The significance of silence:
Long gaps attenuate the preference for 'yes' responses in conversation

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Abstract

In conversation, negative responses to invitations, requests, offers and the like more often occur with a delay – conversation analysts talk of them as dispreferred. Here we examine the contrastive cognitive load 'yes' and 'no' responses make, either when given relatively fast (300 ms) or delayed (1000 ms). Participants heard mini-dialogues, with turns extracted from a spoken corpus, while having their EEG recorded. We find that a fast 'no' evokes an N400-effect relative to a fast 'yes', however this contrast is not present for delayed responses. This shows that an immediate response is expected to be positive – but this expectation disappears as the response time lengthens because now in ordinary conversation the probability of a 'no' has increased. Additionally, however, 'No' responses elicit a late frontal positivity both when they are fast and when they are delayed. Thus, regardless of the latency of response, a 'no' response is associated with a late positivity, since a negative response is always dispreferred and may require an account. Together these results show that negative responses to social actions exact a higher cognitive load, but especially when least expected, as an immediate response.

1 Introduction

Most natural language use occurs in conversational contexts, in which paired initiating and responding actions are prevalent (e.g., request-granting, greeting-greeting; Schegloff, 2007). Responses after an initiating action are rarely equal: the initiating action is constructed to expect a particular response, which is usually positive, such as granting a request (Pomerantz & Heritage, 2013). This unmarked response tends to have a simple form (e.g., *yeah* or *sure*). In contrast, negative responses which reject or decline the initiating action tend to be delayed in time and to occur with prefaces and accounts (e.g., *Well, no, I'm too tired*) for the negative response (Pomerantz & Heritage, 2013). This structural and temporal asymmetry has been called 'preference organization' (Levinson, 1983); for many action pairs positive responses are 'preferred' and negative responses 'dispreferred'. It was first noted in qualitative research (e.g., Heritage, 1984) that preferred responses generally occur quickly after the initiating action, whereas dispreferred responses are more often delayed. Kendrick and Torreira (2015) quantified these observations in a corpus study on English. They found that preferred responses occurred most prevalently, but after around 700 ms, dispreferred responses became more frequent.

Language comprehension research often uses event-related brain potentials (ERPs); EEG responses to specific events. ERP studies on language comprehension have made extensive use of the N400 component, the amplitude of which has been found to vary with the expectation of a word with respect to its preceding context (e.g., Kutas & Hillyard, 1980); the more expected a word, the smaller the N400. In the present study, we looked at ERP responses to fast and delayed preferred and dispreferred responses. We hypothesized that a preferred response ('yes') should be more expected than a dispreferred response ('no'), probably leading to a larger N400 for 'no', especially after a short gap. However, after a long gap a dispreferred response ('no') should be less exceptional, leading to a smaller N400 effect or even a reversal in that case.

2 Methods

Thirty-two participants (8 males) entered the analyses (mean age: 21.8). We took 120 requests, offers, invitations, and proposals from recorded telephone calls in the Corpus of Spoken Dutch (CGN, Oostdijk, 2000) and cross-spliced them with either a 300 ms or a 1000 ms gap of recording noise, followed by either a 'yes' or a 'no' response from elsewhere in the corpus. Conditions were counterbalanced such that each

participant heard each initiating action only once. Participants first read a context sentence, followed by the two-turn sequence. This was followed by a comprehension question in 20% of trials. EEG was recorded from 61 active Ag/AgCI electrodes using an actiCap (e.g., Magyari et al., 2014). Trials with blinks identified by eye electrodes were discarded before analysis, using Fieldtrip (Oostenveld et al., 2011). A cluster-based approach was used for statistical analysis (Maris & Oostenveld, 2007).

3 Results and Discussion

Figure 1 shows the ERPs for a representative electrode (Cz), time-locked to response onset for the 4 conditions. An interaction between gap length and response type in the N400 window (300-500 ms, p = .032) was resolved to show an N400 effect for 'no' versus 'yes' after a short gap (p = .006), but no difference after a long gap. Listeners apparently change their expectations about a preferred vs. dispreferred response purely based on the length of silence between two turns. In particular, listeners expect a preferred response ('yes') rather than a dispreferred one ('no') after a short gap, but these expectations converge after a long gap. Our finding that a dispreferred response does not become *more* expected than a preferred response after a long gap might be related to the normativity of preferred responses: they favor the accomplishment of the activity and have been associated with social solidarity and social affiliation (Heritage, 1984). A general bias might exist towards socially affiliative responses, which might balance the delay-induced expectation of a dispreferred response, leading to a net outcome of no N400 effect.

No interaction between gap length and response type was found after 500 ms. Instead, a main effect of response type showed a larger frontal late positivity for 'no' compared to 'yes' responses, irrespective of gap length (p = .002). As mentioned, the preference system biases expectations towards socially affiliative responses, so that there are extra social consequences for rejections. For that reason, rejections are often accompanied by accounts and explanations (e.g., *No, I can't, I have to work*). The rejections in our stimuli, in contrast, had no such accounts attached because we had to control our stimuli and match them in length to the acceptances and compliances. The flat 'no' responses in our experiment might thus be seen

as rude – leading to stronger social and cognitive consequences (see also e.g., Leuthold et al., 2015).
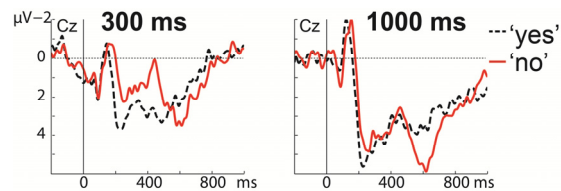

Figure 1. ERPs for 'yes' and 'no' responses after a 300 (left) and 1000 ms gap (right).

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