



seit 1558

Effects of Gaze Direction on Perceived Trustworthiness

H. Kreysa¹, M. Gründel¹, A.-M. Schmidt¹, R. Maisura Yusri¹,
& Stefan R. Schweinberger^{1,2}

¹General Psychology and Cognitive Neuroscience, Friedrich Schiller University of Jena
²DFG Research Unit Person Perception, Friedrich Schiller University of Jena

helene.kreysa@uni-jena.de



Introduction

Directed eye gaze is an important non-verbal communication channel, providing useful information in social interactions (e.g., Emery, 2000; Frischen, Bayliss, & Tipper, 2007). On the one hand, direct gaze and gaze shifts towards a conversational partner can lead to higher ratings of trustworthiness, likeability and attractiveness (e.g., Ewing, Rhodes, & Pellicano, 2010; Kloth, Altmann, & Schweinberger, 2011; Mason, Tatkow, & Macrae, 2005; Willis, Palermo, & Burke, 2011). On the other hand, direct gaze can also be perceived as threatening or aggressive (Argyle & Cook, 1976; Nichols & Champness, 1971), and is commonly associated with contexts of challenge and persuasion (cf. Chen, Minson, Schöne, & Heinrichs, 2013).

Research Question: Will direct gaze result in higher believability scores for truth-ambiguous statements than when they are spoken with averted gaze?

Experiment 1

Methods

Participants:

- 36 students participated for course credit (4 male, $M = 22$ years).

Materials:

- Collection of truth-ambiguous “weird facts”, mainly from the back page of a local newspaper, e.g.:

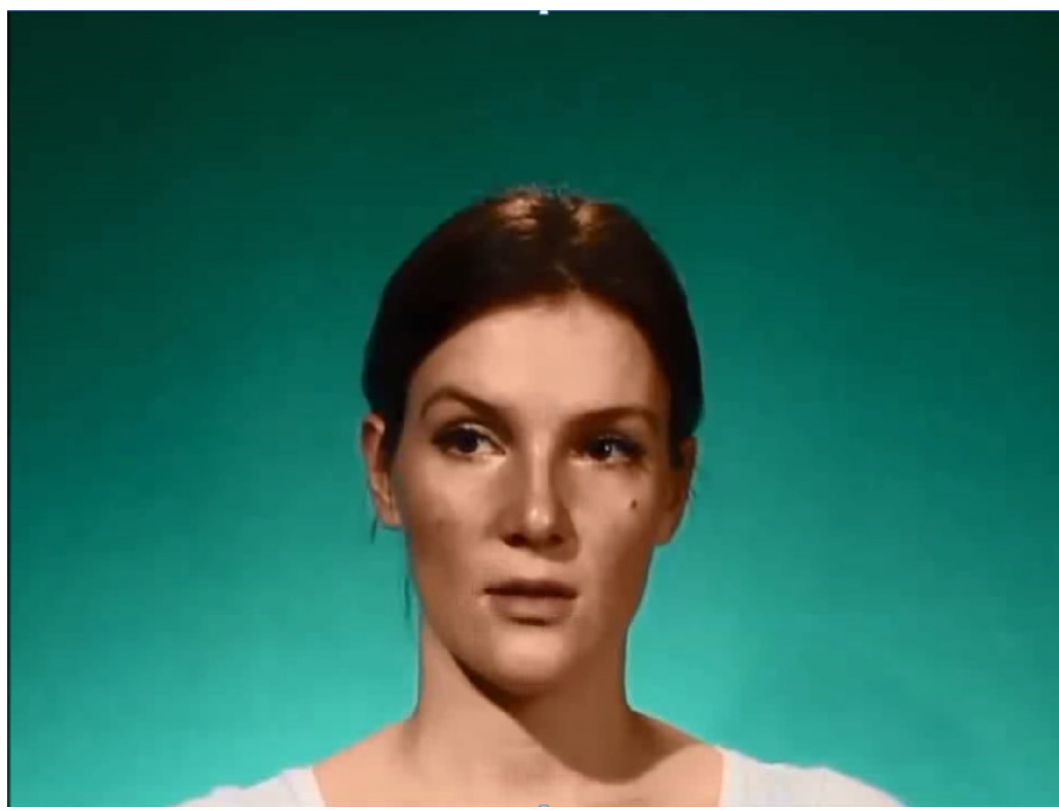
*Sniffer dogs cannot detect a difference between identical twins.
The most frequent word world-wide is “ok”, followed by “cola.”
Rats can swim for eight days without interruption.
Ketchup was invented in China, Chop-Suey in America.*

- Pilot rating of 50 such statements on a 4-point scale ($N = 20$):
definitely not true (0) – probably not true (1) – probably true (2) – definitely true (3)

- 36 statements with a mean rating between 1 and 2 were selected as stimuli.
- Video recordings of a female “news speaker” stating these facts:
 - neutral expression and stress pattern,
 - two recording conditions: direct gaze and right-averted gaze. Timing was kept similar between them; averted gaze contained a gaze shift at the start of the video;
 - mirror versions of both.



