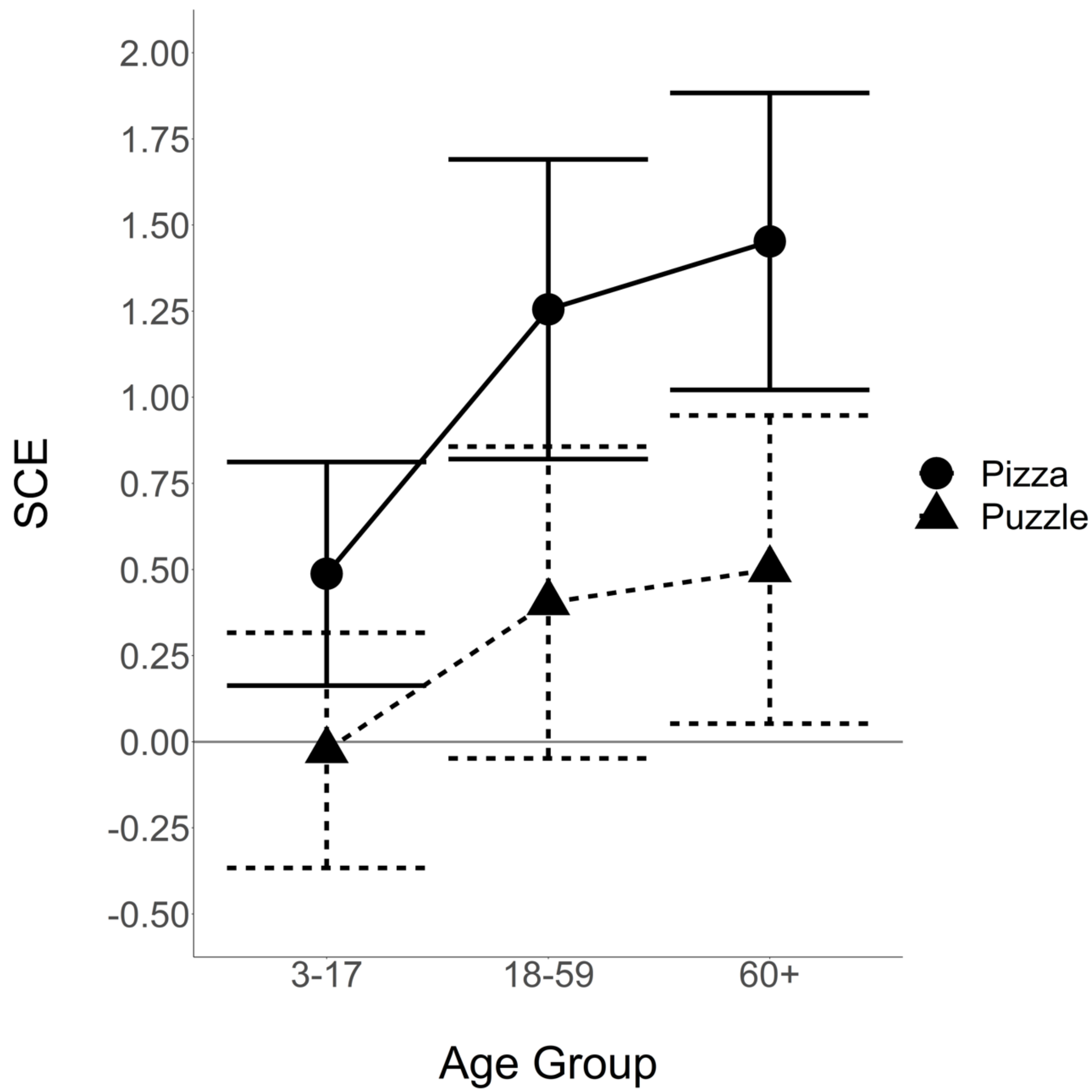
Categorical age final model: Pairwise comparisons

Comparison	t-value	p-value	Wilcox p-value	d	d 95% CI lower	d 95% CI upper
3-17 vs. 18-59	-3.6935796	0.0002498	0.0001622	-0.3229936	-0.4945753	-0.1514120
3-17 vs. 60+	-4.7883046	0.0000023	0.0000025	-0.4157594	-0.5948526	-0.2366663
18-59 vs. 60+	-0.7678587	0.4430314	0.4214404	-0.0766177	-0.2746447	0.1214093
Pizza vs. Puzzle (1st-person)	1.6849545	0.0934971	0.0545671	0.1581147	-0.0274926	0.3437220

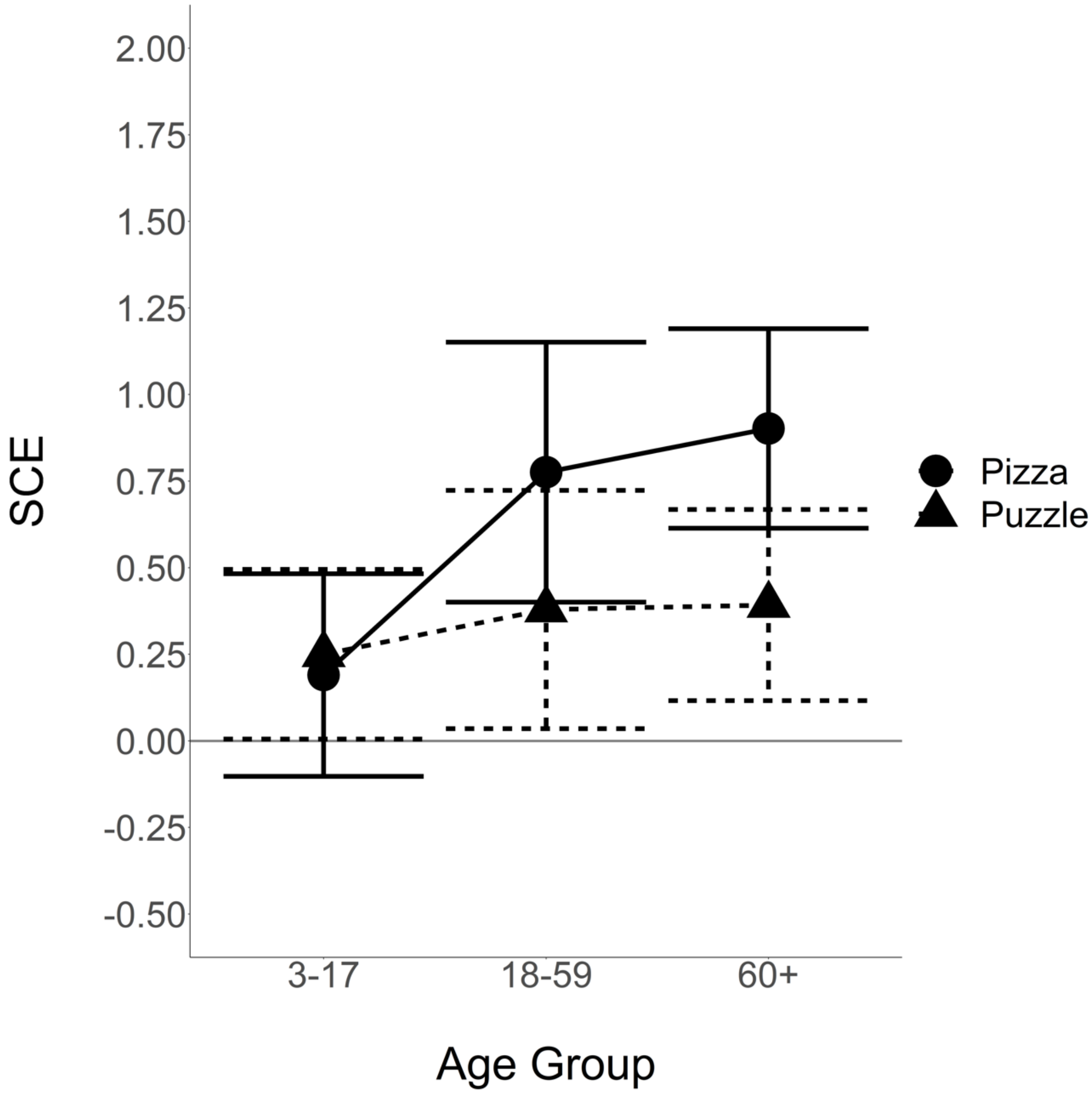
Pizza vs. Puzzle (3rd-person)	4.8992424	0.0000022	0.0000039	0.4733023	0.2729110	0.6736936

