**Neither human normativity nor human groupness are in humanity’s genes**

A commentary on Cecilia Heyes’ “Rethinking Norm Psychology”

(accepted for publication in *Perspectives on Psychological Science*)

Kati Kish Bar-On (The Science, Technology and Society program, Massachusetts Institute of Technology)

Ehud Lamm\* (The Cohn Institute for the History and Philosophy of Science and Ideas, Tel Aviv University)

\* corresponding author

Heyes presents a compelling account of how cultural evolutionary processes shape and create 'rules,' or norms, of social behavior. She suggests that normativity depends on implicit, genetically inherited, domain-general processes and explicit, culturally inherited, domain-specific processes. Her approach challenges the nativist point of view and provides supporting evidence that shows how social interactions with people are responsible for creating mental processes which assist us in understanding and behaving according to rules or norms. We agree. In our commentary, we suggest that it is not only that mental processes for grasping norms are recreated in each generation but also that social interactions shape the kinds of social groups that are recognized (for a more extensive discussion, see Kish Bar-On and Lamm, 2023). We highlight evidence showing that accounts of norm psychology thus require a richer notion of human groups.

In her analysis of the characterization of norms and norm psychology in the literature, Heyes mentions definitions of norms from several disciplines (such as House 2018; Chudek and Henrich 2011; Göckeritz, Schmidt, and Tomasello 2014) and critically prods the relation between norms and rules. However, another concept reoccurs in almost every definition of norms, including the one she develops: the concept of human groups. A detailed picture of normative behavior must address the question of what human groups are, how they evolved, and how this affects normativity.

According to Heyes, groups play a significant role in norm enforcement, compliance, and commentary. Within a group context, individuals learn which norms they should follow and which behaviors they should avoid, as well as develop the ability to partake in commentary concerning what is appropriate, allowed, required, and forbidden in their groups. However, the types of evidence Heyes exploits in her discussion about the relation between implicit and explicit normativity are largely (though not entirely) based on experiments of economic games which, for the (justified) sake of simplicity, address groups as small, homogenous, and stable. These types of evidence build on the hypothesis that small and non-interacting groups are appropriate models and represent the origins of human groups and norm psychology. However, this ignores a different evolutionary perspective supported by significant evidence, according to which human groups transitioned from closed social bands to open bands nested in a multi-level social community a lot earlier than was commonly thought – about 800,000 years ago (Sterelny 2021; Stiner 2002; Layton and O’Hara 2010). The latter perspective, advocated by Kim Sterelny and others, urges us to reconsider work that takes groups to be simple and small and to consider the possibility that some economic experiments and other experimental and observational studies based their assumptions and results on an artifact, not on the natural phenomenon of groups.

From the Pleistocene to the early Holocene, Sterelny’s narrative demonstrates how Hominins exchanged the hierarchical social groups of their ancestors for more egalitarian bands, progressing from mutualistic cooperation centered around foraging and hunting to a more demanding framework of indirect reciprocation (Sterelny 2021, 57–61, 70–74). Previous discussions have shown that social groups across species rapidly self-organize into hierarchies, where members vary in their level of power, influence, skill, or dominance (Gould 2002; Magee and Galinsky 2008; Henrich and Gil-White 2001; Mesoudi and Jiménez 2019). Group hierarchies are dynamic and relational, which makes status-related cognitions and behaviors critical for individual adaptation and group functioning (Koski, Xie, and Olson 2015). Evidence from neuroimaging suggests an underlying neural basis for status processing by identifying specific neuropsychological mechanisms that indicate how human behavior can be modified consciously and unconsciously based on acquired knowledge of social hierarchy (Li et al. 2021; Watanabe and Yamamoto 2015). These and other evidence on different neural systems involved with different kinds of norms (i.e., those directly related to social status and those that are not) should be integrated with the cognitive gadget account (Blair et al. 2006; Blair et al. 2016). Norms draw on and set up hierarchical social order (Towns 2012), and multiple group-belonging affects the way individuals perceive norms and adjust their behavior (Charness, Rigotti, and Rustichini 2007; Goette, Huffman, and Meier 2006). This body of evidence shows that the complexity of human groups, with or without social hierarchies, affects, at least to some extent, the cognitive processes responsible for normative behavior. We are not claiming that small and simple groups cannot be useful case studies in norm psychology or that complex human groups necessarily undermine the theory Heyes develops. However, we contend that heterogeneous, hierarchical, and complex human groups are not only part of norm psychology but also shape our norm psychology, and a comprehensive psychological model should take evidence connecting group complexity, norms, and social hierarchy into account.

