

## Supplemental Materials

### Accompanying the manuscript “Adult Age Differences in the Integration of Values for Self and Others”

#### Methods

##### Recruitment and exclusion criteria

Participants were recruited via different databases of the TU Dresden and flyers and newspaper announcements in Dresden (Germany). Additionally, OA were recruited from local sports, language, and university courses and choirs. A-priori inclusion criteria were defined as follows: right-handed, fMRI suitable (e.g., no magnetic implants), fluency in German with normal or corrected-to-normal vision, no hearing deficits, no color-blindness, no self-reported psychological or neurological diseases presently or within the past 12 months, and no history of drug abuse. Additionally, participants were not allowed to consume more than five cups of coffee per day, more than five cigarettes per day, more than 12g (women)/24g (men) pure alcohol per day, or illegal drugs more than twice per month. OA underwent an additional screening for mild cognitive impairments with the German version of the Montreal Cognitive Assessment (MOCA; Nasreddine et al., 2005). Only OA with a score of at least 26 points (out of 30) were included (see also Stietz et al., 2021). During or after the third session of the experiment, a total of 15 participants were excluded based on the following reasons: inability to undergo the scanning procedure ( $n = 8$ ), neuromorphological abnormalities detected through MRI ( $n = 4$ ), missing rate in our experimental task higher than 10% ( $n = 3$ ). The final sample included 63 YA (31 females, age range = 18-30,  $M = 24.42$  years,  $SD = 3.30$ ) and 48 OA (24 females, age range = 65-78,  $M = 69.71$  years,  $SD = 3.84$ )

26 **Results**

27 **Mixed effect model of choice behavior and RTs**

28 **Table S1**

29 *Mixed effect model of choice behavior predicted by age group x €self x €other interaction.*

	DF	F-value	p-value	Beta
Intercept				2.32
age group	109.00	10.55	0.002**	-0.16
€self	109.00	214.14	< 0.001***	0.21
€other	109.02	129.65	< 0.001***	0.16
age group x €self	109.00	39.05	< 0.001***	-0.09
age group x €other	109.02	63.05	< 0.001***	-0.11
€self x €other	109.02	41.11	< 0.001***	0.02
age group x €self x €other	109.02	30.80	< 0.001***	0.02

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32 **Table S2**

33 *Post-hoc mixed effect models of choice behavior predicted by €self x €other interaction*

34 *separately in YA and OA*

	Younger Adults				Older Adults			
	DF	F-value	p-value	Beta	DF	F-value	p-value	Beta
Intercept				2.48				2.16
€Self	61.99	276.90	< 0.001***	0.30	47.00	27.70	< 0.001***	0.12
€Other	62.00	191.09	< 0.001***	0.28	47.03	6.32	0.02*	0.05
€Self x €Other	61.99	62.71	< 0.001***	0.04	47.10	0.57	0.46	0.003

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37 **Table S3**

38 *Mixed effect model of RTs predicted by age group x €self x €other interaction.*

	DF	F-value	p-value	Beta
Intercept				1.57
age group	108.98	3.24	0.08	0.05
€self	108.95	18.08	< 0.001***	-0.02
€other	108.72	0.01	0.94	-0.0004
Trial	19447.14	2731.61	< 0.001***	-0.003
age group x €self	108.95	0.23	0.64	0.002
age group x €other	108.73	7.88	0.01**	0.02
€self x €other	108.94	12.03	< 0.001***	-0.005
age group x €self x €other	108.94	18.30	< 0.001***	0.007

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41 **Table S4**

42 *Post-hoc mixed effect model RTs predicted by €self x €other interaction separately in YA and*

43 *OA*

	Younger Adults				Older Adults			
	DF	F-value	p-value	Beta	DF	F-value	p-value	Beta
Intercept				1.52				1.62
€Self	61.99	11.53	0.001**	-0.02	46.92	7.48	0.009**	-0.02
€Other	61.82	3.64	0.06	-0.01	47.05	5.73	0.02*	0.01
Trial	11037.27	1749.98	< 0.001***	-0.004	8417.95	1003.55	< 0.001***	-0.003
€Self x €Other	61.96	27.37	< 0.001***	-0.01	46.95	0.44	0.51	0.001

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## 47 **Moderation Regression Analyses on Choice Behavior and Reaction Times**

### 48 **Moderation effect of inhibitory control on reaction times**

49 No significant main or interaction effects involving the moderator of inhibitory control on  
50 RTs were observed in OA or YA (all  $ps > 0.07$ , see Table S6)

51

### 52 **Moderation effect of cognitive functioning on choice behavior**

53 **Composite of fluid abilities.** We did not observe significant main or interaction effects,  
54 including the composite score of fluid abilities, in YAs' choice behavior (all adj.  $ps > 0.39$ , see  
55 Table S5), nor in OA (all adj.  $ps > 0.07$ , see Table S5).

56 **Composite of verbal abilities.** For both, YA (all adj.  $ps > 0.07$ , see Table S5) and OA  
57 (all adj.  $ps > 0.08$ , see Table S1) we did not find significant main or interaction effects for the  
58 composite score of verbal abilities.

59

### 60 **Moderation effect of cognitive functioning on reaction times**

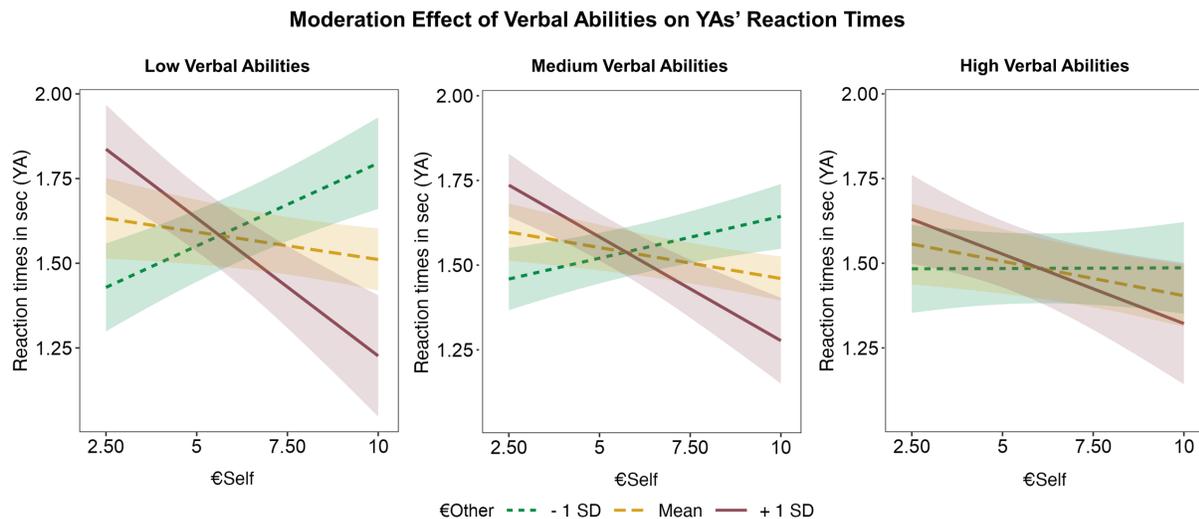
61 **Composite of fluid abilities.** We did not find significant main or interaction effects,  
62 including the composite score of fluid abilities in YA (all adj.  $ps > 0.14$ , see Table S6) and OA (all  
63 adj.  $ps > 0.10$ , see Table S6).

64 **Composite of verbal abilities.** No main or interaction effects involving the SAW as a  
65 measure of verbal abilities were found for OAs' RTs (all adj.  $ps > 0.42$ , see Table S6).  
66 Interestingly, for YAs' RTs, a significant moderation effect in terms of a significant 3-way  
67 interaction of SAW  $\times$  €self  $\times$  €other was observed ( $F(60.95) = 8.29$ , adj.  $p = 0.01$ , see Figure S1  
68 and Table S6). As indicated in Figure S1, both groups showed the same pattern, meaning  
69 quicker RTs when values for self and other were either both high or both low, and slower RTs  
70 when there was a conflict, i.e., only one of them was high and the other low (or vice versa).  
71 However, the RT differences were particularly pronounced in YA with lower verbal abilities, who  
72 showed a slowing of RTs with higher €other (simple slope SAW - 1SD & €other - 1SD:  $\beta = 0.05$ ,

73 95% interval = [0.03, 0.07]; simple slope SAW -1SD & €other + 1SD:  $\beta = -0.08$ , 95% interval = [-  
 74 0.11, -0.05], see Figure S1, left panel), compared to YA with higher verbal abilities (simple slope  
 75 SAW + 1SD & €other - 1SD:  $\beta = -0.001$ , 95% interval = [-0.02, 0.02]; simple slope SAW +1SD &  
 76 €other + 1SD:  $\beta = -0.04$ , 95% interval = [-0.07, -0.01], see Figure S1, right panel). No further  
 77 main or interaction effects involving SAW were observed in YA (all adj.  $ps > 0.14$ , see Table S6).  
 78

79 **Figure S1**

80 *Significant moderation effect of verbal abilities (SAW) in YAs' RTs on the integration of €self ×*  
 81 *€other*



82  
 83 *Note.* In YA with lower verbal abilities (left panel), the interaction of €self × €other was more  
 84 pronounced compared (right panel) to YA with higher verbal abilities. The shaded areas around  
 85 the lines represent the 95% confidence intervals.

86  
 87 **Moderation effect of empathy, compassion, and theory of mind on choice behavior**

88 **Empathy & compassion.** No statistically significant main or interaction effects, including  
 89 empathy or compassion, were observed in YAs' (all adj.  $ps > 0.06$ , see Table S7) and OAs'  
 90 choice behavior (all adj.  $ps > 0.30$ , see Table S7).

91           **Theory of mind.** For both YAs' and OAs' choice behavior, no significant main or  
92 interaction effects involving ToM were observed (all adj.  $ps > 0.10$ , see Table S7).

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#### 94 **Moderation effect of empathy, compassion, and theory of mind on reaction times**

95           **Empathy & compassion.** No significant main or interaction effects with respect to  
96 empathy were found on both YAs' and OAs' RTs (all adj.  $ps > 0.08$ , see Table S8). However, we  
97 observed a significant  $\text{€self} \times \text{compassion}$  and  $\text{€other} \times \text{compassion}$  interaction on YAs' RTs  
98 (see Table S8). While participants, in general, reacted quicker with higher  $\text{€self}$  (main effect  
99  $\text{€self}$ :  $F(60.97) = 7.34, p = 0.009$ ), YAs with higher compassion scores showed less of this  
100 speeding with increasing  $\text{€self}$  ( $F(61.01) = 7.19, p = 0.009, \text{adj. } p = 0.02$ , see Figure S2A) and  
101 even slower RTs with higher  $\text{€other}$  ( $F(60.87) = 7.32, p = 0.009, \text{adj. } p = 0.03$ , see Figure S2B).  
102 We did not find any main or interaction effect involving compassion in OA (all adj.  $ps > 0.47$ , see  
103 Table S8 for the full output of the model).

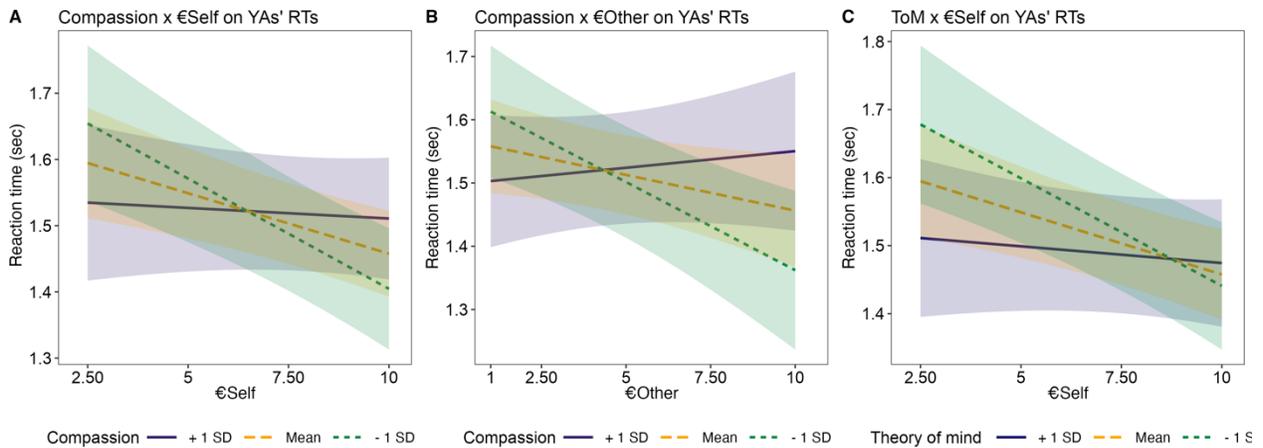
104           **Theory of mind.** A significant 2-way interaction of  $\text{€self} \times \text{ToM}$  was observed concerning  
105 YAs' RTs ( $F(60.90) = 7.08, p = 0.01, \text{adj. } p = 0.02$ ). Interestingly, with lower ToM, RTs were  
106 more strongly influenced by  $\text{€self}$  (see Figure S2C). No further main or interaction effects with  
107 regard to YAs' ToM abilities were found (all adj.  $ps > 0.21$ , see Table S8). With respect to OAs'  
108 RTs and ToM abilities, we did not observe any significant main or interaction effect (all adj.  $ps >$   
109  $0.52$ , see Table S8).

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112 **Figure S2**

113 *RTs in YA as a function of either €self or €other and different socio-affective measures.*



*Note.* (A) and (B) Compassion × €self/€other on YAs' RTs. Generally, participants reacted quicker the higher €self (main effect €self:  $F(60.97) = 7.34, p = 0.009$ ). However, YAs with higher compassion scores showed less of this effect of €self (i.e., less speeding with higher €self) on RTs ( $F(61.01) = 7.19, p = 0.009, \text{adj. } p = 0.02$ , see Figure A), and in fact descriptively, even slower RTs with higher €other ( $F(60.87) = 7.32, p = 0.009, \text{adj. } p = 0.03$ , see Figure B). (C) ToM accuracy × €self on YAs' RTs. As stated above, in general, participants reacted quicker the higher €self (main effect €self:  $F(60.97) = 19.17, p < 0.001$ ). However, this effect was flattened in YA who scored high in ToM ( $F(60.90) = 7.08, p = 0.01, \text{adj. } p = 0.02$ ).

