

Evaluating perceived trust from procedurally animated gaze - Supplementary Materials

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1 Stimuli Script

This section gives details regarding the text presented to participants in our experiments. First, an introduction screen asked for the participant's gender and age followed by the description: "You walk up to the first townsperson you see and start a conversation. The next several scenes will show a series of potential reactions to you from the NPC. We would like you to rate what you believe the NPC's feelings are towards you." When the participant was ready, he or she clicked a button labeled "Begin". For each question, the participant

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was shown a short dialog from the NPC character with text, for example, "You look like you could use new equipment. I always reserve my best wares for dependable people." The full list of possible dialogs is shown in Table 1. When ready, the participant clicked the Next button and he was shown a 5 second clip of our character, with the gaze and eye movements animated as described in section ???. We then asked for the participant's impression of how the NPC felt about the player using one of two probe questions: "How much do you feel this character trusts you?" or "How aggressive do you feel this character is towards you?". The participant responded on a scale of one to five and proceeded to the next trial.

2 Utterances had no significant effect

In addition to the trust parameter and the probe question, the short utterance text used to set the scene for each trial was parametrically varied. Aside from making the experiment less tedious, the different texts allowed the assessment of whether the ratings were dependent on a specific scenario, or whether they were more general (i.e., dependent only on gaze). Figure 1 shows the average ratings for each utterance, grouped by the trust parameter value and probe question. The rating curves for trust and aggressiveness are separated vertically to avoid overlap. For both scenario one (panel A) and scenario two (panel B) there was no significant marginal effect of utterance (2-way ANOVA; $p > 0.3$ for all), nor any interaction with trust parameter value or probe question (2-way ANOVA; $p > 0.1$ for all). The results indicate that trust rating was not sensitive to scene context.

3 Effect is reliable across individuals

Although there was a clear tendency for subjects as a whole to associate direct eye gaze with perceived trust, it is important to consider how reliable the effect was for individuals. Thus we performed the same regression analysis on each subject individually. The full results for both scenarios are plotted in Figure 2. The insets show the families of subject regression lines, for trust and aggressiveness ratings. The bar graphs directly compare the respective slopes for all subjects, sorted by the difference (trust slope - aggressiveness slope). Significance is indicated by shading. For scenario one (panel A),

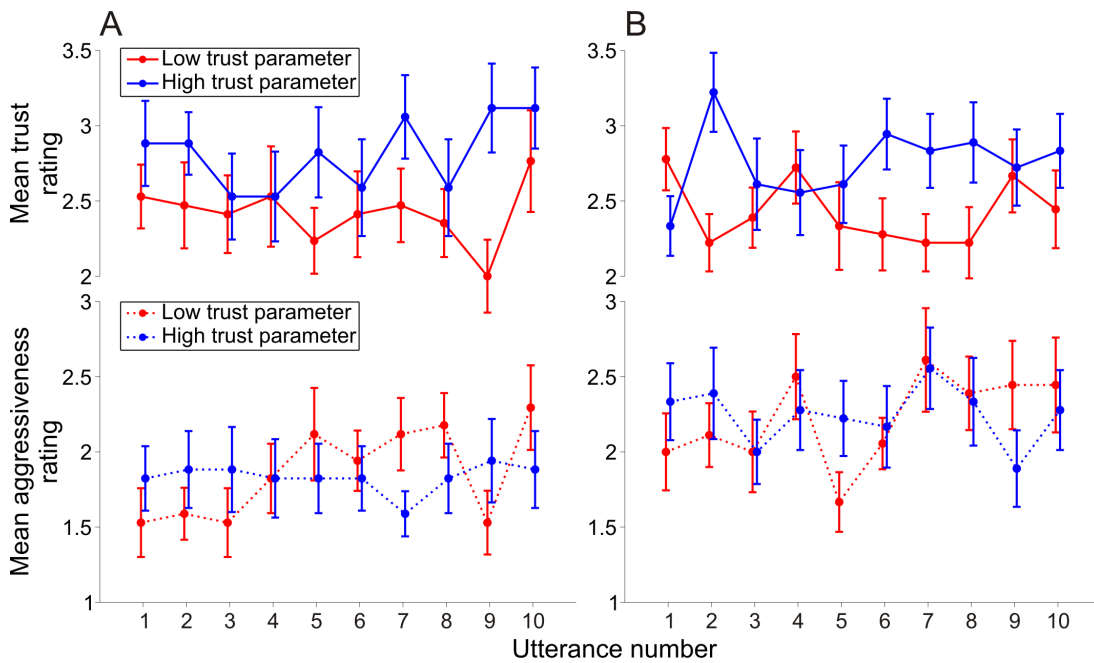


Figure 1: Trust and aggressiveness ratings versus utterance. Mean subject responses are plotted for low (red) and high (blue) trust parameter settings. For clarity, the trust and aggressiveness rating curves are offset vertically and a small horizontal displacement was also added. There is no consistent effect of utterance on either rating. A: scenario one. B: scenario two.

ten out of 17 subjects showed a significant positive correlation between trust rating and gaze fraction, and six additional subjects had a positive though nonsignificant correlation. By contrast, only three subjects had significant correlations for the aggressiveness rating, and slopes were evenly divided between positive and negative. The results for scenario two (panel B) showed a similar distribution: seven out of 18 subjects showed a significant positive correlation and seven more a nonsignificant positive correlation with trust. For aggressiveness, only three subjects had significant correlations and slopes were close to even (ten positive, eight negative). Overall, the results suggest that the perception of trust exists on more than just a population level: the majority of individual subjects are able to recognize the difference between simulated high-trust and low-trust gaze patterns, despite the random nature of the model and limited exposure times.