*Vignette * Perspective interaction results*

Comparison	t-value	p-value	Wilcox p-value	d	d 95% CI lower	d 95% CI upper
Pizza vs. Puzzle (1st-person)	1.684954	0.0934971	0.0545671	0.1581147	-0.0274926	0.3437220
Pizza vs. Puzzle (3rd-person)	4.899242	0.0000022	0.0000039	0.4733023	0.2729110	0.6736936

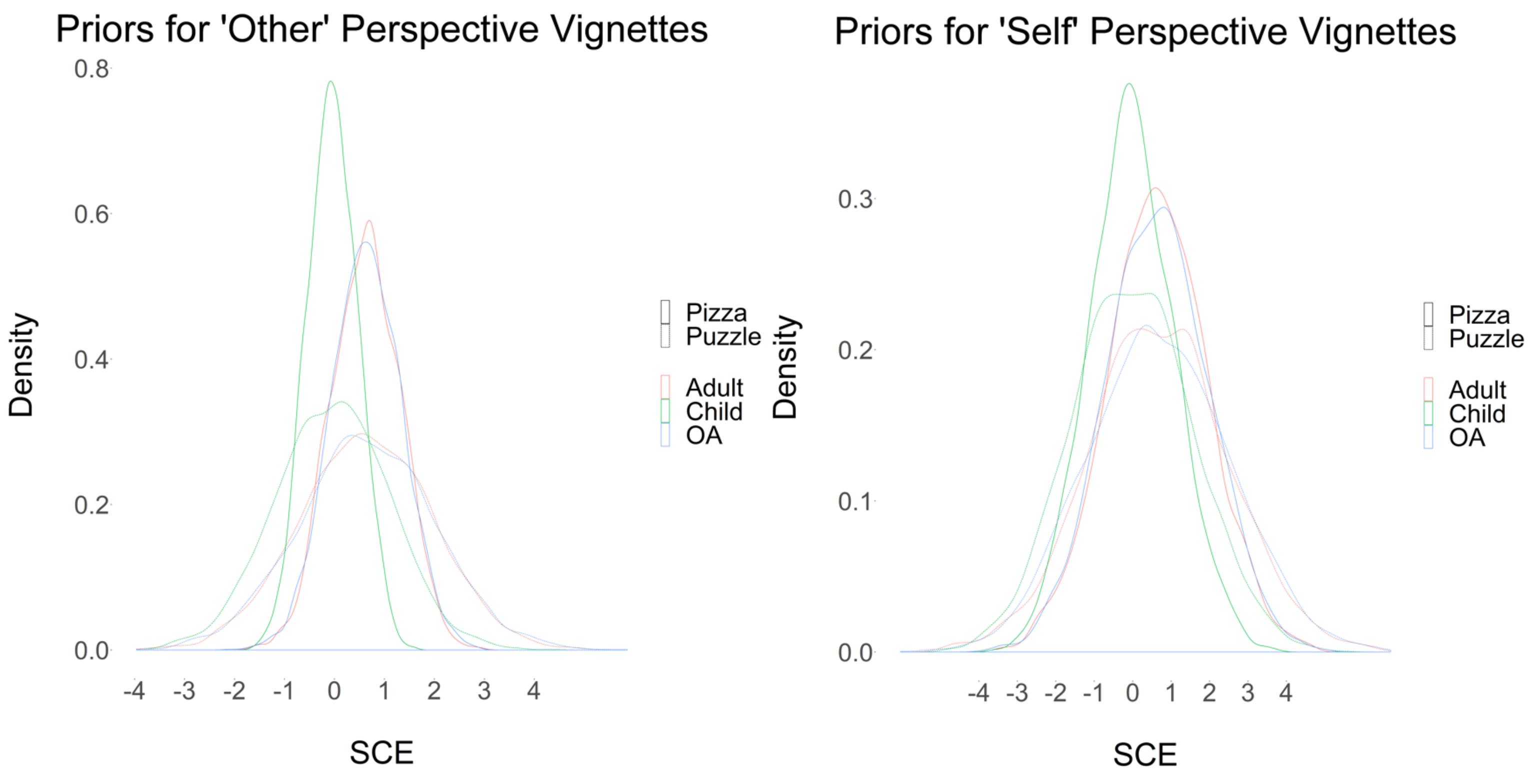


SCE by age group and vignette for 3rd-person perspective vignettes. Error bars = 95% CIs (Between-subjects)



SCE by age group and vignette for 1st-person perspective vignettes. Error bars = 95% CIs (Between-subjects)

ii. Bayesian linear models



Simulated distributions of SCE by Age Group, Vignette, and Perspective drawn from the prior distribution. Priors are broad, but age group priors are drawn from the results of the previous experiment. We also allow more variability in the effects of the Puzzle Vignette and the Self/1st-person perspective.

Model comparison results

Step	*p*-value	Significant	BF	Evidence for effect
Add vignette main effect	0.0000061	Yes	3.376413e+03	Yes
Add perspective main effect	0.1456250	No	9.130000e-05	No
Add age group main effect	0.0000079	Yes	1.571802e+07	Yes

Add vignette * perspective interaction	0.0070519	Yes	6.304673e+00	Yes
Add vignette * age group interaction	0.0476084	No	2.710917e+00	No
Add perspective * age group interaction	0.4114347	No	3.878093e-01	No
Add vignette * perspective * age group interaction	0.9466934	No	7.025207e-01	No

Bayes Factors for effects (Savage-Dickey density ratio method)

Difference	BF01	BF10
3-17 vs. 18-59	0.0073807	1.354893e+02
3-17 vs. 60+	0.0008779	1.139026e+03
18-59 vs. 60+	3.8979056	2.565480e-01
Pizza vs. Puzzle (3rd-person)	0.0000000	7.280780e+10
Pizza vs. Puzzle (1st-person)	6.0907417	1.641836e-01

Summary. Analyses with categorical age provided evidence for main effects of age group and vignette, and an interaction between vignette and perspective. For the age group main effect, children showed lower SCE than adults and older adults, and the latter two groups showed similar SCE. For the vignette main effect, the Puzzle vignette resulted in lower overall SCE. For the vignette by perspective interaction, the 1st-person vignette attenuated differences between the Pizza and Puzzle vignettes.

d. Preregistered decision type analyses

We investigated the effects of Age, Vignette, and Perspective on the relative probability of making a Heuristic response (versus an Analytic response), and the relative probability of making an Other response (relative to any other response type). See the table below for descriptive statistics.

