

understood as a form of unmoored innovation). We have conceptualized a number of forms of psychopathology as understandable in terms of such epistemic disruption (Fonagy et al., 2021).

Where our model diverges from Jagiello and Heyes is in our emphasis on the interactional nature of the processes and the significance of the quality of communication. The theory of epistemic trust, in the form that we have proposed, is based on developmental psychopathology. Social learning first takes place in the context of early caregiving relationships. The biological predisposition of the caregiver to respond contingently to the infant's expressive displays creates the foundation for the infant to acquire further knowledge from that individual. During what we have termed "marked mirroring interactions," the attachment figure will "mark" referential emotion displays to signal the generalizability of knowledge and effectively to instruct the infant about the infant's subjective experience (Fonagy, Gergely, Jurist, & Target, 2002; Fonagy & Target, 2007; Gergely & Watson, 1996). "Marking" by the caregiver as part of "good enough" mirroring serves as ostensive cues that enable a child to feel recognized as a subjective, agentive self, which in turn reinforces epistemic trust, optimizing the effectiveness of social transmission of knowledge. Being able to appropriately adjust one's bifocal stance between imitative and instrumental learning to specific contexts, we suggest, requires both epistemic trust and epistemic agency that (a) constitute a developmental achievement, incubated by particular social experiences, and (b) are necessarily subject to being closed off in response to social interaction which suggests that such cooperative learning is not self-protective (Sperber et al., 2010). The authors cite Watson-Jones' experiment of social copying in children, which found that children who were first exposed to social exclusion by their in-group in a virtual ball-tossing game showed the highest fidelity in copying a causally opaque action, compared to both those who were included by their in-group and those who were rejected or included by an out-group. Developmental literature indicates that children are more likely to protest norm violation when it is committed by an in-group rather than an out-group member. We also know that individuals with BPD, who are prone to epistemic credulity (social copying), also tend to show heightened sensitivity to social rejection (Hanegraaf, van Baal, Hohwy, & Verdejo-Garcia, 2021); effect sizes across studies are large with BPD patients more likely to be reporting feelings of exclusion even in social inclusion conditions (e.g., Brown et al., 2017).

This emphasis on the role of the quality of the relationship between the source of knowledge and the learner takes us to our second point – that higher-order social cognition cannot be understood as an abstraction. This position has been influenced by recent work on the origins and functions of some of the characteristics which we identify as central to our identity as a species as being inherently social. Mahr and Csibra (2017), for example, have argued that episodic memory principally functions to enable social communication. Memories of personal experience provide us with a rationale for our behaviour and locate us in relation to our obligations and commitments to and from others. Memories of interpersonal encounters tell us who we can rely on and who we should treat with caution. Similarly, Mercier and Sperber (2017) have argued that the human capacity for reason is primarily social, that the function of logic and reason is to enable us to cooperate, negotiate, and agree social terms with others – reasonings allow us to negotiate our social terms with others, providing the basis for cooperation and the regulation of complex social relationships (Mercier & Sperber, 2017). The

embedding of social cognition in the social environment makes it inseparably linked to its function and dysfunctions.


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Culture is an optometrist: Cultural contexts adjust the prescription of social learning bifocals

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Abstract

The “prescription” of humans’ social learning bifocals is fine-tuned by cultural norms and, as a result, the readiness with which the instrumental or conventional lenses are used to view behavior differs across cultures. We present evidence for this possibility from cross-cultural work examining children’s imitation and innovation.

Jagiello et al. propose that humans’ social learning is shaped through the lenses of interpreting others’ behavior as either an opportunity for instrumental learning or for conventional learning. They suggest that humans switch their focus interchangeably between these two possibilities – much like someone wearing bifocals – based on the social and contextual cues available related to the behavior of interest. We agree with the authors’ suggestion that human social learning is guided by these two lenses. We would like to expand on this idea to suggest that the “prescription” of these social learning bifocals is shaped by culture, such that sensitivity to particular cues and thus the readiness with which the instrumental or conventional lenses are used to view behavior is fine-tuned by cultural norms. Below, we support this idea with examples from work examining children’s imitation and innovation in distinct cultural contexts.