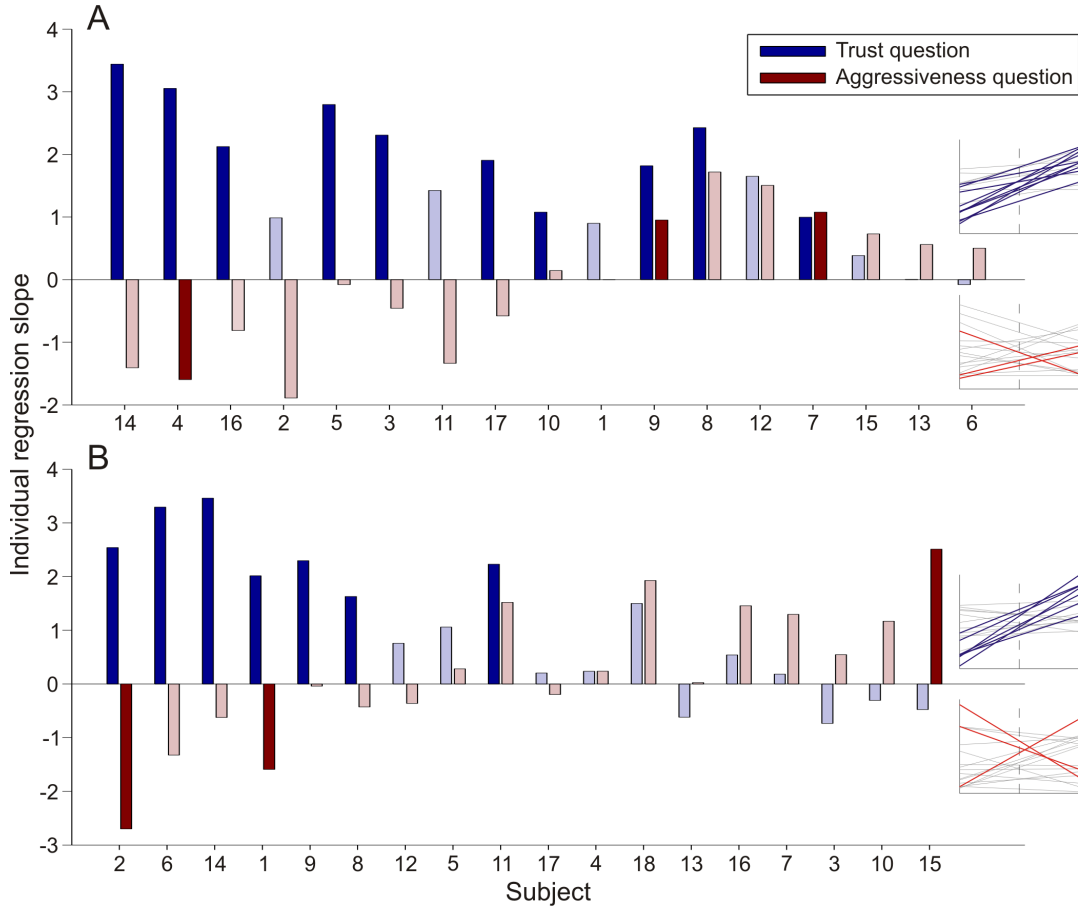


Figure 2: Correlations for individual subjects. The bars show slope values for trust rating (blue) or aggressiveness rating (red) versus fraction of direct gaze, calculated on an individual subject basis. Solid bars are significant at the 0.05 level. Subjects are sorted by the difference between their two slope values; note that the order is different for the two panels. The insets plot the families of fitted regression lines for the different conditions; significance is indicated by color. A: scenario one. B: scenario two.

Id	Sentence
1	Hello there! Please have a look around and let me know if you have any questions. I always give the best deals to upstanding people.
2	Hello, yes, I could give directions to an honorable person. The town meeting hall is at the center of town. Since we only have one road, you can't miss it.
3	Hello, yes? You need directions to the town healer. Yes, of course. Follow the path to the water cistern at the edge of town and turn right.
4	Hello, there! You look like an honest person. Let me show you our specialty stock of goods.
5	You look like you could use new equipment. I always reserve my best wares for dependable people.
6	You don't look so well. I always try to help responsible people. Perhaps you should go to the town healer.
7	Hello, yes? You say you can help some of the villagers? I suppose I could direct you to the town hall where you can offer your services to the local sheriff.
8	Hello there. Oh? You are looking for work? At an old farmstead, the head blacksmith is kind and will give work to people with good credentials.
9	Hello, yes? Oh, you would like to take my picture? I suppose you seem like a good citizen.
10	You say that you can help our village defeat some marauders who have been harassing our farms? I suppose I could direct you to the town hall where you can offer your services to the local sheriff.

Table 1: List of NPC dialog utterances used to set scene context.