Experiment 1 Decision Types by Age-Group

Age Group	2-17 yrs.	18-59 yrs.	60+ yrs.
Heuristic Pizza	39%	57%	61%
Heuristic Puzzle	32%	36%	38%
Analytic Pizza	39%	34%	36%
Analytic Puzzle	44%	51%	51%
Other Pizza	22%	9%	3%
Other Puzzle	24%	13%	11%

Note. Table presents the percentage of trials in which participants in three age-groups made Heuristic, Analytic and Other decisions for pizza and puzzle vignettes.

i. NHST linear models

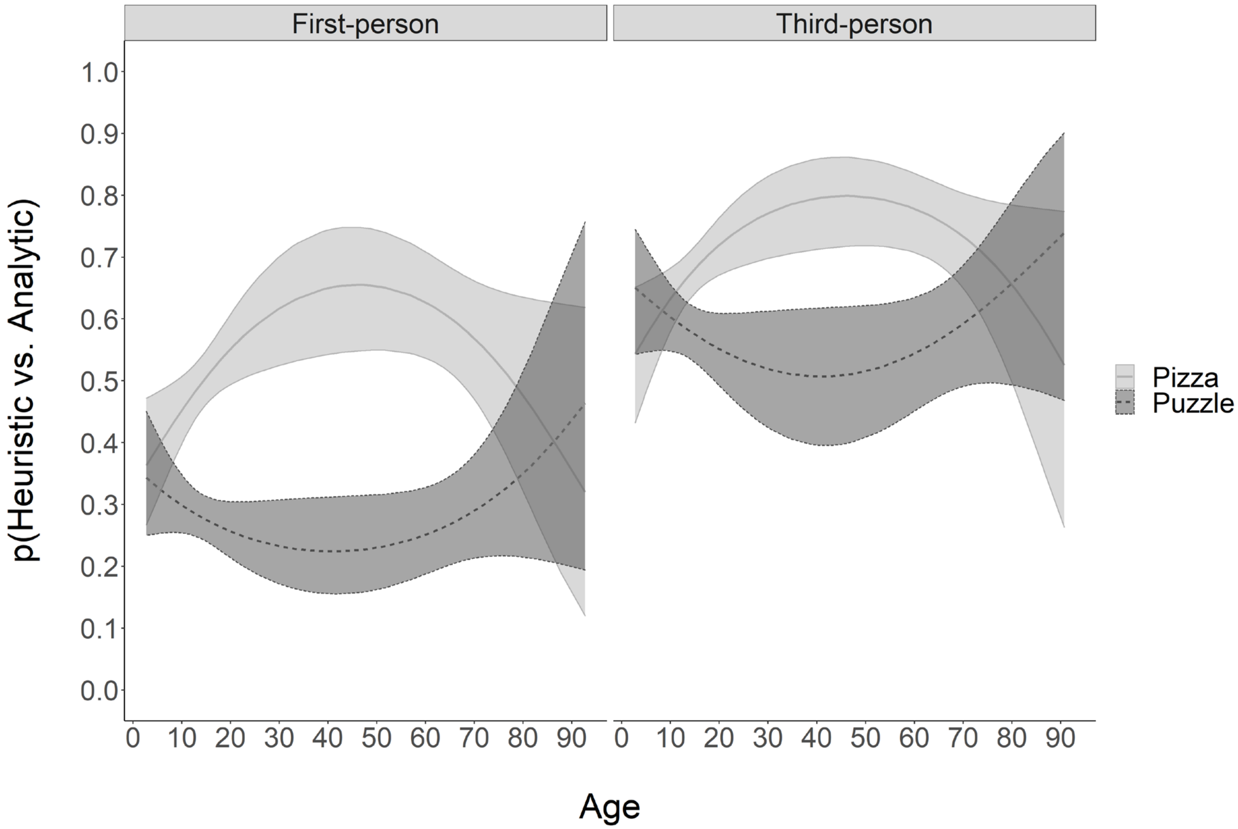
Our preregistered analytic strategy was the same as that used for the SCE magnitude analysis reported in the previous section with the following exceptions: We used mixed-effects binomial logistic regressions to account for the dichotomous nature of our response variables and the multiple measurements for each participant.

Heuristic Versus Analytic Responses

First, we tested the effects of Age (orthogonal polynomial linear and quadratic terms), Vignette, and Perspective on the probability of making a Heuristic response over an Analytic one. We found significant main effects of Vignette ($\chi^2(1) = 13.68$, $p < .001$) and Perspective ($\chi^2(1) = 17.42$, $p < .001$), and a significant Vignette × Age interaction ($\chi^2(2) = 10.45$, $p = .005$)[4]. All other terms were non-significant ($\chi^2 < 4.43$, $ps > .10$). The figure below depicts the predictions of the final model.

[4] The quadratic age term was significant: $z(621) = 3$, $p = .003$, while the linear age term was not: $z(621) = 1.92$, $p = .06$.

Relative Probability of Making a Heuristic vs. Analytic Response by Age, Vignette, and Perspective



Note: Regression bands = 95% CI on the fit lines. Higher values on the vertical axis indicate a higher probability of making a Heuristic response (versus an Analytic one).

The probability of making a Heuristic compared to an Analytic response increased from childhood to adulthood and decreased into older adulthood for the Pizza vignette. The opposite pattern was found for the Puzzle vignette. These analyses show a more striking Age × Vignette interaction than that observed with SCE magnitude, and also show that participants were less likely to make a Heuristic response relative to an Analytic response if the vignette was in 1st-person rather than 3rd-person. We also found that the probability of making a Heuristic response decreased after around age 50 (but we again exercise caution about the results in our "old-old" age group (i.e., 80+) due to the lower n in this age range[5]).

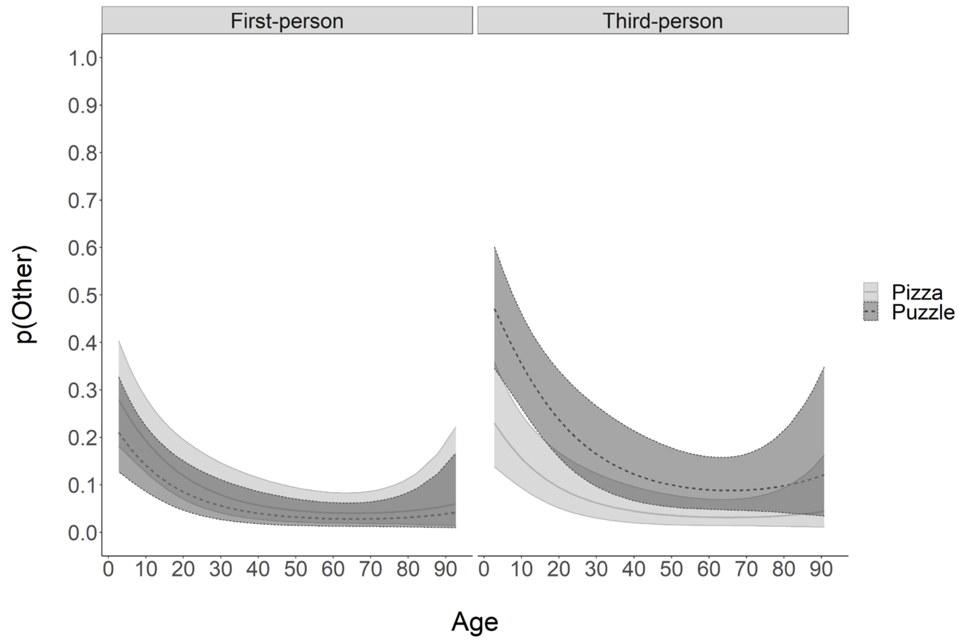
Other Responses

We performed the same analysis for the probability of making an Other response (relative to any other response type). We found significant main effects of Age ($\chi^2(2) = 26.39$, $p < .001$)[6] and Perspective ($\chi^2(1) = 4.20$, $p = .04$), and a significant Vignette × Perspective interaction ($\chi^2(1) = 9.61$, $p = .002$). The figure below depicts the predictions of the final model.