As indicated by Jagiello et al., research suggests that children across cultural contexts engage in higher fidelity imitation when presented with cues that indicate the goal of a behavior is conventional rather than instrumental (e.g., Clegg & Legare, 2016; see also Rawlings, Dutra, Turner, & Flynn, 2019). This same work also suggests that baseline imitative fidelity might be higher in cultural contexts that privilege conformity over creativity (Clegg & Legare, 2016; Clegg, Wen, & Legare, 2017; Wen, Clegg, & Legare, 2019). To illustrate this, we will focus on one such cross-cultural comparison between children from the United States and Vanuatu based on on-going work examining imitation, innovation, and children’s sociocultural contexts.

When presented with the same necklace-making task, U.S. and Ni-Vanuatu children engaged in higher imitative fidelity if given a conventional goal for the task than if given an instrumental goal; thus, displaying use of social learning bifocals. When comparing children’s imitation after being presented with an instrumental goal, however, the Ni-Vanuatu children engaged in higher fidelity imitation compared to the U.S. children (Clegg & Legare, 2016). One possible explanation for the difference in U.S. and Ni-Vanuatu children’s imitation when presented with an instrumental cue is that their bifocals have slightly different prescriptions, with Ni-Vanuatu children’s bifocals focusing more readily on the conventional lens. The tendency to use one lens versus another is shaped by the social norms of each culture. These social norms are implicitly and explicitly communicated and reinforced by children’s learning partners (both caregivers and peers) and include beliefs about the importance of conformity. This possibility is supported by work examining such beliefs which found that Ni-Vanuatu adults are more likely than U.S. adults to endorse children’s high conformity in a necklace-making task as indicative of a child being intelligent and well-behaved (Clegg et al., 2017).

In addition, caregivers’ ethnotheories about children’s learning (e.g., Harkness & Super, 2002) and experience with formal education (e.g., Greenfield, 2009) impact how they guide children’s learning and attention (Rogoff et al., 1993). We propose that these cultural factors, in turn, also adjust the prescription of

children’s social learning bifocals. Further evidence for this can be illustrated by additional research comparing Ni-Vanuatu and U.S. children’s learning environments. When working together with children to complete a puzzle, Ni-Vanuatu caregivers used practices consistent with expectations that children learn using observation whereas their U.S. counterparts engaged in high levels of scaffolding and direct instruction (Clegg et al., 2021; as a note, these findings are consistent with Chavajay & Rogoff [2002] and Hewlett, Fouts, Boyette, & Hewlett [2011] among others). These different teaching norms may coincide with children’s tendency to use the conventional or instrumental lenses more readily in different cultures. When observational learning is expected, it may be more efficient to use the conventional lens and focus on closely replicating an observed process until more expertise is gained (for a review, see Hoehl et al., 2019). Thus, because of a greater cultural value placed on conformity and observational learning, Ni-Vanuatu children may have a prescription that is more attuned to the conventional lens. In contrast, U.S. children’s bifocal prescription may tend toward the instrumental lens because of a greater emphasis placed on creativity and direct instruction.