130 **Table S5**131 *Moderator of cognitive measures regarding the interaction of €Self x €Other in YAs and OAs choice behavior.*

Choice Behavior	Younger Adults			Older Adults		
Inhibitory Control	DF	F-value	p-value	DF	F-value	p-value
€Self	57.98	320.02	< 0.001***	42.00	26.21	< 0.001***
€Other	58.00	190.96	< 0.001***	42.02	6.75	0.01*
Inhibition	58.02	1.12	0.30	41.99	5.18	0.03*
€Self x €Other	57.99	58.69	< 0.001***	42.11	0.64	0.43
€Self x Inhibition	58.01	1.32	0.26	42.00	1.38	0.25
€Other x Inhibition	58.01	0.14	0.71	42.00	0.67	0.42
€Self x €Other x Inhibition	58.01	0.00	0.97	42.04	6.27	0.02*

Choice Behavior	Younger Adults				Older Adults			
Fluid Intelligence	DF	F-value	p-value	Adj. p	DF	F-value	p-value	Adj. p
€Self	60.99	275.76	< 0.001***		45.00	28.66	< 0.001***	
€Other	61.00	189.35	< 0.001***		45.02	6.41	0.02*	
Fluid Intelligence	61.02	0.74	0.39	0.39	44.99	3.27	0.08	0.15
€Self x €Other	60.99	61.72	< 0.001***		45.09	0.67	0.42	
€Self x Fluid	61.01	0.75	0.39	0.39	45.01	3.79	0.06	0.08
€Other x Fluid	61.01	0.43	0.51	0.51	45.01	4.75	0.03*	0.07
€Self x €Other x Fluid	61.01	0.02	0.89	0.89	45.10	1.81	0.19	0.37

Verbal Intelligence	DF	F-value	p-value	Adj. p	DF	F-value	p-value	Adj. p
€Self	60.99	292.67	< 0.001***		45.01	28.29	< 0.001***	
€Other	61.00	194.02	< 0.001***		45.03	5.80	0.02*	
SAW	60.99	1.43	0.24	0.39	44.99	0.33	0.57	0.57
€Self x €Other	60.99	61.86	< 0.001***		45.10	0.64	0.43	
€Self x SAW	60.97	4.54	0.04*	0.07	44.99	3.16	0.08	0.08

€Other x SAW	60.99	1.95	0.17	0.34	45.01	0.02	0.90	0.90
€Self x €Other x SAW	60.89	0.17	0.68	0.89	45.03	0.01	0.94	0.94

132 *Notes.* Fluid = Composite of fluid intelligence. SAW = Spot a word test. Adj. p = p value adjusted for the false discovery rate.

133 \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05

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136 **Table S6**

137 *Moderator analyses of cognitive measures regarding the interaction of €Self x €Other in YAs and OAs RTs.*

Reaction Times	Younger Adults			Older Adults		
	DF	F-value	p-value	DF	F-value	p-value
Inhibitory Control						
€Self	57.98	11.57	0.001**	41.94	5.16	0.03*
€Other	57.82	3.70	0.06	42.05	4.30	0.04*
Inhibition	57.98	1.96	0.17	41.98	0.04	0.84
Trial	10510.24	1566.59	< 0.001***	7716.80	873.85	< 0.001***
€Self x €Other	57.96	27.89	< 0.001***	41.94	0.14	0.71
€Self x Inhibition	58.07	0.58	0.45	41.90	0.13	0.72
€Other x Inhibition	57.86	0.30	0.59	41.92	0.57	0.45
€Self x €Other x Inhibition	57.99	0.14	0.71	41.85	3.50	0.07

	Younger Adults				Older Adults			
Fluid Intelligence	DF	F-value	p-value	Adj. p	DF	F-value	p-value	Adj. p
€Self	60.99	11.40	0.001**		45.92	7.33	0.01**	
€Other	60.85	3.64	0.06		46.06	5.83	0.02*	
Fluid Intelligence	61.00	3.18	0.08	0.14	46.00	0.38	0.54	0.54
Trial	11035.87	1748.65	< 0.001***		8417.66	1003.24	< 0.001***	
€Self x €Other	60.96	26.92	< 0.001***		45.94	0.47	0.50	
€Self x Fluid	61.10	0.32	0.57	0.75	45.93	0.02	0.88	0.88
€Other x Fluid	60.92	1.03	0.31	0.31	46.08	1.88	0.18	0.35
€Self x €Other x Fluid	60.99	0.00	0.98	0.98	45.96	4.13	0.048*	0.10

Verbal Intelligence	DF	F-value	p-value	Adj. p	DF	F-value	p-value	Adj. p
€Self	60.99	11.37	0.001**		45.92	7.44	0.01**	
€Other	60.83	3.67	0.06		46.05	5.61	0.02*	
SAW	60.94	2.27	0.14	0.14	45.99	1.61	0.21	0.42

Trial	11038.96	1750.42	< 0.001***		8416.33	1004.83	< 0.001***	
€Self x €Other	60.98	30.58	< 0.001***		45.95	0.43	0.51	
€Self x SAW	60.93	0.11	0.75	0.75	45.85	0.74	0.40	0.79
€Other x SAW	60.79	1.60	0.21	0.31	45.94	0.00	0.98	0.98
€Self x €Other x SAW	60.95	8.29	0.005**	0.01*	45.87	0.54	0.47	0.47

138 *Notes.* Fluid = Composite of fluid intelligence. SAW = Spot a word test. Adj. p = p value adjusted for the false discovery rate.

139 \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05

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142 **Table S7**

143 *Moderator analyses of socio-affective and -cognitive processes regarding the interaction of €Self x €Other in YAs*  
 144 *versus OAs choice behavior.*

Choice Behavior		Younger Adults			Older Adults			
	DF	F-value	p-value	Adj. p	DF	F-value	p-value	Adj. p
Empathy								
€Self	60.99	283.75	< 0.001***		46.01	27.20	< 0.001***	
€Other	61.00	190.83	< 0.001***		46.02	6.77	0.01*	
Empathy	61.00	1.34	0.25	0.25	46.00	0.78	0.38	0.94
€Self x €Other	60.99	61.63	< 0.001***		46.10	0.57	0.46	
€Self x Empathy	60.99	2.30	0.13	0.20	46.00	0.06	0.81	0.996
€Other x Empathy	61.00	0.77	0.39	0.58	46.01	2.65	0.11	0.31
€Self x €Other x Empathy	60.99	0.05	0.83	0.83	46.05	0.08	0.78	0.78
Compassion								
€Self	60.99	253.00	< 0.001***		46.00	25.24	< 0.001***	
€Other	61.00	175.50	< 0.001***		46.02	5.50	0.02*	
Compassion	61.01	5.86	0.02*	0.06	46.00	0.13	0.72	0.94
€Self x €Other	60.99	62.90	< 0.001***		46.07	0.29	0.59	
€Self x Compassion	61.00	4.56	0.04*	0.11	46.00	0.00	0.99	0.996
€Other x Compassion	61.00	0.02	0.88	0.88	46.02	0.04	0.84	0.84
€Self x €Other x Compassion	61.00	1.18	0.28	0.42	46.02	0.48	0.49	0.74
Theory of mind								
€Self	60.98	234.22	< 0.001***		46.01	21.22	< 0.001***	
€Other	61.00	139.17	< 0.001***		46.04	8.00	0.01**	
ToM	60.98	1.81	0.18	0.25	45.99	0.01	0.94	0.94
€Self x €Other	60.99	39.28	< 0.001***		46.13	1.41	0.24	
€Self x ToM	60.97	1.10	0.30	0.30	46.00	0.08	0.78	0.996

€Other x ToM	60.99	2.11	0.15	0.46	46.02	1.64	0.21	0.31
€Self x €Other x ToM	60.98	4.74	0.03*	0.10	46.04	1.09	0.30	0.74

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145 *Notes.* ToM = Theory of mind. Adj. p = p value adjusted for the false discovery rate.

146 \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05

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149 **Table S8**

150 *Moderator analyses of socio-affective and -cognitive processes regarding the interaction of €Self x €Other in YAs*  
 151 *versus OAs reaction times.*

Reaction Times	Younger Adults				Older Adults			
	DF	F-value	p-value	Adj. p	DF	F-value	p-value	Adj. p
Empathy								
€Self	60.98	12.21	<0.001***		45.93	7.28	0.01**	
€Other	60.84	3.84	0.06		46.06	5.57	0.02*	
Empathy	60.97	1.30	0.26	0.50	46.00	0.00	0.97	0.97
Trial	11033.92	1747.78	< 0.001***		8415.42	1003.76	< 0.001***	
€Self x €Other	60.97	27.98	< 0.001***		45.95	0.40	0.53	
€Self x Empathy	61.01	3.17	0.08	0.08	45.91	0.14	0.71	0.84
€Other x Empathy	60.85	2.21	0.14	0.21	46.01	0.53	0.47	0.71
€Self x €Other x Empathy	60.98	1.69	0.20	0.30	45.89	0.94	0.94	0.50
Compassion								
€Self	60.97	7.34	0.01**		45.91	7.21	0.01*	
€Other	60.85	1.44	0.23		46.02	4.13	0.048*	
Compassion	60.97	0.00	0.98	0.98	46.00	2.07	0.16	0.47
Trial	11037.45	1749.30	< 0.001***		8415.31	1004.50	< 0.001***	
€Self x €Other	60.97	21.99	< 0.001***		45.92	0.33	0.57	
€Self x Compassion	61.01	7.19	0.01**	0.02*	45.89	0.08	0.78	0.84
€Other x Compassion	60.87	7.32	0.01**	0.03*	46.00	1.14	0.29	0.71
€Self x €Other x Compassion	60.99	2.17	0.15	0.30	45.86	0.05	0.82	0.82
Theory of mind								
€Self	60.97	19.17	< 0.001***		45.95	4.89	0.03*	
€Other	60.80	5.23	0.03*		46.12	3.60	0.06	
ToM	60.94	0.94	0.34	0.50	46.00	0.04	0.84	0.97

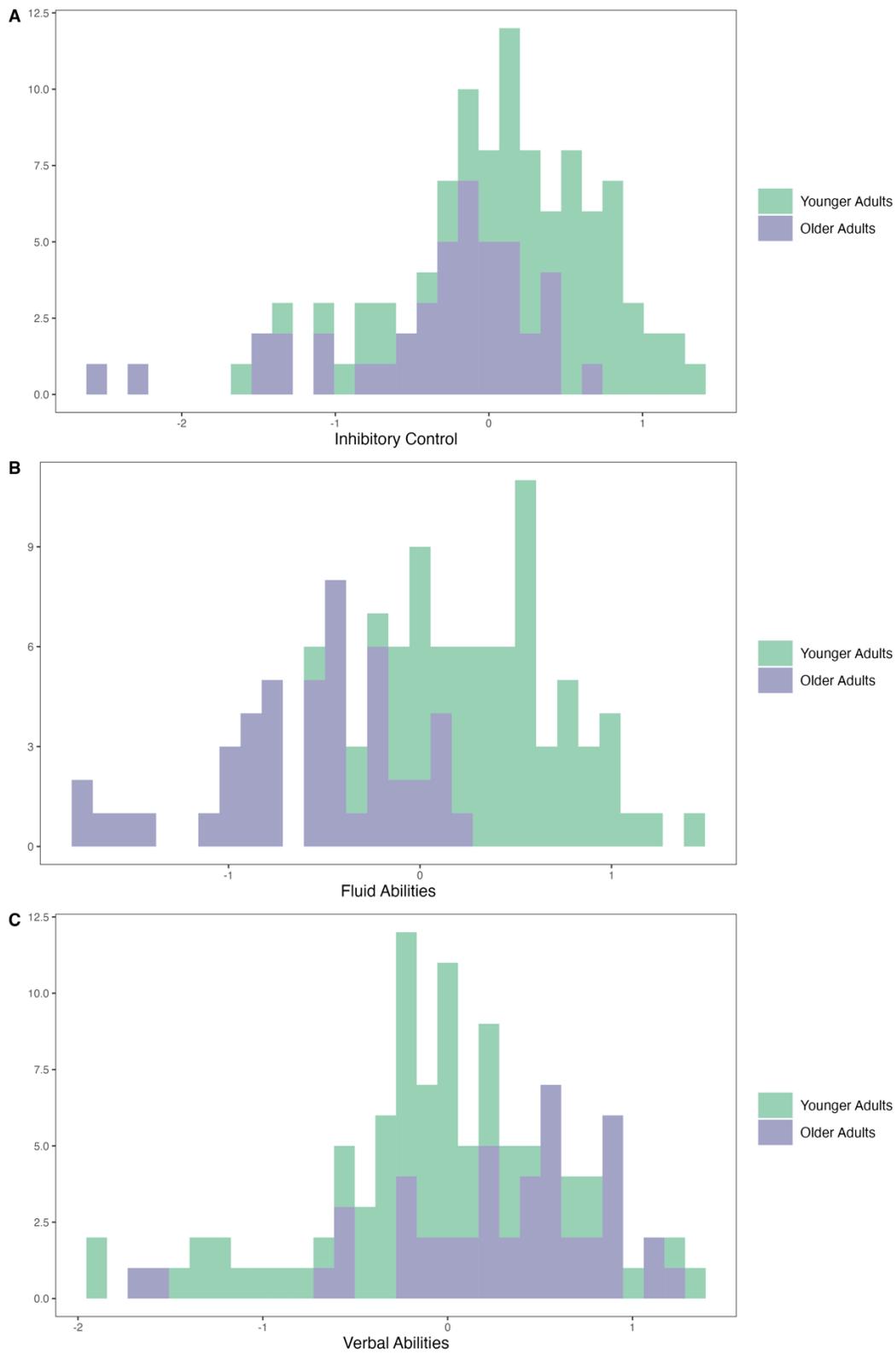
Trial	11035.93	1750.22	< 0.001***		8417.12	1003.92	< 0.001***	
€Self x €Other	60.96	26.12	< 0.001***		45.99	0.00	0.96	
€Self x ToM	60.90	7.08	0.01**	0.02*	45.88	0.04	0.84	0.84
€Other x ToM	60.77	1.63	0.21	0.21	46.01	0.06	0.80	0.80
€Self x €Other x ToM	60.94	0.99	0.32	0.32	45.86	1.42	0.24	0.50

152 *Notes.* ToM = Theory of mind. Adj. p = p value adjusted for the false discovery rate.