[5] An exploratory analysis excluding participants age 80+ revealed a more gradual increase from childhood to adulthood and stability in adulthood for the Pizza vignette, and a gradual linear decrease from childhood to adulthood for the Puzzle vignette. For these decision-type results, it is possible that the smaller sample in Experiment 2 resulted in the imprecise estimates of "old-old" decisions exerting increased influence on the regressions.

[6] Both polynomial Age terms were significant, for linear: $z(743) = 2.54$, $p = .01$, for quadratic, $z(743) = 2.12$, $p = .03$.

Relative Probability of Making an Other Response by Age, Vignette, and Perspective



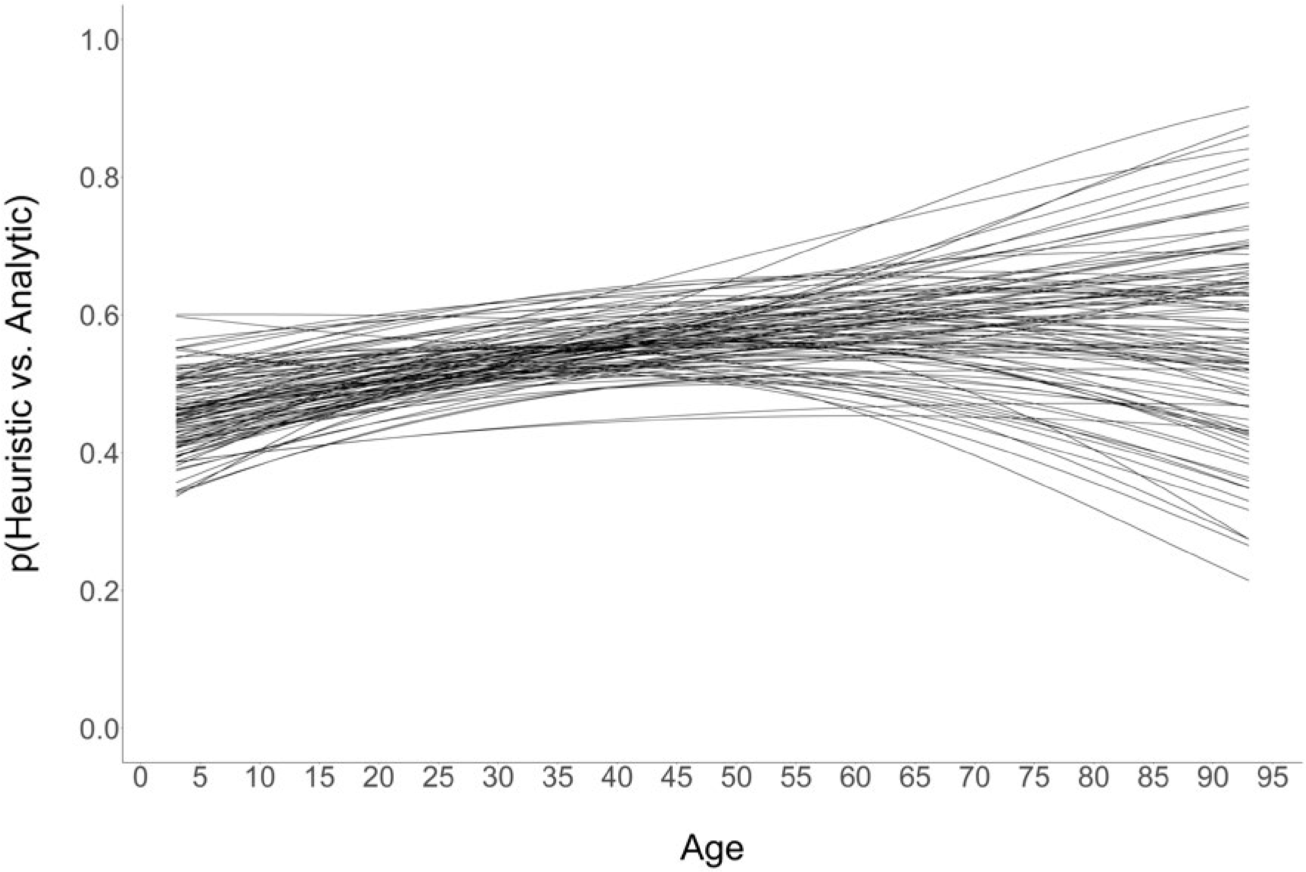
Note: Regression bands = 95% CI on the fit lines. Higher values on the vertical axis indicate a higher probability of making an Other response (versus a Heuristic or Analytic one). The probability of making an Other response decreased with age.

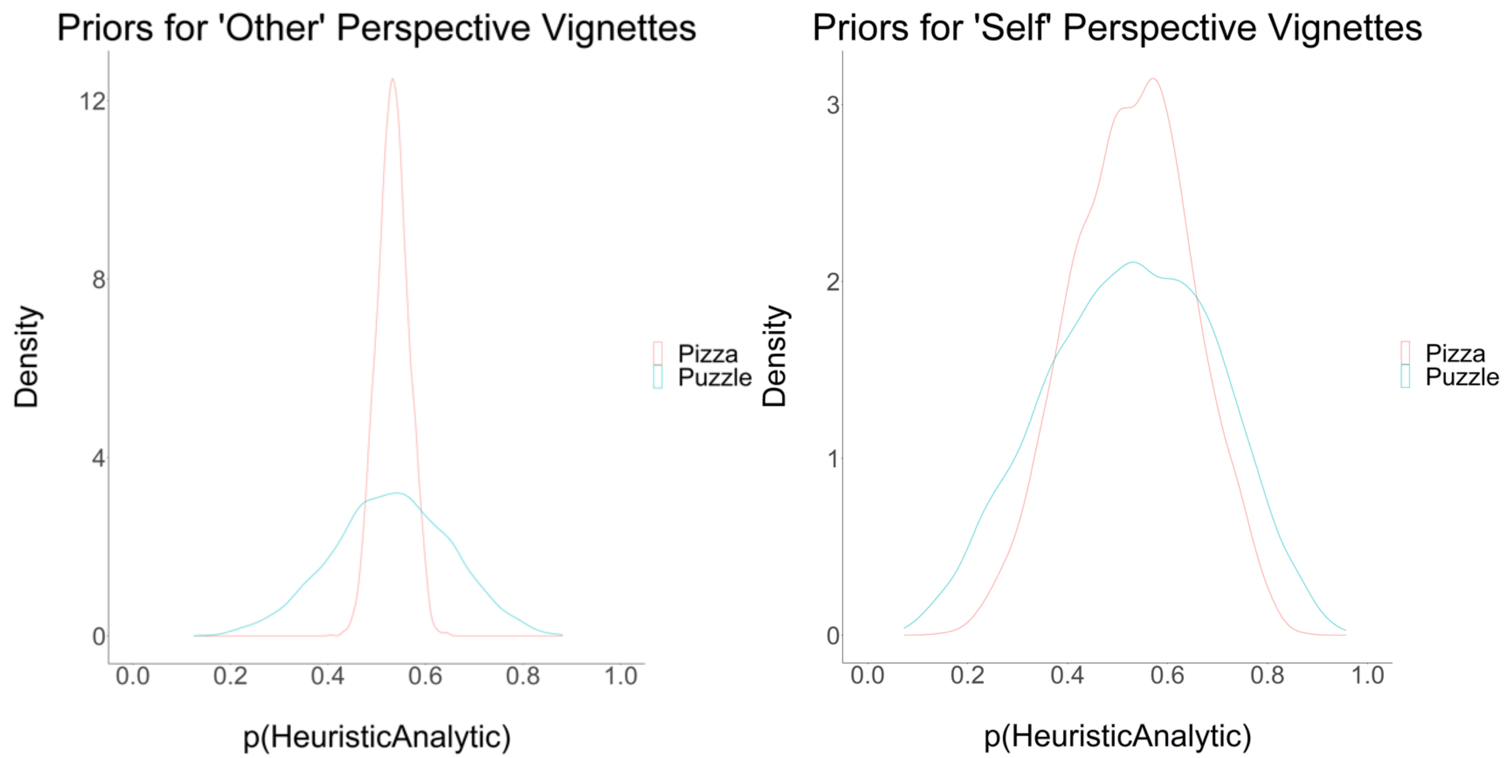
These analyses support the data pattern we observed in Experiment 1: a higher probability of Other responding in children and a sharp decrease with age[7]. Again, we observed reduced vignette differences and a lower probability that participants will make Other responses with 1st-person vignettes relative to 3rd-person vignettes.

