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Controlling dyadic interactions with real-time smile transformations

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Summary Although it is known that imitating other's displays during conversations can lead to better conversation outcomes, it is not known if these effects are mediated by participants' sharing of emotional states or by emergent social dynamics. Using real time face manipulation during a speed dating task, we found evidence for a causal and emergent effect of expressive alignment on conversation outcomes.

Keywords · Smiles · Speed Dating · Face transformation · Social cognition · Interactions

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Introduction Although facial expressions of emotions are a core building block of human social communication, not much is known about their implicit influence in conversational dynamics. For example, while it is known that people often imitate other's mannerisms and facial displays during conversations and that this expressive alignment leads to better conversation outcomes, there is no clear understanding of the mechanisms that generate such high-quality conversations.

On the one hand, sharing emotional states could be the precursor of expressive alignment and better conversational outcomes. On the other hand, expressive alignment could have a causal effect on enhanced conversation outcomes—an effect that could be mediated (or not) by emotion sharing.

Aims Our aim with the current study is to investigate if sharing expressive displays can causally influence conversational outcomes.

Methods To do this, we designed a real time smile manipulation (Arias et al., 2018) to artificially increase or decrease smiles during real time interactions (Fig 1-a). We then recruited N=32 participants to perform a speed dating experiment. Each participant performed four four-minute interactions, either in a congruent (both participants with increased/decreased artificial smiles) or incongruent condition (increased smiles for one participant and decreased smiles for the other; see manipulation examples in Fig 1-b). After each interaction, participants answered the following questions: 1– Was the conversation pleasant and interesting? 2– To what extent do you think the other person wants to see you again? 3– To what extent do you want to see the other person again? 4– To what extent was the other person smiling?.

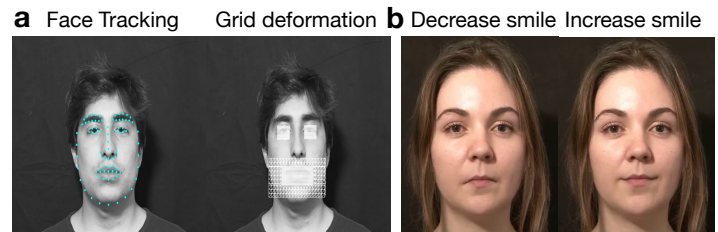


Figure 1: (a) Face tracking (left), and grid deformation (right) examples (b) Increased smiles (left) and decreased smiles (right) transformation example

Results We analysed participant ratings with Generalized Linear Mixed Models, using participant number as a random factor. We found no significant effect of congruence for questions about partner's smiliness ($\chi(1)=2.8$ $p=0.09$) and participants' impression of liking the other person ($\chi(1)=2.0$, $p=0.15$). However, we found two significant main effects of congruence for both conversation quality ($\chi(1) = 4.6$; $p=0.02$) and participant's desire to see the other person again ($\chi(1)=5.7$; $p=0.01$). Specifically, congruence improved conversation quality and increased participants' desire to see the other person again.

Conclusions Using real time smile manipulation algorithms, we were able to interfere with an ecological interaction in order to investigate the mechanisms underlying conversational dynamics and emergent social behavior. We found that participants manipulated to share expressive displays enjoyed the interactions more and wanted to see each other more than participants manipulated to not share expressive displays.

The present data suggests that sharing expressive displays may bring about a shared cognitive state that positively influences conversational dynamics (Gallotti & Frith, 2013).

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