Blinking as addressee feedback in face-to-face dialogue?

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Abstract

Does addressee blinking function as a type of visual feedback in face-to-face dialogue? Preliminary quantitative analyses reveal that in a corpus of spontaneous Dutch dialogue the majority of addressee blinks was timed like types of addressee behavior with clear feedback functions, namely to the end of speaking units within long turns. Preliminary qualitative analyses reveal that long addressee blinks (>=410ms) were produced especially after speakers' self-repairs. This suggests that addressee blinking is closely linked to the structure of speakers' turns, and that in addition to potential cognitive functions, especially long addressee blinks may function as a social feedback signal of understanding.

1 Introduction

In face-to-face dialogue, the addressee provides vocal and visual feedback while the speaker is speaking (e.g., *hm-hm,* head nod; Yngve, 1970). Is eye blinking, too, a type of visual addressee feedback? People blink more often than necessary for wetting their eyes and they tend to blink after they think. That is, blink rate increases with low cognitive load and decreases with high cognitive load (Siegle et al., 2008). But blinking has also been linked to social functions. Comparing blink rates across different activities the highest blink rate was found in conversation, and in non-human primates, blink rate is positively correlated with group size, a measure of social complexity (Tada et al., 2013). These findings suggest that in addition to peripheral physiological and central cognitive functions, human blinking may have a social-communicative function.

Within conversation, blinking is the most frequent facial action and, in American Sign Language, addressees use blinks to signal understanding (Sultan, 2004). Sultan argued that addressee blinking might have developed a feedback function in sign language because of the need to control blinking to minimize visual information loss.

In the present study, we hypothesized that addressee blinking may have a feedback function in spoken Dutch, too, because many spoken languages also rely heavily on the visual channel, at least in face-to-face contexts. If this was true, one should expect addressee blinks to be timed like other types of addressee feedback, namely to the end of speakers' syntactically, prosodically, and pragmatically complete units within turns. If our hypothesis was wrong one would expect addressee blinks to be distributed randomly and irrespective of the communicative context.

2 Method

To address this question, we built an audio-video corpus of informal, spontaneous Dutch face-to-face dialogue (10 dyads: 4 female-female, 4 female-male, 2 male-male; 18-68 years) and—focusing on multi-unit turns—we measured the temporal distance of each addressee blink onset to the closest end of a speaker's syntactically, prosodically, and pragmatically complete unit. Here is an example of a multi-unit turn (ends of speaker units are marked by a |): *If you both become happy | this is more important | than that your home remains as it was* |. Addressee blinks were detected semi-automatically using a motion tracking software (Xiong & De la Torre, 2013) combined with manual coding.

3 Results

Preliminary quantitative analyses revealed that the majority of addressee blinks occurred very close to the end of speaker units (see **Figure 1**).

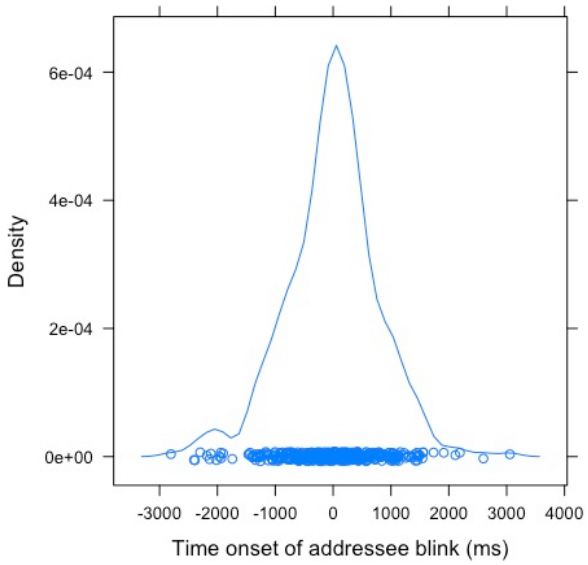

Figure 1. Addressees' blink onset (N=411) measured to the closest speaker unit end. The zero point on the x-axis marks the end of the speaker unit, the peak of the density distribution the estimate of the mode, and dots represent individual data points.

Preliminary qualitative analyses revealed that long addressee blinks (>=410ms) were especially produced after speakers' self-repairs. Here is an example (translated from Dutch): A (on the left) asked B (on the right): *Did he send you a letter in response?* B then answered and added a self-repair (underlined): *He sent me a message afterwards - well it wasn't a letter but on Whatsapp a long message*. After B's self-repair, as soon as she looked back at her addressee, the addressee responded with a long blink (and a head nod; see **Figure 2**).

Figure 2. Example of a long addressee blink (on the left) following a speaker's self-repair. Note that this image is taken from a split-screen recording and that participants were facing each other in actuality.

4 Discussion and Conclusion

While all blinks also lubricate the cornea, addressee blinks were produced too frequently to serve solely this physiological function. The fact that the majority of addressee blinks was timed to unit ends is consistent with a cognitive interpretation of blinking (Siegle et al, 2008) because it may reflect addressees' relative decrease in cognitive load. But the results are also consistent with a social interpretation of blinking because speakers tend to visually monitor addressees for feedback at unit ends, and in addition, especially long addressee blinks following speakers' self-repairs seem to function as a social signal of successful grounding (Clark & Brennan, 1991). Cognitive and social functions of addressee blinks are not mutually exclusive, of course. Maybe the cognitive function underlies and evolutionarily preceded any potential social function. Perhaps blinking as a symptom of momentary low cognitive load has been co-opted for communicative purposes, so that it is now (also) used as a social signal.

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