

Supplementary materials

Perceived predictability, semantic centrality and ‘clue’ needed

We let an independent group of TD participants ($n = 30$), with a mean age of 36.67 ($SD = 16.61$), rate the predictability (*How predictable is the change in the scene?*) and the semantic centrality (*How meaningful is the change in the scene?*) of each of the changes, in each of the images, on a 7-point Likert scale (Figure 1Sup). Lower values thereby indicated less and higher values more perceived predictability/semantic centrality of the change. To complete this task, both the original and the altered version of each image were shown simultaneously, and without time constraints, to the participants. If they were not able to locate the change in the scene themselves, they were allowed to ask for a ‘clue’. This ‘clue’ unambiguously illustrated the exact location of the change. Overall, the mean perceived predictability was 4.08 ($SD = .82$), the mean perceived semantic centrality was 3.37 ($SD = .88$) and the mean proportion of participants needing a clue to locate a change in the image was .18 ($SD = .15$). In order to check the internal consistency of the measured variables, we randomly split our group of 30 participants in half, providing us with two groups of 15 participants, with a mean age of 36.33 ($SD = 15.21$) in Group 1 and a mean age of 37.00 ($SD = 18.45$) in Group 2. Correlating the mean scores on perceived predictability, semantic centrality and ‘clue’ between both groups thereby clearly indicated that there was a strong inter-rater-agreement in image scores (Table 1Sup). As a results, we correlated the mean scores per image, for all three variables, in the total participant set of 30 participants with the mean RT scores per image, for the group-level specific performance (ASD and TD) in the upright and inverted condition separately, of the change blindness task.