Finally, as Jagiello et al. note, innovation represents the other side of the cultural evolutionary coin, affording the generation of new behaviors, customs, and technology. As such, although the authors present the bifocal stance theory to challenge a tendency to focus on innovation within work on cultural evolution and instead shift the focus to high-fidelity transmission of cultural traditions and rituals, we also propose that just as the lenses of the social learning bifocals are shaped by culture, the same must be true of innovation. Cultural variation in societal norms, institutions, and values likely contribute to cultural variation in the prescription of children’s bifocal lenses that result in different approaches to innovation. Research examining differences in children’s innovation across cultures lends support for this possibility. Urban non-Indigenous Australian children demonstrated higher success rates on tool-based innovation tasks than rural Indigenous Australian children, and children in Vanuatu and rural South Africa (Neldner, Mushin, & Nielsen, 2017, 2019). As with the differences in imitation of an instrumental task described above, differences in success in innovation tasks between children in post-industrialized and developing countries have also been attributed to differences in an emphasis on conformity and adherence to others’ actions and exposure to formal education (Lew-Levy, Pope, Haun, Kline, & Broesch, 2021; Rawlings, 2022). Attending school may facilitate creative capacities through emphasis on problem solving, peer-collaboration, and access to novel information.

Examinations of children’s imitation and innovation suggest both consistencies and differences across cultures. This work indicates that cultural values and ethnotheories play an important role in shaping children’s social learning behaviors. We thus encourage Jagiello and colleagues to consider that the bifocal lenses of social learning may be shaped by culture and that these lenses impact both children’s imitation and innovation.

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When instrumental inference hides behind seemingly arbitrary conventions

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Abstract

We review recent evidence that game rules, rules of etiquette, and supernatural beliefs, that the authors see as “ritualistic” conventions, are in fact shaped by instrumental inference. In line with such examples, we contend that cultural practices that may appear, from the outside, to be devoid of instrumental utility, could in fact be selectively acquired and preserved because of their perceived utility.

The authors propose a plausible case for the idea that detail-focused copying fulfills an affiliative function, and underlies the cultural evolution of apparently arbitrary conventions. In their own terms, the actions behind “social etiquette, clothing fashions, tea ceremonies, and even the rules of childhood games” are “simply copied without question” because “their purposes remain mysterious” (target article, sect. 2, para. 6). While we do not deny this possibility, we suspect that the cultural evolution of many seemingly arbitrary conventions may be, despite appearances, mostly driven by instrumental inference at the cognitive level. We argue that many conventions which, from the outside, may appear devoid of instrumental utility, and “slavishly” learned simply because it's the “done” way to behave, are in fact selectively acquired and preserved, by the people involved, because of perceived instrumental benefits (see also André, Baumard, & Boyer, 2020; Singh, 2020). While demonstrating this on each instance of apparently arbitrary convention would require a whole research program, we here illustrate this point on the following examples – game rules, social etiquette, and religious rituals.

1. Sport and game rules

Sport and game rules are widely deemed typical examples of arbitrary conventions (Schmidt & Tomasello, 2012). The authors similarly argue that competitive sports (e.g., football), despite being oriented toward some instrumental outcomes (e.g., playing a ball into the opposing teams' net), are constrained by slavishly copied, causally opaque conventions (e.g., the prohibition to use one's hands to do so). We argue, however, that people adopt an instrumental stance toward *these conventional rules themselves*, designing and selectively retaining them to satisfy the goals they pursue by playing or watching sports and games – such as being entertained and signaling one's skills (Lombardo, 2012; see Dubourg & Baumard [2022] for another example of entertainment technology).

This is manifested by the fact that sport and game rules are transformed, under people's impulse, in a direction that increasingly satisfies those goals. Sport federations have adapted their rules throughout history to maximize players' and spectators' enjoyment, and the possibility for players' to signal their physical skills. The “offside rule,” for instance, has been explicitly designed and retained because it prevents players from “goal-hanging,” thereby making the game harder to play and funnier to watch (Zhao, 2021; see Fig. 1 for other examples). Even at a more micro-level, non-professionals who play street football spontaneously adapt the official rules of football to the context (e.g., the pitch dimensions). For instance, they commonly remove goalkeepers and reduce the number of players, to make the game funnier and more physically challenging (Hill-Haas, Dawson, Impellizzeri, & Coutts, 2011). In other words, we doubt that people would slavishly copy rules that would make a sport boring and hard to use to signal