153 \*\*\* p < 0.001, \*\* p < 0.01, \* p < 0.05

154 **Figure S3.**

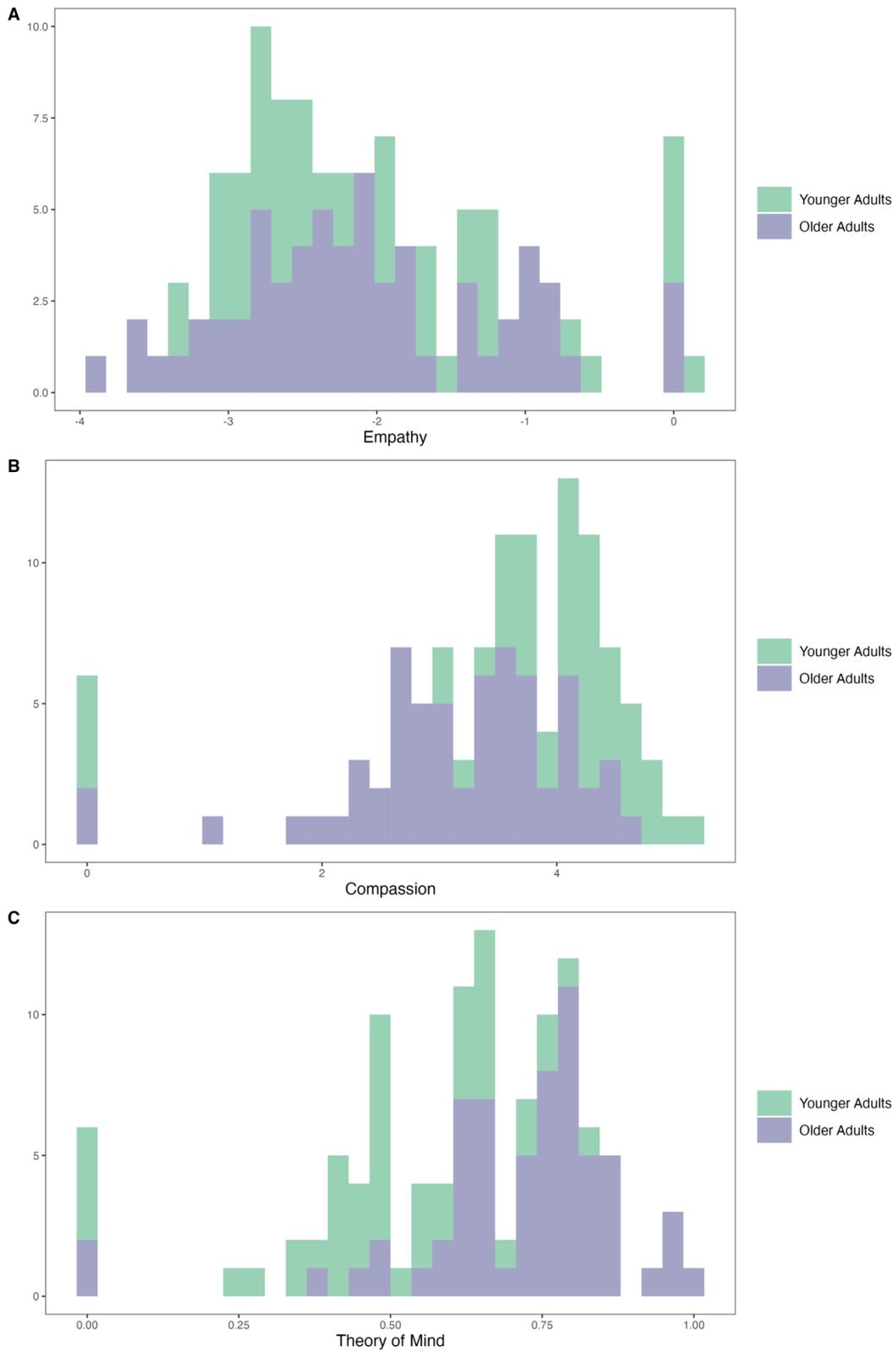
155 *Histograms of cognitive variables.*



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157 **Figure S4.**

158 *Histogram of EmpaToM Variables.*



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160 **Table S9**

161 *Overview of the models estimated (separately for YA and OA) and their DIC (deviance*  
 162 *information criterion) values.*

Model	Formula	DIC YA	DIC OA
1	-	28176.608501	20887.705342
2	v ~ preference	27346.090520	20009.521163
3	v ~ €Self	25771.078511	18752.344631
4	v ~ €Other	26435.657037	19104.879521
5	v ~ €Self + €Other	20648.228821	17758.972883
6	v ~ €Self x €Other	19497.977667	17636.234019
7	a ~ condition	27058.214950	20728.503024
8	z ~ condition	23057.155640	19253.280078
9	a ~ condition, z ~ condition	22800.553506	19099.650121
10	v ~ €Self x €Other, a ~ condition	19314.506888	17535.854681
11	v ~ €Self x €Other, z ~ condition	19181.718398	17575.996704
12	v ~ €Self x €Other, a ~ condition., z ~ condition	<b>19066.287519</b>	<b>17479.187347</b>

163 *Notes.* The winning model is indicated by bold font. 1 = baseline model, i.e., no modulation by  
 164 experimental variables, 2 = v is modulated by preference variable (postdoc defined variable whereas the  
 165 choices of 1 and 4 were classified as strong preference, and 2 and 3 were classified as weaker  
 166 preference), 3 = v is modulated by €Self, 4 = v is modulated by €Other, 5 = v is modulated by €Self, and  
 167 additionally varies by €Other, 6 = v is modulated by an interaction of €Self x €Other, 7 = a varies by choice  
 168 option, 8 = z varies by choice option, 9 = a and z vary by choice option, 10 = v is modulated by an  
 169 interaction of €Self x €Other, and a vary by choice option, 11 = v is modulated by an interaction of €Self x  
 170 €Other, and z vary by choice option, 12 = v is modulated by an interaction of €Self x €Other, and a and z  
 171 vary by choice option.

172

173 **Moderation Analyses on HDDM parameters**

174

175 **V-Parameter: Drift Rate**

176 The mean group posteriors of the drift rate (based on the interaction of  $\epsilon_{\text{self}} \times \epsilon_{\text{other}}$ )  
177 were not significantly predicted by any of the pre-defined moderators (all (adj.)  $p$ s > 0.15, see  
178 Table S10).

179

180 **Z-Parameter: Initial Bias**

181 The mean group posteriors of the initial biases (separately for other-serving, self-serving,  
182 and rational conditions) were not significantly predicted by any of the pre-defined moderators (all  
183 (adj.)  $p$ s > 0.09, see Table S11).

184

185 **A-Parameter: Boundary Separation**

186 In YA, the mean group posteriors of boundary separation for the other-serving and  
187 rational condition were significantly predicted by ToM-abilities (other-serving:  $b = -0.83$ , adj.  $p =$   
188  $0.048$ ; rational:  $b = -0.84$ , adj.  $p = 0.048$ , see Table S12). Both effects showed a negative  
189 association, indicating that YA with higher ToM-abilities need to accumulate less evidence to  
190 reach a decision in the other-serving and rational condition (i.e., reduced boundary separation).

191 No further significant associations between boundary separation and the pre-defined moderators  
192 were observed with respect to YA, irrespective of the condition (all adj.  $p$ s > 0.45, see Table  
193 S12). In OA, across all three conditions (other-serving, self-serving, and rational), significant  
194 negative associations were found between boundary separation and fluid abilities, as well as  
195 between boundary separation and verbal abilities ( $-0.35 > b > -0.24$ , all adj.  $p$ s < 0.046, see  
196 Table S12). All effects showed a negative relationship, illustrating that OA with better cognitive  
197 functioning showed reduced boundary separation (in all three conditions), i.e., they had to  
198 accumulate less evidence to reach a decision.

**Table S10**

*Linear models predicting drift rates (v-parameter). Inhibitory control, fluid abilities, verbal abilities, empathy, compassion, and theory of mind predicting drift rate of €Self x €Other*

	Younger adults							Older adults						
	b	SE	DF	t	p	adj. p	r	b	SE	DF	t	p	adj. p	r
Inhibition	0.01	0.01	58	0.75	0.46		0.10	0.01	0.01	42	1.35	0.19		0.20
Fluid intelligence	-0.002	0.01	61	-0.21	0.83	0.83	-0.03	0.01	0.01	46	1.82	0.08	0.15	0.26
Verbal intelligence	0.004	0.01	61	0.47	0.64	0.83	0.06	-0.0003	0.01	46	-0.05	0.96	0.96	-0.01
Empathy	0.003	0.01	61	0.45	0.66	0.78	0.06	-0.01	0.004	46	-1.16	0.25	0.43	-0.17
Compassion	-0.002	0.01	61	-0.28	0.78	0.78	-0.04	-0.001	0.003	46	0.14	0.89	0.89	0.02
Theory of mind	0.02	0.03	61	0.74	0.46	0.78	0.09	0.02	0.02	46	1.07	0.29	0.43	0.16

*Note.* Fluid intelligence = Composite of fluid intelligence. Verbal Intelligence = Composite of verbal intelligence.

\* p < 0.05

**Table S11**

*Linear models predicting initial bias (z-parameter). Inhibitory control, fluid abilities, verbal abilities, empathy, compassion, and theory of mind predicting the initial starting bias, separately for generous, selfish, and rational choice options.*

		Younger Adults						Older Adults							
		b	SE	DF	t	p	adj. p	r	b	SE	DF	t	p	adj. p	r
Generous	Inhibition	0.002	0.01	58	0.20	0.84		0.03	0.01	0.02	42	0.51	0.61		0.08
Generous	Fluid int.	-0.004	0.01	61	-0.27	0.79	0.79	-0.04	0.02	0.02	46	1.22	0.23	0.46	0.18
Generous	Verbal Int.	0.003	0.01	61	0.28	0.78	0.79	0.04	0.001	0.01	46	0.07	0.94	0.94	0.01
Generous	Empathy	0.01	0.01	61	0.79	0.43	0.43	0.10	0.01	0.01	46	1.10	0.28	0.73	0.16
Generous	Compassion	-0.01	0.01	61	-0.94	0.35	0.43	-0.12	-0.003	0.01	46	-0.34	0.73	0.73	-0.05
Generous	ToM	-0.07	0.05	61	-1.48	0.14	0.43	-0.19	-0.03	0.05	46	-0.51	0.61	0.73	-0.07
Selfish	Inhibition	-0.02	0.02	58	-1.16	0.25		-0.15	0.003	0.03	42	0.12	0.91		0.02
Selfish	Fluid int.	0.001	0.02	61	0.04	0.97	0.97	0	0.02	0.03	46	0.78	0.44	0.63	0.11
Selfish	Verbal Int.	0.04	0.02	61	2.06	0.04*	0.09	0.26	0.01	0.02	46	0.49	0.63	0.63	0.07
Selfish	Empathy	0.02	0.01	61	1.11	0.27	0.27	0.15	0.02	0.02	46	1.26	0.22	0.47	0.18
Selfish	Compassion	-0.02	0.01	61	-1.20	0.24	0.27	-0.15	-0.01	0.01	46	-0.41	0.69	0.69	-0.06
Selfish	ToM	-0.11	0.07	61	-1.49	0.14	0.27	-0.19	-0.08	0.08	46	-1.02	0.31	0.47	-0.15
Rational	Inhibition	-0.01	0.03	58	-0.29	0.77		-0.04	0.02	0.02	42	0.88	0.38		0.14
Rational	Fluid int.	0.02	0.03	61	0.46	0.65	0.65	0.06	0.03	0.02	46	1.26	0.22	0.43	0.18
Rational	Verbal In.	-0.03	0.03	61	-0.99	0.33	0.65	-0.13	0.01	0.02	46	0.58	0.56	0.56	0.09
Rational	Empathy	0.02	0.02	61	1.16	0.25	0.74	0.15	0.01	0.01	46	0.86	0.40	0.74	0.13
Rational	Compassion	-0.01	0.02	61	-0.34	0.74	0.74	-0.04	0.002	0.01	46	0.21	0.84	0.84	0.03
Rational	ToM	0.07	0.11	61	0.65	0.52	0.74	0.08	0.04	0.06	46	0.69	0.49	0.74	0.10

*Note.* Fluid int. = Composite of fluid intelligence. Verbal Int. = Composite of verbal intelligence. ToM = Theory of mind.

\* p < 0.05

**Table S12.** Linear models predicting boundary separation (a-parameter). Inhibitory control, fluid abilities, verbal abilities, empathy, compassion, and theory of mind predicting boundary separation, separately for generous, selfish, and rational choice options.

		Younger Adults							Older Adults						
		b	SE	DF	t	p	adj. p	r	b	SE	DF	t	p	adj. p	r
Generous	Inhibition	0.001	0.08	58	0.01	0.99		0	-0.25	0.14	42	-1.80	0.09		-0.27
Generous	Fluid int.	-0.08	0.11	61	-0.76	0.45	0.45	-0.10	-0.35	0.15	46	-2.28	0.03*	0.045*	-0.32
Generous	Verbal int.	-0.08	0.09	61	-0.83	0.41	0.45	-0.10	-0.24	0.12	46	-2.06	0.045*	0.045*	-0.29
Generous	Empathy	0.03	0.07	61	0.49	0.63	0.63	0.06	0.02	0.09	46	-0.23	0.82	0.82	-0.03
Generous	Compassion	-0.05	0.07	61	-0.73	0.47	0.63	-0.09	0.08	0.07	46	1.12	0.27	0.40	0.16
Generous	ToM	-0.83	0.34	61	-2.47	0.02*	0.048*	-0.30	0.55	0.42	46	1.33	0.19	0.40	0.19
Selfish	Inhibition	-0.01	0.08	58	-0.15	0.88		-0.02	-0.27	0.14	42	-1.95	0.06		-0.29
Selfish	Fluid int.	-0.01	0.10	61	-0.19	0.85	0.85	-0.02	-0.35	0.16	46	-2.27	0.03*	0.03*	-0.32
Selfish	Verbal Int.	-0.02	0.08	61	-0.28	0.78	0.85	-0.04	-0.26	0.12	46	-2.25	0.03*	0.03*	-0.32
Selfish	Empathy	-0.001	0.06	61	-0.02	0.99	0.99	0	-0.04	0.09	46	-0.41	0.69	0.69	-0.06
Selfish	Compassion	-0.03	0.06	61	-0.45	0.65	0.98	-0.06	0.09	0.07	46	1.25	0.22	0.33	0.18
Selfish	ToM	-0.41	0.31	61	-1.29	0.20	0.60	-0.16	0.065	0.42	46	1.55	0.13	0.33	0.22
Rational	Inhibition	0.01	0.09	58	0.07	0.94		0.01	-0.25	0.14	42	-1.81	0.08		-0.27
Rational	Fluid int.	-0.08	0.11	61	-0.74	0.46	0.46	-0.09	-0.35	0.15	46	-2.30	0.03*	0.046*	-0.32
Rational	Verbal int.	-0.08	0.11	61	-0.87	0.39	0.46	-0.11	-0.24	0.12	46	-2.05	0.046*	0.046*	-0.29
Rational	Empathy	0.04	0.07	61	0.57	0.57	0.57	0.07	-0.02	0.09	46	-0.22	0.83	0.83	-0.03
Rational	Compassion	-0.05	0.07	61	-0.77	0.45	0.57	-0.10	0.08	0.07	46	1.11	0.27	0.41	0.16
Rational	ToM	-0.84	0.34	61	-2.47	0.02*	0.048*	-0.30	0.55	0.42	46	1.32	0.20	0.41	0.19

Note. Fluid int. = Composite of fluid intelligence. Verbal Intelligence = Composite of verbal intelligence. ToM = Theory of mind.