[7] We observed nearly identical results when excluding participants age 80+, likely due to the larger and more consistent effect of age on Other responding.

ii. Bayesian linear models

Priors





Simulated draws from the prior distributions for p(Heuristic vs. Analytic decision) as a function of Age effects, Vignette effects, and Perspective effects. Age priors are based on the results of Experiment 1, all other priors are broad/uninformative.

Bayes Factors for effects (Savage-Dickey density ratio method) in full model

Effect	BF01	BF10
Linear age main effect	2.8935440	0.3455970
Quadratic age main effect	1.8370854	0.5443405
Vignette main effect	0.0191440	52.2357768
Perspective main effect	0.1795317	5.5700461
Perspective X linear Age interaction	1.0560956	0.9468840
Perspective X quadratic Age interaction	1.3713790	0.7291930

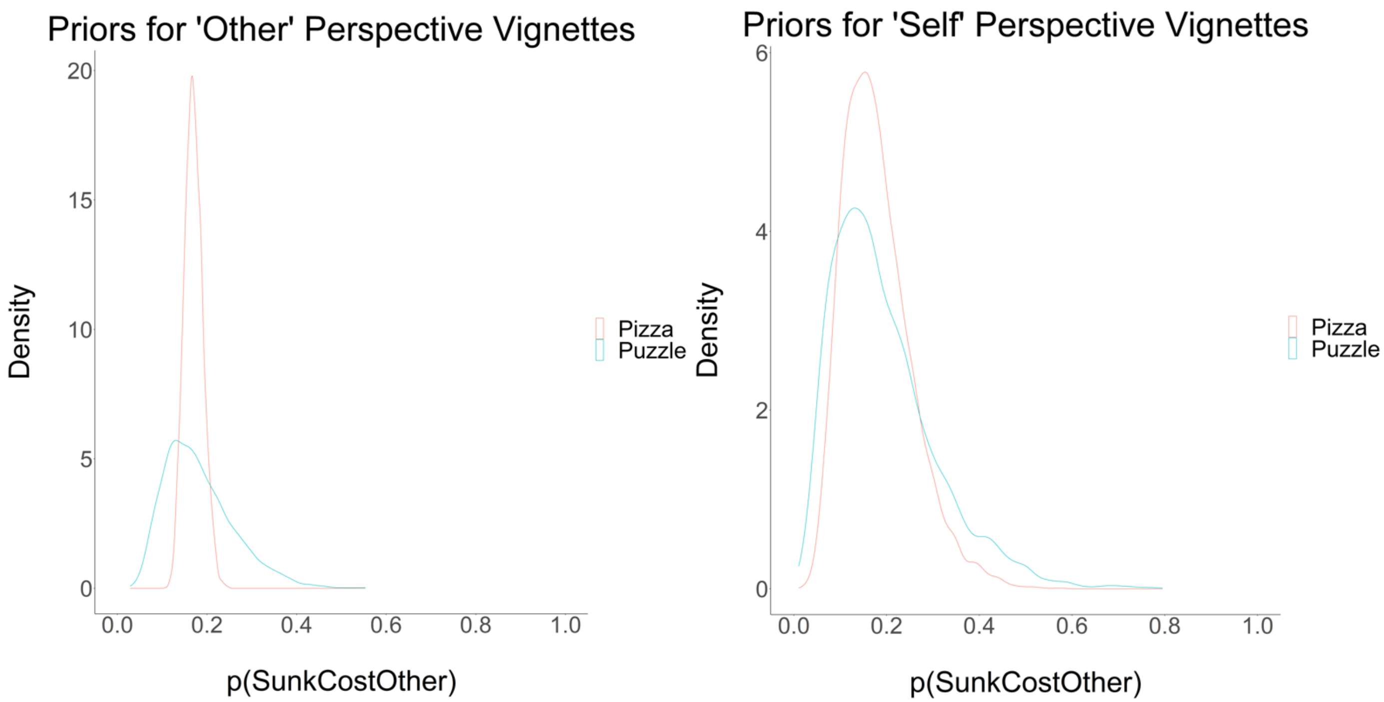
Vignette X linear Age interaction	0.7607867	1.3144289
Vignette X quadratic Age interaction	0.8634161	1.1581901
Vignette X Perspective X linear Age interaction	0.9648918	1.0363856
Vignette X Perspective X quadratic Age interaction	0.9546586	1.0474949
Vignette X Perspective interaction	0.2670308	3.7448867

Bayes Factors for effects (Savage-Dickey density ratio method) in final model

Effect	BF01	BF10
Linear age main effect	2.9615515	0.3376608
Quadratic age main effect	1.5232002	0.6565125
Vignette main effect	0.0204028	49.0129349
Perspective main effect	0.0146163	68.4168521
Vignette X linear Age interaction	0.4930452	2.0282115
Vignette X quadratic Age interaction	1.0984552	0.9103694
Vignette X Perspective interaction	0.1829440	5.4661523

Summary. NHST analyses suggested main effects of vignette (such that the Puzzle vignette resulted in a lower probability of making a Heuristic decision relative to an Analytic one) and perspective (such that the 1st-person perspective resulted in a lower probability of making a Heuristic decision relative to an Analytic one), an interaction between age and vignette (such that we observed a reverse-U-shaped pattern for the Pizza vignette and a U-shaped pattern for the Puzzle vignette), and an interaction between vignette and perspective (such that vignette differences were attenuated for 3rd-person perspective vignettes). However, we only observed compelling Bayesian evidence for the vignette and perspective main effects. Also, given that we had a smaller sample than Experiment 1 and the estimates of the fit line were quite variable, we advise caution in interpreting these results.

Other decisions



Simulated draws from the prior distributions for p(Other decision) as a function of Age effects, Vignette effects, and Perspective effects. Age priors are based on the results of Experiment 1, all other priors are broad/uninformative.

