The influence of a second agent on detecting communicative intentions

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INTRODUCTION

While efficient social functioning requires the recognition of a wide range of others' actions, communicative actions (COM) are of particular importance for adequately interpreting and engaging in social encounters with other people. Special character of COM processing is supported by behavioral[1] and neuroimaging[2] studies using point-light displays (PLD). Thus, it was suggested that in the absence of a visible interacting partner, recognition of COM might be significantly decreased[3]. However, research using PLD to study COM focused on detecting interactions and independent actions (IND) mostly in dyadic displays.

The main aim of the present study was to examine if the availability of information about another agent's response facilitates detection and interpretation of COM. We investigated whether COM are categorized and described more accurately in dyadic as opposed to single-agent displays. Also, the relationship between recognition the presented actions and mentalizing abilities was examined.

METHODS

Participants: 122 healthy individuals (61 F; age: M = 29.3, SD = 7.4, years of education: M = 14.9, SD = 2.5)

Comunicative Interaction Database—5AFC format (CID-5).

The task created by Manera et al.[4] consists of 14 vignettes depicting two point-light agents interacting with each other and 7 control vignettes presenting them acting independently. Participants were asked to indicate whether the vignette had depicted an interaction or independent actions and to choose the most appropriate description from five alternatives.

Gestures from BioMotion.

The task consisted of 26 animations from a set created by Zaini et al.[5] Each animation depicted a single point-light agent with 10 additional markers for finger joints in hands. 13 animations presented an agent performing a communicative gesture and 13 presented an agent performing an object-oriented gesture. Participants were asked to indicate whether an action was communicative or individual and then to describe verbally a meaning of the action.

Reading the Mind in the Eyes Task.

The task[6] provides a proxy measure of mind reading abilities. It consists of 36 pictures of pairs of eyes, each accompanied by four single-word potential descriptions of an internal state of a person depicted. Participants have to choose the one that most adequately describes the picture.

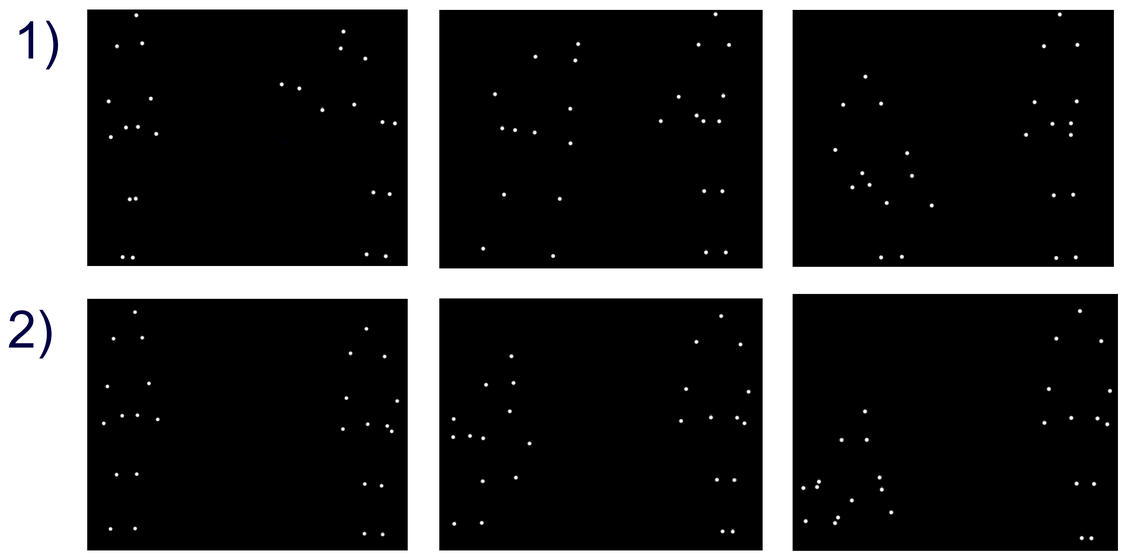

Fig. 1. Exemplary COM (1) and IND (2) animations from CID-5 task.