\* p < 0.05

**Table S13**

*Sensitivity analyses with respect to the preference variable and the post-hoc dichotomization of choice behavior.*

	Younger Adults		Older Adults	
Accept ~ €Self x €Other x Preference	F-Value (DF = 1)	p-value	F-value (DF = 1)	p-value
€Self	2355.36***	< 0.001	319.86***	< 0.001
€Other	2145.37***	< 0.001	48.26***	< 0.001
Preference	127.16***	< 0.001	106.43***	< 0.001
€Self x €Other	445.27***	< 0.001	0.38	0.537
€Self x Preference	27.81***	< 0.001	14.11***	< 0.001
€Other x Preference	16.73***	< 0.001	12.03***	< 0.001
€Self x €Other x Preference	2.51	0.113	1.81	0.179
RT ~ Accept x preference	F-Value (DF)	p-value	F-value (DF )	p-value
Accept	98.37 (11205.4)***	< 0.001	17.75 (8531.99)***	< 0.001
Preference	1233.32 (11221.38)***	< 0.001	87.25 (8512.52)***	< 0.001
Accept x Preference	0.67 (11202.50)	0.413	9.27 (8532.19)**	0.002
RT ~ Accept x Preference x Offer	F-Value (DF)	p-value	F-value (DF)	p-value
Accept	17.79 (11174.07)***	< 0.001	3.39 (8498.67)	0.066
Preference	475.33 (11184.60)***	< 0.001	78.86 (8488.54)***	< 0.001
Offer	21.00 (11139.54)***	< 0.001	24.79 (8461.17)***	< 0.001
Accept x Preference	5.55 (11161.24)*	0.018	10.80 (8498.71)**	0.001
Accept x Offer	6.64 (11146.62)***	< 0.001	14.43 (8467.41)***	< 0.001
Preference x Offer	3.91 (11139.09)***	< 0.001	1.73 (8463.41)	0.086
Accept x Preference x Offer	2.04 (11139.87)*	0.038	2.14 (8464.37)*	0.029
RT ~ Accept x Preference x €Self x €Other	F-Value (DF)	p-value	F-value (DF)	p-value
Accept	21.31 (11180.23)***	< 0.001	2.38 (8505.54)	.123
Preference	274.82 (11183.80)***	< 0.001	27,50 (8526.00)***	< 0.001

Self	4.75 (11172.98)*	0.029	44.12 (8481.88)***	< 0.001
Other	22.02 (11177.71)***	< 0.001	14.41 (8481.59)***	< 0.001
Accept x Preference	1.46 (11169.15)	0.227	6.20 (8505.64)*	0.013
Accept x Self	41.91 (11174.38)***	< 0.001	58.56 (8491.80)	< 0.001
Preference x Self	12.46 (11161.57)***	< 0.001	0.09 (8484.58)	0.762
Accept x Other	45.54 (11179.79)***	< 0.001	0.09 (8490.60)	0.763
Preference x Other	13.89 (11168.98)***	< 0.001	1.35 (8484.74)	0.246
Self x Other	3.63 (11167.21)	0.057	0.06 (8481.63)	0.812
Accept x Preference x Self	12.17 (11162.37)***	< 0.001	4.89 (8485.90)*	0.027
Accept x Preference x Other	5.97 (11167.57)*	0.015	5.11 (8486.05)	0.024
Accept x Self x Other	3.37 (11165.82)	0.066	0.04 (8482.16)	0.851
Preference x Self x Other	5.87 (11163.02)*	0.015	4.49 (8483.27)*	0.034
Accept x Preference x Self x Other	0.05 (11158.99)	0.823	0.16 (8482.17)	0.690

*Note.* Accept: 0 = reject, 1 = accept, binary variable. €Self = value for oneself. €Other = value for other person. Preference: high (pressing 1 or 4 on Likert-scale) versus low (pressing 2 or 3 on Likert-scale). RT = reaction time. Offer = proposed offers 1 – 9

**Table S14***Posterior Predictive Checks – Younger Adults*

stat	observed	mean	std	SEM	MSE	credible	quantile	mahalanobis
accuracy	0.41484055	0.410117	0.19519164	2.231191e-05	0.038122084	True	53.850792	0.024199544
mean_ub	1.6124573	1.6109482	0.30236858	2.2774611e-06	0.09142904	True	49.764	0.0049910145
std_ub	0.60123223	0.61172855	0.2601872	0.00011017308	0.067807555	True	53.88271	0.040341478
10q_ub	0.9433377	1.0585057	0.21848434	0.013263663	0.060999066	True	30.301952	0.5271223
30q_ub	1.2328377	1.2707397	0.23328803	0.0014365626	0.055859867	True	44.707745	0.16246875
50q_ub	1.4964293	1.4579648	0.26016888	0.0014795191	0.06916737	True	58.01112	0.14784442
70q_ub	1.8383183	1.7104921	0.329158	0.016339546	0.12468455	True	68.682915	0.38834307
90q_ub	2.4429584	2.3209476	0.56425464	0.014886592	0.33326986	True	61.70309	0.21623327
mean_lb	-1.586347	-1.6693641	0.3630149	0.0068918355	0.13867165	True	58.92381	0.2286878
std_lb	0.6136045	0.6024849	0.24526753	0.000123646	0.0602798	True	57.444443	0.04533671
10q_lb	0.9228095	1.1009092	0.24234481	0.03171952	0.09045053	True	23.396826	0.73490226
30q_lb	1.2040224	1.3286825	0.2685924	0.015540156	0.087682046	True	35.120636	0.46412396
50q_lb	1.4697796	1.5287895	0.30662003	0.0034821704	0.09749804	True	43.368256	0.19245291
70q_lb	1.8133596	1.7916979	0.3905396	0.00046922953	0.15299039	True	51.231747	0.055466097
90q_lb	2.4345248	2.3836374	0.62667656	0.0025895282	0.39531305	True	53.698414	0.08120203

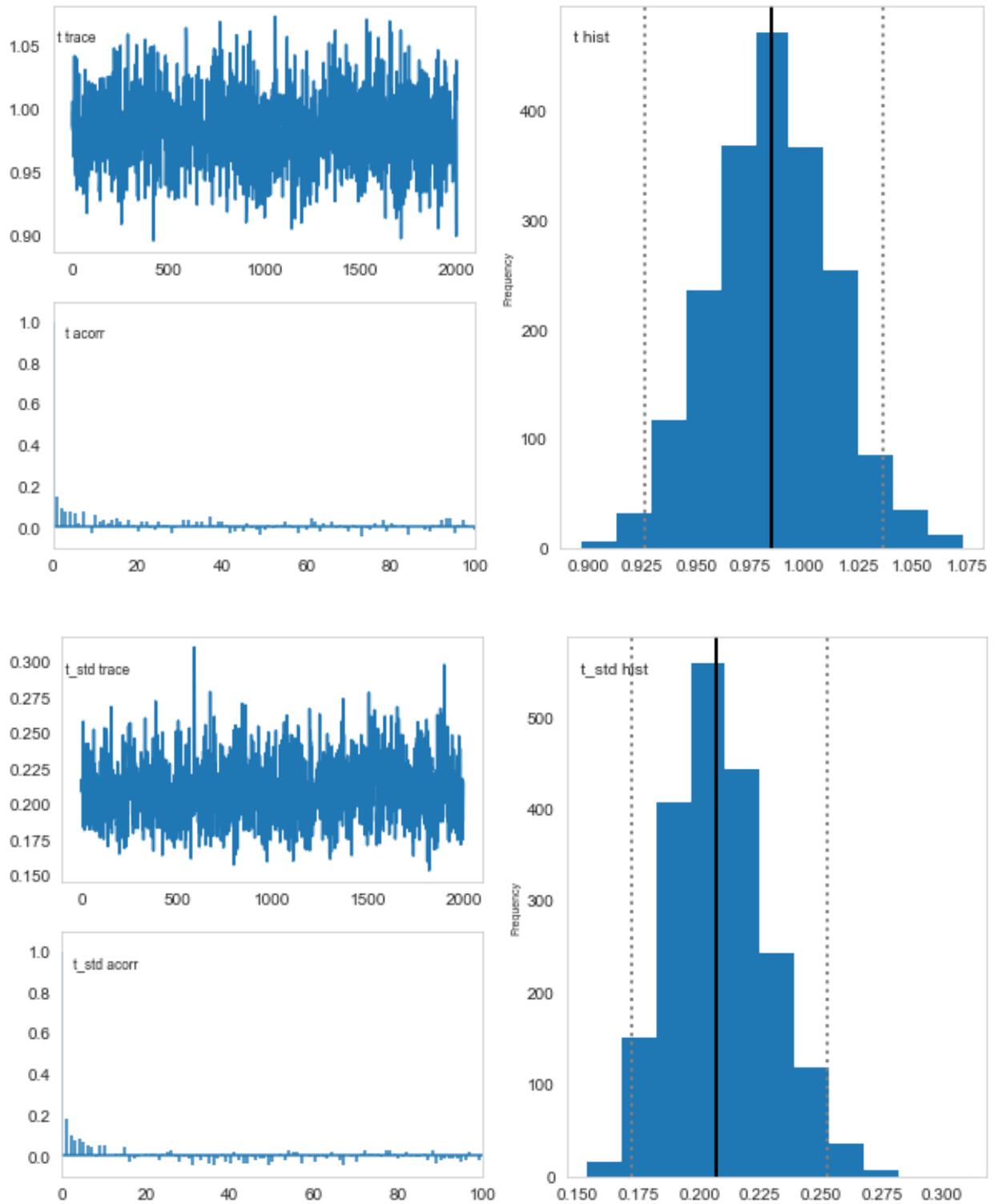
*Note.* Quantile comparison of the observed reaction time data with reaction time data simulated based on the drift diffusion model (500 simulations), as well as the standard deviation (std), standard error of means (SEM) and mean squared error (MSE) of the simulated data. The column *credible* indicates whether the data fall within the 95 % credible interval (if “True” the model is a 95% credible fit for the observed data). *Quantile* corresponds to the posterior predictive quantile and *mahalanobis* indicates the *mahalanobis* distance between observed and estimated reaction time indices. *ub* = upper boundary, *lb* = lower boundary.

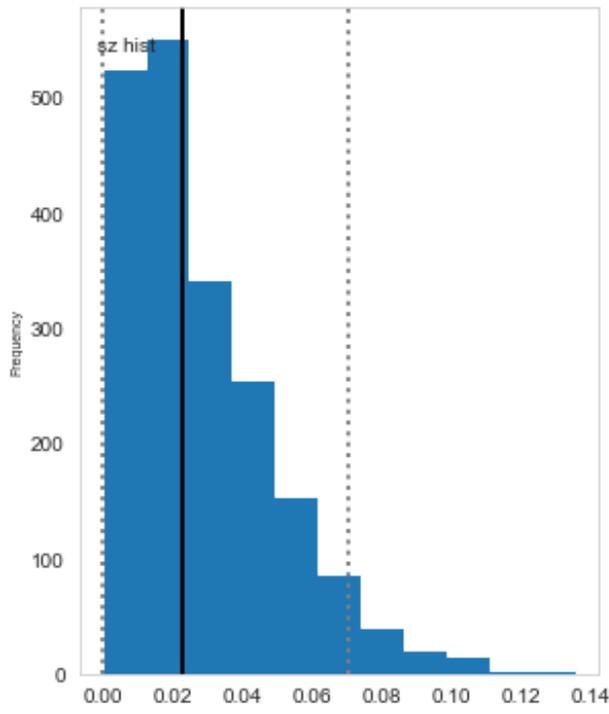
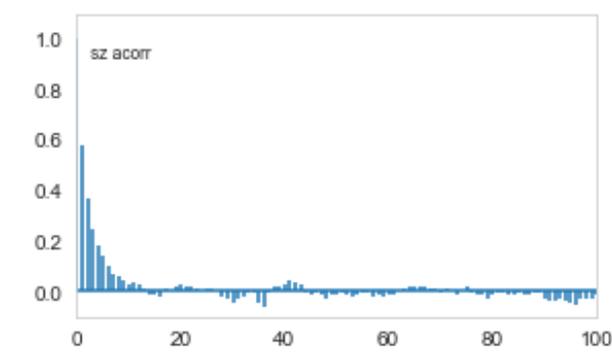
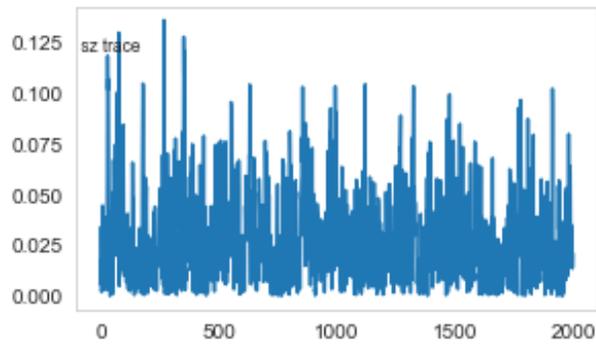
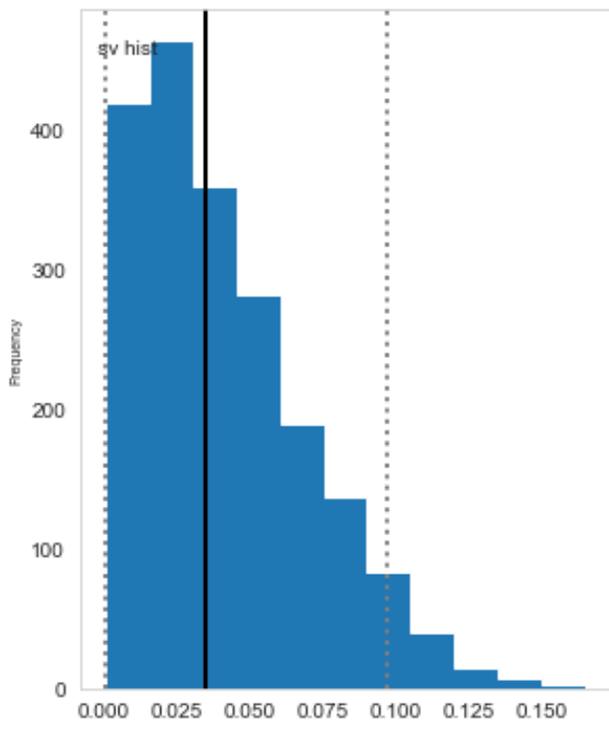
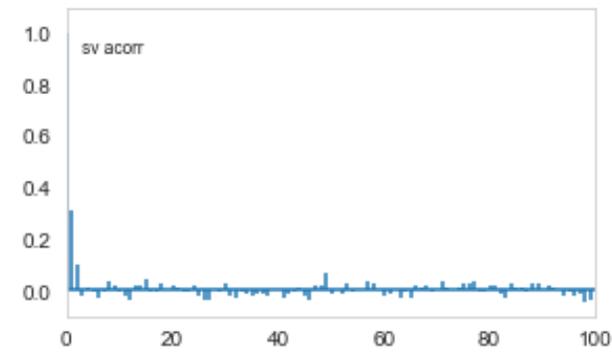
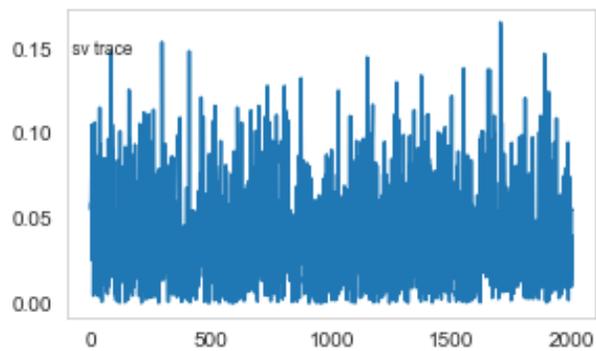
**Table S15***Posterior Predictive Checks – Older Adults*