Bayes Factors for effects (Savage-Dickey density ratio method) in full model

Effect	BF01	BF10
Linear age main effect	0.0000000	3.864815e+14
Quadratic age main effect	1.4024904	7.130174e-01
Vignette main effect	2.0909893	4.782425e-01
Perspective main effect	0.0923181	1.083211e+01
Perspective X linear Age interaction	0.7316204	1.366829e+00
Perspective X quadratic Age interaction	1.2200428	8.196434e-01
Vignette X linear Age interaction	1.2860774	7.775582e-01
Vignette X quadratic Age interaction	1.1763555	8.500832e-01
Vignette X Perspective X linear Age interaction	0.9490999	1.053630e+00
Vignette X Perspective X quadratic Age interaction	1.0256644	9.749778e-01
Vignette X Perspective interaction	0.5337656	1.873482e+00

Bayes Factors for effects (Savage-Dickey density ratio method) in final model

Effect	BF01	BF10
Linear age main effect	0.0000000	2.866845e+12
Quadratic age main effect	1.0565215	9.465023e-01
Vignette main effect	2.2973948	4.352757e-01
Perspective main effect	0.0150357	6.650833e+01
Vignette X Perspective interaction	0.4592188	2.177611e+00

Summary. Like in Experiment 1, analyses suggest a sharp decrease in Other responding from childhood to adulthood. We did observe evidence for a perspective main effect (such that the 3rd-person perspective resulted in higher rates of Other responding) and a vignette by perspective interaction (such that vignette differences were attenuated in the 1st-person perspective relative to the 3rd-person perspective). However, Bayesian evidence for/against effects was generally weak, with the exception of extreme evidence for the age effect.

e. Exploratory memory error analyses

i. Memory errors by Age group, Vignette, and Perspective

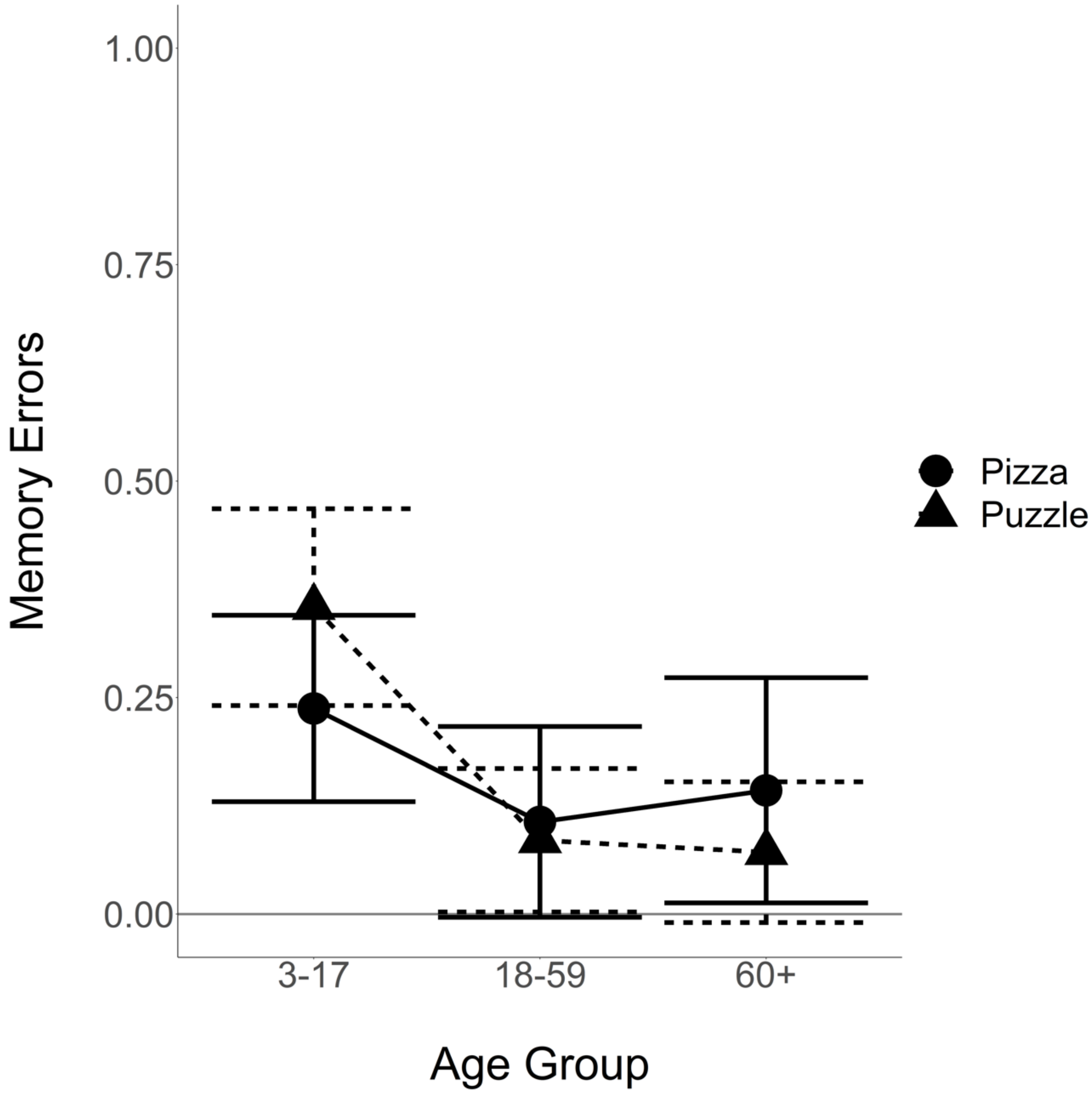
We also measured memory errors for each vignette (i.e., whether a participant correctly remembered whether a given vignette included sunk-costs (i.e., baked pizza, bought puzzle) or not. Preliminary analyses revealed a high rate of memory errors in our youngest age group (~40% made an error on at least on vignette). As such, we were interested in 1) the potential relationship between Age (and our other variables) on memory errors, and 2) whether the amount of memory errors made affects the SCE.

We first assessed the relationship between categorical age and memory errors. To do so, we conducted simplified versions of our main analysis: single NHST and Bayesian models including all terms. NHST analyses revealed that the only significant effect to survive Bonferroni correction was an Age group main effect ($p < .001$). This was corroborated with a simple Bayesian ANOVA using default prior specifications (Rouder, Morey, Verhage, Swagman, & Wagenmakers, 2016), $BF_{10} = 1.91 * 10^7$. Follow-up pairwise NHST and Bayesian t-tests using default prior specifications (Rouder, Speckman, Sun, Morey, & Iverson, 2009) revealed that children had higher memory errors than adults ($p < .001$, $BF_{10} = 63.66$) and older adults ($p < .001$, $BF_{10} = 2.01 * 10^3$), but that adults and older adults did not differ ($p = .44$, $BF_{01} = 6.79$). For continuous age, NHST analyses did not reveal any significant effects (*p*s > .02), but a simple Bayesian regression revealed evidence for linear and quadratic age effects (BF_{10}s > $1.22 * 10^9$). An examination of the regression pattern supported the categorical analyses, but was also suggestive of a potential increase in memory errors in older adulthood. Despite this, memory errors were low on average (0 to .25 out of 2 possible errors per vignette).

