

Fidgeting is not random: Rhythmic leg motion, speech, and gesture

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INTRODUCTION

Humans in interaction produce diverse movements. As analysts, we focus on 'speech' and 'gesture'; we subdivide 'gesture' further into such categories as spatial 'iconics' and prosodic 'beats'. We do not know how these categories relate to one another; and even the speech/gesture distinction can be unclear in signed languages.

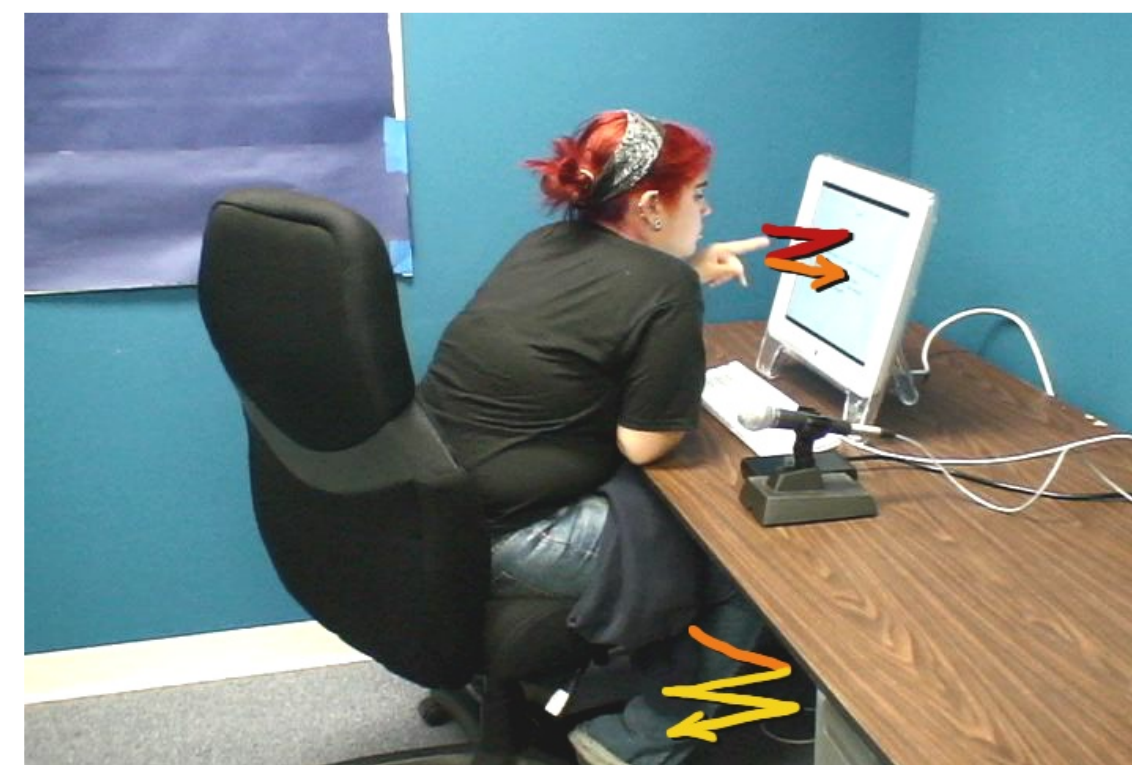
It may be useful to consider these in relation to other movements: self-adjustments, weight shifts, fidgeting, etc. However, little is currently known about their relation to speech or gesture. This poster presents preliminary data on one such class: rhythmic motions produced by (usually) the legs and feet.

1. IN MONOLOGUE

A woman talks to herself, then pauses to think. As she pauses, she begins to kick her leg back and forth, the first kick co-timed to the last stressed syllable and corresponding gestural beat.

Later, the kicks stop exactly as she resumes speaking.

[0:31]
If [B...] is the [[oldest...] and
[LH d, deictic/beat at screen]
[LH d, deictic/beat at screen]
[Leg kicks twice]
[A] is the youngest, [C...]
[LH d, deictic/ beat at screen]
[LH 30, deictic/beat at screen]
is in the middle.