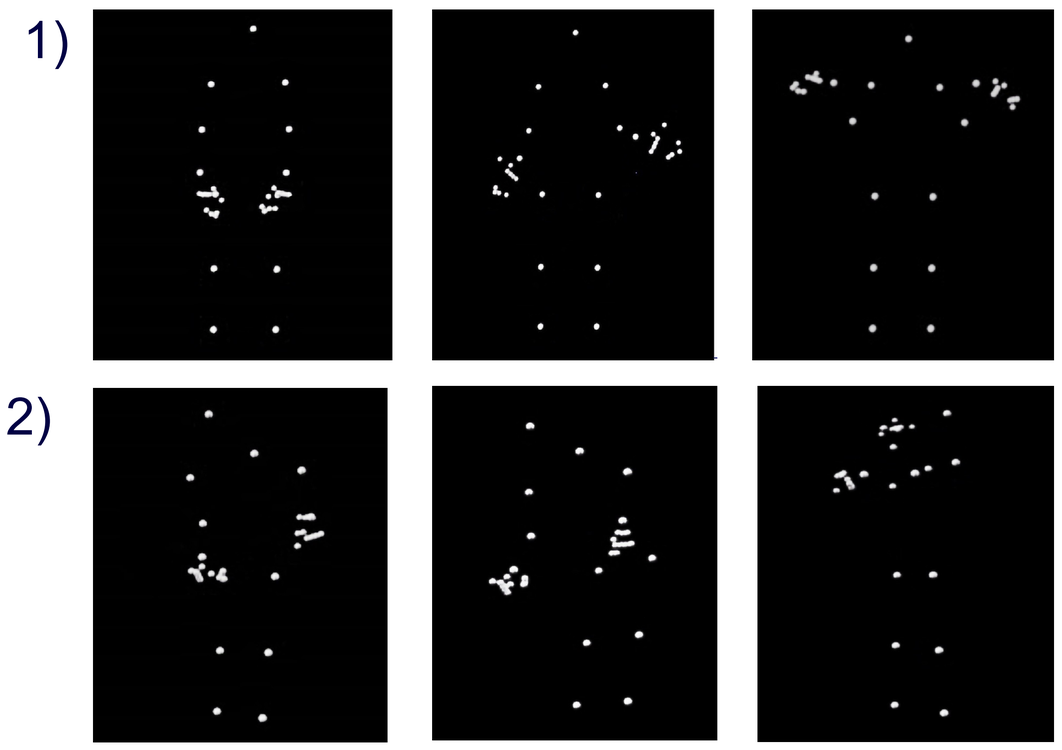

Fig. 2. Exemplary COM (1) and IND (2) animations from Gestures task.

RESULTS

Action classification

Significant interaction effect was found between a type of the display and a type of action ($F(1,121) = 31.95$, $p < 0.001$)

COM were detected more accurately in CID-5 task compared to Gestures task ($p<0.01$)

IND were recognized more accurately in Gestures task compared to CID-5 task ($p<0.001$)

Action interpretation

Significant effect of the task ($F(1,121)=30.86$, $p <0.001$): vignettes from the CID -5 task were more accurately recognized compared to vignettes form the Gestures task

Correlations

Significant correlation was observed between RMET score and COM classification accuracy in Gestures ($rs= 0.19$, $p< 0.05$) and COM interpretation in both tasks (CID-5: $rs = 0.30$, $p<0.01$; Gestures: $rs = 0.19$, $p< 0.05$)

CONCLUSIONS

The high accuracy of detecting COM in dyadic displays supports the hypothesis that expectations about behavioral patterns in dyadic encounters facilitate processing of the interacting individuals.

The absence of communicating partner seemed to decrease the ability to correctly detect communicative intentions from body movements of an individual. At the same time, IND in single-agent displays were recognized with relatively high levels of accuracy.. It can be suggested that the detection of IND may have been additionally facilitated by the object oriented nature of the actions.[7]

Moreover, the present findings add to the previous evidence emphasizing the importance of interpersonal context for processing visual stimuli consisting of two agents.[8]

Finally, mentalizing skills were related to the accuracy of COM interpretation in both types of display, which is in line with literature emphasizing crucial role of mentalizing network in inferring social intentions.[9]

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