Considering the complexity of human societies alongside Heyes’ cognitive gadgets model of norm psychology leads us to ask whether the mechanisms of social identity theory (broadly construed) are innate or hinge on domain-general mechanisms and cultural inheritance. Individuals belong to multiple, sometimes overlapping, groups and constantly move from one group to another by joining or forming new groups or changing the salient group among groups they already belong to. As a result, people often adjust their social identity, group identity, and the norms they follow to adapt to the new social circumstances (Cancian 1975; Turner and Reynolds 2012). According to the social identity approach, individuals have rich social identities that derive from their knowledge of belonging to multiple social groups and the emotional significance of group membership (Tajfel 1981, 255). Three cognitive processes are central to developing social identity: social categorization, social comparison, and social identification. Research on social categorization suggests that the tendency to represent and reason about social categories is arguably a core component of human psychology, and the cognitive processes supporting it are early emerging and flexibly adaptive (Macrae and Bodenhausen 2000; Rhodes and Baron 2019). Related evidence suggests that there are cross-cultural differences in social categorization processes, which appear to be driven by familiarity-based mechanisms, and thus are highly dependent on structural factors such as cues to competition and cooperation in the social environment (Ferera, Baron, and Diesendruck 2018; Kelly et al. 2007). These and other studies on cross-cultural differences (Zhang et al. 2021) are significant sources of evidence supporting the possibility that social identity might be, to some extent, a cognitive gadget.

The questions are thus whether there are appropriate domain-general mechanisms and rich enough stimuli to support the development of social identity and group boundaries with all their complexities and their relation to underlying normativity. We think that the evidence would support Heyes’ contention, but we argue that this aspect has to be considered in any approach to norm psychology and is thus also critical for Heyes’ cognitive gadget account. Moreover, should she accept this friendly amendment, we think it would further her general claim: the complexity of human groups argues against simple nativist accounts and ultimately may provide the best evidence in favor of developmental approaches such as the cognitive gadgets approach.

**References:**

Blair, James, A. A. Marsh, E. Finger, K. S. Blair, and J. Luo. 2006. “Neuro-Cognitive Systems Involved in Morality” Philosophical Explorations (9): 13–27. https://doi.org/10.1080/13869790500492359.

Blair, R. J. R., Soonjo Hwang, Stuart F. White, and Harma Meffert. 2016. “Emotional Learning, Psychopathy, and Norm Development.” In *Moral Brains: The Neuroscience of Morality*, edited by S. Matthew Liao, 185–202. New York: Oxford Academic.

Cancian, Francesca M. 1975. *What Are Norms? A Study of Beliefs and Action in a Maya Community*. Cambridge: Cambridge University Press.

Charness, Gary, Luca Rigotti, and Aldo Rustichini. 2007. “Individual Behavior and Group Membership.” *American Economic Review* 97: 1340–52.

Chudek, Maciej, and Joseph Henrich. 2011. “Culture-Gene Coevolution, Norm-Psychology and the Emergence of Human Prosociality” Trends in Cognitive Sciences (15): 218–26.

Ferera, M., A. S. Baron, and G. Diesendruck. 2018. “Collaborative and Competitive Motivations Uniquely Impact Infants’ Racial Categorization” Evol. Hum. Behav (39): 511–19.

Göckeritz, T., M. F. Schmidt, and M. Tomasello. 2014. “Young Children’s Creation and Transmission of Social Norms” Cognitive Development (30): 81–95.

Goette, Lorenz, David Huffman, and Stephan Meier. 2006. “The Impact of Group Membership on Cooperation and Norm Enforcement: Evidence Using Random Assignment to Real Social Groups.” *American Economic Review* 96.