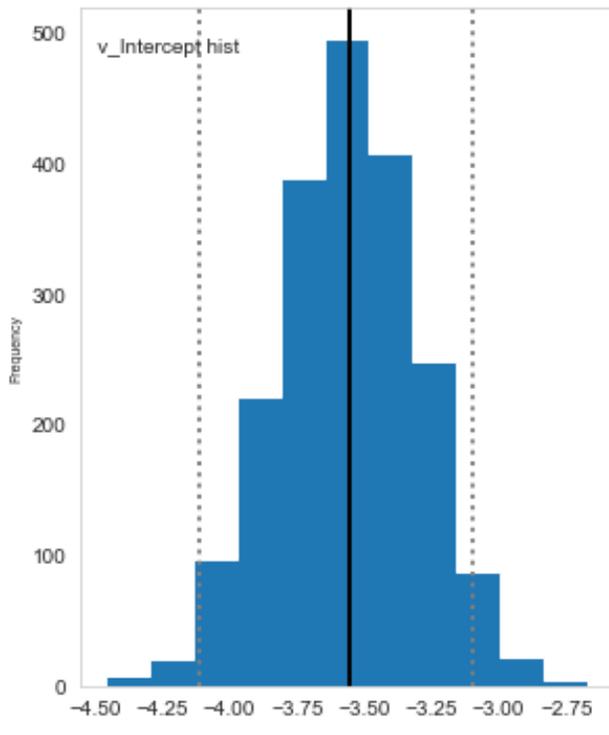
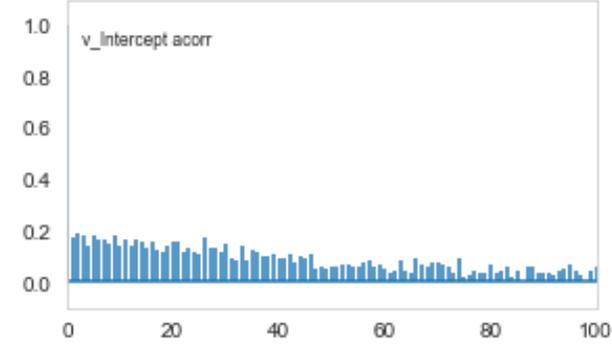
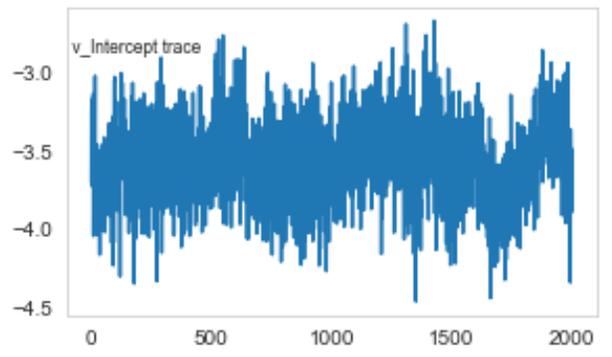
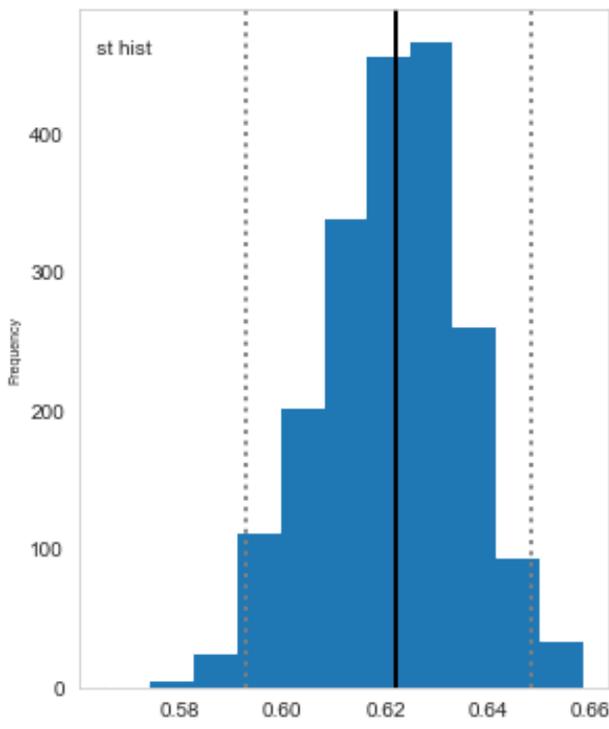
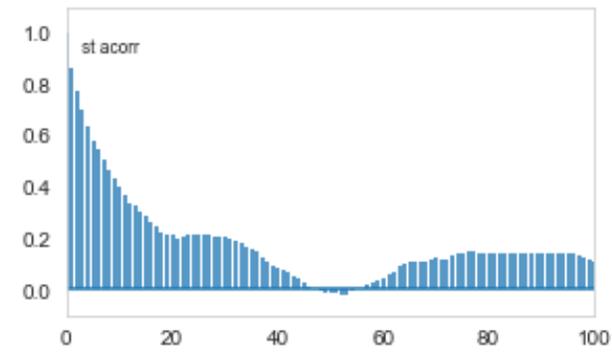
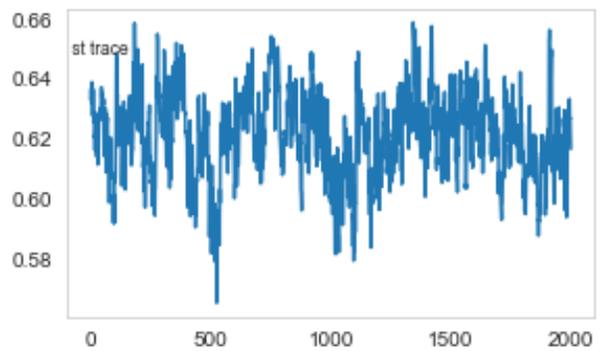
stat	observed	mean	std	SEM	MSE	credible	quantile	mahalanobis
accuracy	0.37532192	0.3800905	0.21723017	2.2739225e-05	0.047211684	True	45.0625	0.021951675
mean_ub	1.6421566	1.6395155	0.40381032	6.975271e-06	0.16306974	True	55.711765	0.0065403823
std_ub	0.6212577	0.56267816	0.2571273	0.0034315633	0.06954602	True	61.78744	0.22782312
10q_ub	0.94824	1.1116843	0.30703983	0.02671405	0.120987535	True	32.548256	0.5323229
30q_ub	1.2287391	1.3163218	0.32355967	0.007670724	0.112361595	True	43.89042	0.27068475
50q_ub	1.5283384	1.5019706	0.36238122	0.00069525937	0.13201539	True	57.049862	0.07276252
70q_ub	1.8834026	1.7576022	0.44115078	0.015825745	0.21043976	True	65.41747	0.2851642
90q_ub	2.549847	2.3188686	0.6628944	0.053350966	0.4927799	True	67.02681	0.348439
mean_lb	-1.5923958	-1.6502684	0.4032613	0.0033492476	0.16596892	True	53.595833	0.14351162
std_lb	0.6436081	0.57481575	0.22263516	0.0047323904	0.054298796	True	66.075	0.3089915
10q_lb	0.8442104	1.0951886	0.2980469	0.06299008	0.15182203	True	21.966667	0.84207636
30q_lb	1.1958085	1.3168449	0.32065377	0.014649815	0.11746865	True	37.016666	0.37746763
50q_lb	1.4852326	1.5161709	0.3575476	0.0009571777	0.12879747	True	48.425	0.08652914
70q_lb	1.8397444	1.7826067	0.4324137	0.0032647257	0.19024634	True	56.320835	0.13213684
90q_lb	2.5187798	2.3532455	0.6390194	0.027401624	0.43574736	True	63.045834	0.25904432

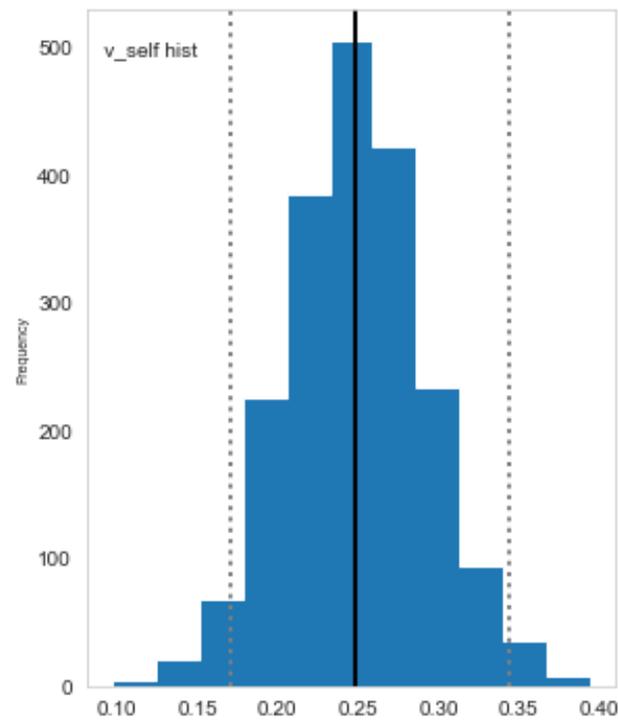
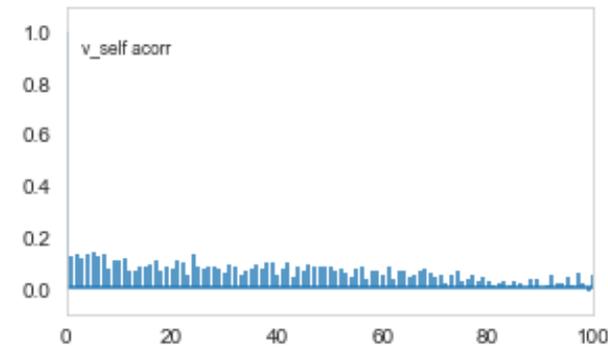
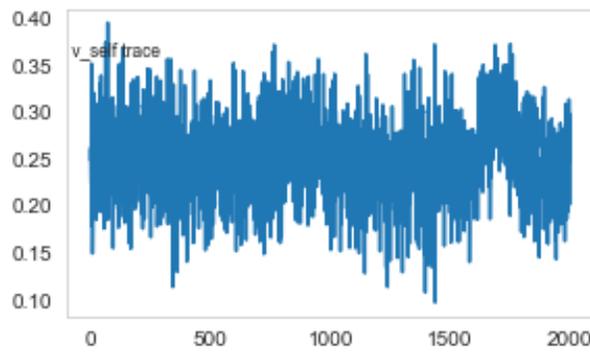
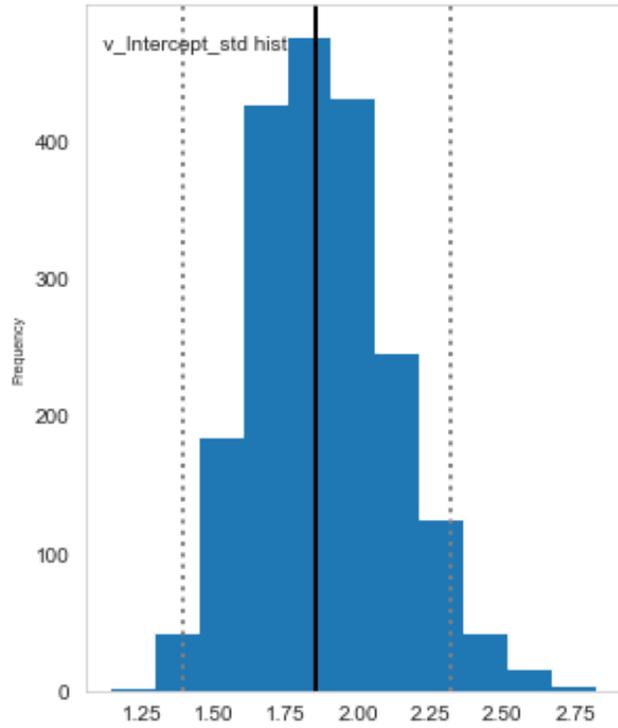
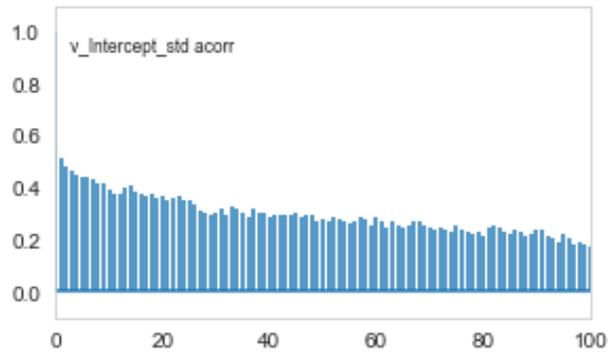
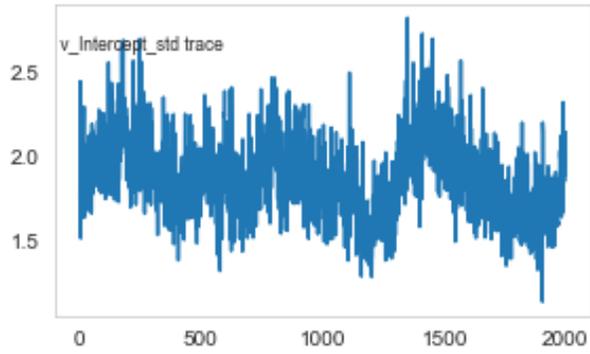
*Note.* Quantile comparison of the observed reaction time data with reaction time data simulated based on the drift diffusion model (500 simulations), as well as the standard deviation (std), standard error of means (SEM) and mean squared error (MSE) of the simulated data. The column *credible* indicates whether the data fall within the 95 % credible interval (if “True” the model is a 95% credible fit for the observed data). *Quantile* corresponds to the posterior predictive quantile and *mahalanobis* indicates the *mahalanobis* distance between observed and estimated reaction time indices. *ub* = upper boundary, *lb* = lower boundary.

