Response times were recorded from triad onset to the keypress indicating a decision. Response times were analyzed with a linear mixed model (LMM) to take the fact into account that because subjects made free choices, which led to unequal and unballced counts of Response times for each cell in our study design (e.g, few yes+unsolved responses compared to yes+solved).

Categorical predictors Cursor, Response type and triad were given simple coding. For the fixed part all predictors, e.g., main effects and interactions were included the model. For the random part, the intercetp as well as the slopes were allowed to vary randomly between subjects, to control for reapeated measures (zitiere holger, ????).

To select the appropriate random structure we follwowed the recommendations of Zuur et a. (????) and compared nested models with reduced number of random effects. Likleyhoodratio tests indicated that random slopes and intercepts for all effects were sufficinet compared too the maximal complex model with all possible interactions set as random χ²(63) = 34.64, p = 1.

To evaluate significance of fixed effets an Analysis of Variance using Kenward-Roger (????) method to obtain F-values and df revealed the follwong was conducted and led to the following results.

An insignificant main effect of cursor, F(1,15.34) = 3.5, p = 0.08 and an significant main effect of response F(2,12.83) = 7.21, p = 0.01 was qualified by an significant cursor x response interaction F(2,1018.14) = 3.41, p = 0.03. All effects of triad were insignificant, including the main effect both two-times-interactions as well as the three-time interaction, main effect of triad F(1,15.3) = 0.26, p = 0.61, both two-times interactions traid x cursor F(1,1440.39) = 0.93, p = 0.33, traid x response F(2,1230.64) = 0.12, p = 0.89, and the three-times interaction cursor x triad x response, F(2,1447.71) = 0.33, p = 0.72.

Dropping the fixed effect of triad from the model did not change model fit as indicated by an likeleyhood ratio test of nested model comparison, χ²(6) = 2.3663238, p = 0.883118. The parameters of the final model are given in table X.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Estimate | Std. Error | df |
| **(Intercept)** | 8865 | 1148 | 13.97 |
| **dot-gaze** | 568 | 316 | 15.92 |
| **unsolved-solved** | 2964 | 796.8 | 14.11 |
| **incoherent-solved** | -488.2 | 531 | 12.67 |
| **dot-gaze:unsolved-solved** | 995.6 | 553.1 | 1239 |
| **dot-gaze:incoherent-solved** | -1262 | 463.2 | 1204 |

Table continues below

|  |  |  |
| --- | --- | --- |
|  | t value | Pr(>|t|) |
| **(Intercept)** | 7.72 | 0 |
| **dot-gaze** | 1.8 | 0.09 |
| **unsolved-solved** | 3.72 | 0 |
| **incoherent-solved** | -0.92 | 0.38 |
| **dot-gaze:unsolved-solved** | 1.8 | 0.07 |
| **dot-gaze:incoherent-solved** | -2.72 | 0.01 |

While not significant the condition Cursor let to 586 ms longer response times. The Factor response was indexed by highly significant longer response times in the unsolved condition, while not beeing significant the reaction times during incoherent responses were faster than in the solved condition. However the interaction between response and cursor was indexed by highly significant 996 ms faster responses in the gaze compared to the dot condition during incoherent responses to compared to the solved condition.

Planned contrasts of cursor-effect in all three response conditions revealed that the cursor effect was only significant in the unsolved condition, -1320.43 ms, χ²(1) = 8.48, p = 0.01