

## ADAPTORS AND THE TURN-TAKING MECHANISM

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### Introduction

Ekman & Friesen's (1969) classification of nonverbal behaviours, by far the most influential in psychological literature, singles out *regulators* as a separate class of movements dedicated to the structuring of conversational interaction. By contrast, the category of *adaptors* (e.g. scratching yourself, foot-shaking or fiddling with a pen) is generally considered to subsume purely self-regulatory behaviours, largely devoid of an interactive function. Our study suggests that this long-held assumption is inaccurate and that adaptors may serve a conversation-related function, with possible consequences to evolutionary concerns about the emergence of proto-conversational interaction.

Turn-taking – the coordinated and efficient transition between the roles of sender and receiver in a communicative interaction (Sacks et al. 1974) – is a robust property of many human and nonhuman communication systems, and one that has recently come to high prominence in language evolution research. Studies on nonhuman primates address e.g. how vocal turn-taking may arise in ontogeny via learning (Chow et al. 2015) and how it counts as a basic form of cooperation (Takahashi et al. 2013), whereas in humans an increased cognitive load for utterance processing around the floor transfers (“crunch-time”) has been suggested as one kind of pressure on the grammatical structure, esp. word order, of a language (Roberts et al. 2015). Recently, turn-taking has received a lot of attention in psycholinguistic research, to the effect that Levinson termed it “a central problem of psycholinguistics” (2015). A wealth of studies into the elements of semantics (Riest et al. 2015), syntax (Selting 1996, Caspers 2003, de Ruiter et al. 2006) or prosody (Keitel et al. 2013, Keitel & Daum 2015) that

contribute to effecting turn transitions is not matched by investigating non-verbal visual components likely to be of importance in this context (but see e.g. Streeck 1992, Holler & Kendrick 2015, Clark & Lindsey 2015, Torreira et al. 2015). Our research should be seen as a step in the direction of remedying this situation.

### Study

We video-recorded ten semi-scripted conversations, 10 to 18 minutes long, between pairs of naïve subjects – Polish undergraduate students at Nicolaus Copernicus University, Toruń, Poland (N = 12). Of the 12 participants, two were hosts, and 10 were guests (5 guests interviewed by each host). Two experts annotated the video material for the presence of adaptors using the ELAN software. For the purposes of the study, we considered only *discrete adaptors*: ones that are short-lasting (< 3 seconds) and have a distinct terminal structure (Freedman 1972). Independently, another team of experts marked the boundaries of conversational turns.

We hypothesised that participants would produce relatively more adaptors close to floor transfers. That is, we expected that adaptors would be more frequent in the *peritransitional windows* than elsewhere in the conversation. Given the mean length of conversational turns in our material, which was 9.736 sec (cf. Roberts 2015), we defined a *peri-transitional window* as the last 2 seconds of the finishing turn plus the first 2 seconds of the new turn (plus the gap, if any; see Fig. 1). In other words, the window starts 2 seconds before the speaker finishes his turn and lasts 2 seconds after the next speaker begins her turn. Note that a window lasts 4 seconds for perfectly latched turns; > 4 seconds if there is a gap, and < 4 seconds if there is an overlap. Occasionally, when participants took turns in quick succession, a single window could extend more than 10 seconds, embracing several short turns. Our material was annotated for peri-transitional windows by the second team of experts. On average, peri-transitional windows accounted for 33% of the conversation time

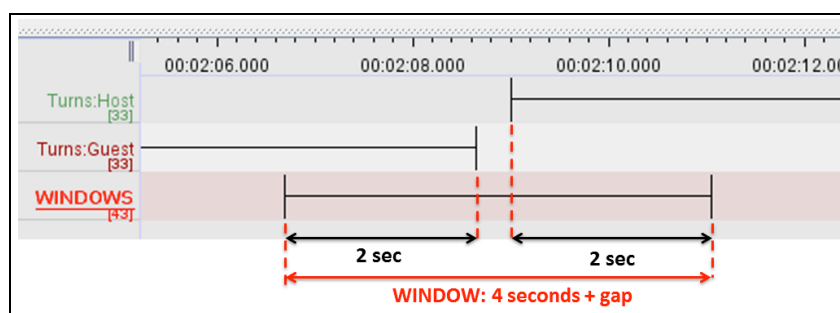


Fig 1. A *peri-transitional window* annotated in ELAN. Here, the Guest finishes his turn, and the Host starts her turn after a short gap. The peritransitional window incorporates the last 2 seconds of the Guest's turn, the gap, and the last 2 seconds of the Host's turn.

(mean total duration of the windows in a conversation: 269.93 sec., SD = 78.57; mean remaining time in a conversation: 551.02 sec., SD = 138.35).

In accordance with our hypothesis, we found that the participants (both the hosts and guests) produced adaptors significantly more frequently around the turn borders than outside of the floor-transition context:  $M = 0.0411$  per second in the peri-transitional windows ( $SD = 0.03$ ) compared to  $M = 0.0243$  per second ( $SD = 0.013$ ) in the rest of the material ( $p = 0.023$ ; related samples Wilcoxon Signed Rank). This result held after eliminating the outliers in the differences between adaptors per second within and outside the windows (Paired Samples T-test,  $N = 10$ ,  $t = 2.445$ ,  $p = 0.037$ ;  $d = 0.77$  [moderate ES]).

To interpret this result, we next performed a series of post-analyses, trying to relate the distribution of adaptors in the peri-transitional windows to:

- conversational roles (i.e. adaptors being performed by a participant giving the floor vs. participant taking the floor, and by the current speaker vs. current listener), and
- location in the peri-transitional windows (adaptors being located in the last 2 seconds of a finishing turn, the first 2 seconds of a new turn, the gap or the overlap).

The tests did not reveal any significant differences between these variables, when it comes to the distribution of adaptors in the peri-transitional windows, and – taken *in toto*, these post-analyses show that the distribution of adaptors in the peri-transition windows is random with respect to conversational roles of who performed them and their location within the windows.

Finally, we wanted to see the result for adaptors in the peri-transitional windows in the context of other conversational variables that could have an impact on the distribution of adaptors. To this end, we looked at:

- the relation between turn-length and the distribution of adaptors;
- the distribution of adaptors in conversational turns: here, we only considered long turns from our material (operationalised as turns longer than the median turn-length in the corpus, 4.94 seconds); such turns were divided and we compared the frequencies of adaptors in their initial and final part; and
- whether adaptors are produced more frequently by the current speaker or current listener..

None of these variables rendered a statistically significant result (even, surprisingly, the last hypothesis was not confirmed), from which we draw the conclusion that – at least in our material – *turn-transitions represent the only variable related to the structure of conversation that influences the distribution of adaptors in face-to-face conversational interaction.*

## Conclusion

Our result indicates that adaptors might play a role in the turn-taking mechanism. This warrants the speculation that adaptors (as pre-linguistic but still interactional behaviors) may have formed a platform on which the logistics of proto-conversational exchanges were built. On a wider plane, we suggest that the coordination of adaptors, within or outside the turn-taking context, may be a mechanism for bootstrapping cooperation: it entails little cost, is easily repeatable, and which furthermore can be used by conversants to diagnose their mutual commitment to engage in future cooperation involving higher cost, such as sharing important information.

## Acknowledgements

This research was supported by grant UMO-2012/07/E/HS2/00671 from the Polish National Science Centre.

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