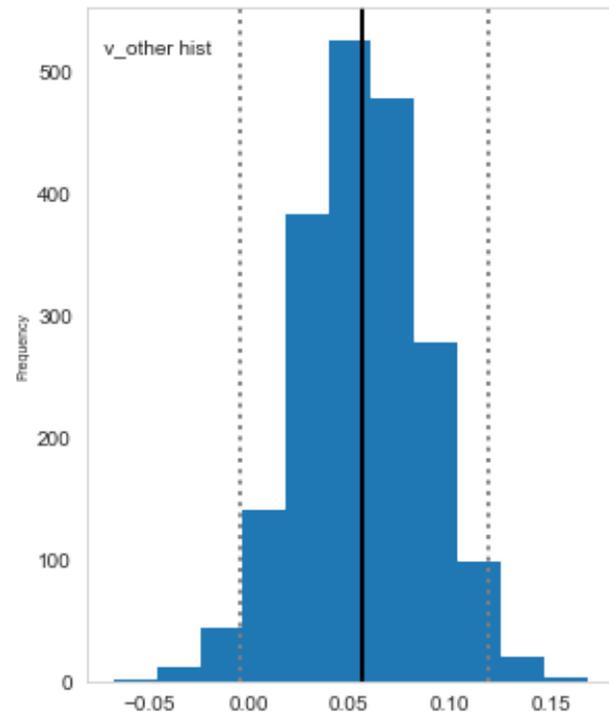
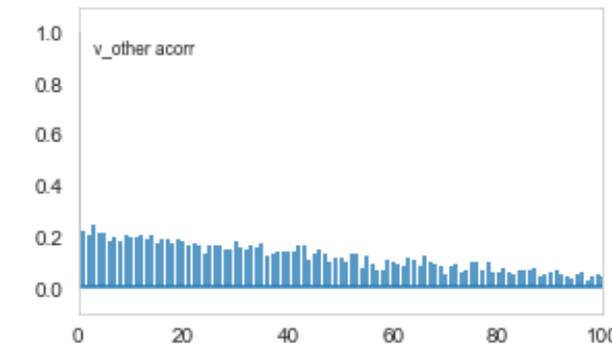
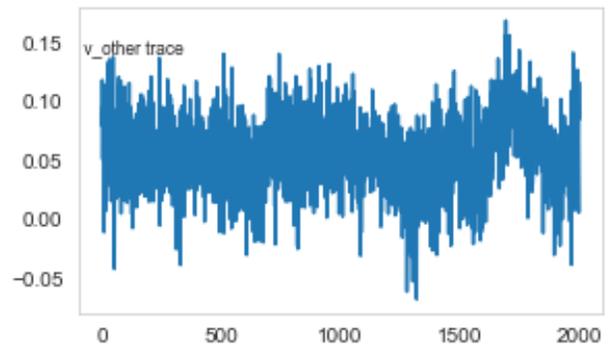
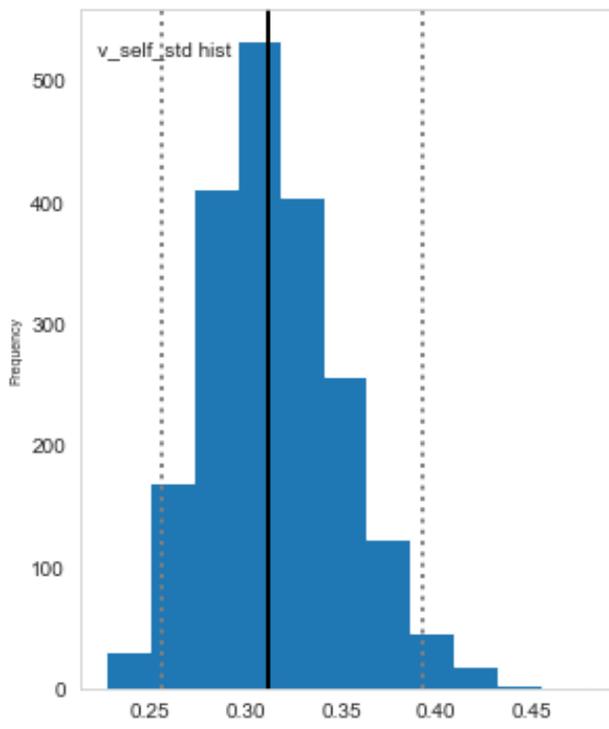
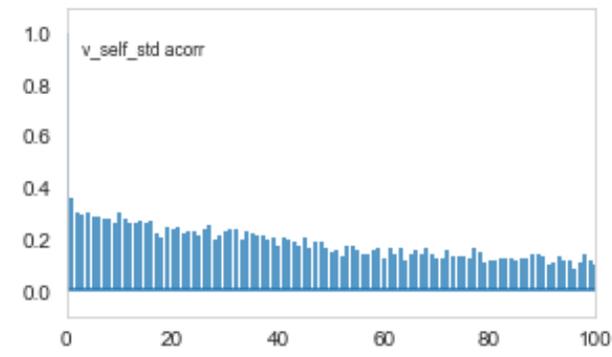
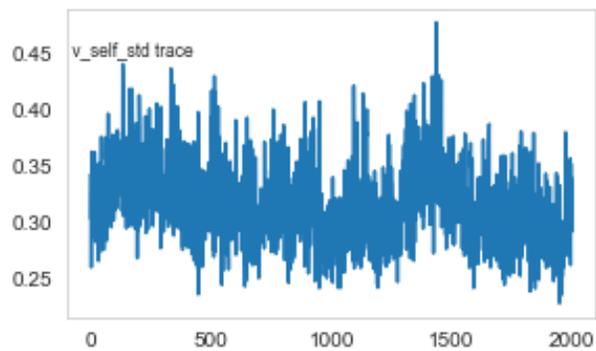
**Figures S5.**  
*Posterior predictive plots final model younger adults*

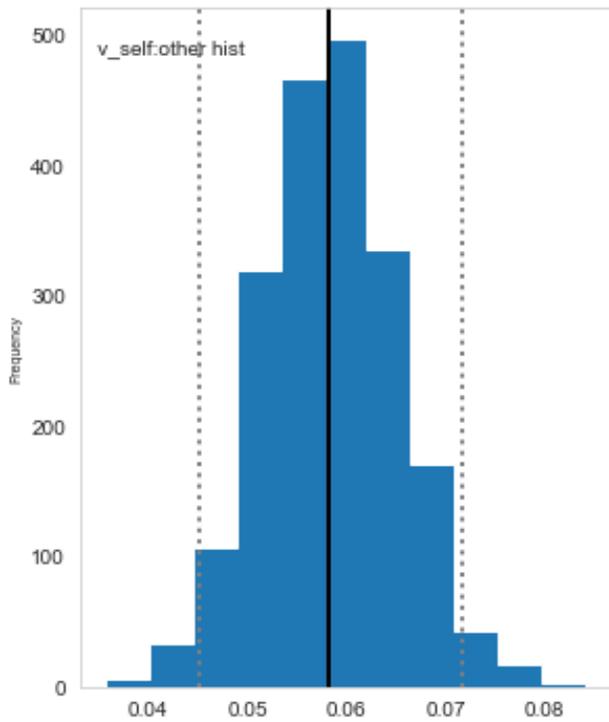
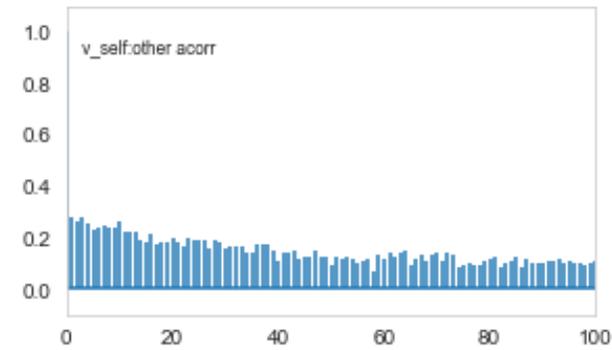
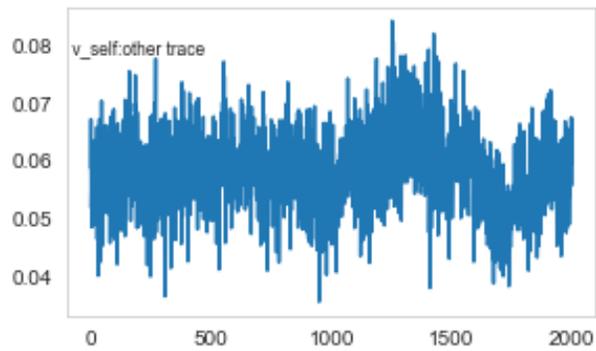
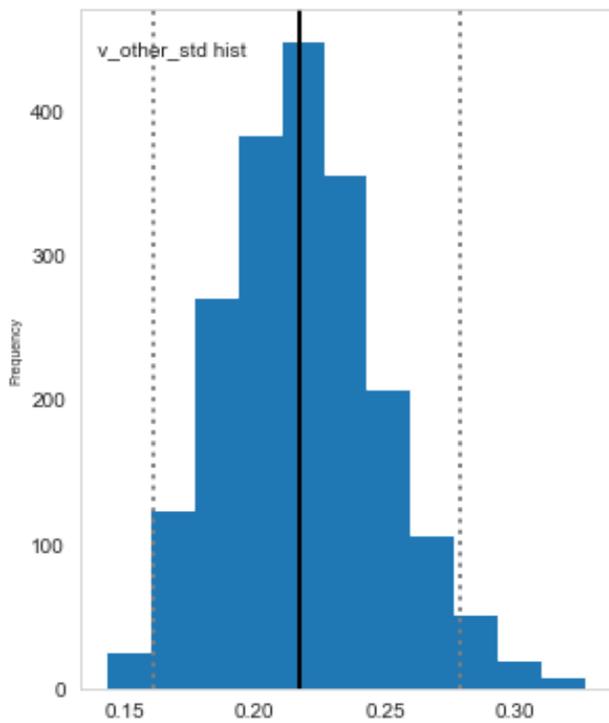
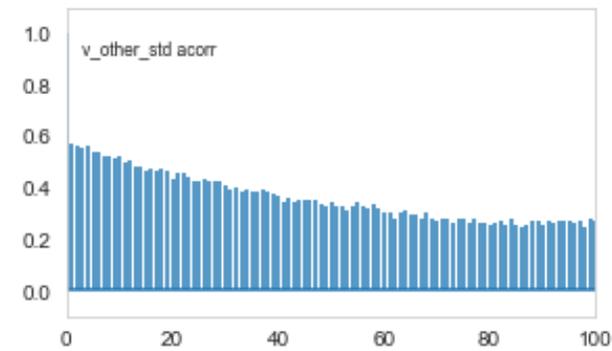
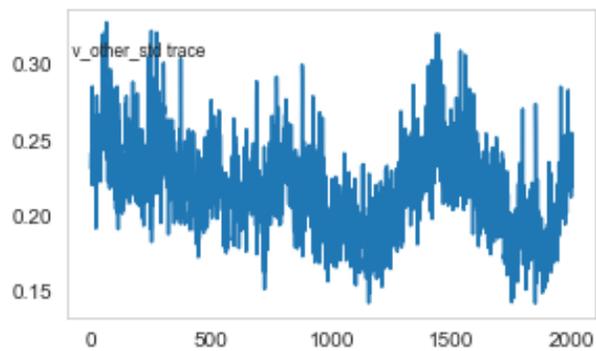


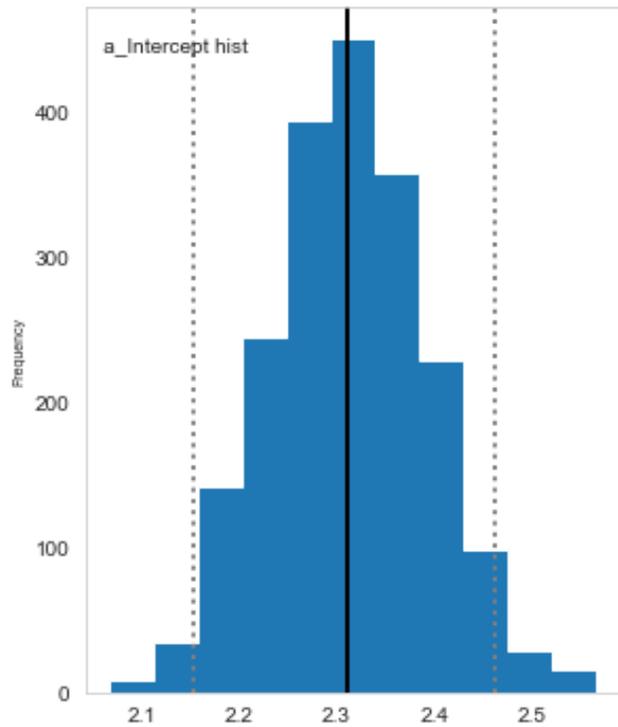
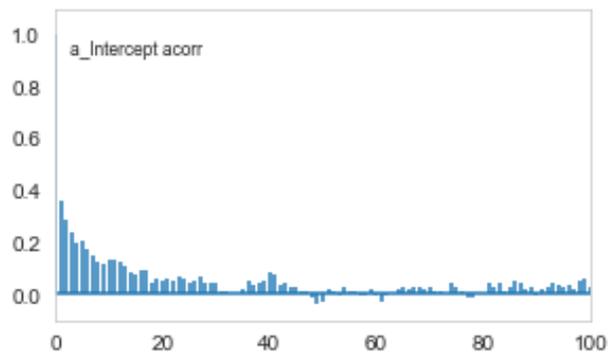
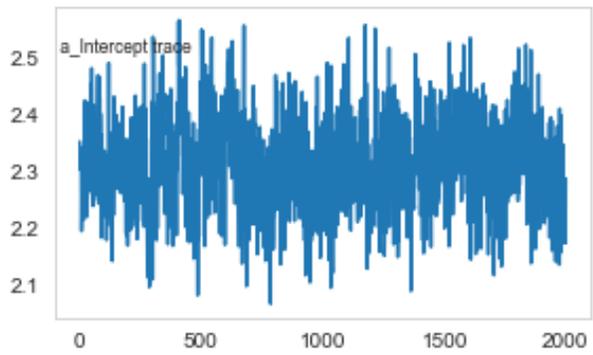
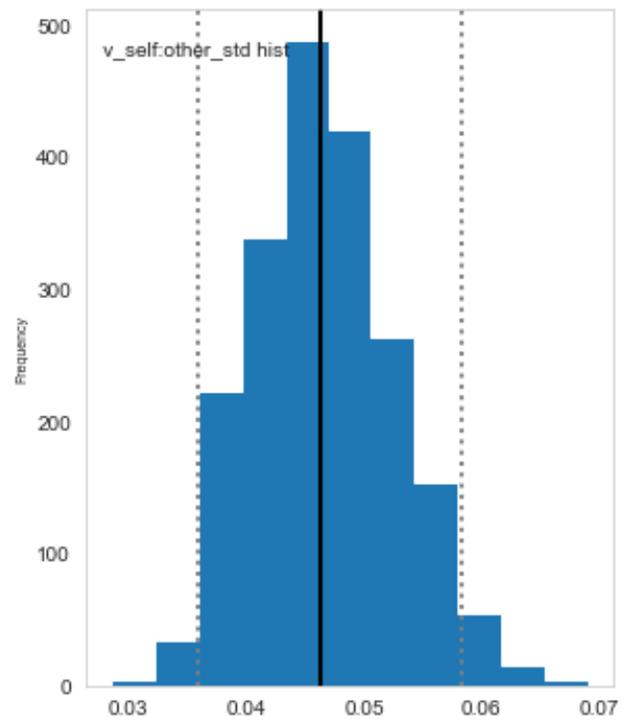
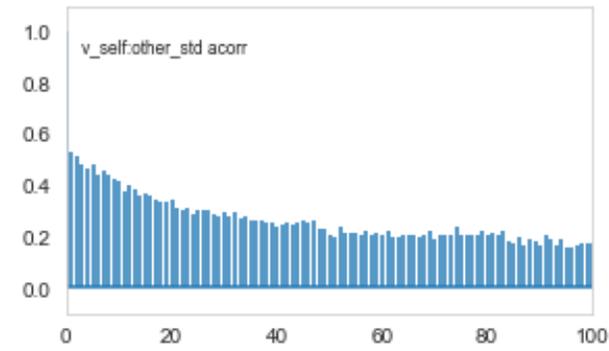
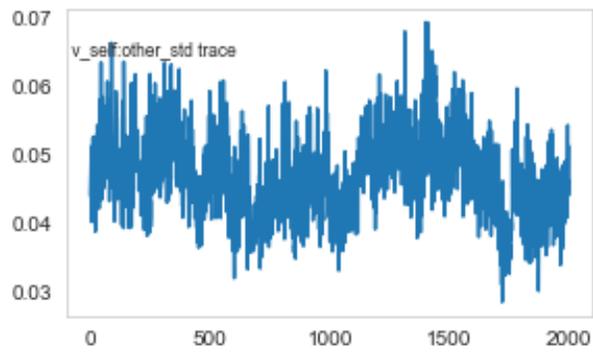


