

Could you still 'see' one's action even when s/he disappears?

The ability to predict and anticipate the actions of others is crucial for planning appropriate behaviours before engaging or intervening in observed action, such as the pre-judgement of partner's next actions in the football game. Even we do not explicitly know how actions are generated in the biological and neurological level, life tells us that we can still predict one's action accurately. For example, if taking a cup, we always plan the optimal way to arrive at the cup; that is how we predict doings of a hand when seeing it approach the cup. This is because humans do not understand actions in the biological level, but usually assign the abstract cause (i.e., intention) to the action. In this case, the action is treated as the effect or means of implementing an intention in both participant and observer. Hence, if you get the intention of actions, even when the actor sometimes is blocked by an occluder, you can still predict or infer what is happening.

The above inspection has been documented by many studies, which suggests that action prediction is sensitive to the individual goals of expected actions. However, people's actions are not always framed as pursuing their own individual goals. Instead, they are often embedded in coordinated interactions to achieve a collective/shared goal, which are referred to coordinated or joint actions. Less is known about whether this interpersonal coordination information, beyond individual goals, could influence action prediction.

This study reports a novel finding that the predictions of observed actions for a temporarily invisible agent are influenced, and even enhanced, when this agent has a joint/collective goal to implement coordinated actions with others (i.e., with coordination information). Specifically, we manipulated the coordination information by presenting two chasers and one common target to perform coordinated or individual chases, and subjects were required to predict the expected action (i.e., position) for one chaser after it became momentarily invisible. The results show that the prediction error for invisible chasers depends on whether the second chaser is coordinated with the first, and this effect vanishes when the chasers behaves with exactly the same motions, but without coordination information between them; furthermore, this influence results in enhancing the performance of action prediction.

Concerning these findings, possibly, while observing multi-persons' interaction, the information of shared goal (i.e., coordination information) acts like a constraint or invisible boundary to limit possible actions. This form is very similar with the subjective boundary of illusory contour, which provides the structure to complete the un-depicted part. Such function is important for deciding to engage a coordination, since we do not always see all participants who are involving in an interaction, such as the ball sports in modern world and the hunting activities in ancient times.

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