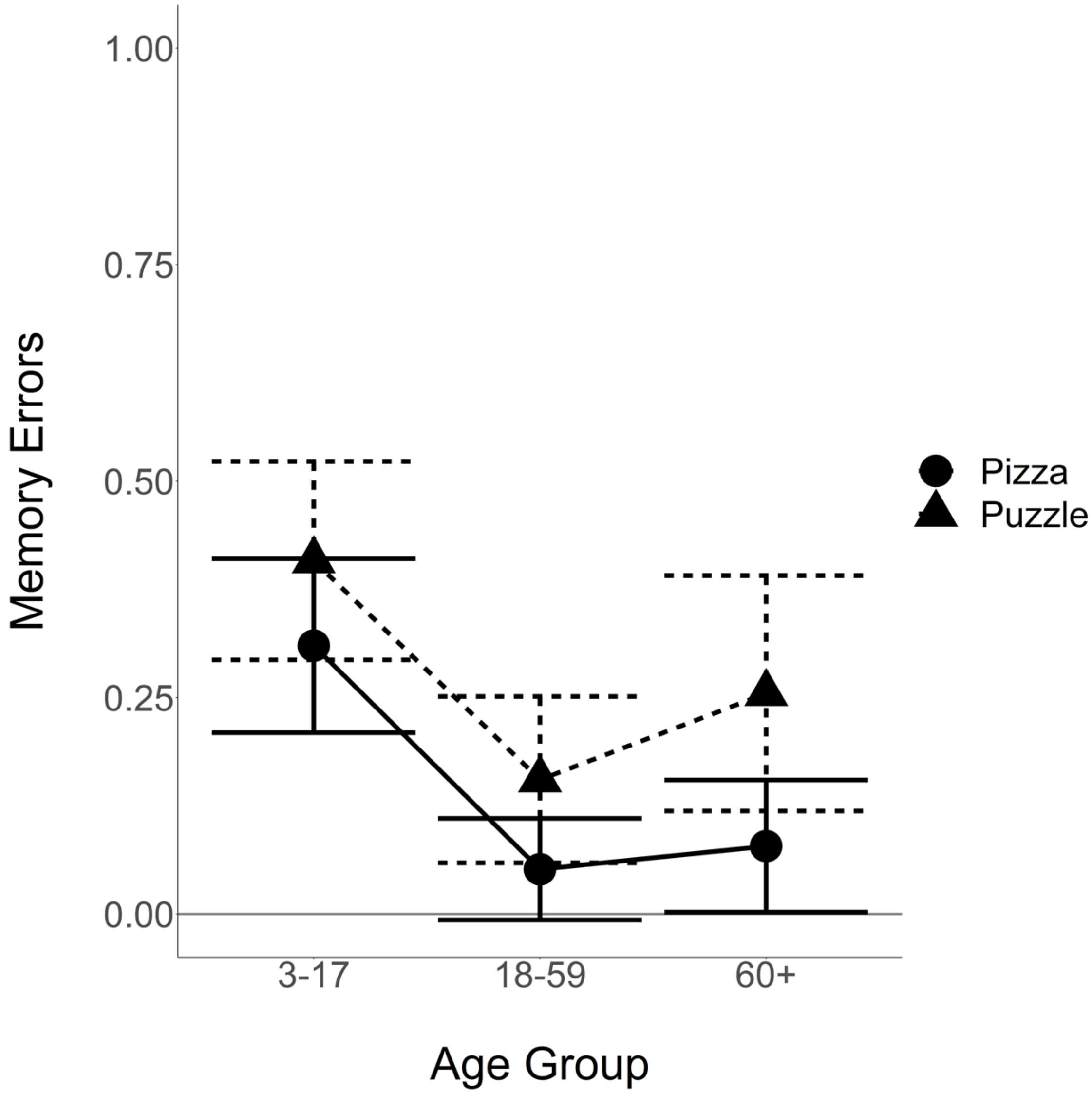
1. Categorical age

Pairwise comparisons for Age group main effect

Comparison	t-value	p-value	Wilcox p-value	BF10	d	d 95% CI lower	d 95% CI upper
3-17 vs. 18-59	-3.6935796	0.0002498	0.0001622	63.6663895	-0.3229936	-0.4945753	-0.1514120
3-17 vs. 60+	-4.7883046	0.0000023	0.0000025	2009.7830884	-0.4157594	-0.5948526	-0.2366663
18-59 vs. 60+	-0.7678587	0.4430314	0.4214404	0.1473534	-0.0766177	-0.2746447	0.1214093

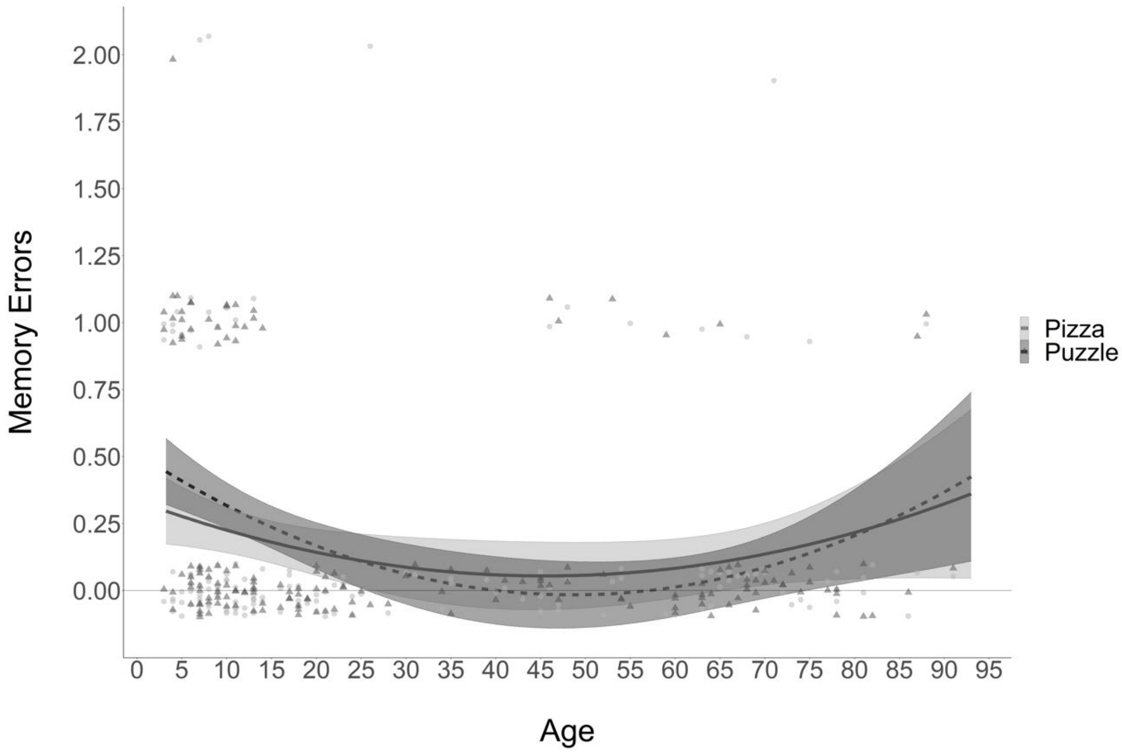


Memory errors by Age group and Vignette for 3rd-person perspective. Error bars = 95% CIs.

