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Commentary

The interplay between intuitive psychology and intuitive sociology

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In the early childhood years, children build domain-specific causal-explanatory frameworks, or 'intuitive theories,' of the biological, physical, and social worlds to help them explain and predict their environment (Wellman & Gelman, 1992). These theories point to unobservable causal mechanisms (e.g., gravity for intuitive physics, growth for intuitive biology, beliefs for intuitive psychology) that allow children to predict the outcomes of novel events. By preschool, children have access to at least two types of theories for explaining human behaviour – an *intuitive psychology*, which centres on the role of individual mental states (e.g., beliefs, desires, intentions; Wellman, 1990), and an *intuitive sociology*, which appeals to social causes that extend beyond the individual, including memberships in social categories, social and moral norms, and social status (Hirschfeld, 1996; Rhodes, 2013). Whereas much prior research has separately examined the development of these two intuitive theories, Abrams *et al.*, 2014 provide a rare and important examination of how intuitive psychology and sociology interact with one another to shape children's understanding of complex social events.

A basic component of children's intuitive sociology is that social groups mark social relationships and obligations (Rhodes, 2013). By the preschool years, children expect members of the same social group to be friends with one another preferentially (Shutts, Roben, & Spelke, 2013), to share the same social norms (Kalish & Lawson, 2008; Schmidt, Rakoczy, & Tomasello, 2012), and to avoid harming one another (Rhodes, 2012; Rhodes & Chalik, 2013). Thus, certainly by the ages tested here (ages 6–7), children expect people to prefer members of their own in-groups to members of outgroups.

How do children balance this general expectation that groups shape social preferences with information about the behaviour of particular individuals? Earlier in childhood, categories appear to 'trump' information about individual properties in shaping children's social inferences. For example, preschool-age children predict that people will behave in line with gender norms (e.g., that a girl will prefer a doll to a truck), even if the particular individual has previously expressed atypical preferences, traits, or was raised in an atypical environment (Berndt & Heller, 1986; Biernat, 1991; Taylor, 1996). Also, preschool-age children show better memory for information about categories (e.g., that boys are good at puzzles) than comparable information about individuals (e.g., that a particular boy is good at puzzles; Cimpian & Erickson,

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2012). Most directly, we have found that only after children have developed explicit representational theories of mind do they predict that agents will harm fellow group members with whom they are angry, violating the norm that prohibits in-group harm (Chalik, Rivera, & Rhodes, under review). Thus, we have proposed that children have a default bias to predict behaviour based on categories, but that as children develop firmer understandings of the causal mechanisms that account for individual variation – including more advanced theories of mind – they shift away from this category-driven bias to incorporate individual-level information.

This study examines a similar shift in how children integrate intuitive sociology and intuitive psychology to understand human behaviour, but among older children who hold considerably more complicated theories. Here, we would predict that children at lower levels of mental state understanding would expect people to prefer their in-group members over outgroup members, regardless of loyalty (showing a default bias to base their predictions on category memberships), whereas children with more advanced theories of mind would predict that people would value loyal in-group members over disloyal ones and show the reverse pattern for outgroup members. In other words, only after children have developed a firmer understanding of higher-order mental state relationships will they anticipate differential responses to group members based on those individuals' expressed beliefs.

The data are not presented in a manner that allows direct evaluation of this prediction; it is clear that children with lower levels of theory of mind did not respond differentially to the loyal and disloyal group members, but the presented analyses do not test whether these children demonstrated a default bias to simply expect people to prefer in-group members over outgroup members (regardless of their expressed beliefs). Nevertheless, this account is consistent with the reported finding that as children develop more advanced mental state understanding, they increasingly consider individual loyalty when determining whom other group members will prefer.

One striking aspect of this study is the subtlety of the loyalty manipulation. Prior developmental research examining children's understanding of loyalty has examined far more severe forms of disloyal behaviour – for example, leaving one's own group to join a winning team (Misch, Over, & Carpenter, 2014). In this study, loyalty was manipulated by whether the target character spoke favourably about only their own group or about both the groups. Thus, the disloyal behaviour was expressing a positive belief about another group (instead of solely about one's own).

Although expecting people to behave loyally is broadly consistent with young children's intuitive sociological theories as described above, there is a good reason to suspect that viewing this particular behaviour – speaking positively about both in-groups and outgroups – as disloyal reflects a meaningful developmental change in relation to children's early theories. For example, preschool-age children (ages 3–5) expect people to avoid harming their own group members, but expect people to help members of their own and other groups equally often (Rhodes, 2012). An understanding that people preferentially help their own in-group members develops around age six. Also, Rhodes and Brickman (2011) found that 5- and 6-year-olds responded that people should refrain from helping outgroups *only* during times of competition and resource scarcity. When resources were plentiful, children viewed helping outgroups as acceptable.

Thus, although younger children were not tested in this study, based on prior work, it seems likely that the tendency to view positive feelings towards the outgroup as disloyal develops only around ages 6–7. This consideration raises two important questions for future research. First, why does children's concept of loyalty expand to include viewing

favourability to the outgroup as negative? Such beliefs could have serious developmental consequences, encouraging children to avoid positivity towards others only on the basis of superficial differences between groups – thus, it is especially important to understand what experiences or developmental changes might prompt this pattern. Second, how might the present pattern change if the disloyal behaviour were more severely disloyal and thus easier to understand? Testing a range of disloyal behaviours could shed light on the exact role of theory of mind in explaining the present results – for example, more advanced mental state understanding may have allowed children to understand positive statements about the outgroup as disloyal. Alternatively, these findings might reflect a more complex process by which mental state understanding allowed children to use their assessment of the disloyal behaviour (and their expectation of how the other group members would react to it) to shape their predictions regarding the characters' social evaluations. Teasing apart these possibilities will be an important avenue for future work and will deepen our understanding of the relationship between mental state understanding and social evaluation.

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