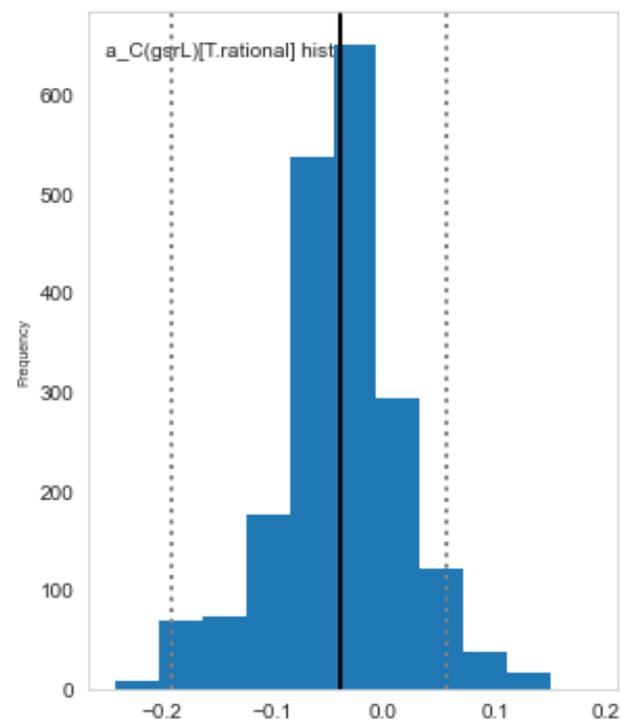
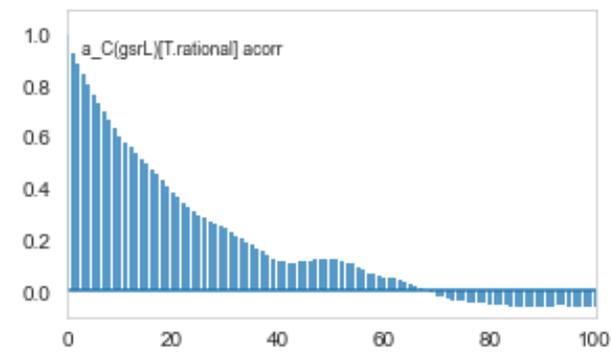
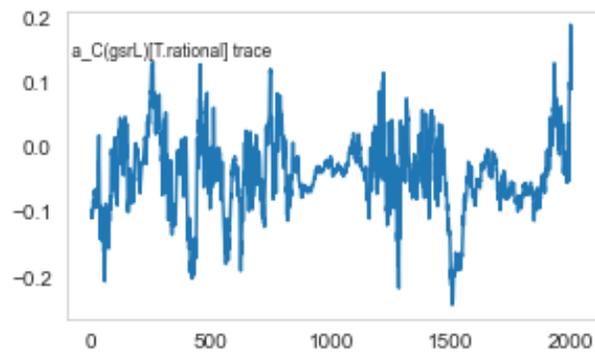
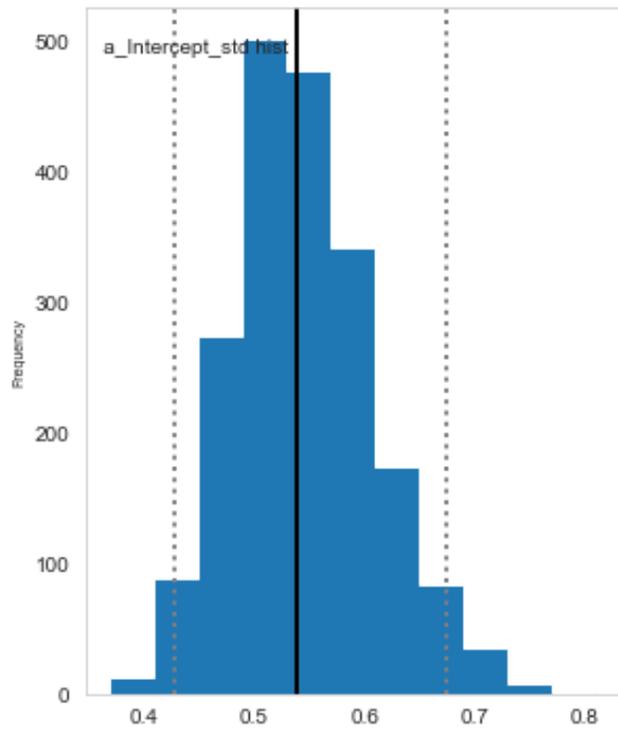
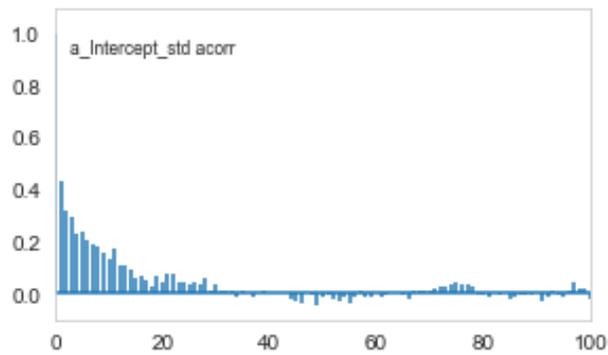
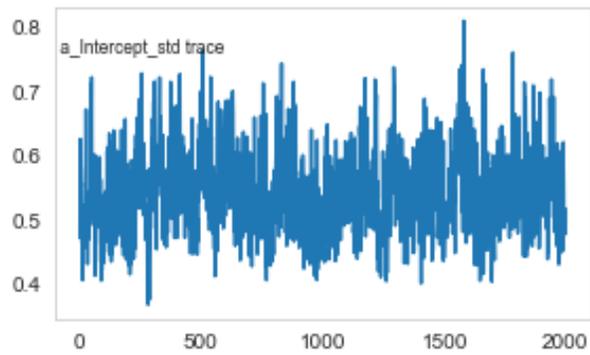


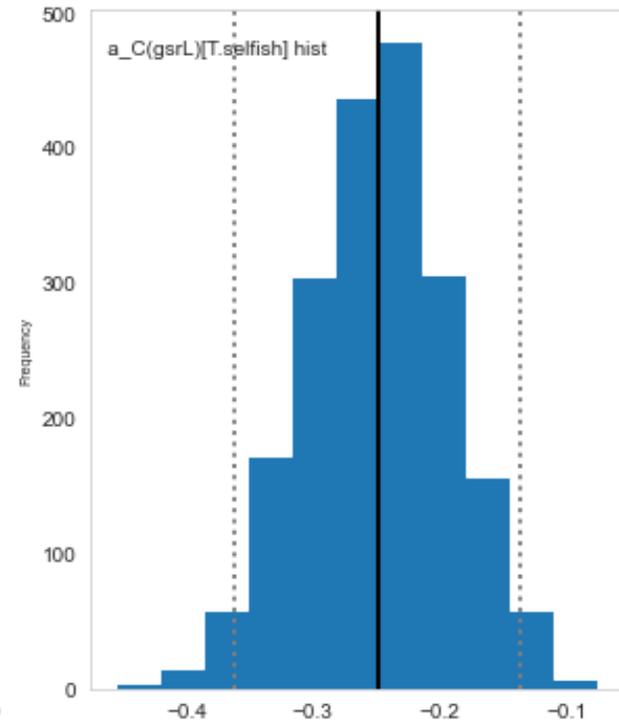
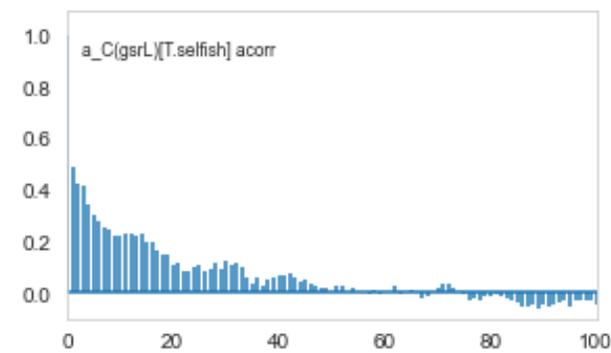
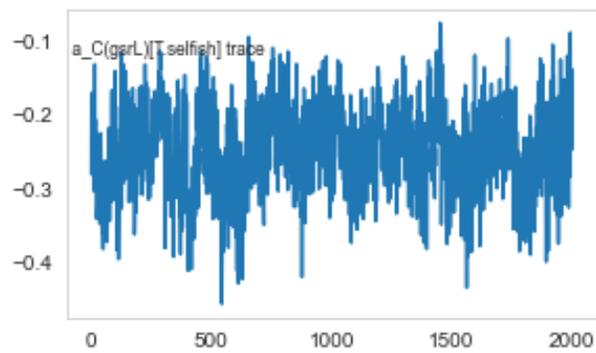
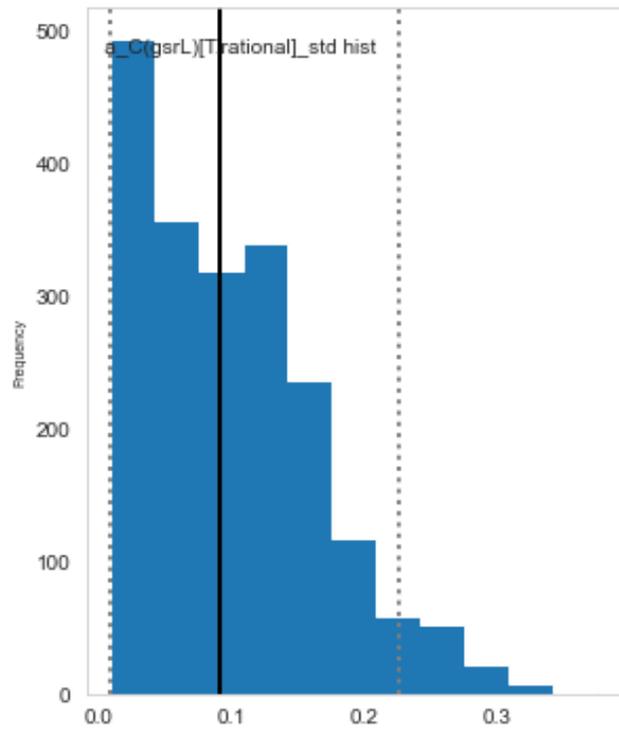
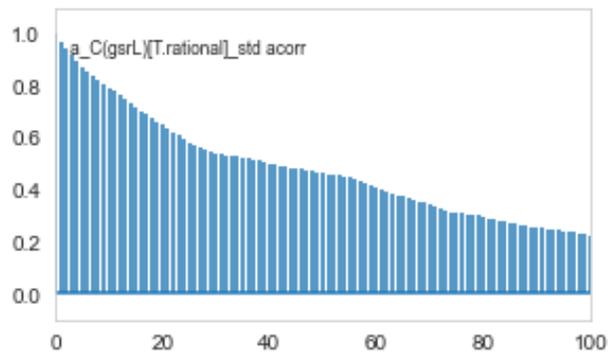
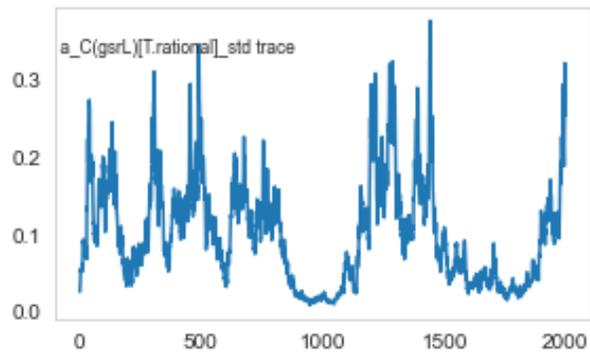


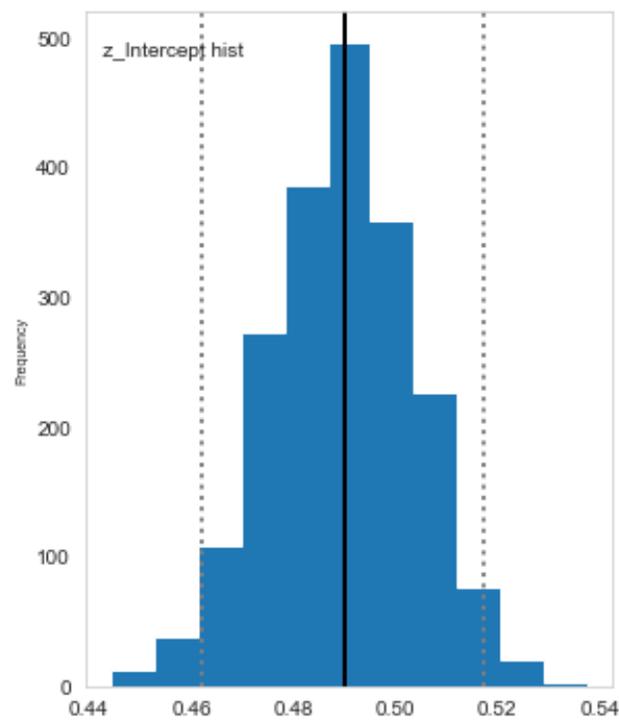
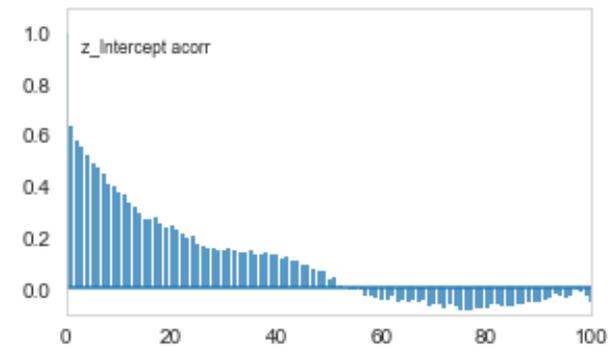
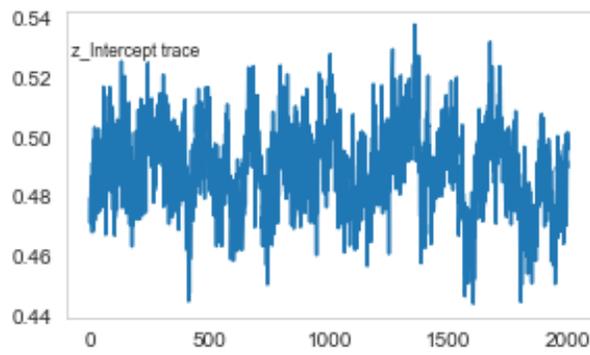
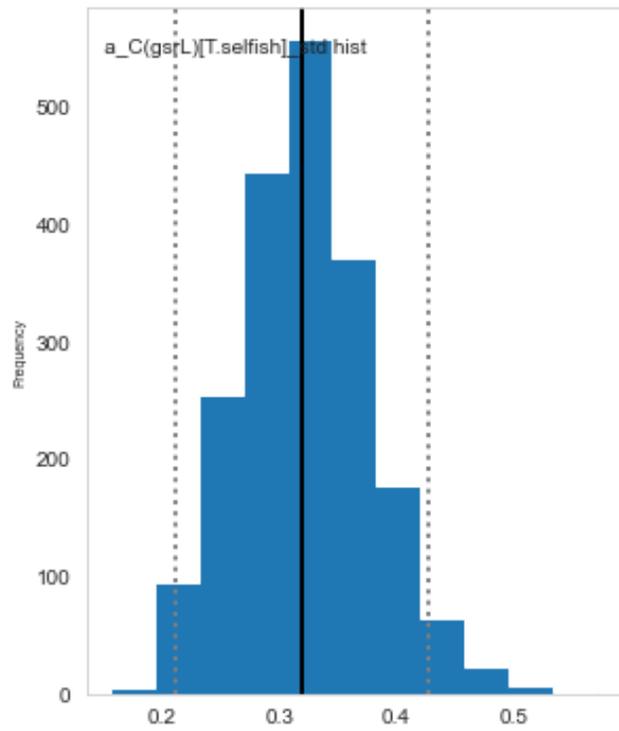
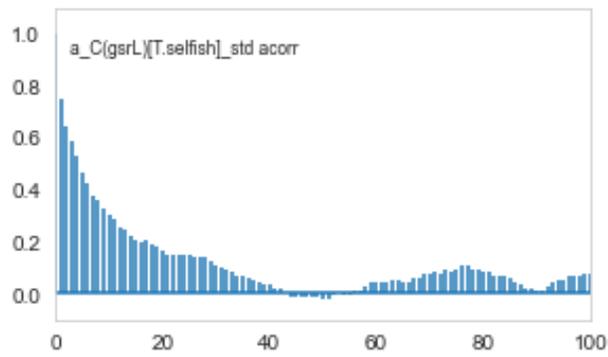
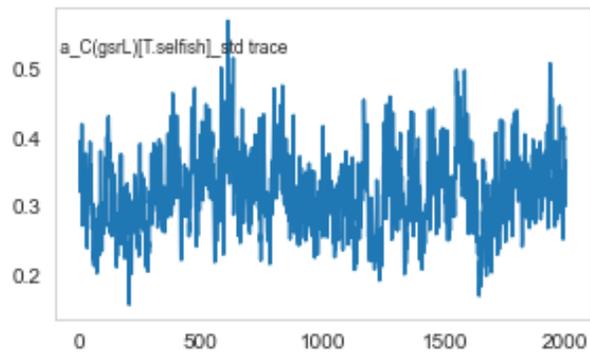


