

The attribution of agency to sound can affect social engagement

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ABSTRACT

Background

There is now an increasing body of evidence suggesting that synchronisation with other people can influence various aspects of affiliative behaviour towards them. For example, people will give higher subjective ratings of the likeability of someone they synchronise well with (Hove & Risen, 2009), will co-operate with them more in economic games (Wiltermuth & Heath, 2009), will display more altruistic behaviour towards them (Valdesolo & DeSteno, 2011), and will help them more (Kokal, Engel, Kirschner, & Keysers, 2011). However, the majority of these studies have involved synchronisation with observable movement of a partner, and where this was not the case, participants were exposed to movement paired with sound prior to their interaction period (Kokal et al., 2011). The current set of experiments aim to explore how people interact with sounds that they are told are triggered by person, but do not have any inherent or learned associations with movement. As people are able to detect and reflect on sound that has agency we would expect to find that removing observable movement from the interaction does not stop it being experienced as a social process.

Aims

The aim was to investigate whether synchronising with sound attributed with agency could affect subsequent affiliative behaviour, similarly to that shown in studies involving interaction with observable or learned associations with human movement.

Method

Experiment 1 used a within-subject design ($n = 38$) to investigate whether the behaviour of a synchronisation partner could affect how much trust participants were willing to place in them, in the form of an economic investment. Participants interacted with a series of 4 virtual partners, who they were told were human. They were instructed to synchronise with two of the partners, and not to synchronise with the other two ("tap at a different time from the tones but try to make one tap per tone, and maintain a regular beat"). Partners either became increasingly isochronous or increasingly anisochronous throughout trials, meaning that participants could experience varying degrees of success and synchronisation with each partner. They were asked to give subjective ratings of synchrony and success after each interaction. They then played two rounds of the "Trustee Game" (Berg, Dickhaut, & McCabe, 1995) with each partner, known to elicit higher contributions when people feel socially closer to an interaction partner.

Experiment 2 used a between-subject design ($n = 88$), to determine whether moving at the same time as sounds created by a virtual partner, compared with moving at a different time, could influence subjective ratings of that partner. Each participant was either given the instruction to synchronise ("tap with the tones), or to not synchronise ("tap between the tones") with a partner in 3 different rounds of a tapping game. All partners were controlled by a computer, and all performed similarly, becoming increasingly isochronous throughout trials. After the interaction had taken place, participants were asked a number of questions about their experience, including one about the likeability of their partner. Half of the participants were told they were interacting with a person, while the other half were told they were interacting with a computer. This was to ensure that any differences we observed in the likeability ratings could not be attributed to nonspecific effects relating to tapping along to sounds or influenced by the other answers given.

Results

In experiment 1, multilevel linear models were used to assess whether ratings of synchronisation and success could predict contributions made in the economic game. The first contribution was equally well predicted by success and synchrony, but a model including both of these as predictors was inferior. The total contribution made (i.e. contribution in round 1 + contribution in round 2) was best predicted by a combination of success and synchronisation ratings, suggesting that after positive effects of success, there was some positive effect of experience of synchronisation. Objective measures of the stability of synchronisation ("R" in circular statistics) only correlated with contributions in the economic game in the rounds in which participants had been told to synchronise with their partner, suggesting that moving in time, but not moving out of time, could influence this measure of affiliative behaviour.

In experiment 2, participants who were told to synchronise with their partner rated them as more likeable than participants who were told to not synchronise with their partner. In the group who were told they were tapping with a computer there were no differences in ratings of likeability. There was also a significant correlation between ratings of likeability and an objective measure of synchronisation, but only for the participants who had been told they were interacting with another person.

Conclusions

Effects of synchronisation on affiliative behaviour apply when people are synchronising with sound that is attributed with agency but has no inherent or learned associations with movement. This finding is particularly relevant to the ways that we understand how people interact with recorded music,

which may not have any direct associations with movement for the perceiver, but does have associations with human agency. In effect, this means that engagement with music could be perceived as a 'social' process, even when it occurs alone.

Keywords

Synchronisation; agency; sound

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