Gould, R. V. 2002. “The Origins of Status Hierarchies: A Formal Theory and Empirical Test.” American journal of sociology (107): 1143–78.

Henrich, Joseph, and Francisco Gil-White. 2001. “The Evolution of Prestige: Freely Conferred Deference as a Mechanism for Enhancing the Benefits of Cultural Transmission.” Evolution and Human Behavior (22): 165–96.

House, B. R. 2018. “How Do Social Norms Influence Prosocial Development?” Current Opinion in Psychology (20): 87–91.

Kelly, D. J., P. C. Quinn, A. M. Slater, K. Lee, L. Ge, and O. Pascalis. 2007. “The Other-Race Effect Develops during Infancy” Psychol. Sci (18): 1084–89.

Kish Bar-On, Kati, and Ehud Lamm. 2023. “The Interplay of Social Identity and Norm Psychology in the Evolution of Human Groups” *Philosophical Transactions of the Royal Society B: Biological Sciences* **378,** 20210412. <https://doi.org/10.1098/rstb.2021.0412>

Koski, Jessica, Hongling Xie, and Ingrid Olson. 2015. “Understanding Social Hierarchies: The Neural and Psychological Foundations of Status Perception” Soc Neurosci (10): 527–50. https://doi.org/10.1080/17470919.2015.1013223.

Layton, R., and S. O’Hara. 2010. “Human Social Evolution: A Comparison of Hunter- Gatherer and Chimpanzee Social Organization.” In *Social Brain, Distributed Mind*, edited by R. Dunbar, C. Gamble, and J. Gowlett, 83–113. Oxford: Oxford University Press.

Li, Siying, Frank Krueger, Julia A. Camilleri, Simon B. Eickhoff, and Chen Qu. 2021. “The Neural Signatures of Social Hierarchy-Related Learning and Interaction: A Coordinate- and Connectivity-Based Meta-Analysis.” *NeuroImage* 245 (December): 118731. https://doi.org/10.1016/j.neuroimage.2021.118731.

Macrae, C. N., and G. V. Bodenhausen. 2000. “Social Cognition: Thinking Categorically about Others” Annu. Rev. Psychol (51): 93–120.

Magee, J. C., and A. D. Galinsky. 2008. “Social Hierarchy: The Self-Reinforcing Nature of Power and Status” The Academy of Management Annals (2): 351–98.

Mesoudi, Alex, and Ángel Jiménez. 2019. “Prestige-Biased Social Learning: Current Evidence and Outstanding Questions” Palgrave Communications (5): 20. https://doi.org/10.1057/s41599-019-0228-7.

Rhodes, M., and A. Baron. 2019. “The Development of Social Categorization” Annu Rev Dev Psychol (Dec 1): 359–86. https://doi.org/10.1146/annurev-devpsych-121318-084824.

Sterelny, Kim. 2021. *The Pleistocene Social Contract*. Oxford: Oxford University Press.

Stiner, M. C. 2002. “Carnivory, Coevolution, and the Geographic Spread of the Genus Homo” Journal of Archaeological Research (10): 1–63.

Tajfel, Henri. 1981. *Human Groups and Social Categories: Studies in Social Psychology*. Cambridge: Cambridge University Press.

Towns, Ann E. 2012. “Norms and Social Hierarchies: Understanding International Policy Diffusion ‘From Below.’” *International Organization* 66: 179–209.

Turner, John, and Katherine Reynolds. 2012. “Self-Categorization Theory.” In *Handbook of Theories of Social Psychology*, edited by Paul A. M. Van Lange, Arie W. Kruglanski, and E. Tory Higgins, 399–417. London: SAGE Publications.

Watanabe, N., and M. Yamamoto. 2015. “Neural Mechanisms of Social Dominance” Front. Neurosci. (9): 154. https://doi.org/10.3389/fnins.2015.00154.

Zhang, Xinyuan, Mario Dalmaso, Luigi Castelli, Alberto Fiorese, Yonglong Lan, Bo Sun, Shimin Fu, and Giovanni Galfano. 2021. “Social Attention across Borders: A Cross-Cultural Investigation of Gaze Cueing Elicited by Same- and Other-Ethnicity Faces” British journal of Psychology (112): 741–62.