A man talks to himself, then, when he pauses to think, begins to jiggle his leg up and down. The stressed syllables in the speech form an isochronous rhythm; the jiggles follow this rhythm, with two jiggles per time unit and the first jiggle synchronized to the first 'missing beat'.

Later, the jiggles stop as he starts rubbing his face with his hand.



[0:13]
If [A] or [B] is the oldest of three [...]
[RH deictic/beat at screen]
[RH deictic/beat at screen]
[jiggle jiggle jiggle jiggle (10 s)]
[hand fidgeting]

2. IN ONE-SIDED CONVERSATION

The next two examples are from a Tzotzil speaker who is telling stories to John Haviland.



In some segments, he produces both gestures and leg-jiggling while speaking. However — as with the monologic speakers — there is an alternation, with jiggling pausing during gestural strokes.

In other segments he produces gestural beats, and produces isolate leg-jiggles co-timed with the beats.



LEGEND

Action order:
1st
2nd
3rd
4th
5th

3. IN INTERACTIVE CONVERSATION



Here one speaker produces a sequence of leg-jiggles timed to the rhythm of another speaker's words.

His jigging does not just alternate with his own gestures; it also pauses when Haviland produces a gesture.



[0:30]
Speaker2 Okay, how many [points] are in the [sun?] []
[leg bounce] [leg bounce] [leg jiggle]

Speaker1 [One,] [two,] [three,] [four,] [five.]
[nod] [nod] [nod]
Speaker2 [bounce] [bounce] [bounce] [bounce] [bounce]

Speaker2 Five points.

The same speaker also trades-off jiggles with speech, when pausing between utterances.

[0:36]
Speaker 2 Okay, it's kinda circular, with [rounded edges]
[RH traces bumps]

Speaker 1 Ye- []
[That [ha]ve five points. [...] Okay. Z'have any words in there?
[hands rotate apart]
[Leg jiggles]

4. SENSITIVITY TO LINGUISTIC CONTENT



Here a listener jiggles his leg while a speaker goes on and on describing a haircut, eventually interrupting. The jiggles stop not at the interruption, but when the speaker drops his hands to signal a shift to a new topic.

This listener generally begins jiggling whenever impatient and thus the jiggling often occurs before interruptions, or stops when the speaker produces new information.

[15:04]
Speaker1 [S'got this]
[Both hands D, index finger at ears]
very [ti]ny [side]burns []
[both hands stroke forward]
[both hands stroke forward]
Speaker2 [Mhm] []
[foot jiggles start]
Speaker1 His hair is kinda [sticking up right here.]
[RH curved 5, moves up and forward from top of head]
[Not too much.]
[RH repeats movement]
[K'a hanging down][]
[RH closed C, loops over forehead]
[RH closed C, moves up from top of head]
Speaker2 [What's he wearing?]
Speaker1 (Sticking up.) [] White t-shirt...
[hands drop]
Speaker2 foot jiggles stop]

The woman from Section 1, a few moments after the previous example, speaks into a microphone, re-using some linguistic content from her earlier utterance. At the corresponding moment she produces another two kicks — though this time without pausing her speech — in a kind of 'speech/fidget catchment'.

[0:39]
B is the [oldest, C is in the middle, and] A is the youngest.
[Leg kicks twice]

DISCUSSION

Fidgeting is clearly less structured and less meaningful than gesture proper, which may explain why it has previously received little attention. However, we have demonstrated that certain rhythmic fidgets interact systematically with speech and gesture. Though these interactions are partially idiosyncratic, commonalities arise between individuals in very different linguistic and cultural contexts, including two distinctive effects of alternation and synchronization. These effects pattern with other movements or prosody produced within the same body, or with that produced by interlocutors, or even with more subtle cues such as information structure or an utterance being reprised.

While an explanation of the causal structure, purpose, and discourse relevance of these patterns await further study, their existence hints at the existence of deeper networks of arousal and rhythmic synchronization that may underlie and bind together different aspects of real-time communicative behavior. Their understanding seems important to a complete theory of e.g. linguistic prosody or gestural beats, and of interactive communication generally.