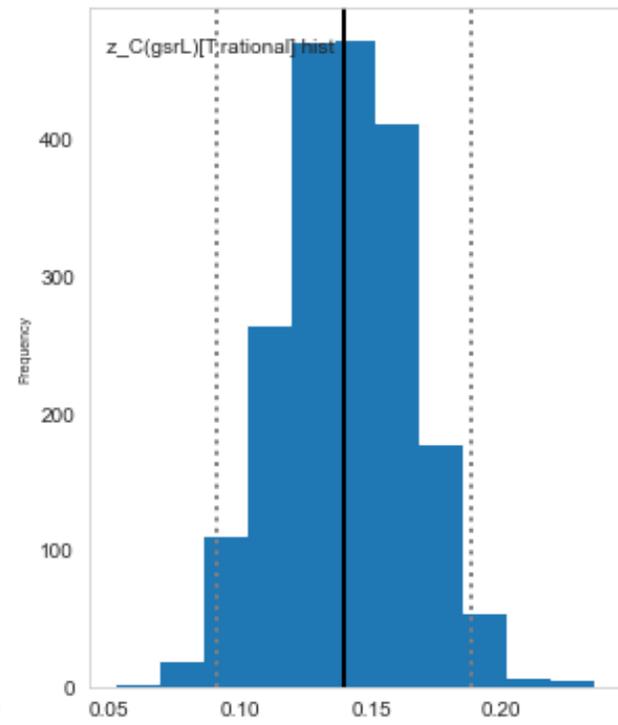
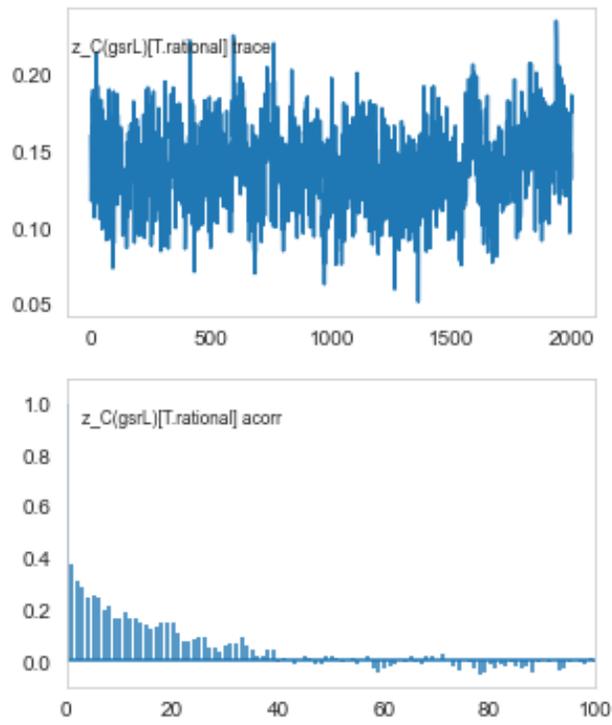
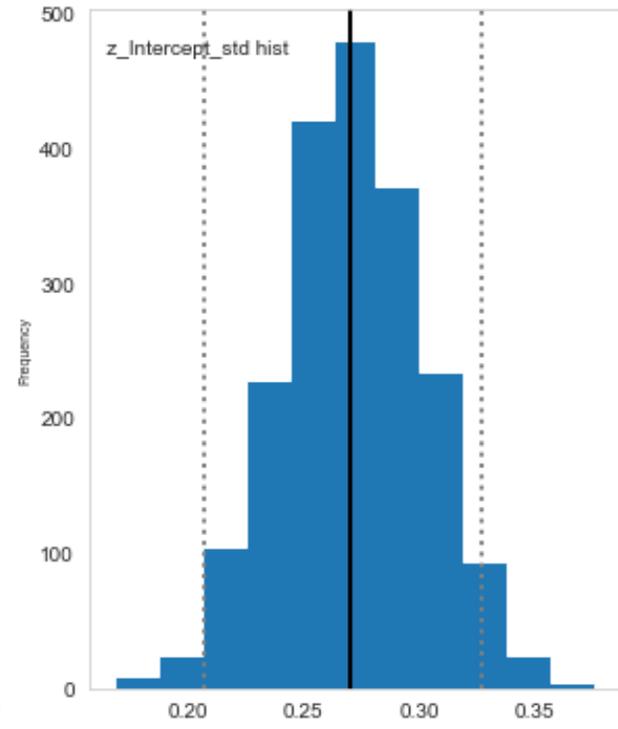
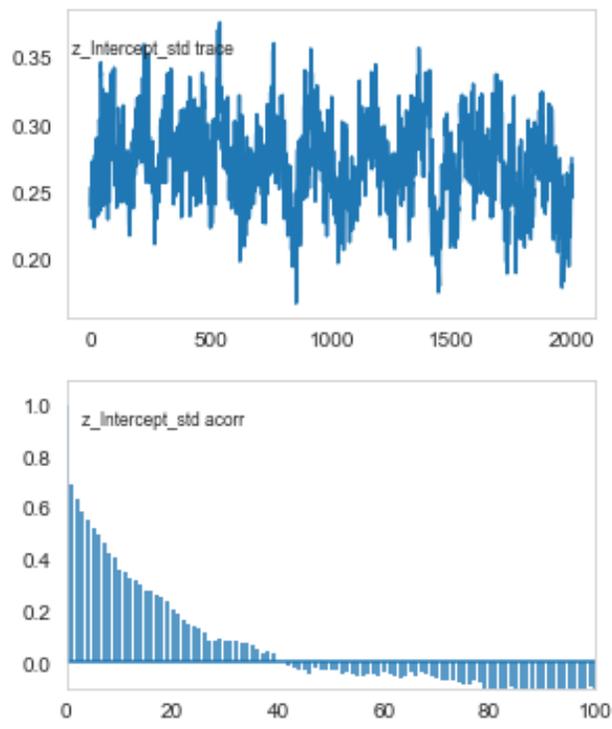


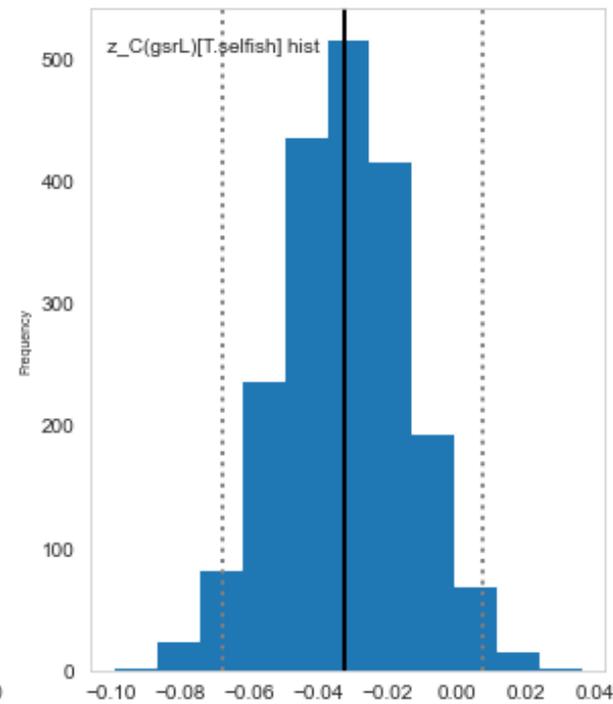
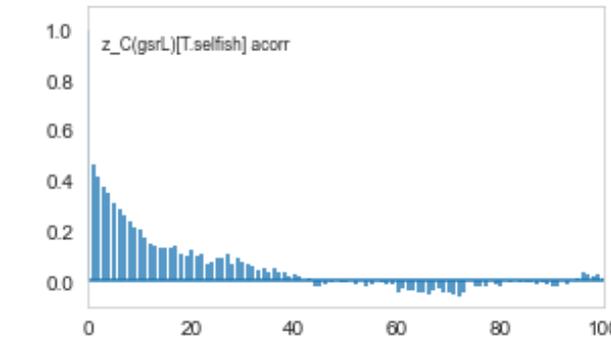
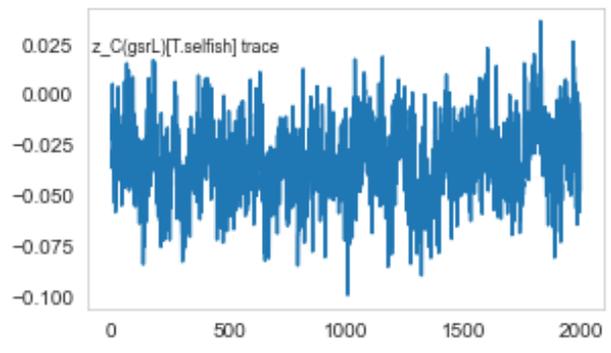
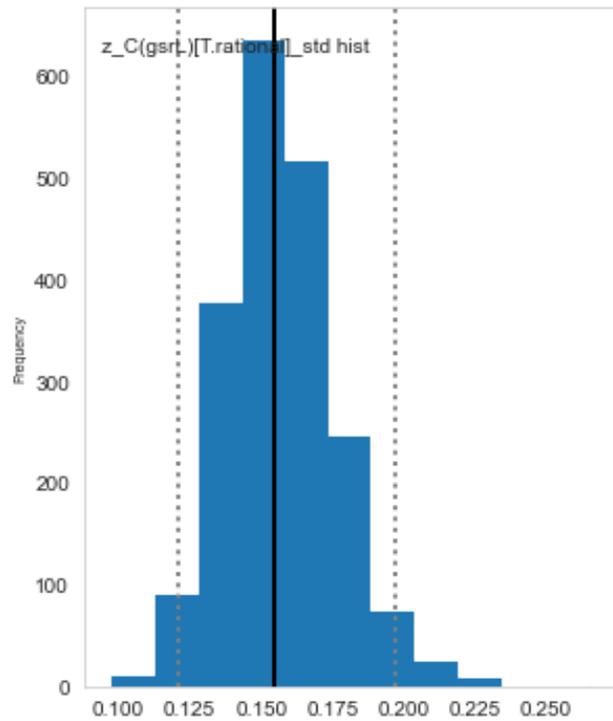
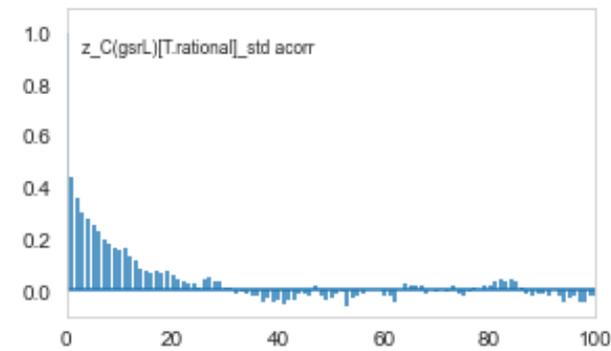
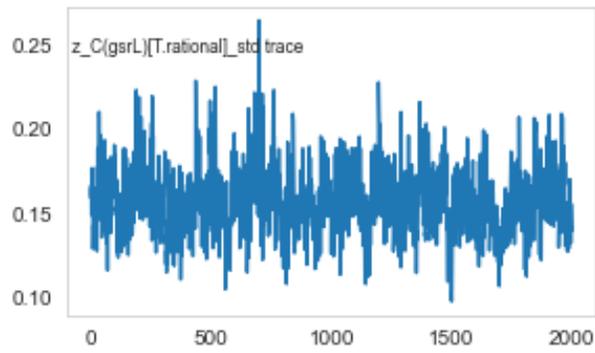


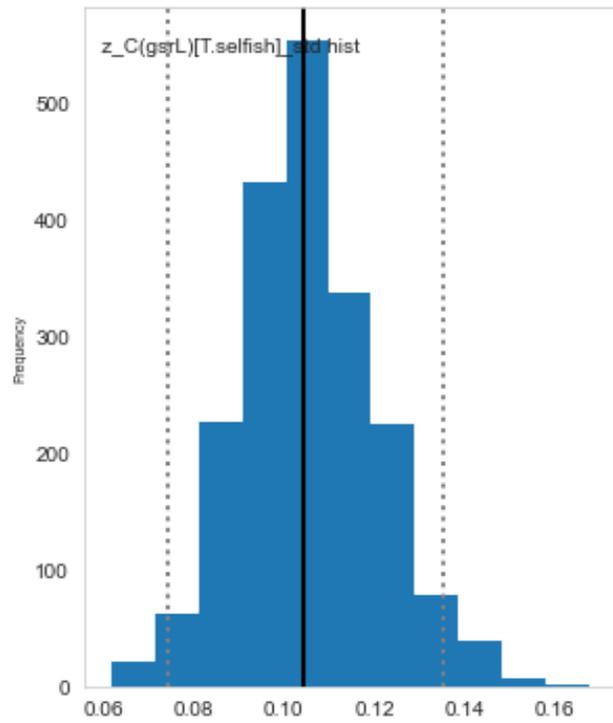
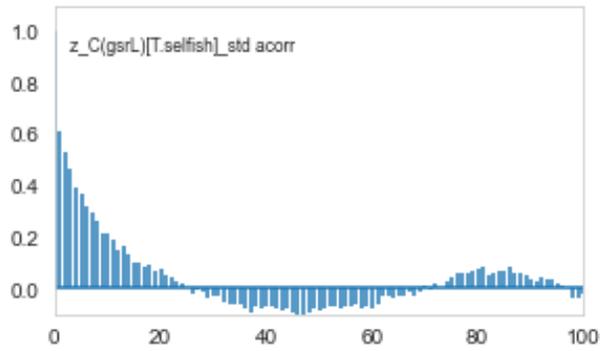
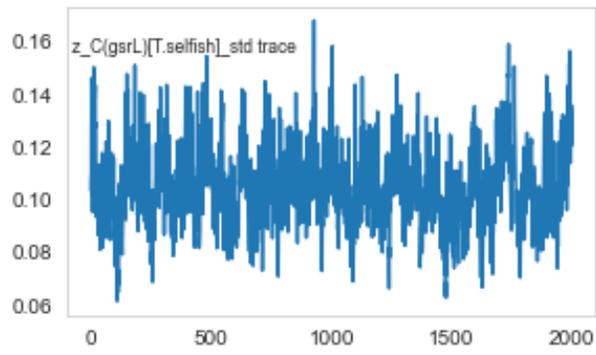












**Figures S6.**

*Posterior predictive plots final model older adults*

