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Brief article

The GROOP effect: Groups mimic group actions

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ABSTRACT

Research on perception–action links has focused on an interpersonal level, demonstrating effects of observing individual actions on performance. The present study investigated perception–action matching at an inter-group level. Pairs of participants responded to hand movements that were performed by two individuals who used one hand each or they responded to hand movements performed by an individual who used both hands. Apart from the difference in the number of observed agents, the observed hand movements were identical. If co-actors form action plans that specify the actions to be performed jointly, then participants should have a stronger tendency to mimic group actions than individual actions. Confirming this prediction, the results showed larger mimicry effects when groups responded to group actions than when groups responded to otherwise identical individual actions. This suggests that representations of joint tasks modulate automatic perception–action links and facilitate mimicry at an inter-group level.

1. Introduction

Social interaction involves not only individuals interacting with other individuals, but also groups interacting with groups. Prior research on inter-group relations has focused on the role of implicit social attitudes that shape individuals' behavior towards members of other groups (Dunham, Baron, & Banaji, 2008). Less is known about basic effects of inter-group relations on a perception–action level (Crosby, Monin, & Richardson, 2008; Semin & Smith, 2008). How does observing group actions affect group performance? Are people acting together more responsive to actions of another group than to actions performed by an individual? For instance, ballroom dancing is usually taught to couples by couples. It seems more difficult for couples to learn how to waltz from observing a single person.

A large body of research has addressed effects of action observation on performance at an interpersonal level (Blakemore & Frith, 2005). When we observe another's movements, this leads to an internal motor activation (Jeannerod, 2001; Prinz, 1997; Rizzolatti & Sinigaglia, 2010) that induces a tendency to mimic the perceived movements (Chartrand & Bargh, 1999; van Baaren, Janssen, Chartrand, & Dijksterhuis, 2009). For instance, Brass and colleagues demonstrated that participants were faster at executing a particular instructed finger movement when they saw a hand performing the same movement compared to seeing a hand performing the opposite movement (Brass, Bekkering, & Prinz, 2001). Such effects of action perception on performance can be explained by the assumption that perceived actions and self-generated actions are represented in the same way because actions are coded in terms of their perceptual consequences (Prinz, 1997). According to the theory of event coding (Hommel, 2009; Hommel, Müsseler, Aschersleben, & Prinz, 2001), the more features of observed events overlap with features of our own actions, the greater the interaction between perception and action.

Observed and performed actions may vary in similarity not only with respect to the kind of action being performed, but also in terms of the number of agents involved in producing and perceiving actions. The aim of the present

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study was to explore whether people's tendency to mimic observed actions is modulated by numerical differences in inter-group relations. Prior research has shown that individuals performing tasks next to each other tend to include each other's actions in their action planning (Milanese, Iani, & Rubichi, 2010; Sebanz, Knoblich, & Prinz, 2003, 2005; Tsai, Kuo, Hung, & Tzeng, 2008). Thus, a pair of actors may map their combined actions rather than their individual actions onto observed actions, so that perception–action matching occurs no longer at an interpersonal level, but at an inter-group level. If this is the case, then people acting together should have a stronger tendency to mimic actions performed by a pair compared to actions performed by an individual.

2. Experiment 1

To test this prediction we extended the mimicry task developed by Brass et al. (2001) and combined it with a numerical compatibility manipulation. Participants either observed two people acting (congruent condition, Fig. 1 top left) or a single person acting (incongruent condition, Fig. 1 bottom left). They performed the task together with a confederate. In the numerically compatible condition, movements of one hand required one response and movements of two hands required two responses. In the numerically incompatible condition, movements of one hand required two responses and movements of two hands required one response (Fig. 1, right).

Earlier findings on numerical compatibility (Miller, Atkins, & van Nes, 2005) predict faster reaction times (RTs) in the compatible condition, where the number of observed movements and performed movements is the same. We tested whether inter-group congruency modulates this numerical compatibility effect. If the participants in a group map their combined actions onto observed actions, rather than their own individual actions, then there should be a larger numerical compatibility effect when they observe actions performed by a group than when they observe actions performed by an individual.

2.1. Method

2.1.1. Participants

Eighteen right-handed undergraduates (five men, aged between 18 and 24 years) participated in Experiment 1. All participants had normal or corrected-to-normal vision. They were recruited by electronic advertisements and were paid 10 Euro.

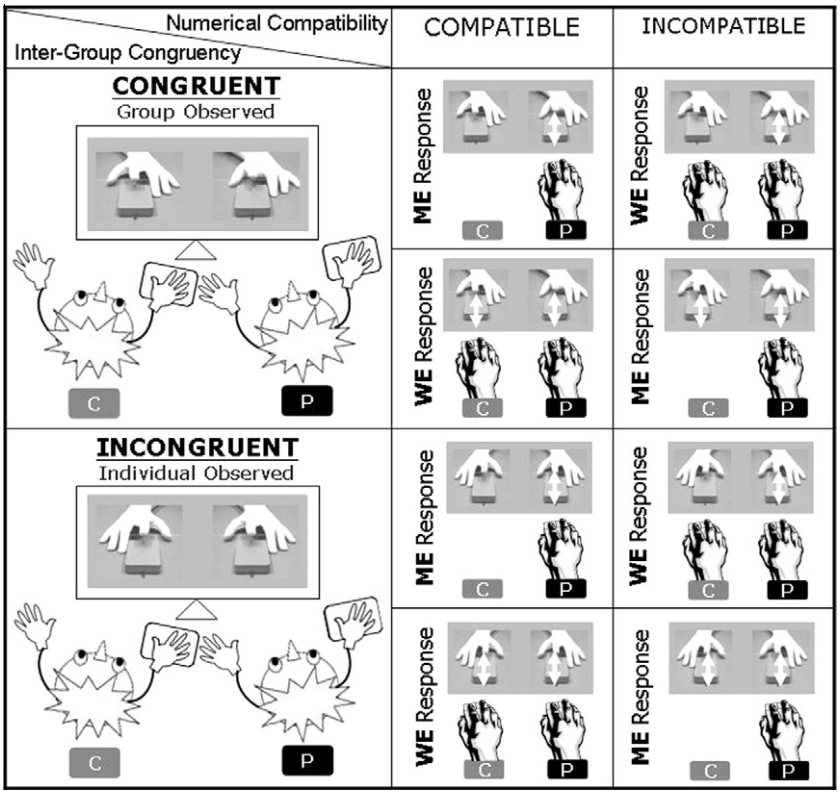

Fig. 1. Illustration of the experimental set-up and design. Left: Participants ("P") observed movements of two hands belonging to two different individuals (congruent condition: group observed) or movements of a left and right hand belonging to one individual (incongruent condition: individual observed). Right: Participants performed the same go/no-go task throughout the experiment with a confederate ("C"), responding to ipisilateral hand movements that occurred either alone (one hand moving) or together with another hand movement (two hands moving). The up-/downward white arrow(s) indicate the hand(s) that moved. The confederate's task varied between the compatible and incompatible condition in order to manipulate numerical compatibility. The four types of trials that occurred in the group congruent and group incongruent condition are illustrated.