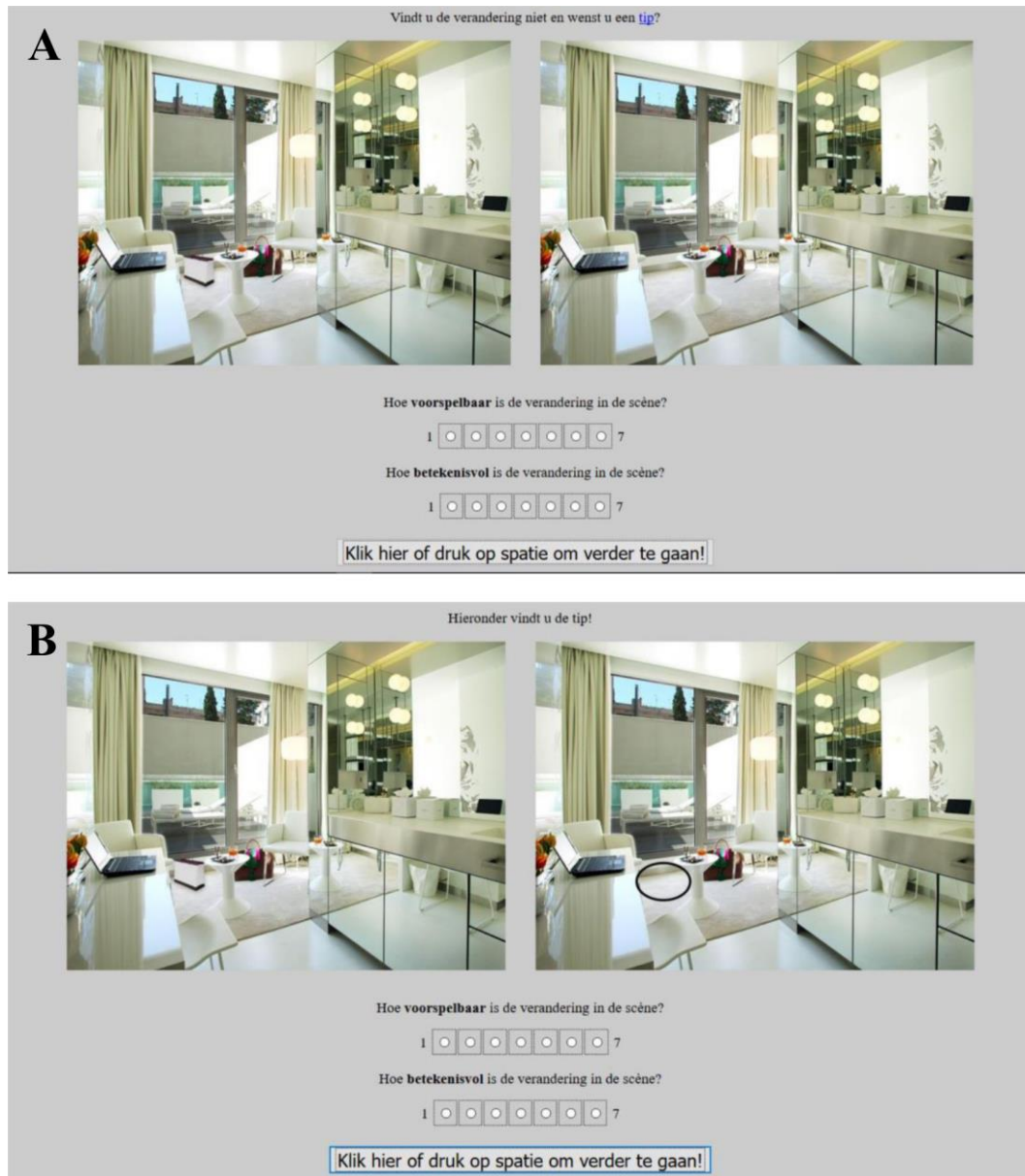


Figure 1Sup. Graphical example of the rating task, conducted by 30 TD participants. In (A), the original and altered version of an image are shown, together with both questions (in Dutch) asked to our participants: (1) *How predictable is the change in the scene?* and (2) *How meaningful is the change in the scene?*. In (B), the participant asked for the ‘clue’, which is then presented at the location of the unaltered image. In this image, the black circle unambiguously illustrated the exact location of the change.

Table 1Sup. Overview of the correlation matrix between the image ratings of Group 1 ($n = 15$) and Group 2 ($n = 15$). This was done for the following three variables: (1) perceived predictability, (2) perceived semantic centrality and (3) ‘clue’ needed.

	Perceived predictability (Group 1)	Perceived semantic centrality (Group 1)	Clue needed (Group 1)
Perceived predictability (Group 2)	.86*	.56*	-.71*
Perceived semantic centrality (Group 2)	.38*	.89*	-.24
Clue needed (Group 2)	-.72*	-.30*	.75*

(* Bonferonni corrected level: $p < .006$)

Results of the GLMM model selection process for the change blindness task, in terms of fixed effects and goodness-of-fit, for both RT and accuracy.

Overview of the parameter estimates for the change detection task for both (a) the random intercepts regression analysis on the RT output and (b) the random intercepts logistic regression analysis on the accuracy data.

RT			
Parameter	Estimate (Standard Error)	p-value	95% confidence interval
Intercept	24.26 (3.05)	< .001	[18.28 ; 30.24]
Group	-.26 (.71)	.71	[-1.65 ; 1.13]
Age	-.60 (.21)	< .01	[-1.01 ; -.19]
Scene inversion	.30 (.55)	.59	[-.78 ; 1.38]
Change location	-5.60 * 10 ⁻³ (1.54 * 10 ⁻³)	< .001	[-8.62 * 10 ⁻³ ; -2.58 * 10 ⁻³]
Change size	-1.06 * 10 ⁻⁴ (3.28 * 10 ⁻⁵)	< .01	[-1.70 * 10 ⁻⁴ ; -4.17 * 10 ⁻⁵]
Image order	-.05 (.01)	< .001	[-.07 ; -.03]
Group * Scene inversion	2.64 (.77)	< .001	[1.13 ; 4.15]

Accuracy			
Parameter	Estimate (Standard Error)	p-value	95% confidence interval
Intercept	-2.91 (.94)	< .01	[-4.75 ; -1.07]
Group	.12 (.23)	.60	[-.33 ; .57]
Age	.18 (.06)	< .01	[.06 ; .30]
Scene inversion	-.35 (.19)	.07	[-.72 ; .02]
Change location	3.25 * 10 ⁻³ (5.58 * 10 ⁻⁴)	< .001	[2.16 * 10 ⁻³ ; 4.34 * 10 ⁻³]
Change size	-1.30 * 10 ⁻⁵ (1.14 * 10 ⁻⁵)	.25	[-3.53 * 10 ⁻⁵ ; -9.34 * 10 ⁻⁶]
Image order	9.03 * 10 ⁻³ (4.60 * 10 ⁻³)	.05	[1.40 * 10 ⁻⁵ ; .02]
Group * Scene inversion	.12 (.27)	.67	[-.41 ; .65]