Fig. 1: Video stills of the speaker with direct (←) and averted (→) gaze.



Design:

- 6 experimental lists varying response key layout and gaze direction;
- 6 participants per list; each participant saw 12 items in each gaze condition, but each item only once;
- item order randomised for every participant,
- DVs: belief responses, response times, fixation patterns, post-experiment personality ratings of the speaker.

Apparatus:

- Stimulus presentation using PST E-Prime 2 (v. 2.0.8.22) on a 1680×1050 screen;
- iViewX Hi-Speed eyetracker (SMI), monocular tracking of the right eye at 500 Hz;
- keyboard keys “S” and “L” as response buttons.

Procedure:

- Instructions presented on-screen: Participants were asked to watch each video completely and then indicate whether they believed the speaker’s statement (two-alternative forced-choice).
- Calibration and two practice trials, then recording of ratings and eye movements (Fig. 2).
- Post-experimentally, agreement ratings with 6 general statements assessed participants’ overall impressions of the speaker’s personality on a 6-point scale: likeability (“sympathisch”), competence, trustworthiness (“vertrauenswürdig”), intelligence, attractiveness, and believability (“glaubwürdig”).
- A concluding paper-and-pencil task allowed participants to indicate on a list of all statements any that they had prior knowledge about. They were also asked about their assumptions about the experiment using three debriefing questions: whether they had noticed any regularities during the experiment, what they believed was the aim of the study, and whether they had used any strategies to prepare their response.



Fig. 2: Event sequence for the 36 trials of the main experiment. All videos began with the speaker looking directly at the camera; in the “averted” conditions she shifted gaze before beginning to speak.

Results

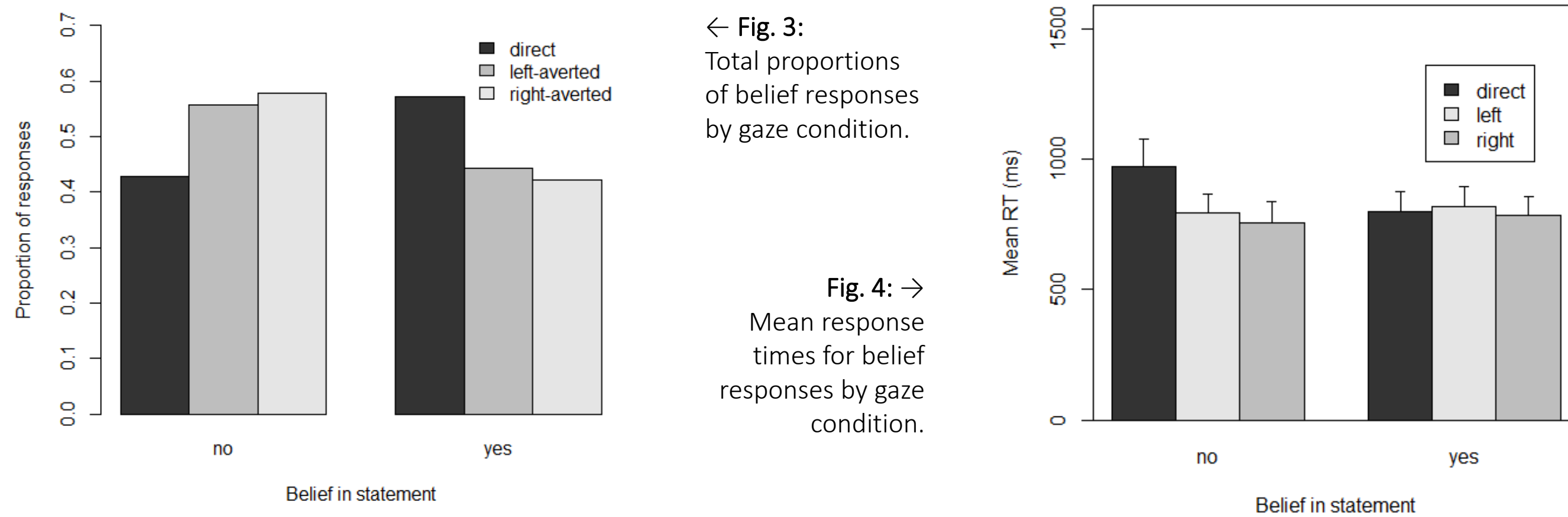
Belief responses:

- Overall, participants believed the speaker in 48 % of trials.
- Speaker gaze direction affected listener belief ($\chi^2(2) = 23.01, p < .001$; Fig. 3):
Substantially more “yes”- responses following direct gaze ($M = 6.86$ out of 12, $SD = 2.22$) than averted gaze ($M = 5.31$ (left)/ 5.05 (right), $SD = 2.1$; $F(2,70) = 6.701, p = .006$).