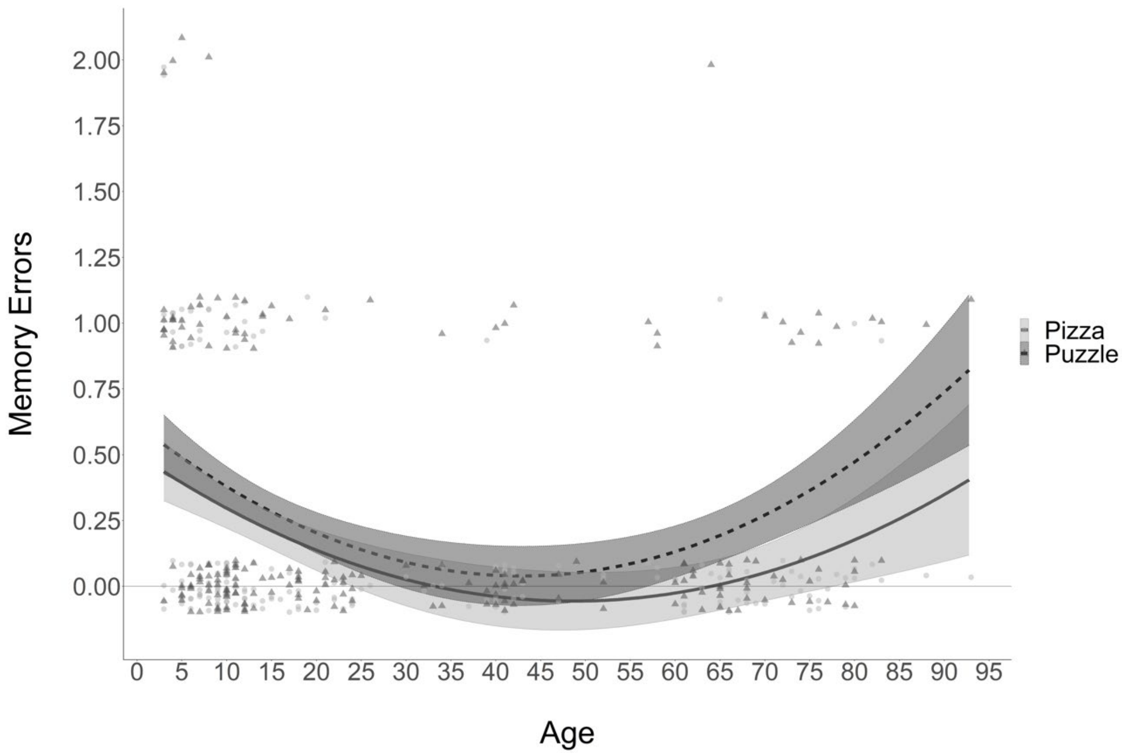


Memory errors by Age group and Vignette for 1st-person perspective. Error bars = 95% CIs.

2. Continuous age



Memory errors by continuous Age and Vignette for 3rd-person perspective. Ribbon = 95% CI on the fit line.



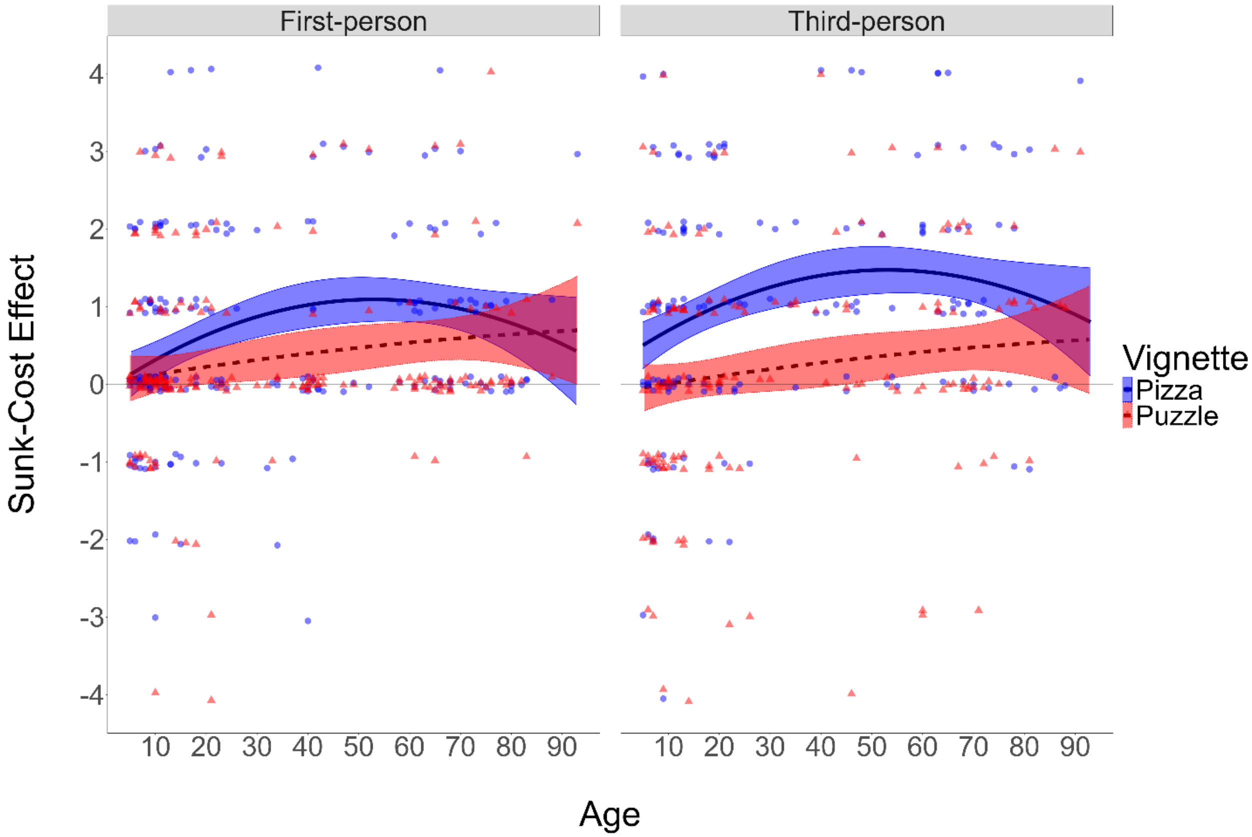
Memory errors by Age and Vignette for 1st-person perspective. Ribbon = 95% CI on the fit line.

Summary. Memory errors (i.e., forgetting the sunk-cost nature of a particular trial) were higher in children than in adults, and potentially higher in older adults than adults, but low overall.

ii. Memory errors as a predictor of the SCE

We assessed the relationships between Memory errors and the SCE by adding Memory errors as a predictor (main effects and interactions) to our final categorical and continuous age models to see if its inclusion improved model fit. The NHST model comparison was not significant (χ^2 p = .48), and the Bayesian model comparison provided very strong evidence against the inclusion of Memory error effects (BF_{01} = 50). For continuous age, the NHST model comparison was not significant (χ^2 p = .16), and the Bayesian model comparison provided extreme evidence against the inclusion of Memory error effects (BF_{01} = 406.50). Thus, although memory errors seem to change with age, it is unlikely that they affect the SCE.

f. Exploratory analysis excluding participants age <5



For Experiment 2, for the 1st-person Pizza vignette, the SCE 'emerged' at age 9 (vs. previously age 11), and 'disappeared' at age 88 (vs. previously age 86). For the 3rd-person Pizza vignette, the SCE 'emerged' at age 5 (vs. previously age 4), but now even the oldest-old showed *some* SCE on average (vs. previously 'disappeared' at age 92). For the 1st-person Puzzle vignette, the SCE 'emerged' at age 20 (vs. previously age 13, the only big change but still in line with our conclusions), and for the 3rd-person Puzzle vignette, the SCE 'emerged' at age 45 (vs. previously age 49), and now 'disappeared' at age 87 (previously did not 'disappear').