A. Trial-by-trial reaction time

Fixed effects	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
Intercept	13.04*** (.32)	12.73*** (.45)	12.53*** (.52)	13.81*** (.99)	14.02*** (.99)	27.50*** (5.43)	29.11*** (5.47)	24.26*** (3.05)
Group	---	.60 (.63)	-.62 (.74)	-.75 (1.21)	-.74 (1.22)	-6.98 (6.82)	-7.08 (6.87)	-.26 (.71)
Scene inversion	---	---	.41 (.55)	1.48 (1.11)	1.56 (1.12)	1.42 (1.12)	1.34 (1.12)	.30 (.55)
Change location	---	---	---	-4.1 * 10 ⁻³ (2.70 * 10 ⁻³)	-3.72 * 10 ⁻³ (2.70 * 10 ⁻³)	-4.94 * 10 ⁻³ (3.02 * 10 ⁻³)	-5.30 * 10 ⁻³ (3.02 * 10 ⁻³)	-5.60 * 10 ⁻³ *** (1.54 * 10 ⁻³)
Change size	---	---	---	---	-9.34 * 10 ⁻⁵ (5.87 * 10 ⁻⁵)	-1.82 * 10 ⁻⁴ (1.79 * 10 ⁻⁴)	-1.87 * 10 ⁻⁴ (1.78 * 10 ⁻⁴)	-1.06 * 10 ⁻⁴ ** (3.28 * 10 ⁻⁵)
Correct response (left/right)	---	---	---	---	---	-.28 (.38)	-.31 (.38)	---
FSIQ	---	---	---	---	---	-.07 (.04)	-.07 (.04)	---
Age	---	---	---	---	---	-.43 (.24)	-.43 (.24)	-.60** (.21)
Gender	---	---	---	---	---	5.83 (6.75)	5.69 (6.76)	---
Image order	---	---	---	---	---	---	-.05** (.02)	-.05*** (.01)
Age * Gender	---	---	---	---	---	-.46 (.47)	-.45 (.47)	---
Group * FSIQ	---	---	---	---	---	.07 (.06)	.07 (.06)	---
Group * Scene inversion	---	---	2.50** (.77)	2.57*** (.77)	2.57*** (.77)	2.59*** (.77)	2.65*** (.77)	2.64*** (.77)
Group * Change location	---	---	---	3.57 * 10 ⁻⁴ (3.09 * 10 ⁻³)	3.95 * 10 ⁻⁴ (3.09 * 10 ⁻³)	4.66 * 10 ⁻⁴ (3.09 * 10 ⁻³)	7.86 * 10 ⁻⁴ (3.08 * 10 ⁻³)	---
Group * Change size	---	---	---	---	-2.00 * 10 ⁻⁷ (6.66 * 10 ⁻⁵)	-6.66 * 10 ⁻⁷ (6.66 * 10 ⁻⁵)	-1.37 * 10 ⁻⁵ (6.65 * 10 ⁻⁵)	---
Group * Image order	---	---	---	---	---	---	-1.35 * 10 ⁻³ (.03)	---
Scene inversion * Change location	---	---	---	-3.62 * 10 ⁻³ (3.12 * 10 ⁻³)	-3.56 * 10 ⁻³ (3.12 * 10 ⁻³)	-3.18 * 10 ⁻³ (3.12 * 10 ⁻³)	-3.11 * 10 ⁻³ (3.11 * 10 ⁻³)	---
Scene inversion * Change size	---	---	---	---	-2.69 * 10 ⁻³ (6.64 * 10 ⁻⁵)	-2.39 * 10 ⁻⁵ (6.65 * 10 ⁻⁵)	-2.40 * 10 ⁻⁵ (6.63 * 10 ⁻⁵)	---
Change location * Change size	---	---	---	---	2.38 * 10 ⁻⁷ (4.90 * 10 ⁻⁷)	2.57 * 10 ⁻⁷ (4.90 * 10 ⁻⁷)	2.92 * 10 ⁻⁷ (4.89 * 10 ⁻⁷)	---
Goodness – of - fit								
Deviance	16140.2	16139.3	16109.9	16094.9	16084.2	16072.1	16057.6	16064.3
Drop in Deviance	---	.9	29.4***	15**	10.7*	12.1	14.5**	-6.7
AIC	16146.2	16147.3	16121.9	16112.9	16108.5	16110.1	16099.6	16084.3
BIC	16163.3	16170.1	16156.1	16164.3	16176.9	16218.4	16219.4	16141.3