Response times:

- Slower responses following direct than averted gaze ($F(2,66) = 8.71, p < .001$), especially for disagree responses (interaction: $F(2,66) = 5.08, p = .008$; log-transformed RT; Fig. 4).

Personality ratings: no correlation with rate of agreement.
Fixations: mostly to eye region in all conditions.



Audio-only Control Experiment

Methods (where different from Experiment 1)

Participants:

- 20 students participated for course credit or 4 € (6 male, $M = 23$ years, 1 exclusion due to failed calibration).

Materials:

- audio stream of the videos from Experiment 1 (no speaker visible).

Design:

- 2 experimental lists varying response key layout and gaze condition of the original movie;
- DVs: belief responses, response times, pupil dilation.

Procedure:

- Instructions presented on-screen: Participants were asked to listen to each sentence completely and then indicate whether they believed the speaker’s statement (two-alternative forced-choice; Fig. 5).

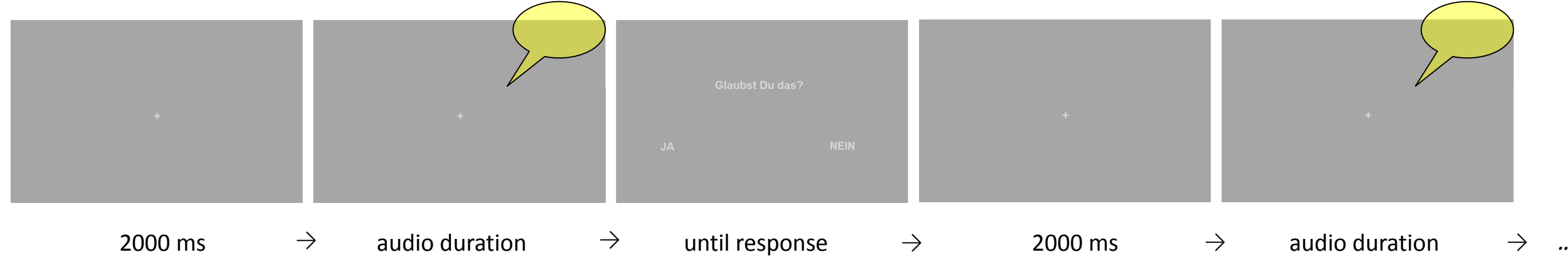


Fig. 5: Event sequence for the 36 trials of the control experiment. All trials began with an extended fixation cross to allow pupil size to stabilise; this remained on screen during the audio presentation of the sentence.

Results

Belief responses:

- Overall, participants believed the speaker in 56 % of trials.
- The orientation of the original video had no effect on listener belief ($\chi^2(1) = 0.09, p = .764$):
Roughly equal numbers of “yes”- responses for audios from videos with direct gaze ($M = 10.25$ out of 18, $SD = 2.84$) than with averted gaze ($M = 10.0, SD = 2.43$; $F(1,19) = 0.25, p = .624$).

Response times:

- Marginally slower responses following direct than averted audios ($F(1,19) = 3.25, p = .087$), but no effect of response type and no interaction ($ps > .1$).

Pupil dilation:

- No effect of response type or orientation on baseline-corrected pupil dilation during audio presentation and response period (mean pupil dilation per fixation; baseline: mean dilation during 2000 ms prior to audio presentation).

Discussion

Participants were more likely to believe/ agree with a speaker who looked at them directly than when she had averted her gaze (Mason et al., 2005; Bayliss & Tipper, 2006). Interestingly, they were faster to reject a statement produced with averted gaze than a statement with direct gaze, as if the direct gaze condition conflicted with their intuitive judgment. Alternatively, this delay may reflect inhibition in the recall of counter-information to the speaker’s opinion (cf. Macrae, Hood, Milne, Rowe, & Mason, 2002) or the listener’s increased resistance to the context of persuasion (Chen et al., 2013).

Acknowledgements: We are very grateful to our speaker Karoline Bading. In addition, we thank Katrin Lehmann, Verena Skuk, and Romi Zäske (Jena Audio-Visual Lab) for support with creating the materials, as well as Luise Keßler for setting up, running, and analysing the control experiment.