For the fixed effects: * $p < 0.05$. ** $p < 0.005$. *** $p < 0.0001$

B. Trial-by-trial accuracy

Fixed effects	Model A	Model B	Model C	Model D	Model E	Model F	Model G	Model H
Intercept	.60*** (.10)	.45** (.14)	.72*** (.20)	-1.79 * 10 ⁻³ (.36)	.05 (.36)	-4.34** (1.64)	-4.14** (1.64)	-2.91** (.94)
Group	---	.29 (.19)	.20 (.28)	.05 (.43)	-.01 (.44)	2.96 (2.04)	3.04 (2.15)	.12 (.23)
Scene inversion	---	---	-.43* (.21)	-.63 (.41)	-.63 (.41)	-.63 (.47)	-.63 (.41)	-.35 (.19)
Change location	---	---	---	2.39 * 10 ⁻³ * (1.00 * 10 ⁻³)	2.56 * 10 ⁻³ ** (9.84 * 10 ⁻⁴)	2.80 * 10 ⁻³ ** (9.83 * 10 ⁻⁴)	2.80 * 10 ⁻³ ** (9.84 * 10 ⁻⁴)	3.25 * 10 ⁻³ *** (5.58 * 10 ⁻⁴)
Change size	---	---	---	---	-2.45 * 10 ⁻⁵ (1.33 * 10 ⁻⁵)	-2.58 * 10 ⁻⁵ (1.83 * 10 ⁻⁵)	-2.57 * 10 ⁻⁵ (1.82 * 10 ⁻⁵)	-1.30 * 10 ⁻⁵ (1.14 * 10 ⁻⁵)
Correct response (left/right)	---	---	---	---	---	.10 (.14)	.09 (.14)	---
FSIQ	---	---	---	---	---	.01 (.01)	.01 (.01)	---
Age	---	---	---	---	---	.21** (.07)	.21** (.07)	.18** (.06)
Gender	---	---	---	---	---	3.41 (2.00)	3.40 (2.00)	---
Image order	---	---	---	---	---	---	8.97 * 10 ⁻³ (4.60 * 10 ⁻³)	9.03 * 10 ⁻³ * (4.60 * 10 ⁻³)
Age * Gender	---	---	---	---	---	-.21 (.14)	-.21 (.14)	---
Group * FSIQ	---	---	---	---	---	-.03 (.02)	-.03 (.02)	---
Group * Scene inversion	---	---	.14 (.30)	.12 (.30)	.12 (.31)	.14 (.31)	.14 (.31)	.12 (.27)
Group * Change location	---	---	---	5.71 * 10 ⁻⁴ (1.13 * 10 ⁻³)	3.90 * 10 ⁻⁴ (1.13 * 10 ⁻³)	8.08 * 10 ⁻⁵ (1.12 * 10 ⁻³)	8.08 * 10 ⁻⁵ (1.12 * 10 ⁻³)	---
Group * Change size	---	---	---	---	2.81 * 10 ⁻⁵ (1.91 * 10 ⁻⁵)	2.92 * 10 ⁻⁵ (2.20 * 10 ⁻⁵)	2.92 * 10 ⁻⁵ (2.20 * 10 ⁻⁵)	---
Group * Image order	---	---	---	---	---	---	-4.87 * 10 ⁻³ (9.20 * 10 ⁻³)	---
Scene inversion * Change location	---	---	---	7.46 * 10 ⁻⁴ (1.16 * 10 ⁻³)	7.37 * 10 ⁻⁴ (1.13 * 10 ⁻³)	7.14 * 10 ⁻⁴ (1.13 * 10 ⁻³)	7.14 * 10 ⁻⁴ (1.13 * 10 ⁻³)	---
Scene inversion * Change size	---	---	---	---	-1.06 * 10 ⁻⁶ (1.76 * 10 ⁻⁵)	-8.13 * 10 ⁻⁷ (2.21 * 10 ⁻⁵)	-8.13 * 10 ⁻⁷ (2.21 * 10 ⁻⁵)	---
Change location * Change size	---	---	---	---	5.37 * 10 ⁻⁶ (1.14 * 10 ⁻⁵)	5.37 * 10 ⁻⁶ (1.14 * 10 ⁻⁵)	5.37 * 10 ⁻⁶ (1.14 * 10 ⁻⁵)	---
Goodness – of - fit								
Deviance	2529.4	2527.1	2521.4	2489.4	2484.8	2471.2	2464.6	2480.6
Drop in Deviance	---	2.3	5.7	32***	4.6	13.6*	6.6*	-16
AIC	2537.4	2537.1	2535.4	2509.4	2510.8	2509.2	2506.6	2498.6
BIC	2561.0	2566.6	2576.7	2568.4	2587.6	2621.3	2626.6	2551.7

For the fixed effects: * $p < 0.05$. ** $p < 0.005$. *** $p < 0.0001$