and adults have been a long-time convenience sample for experimental research (*starting point*). The home-field disadvantage contributes to overgeneralization (e.g., from adults to people) and to overlooking important differences across social-cultural groups (e.g., children). But it also impacts methods and the interpretation of results. For example, stimuli originally designed for home-field samples, by virtue of their better fit, are more likely to result in publishable significance levels, one possible reason WEIRD samples tend to be outliers when those original, hypothesis-confirming stimuli are later used in cross-cultural research with non-WEIRD samples (Bennis & Medin, 2010).

Two examples help clarify why the home-field disadvantage is relevant to the target article. The first concerns the child-adult dichotomy itself. The emphasis on *children* as the neglected group blurs the extent to which *age* matters to whether and how children contribute to cultural adaptation. It also masks the extent to which adults also form distinct, age-relevant peer cultures (Neugarten, Moore, & Lowe, 1965), some of which are marked and neglected similarly to children. Consider one of Lew-Levy and Amir's childhood category, *adolescents* (13- to 17-year-olds), an age range that would be classified as *adult* rather than *child* by many non-WEIRD cultures (see, e.g., Whiting & Whiting, 1975). As such, that key demographic of overlooked *children* driving cultural adaptation could just as well have been framed as an example of overlooked adults. The elderly are another, unambiguously adult example (e.g., Heiat et al., 2002; North, 2025).

Second, there are innumerable social-cultural categories differing widely across cultures that are not defined by age but that nonetheless form peer cultures with different dynamics for cultural adaptation. Limiting the examples to just WEIRD cultures, research scientists, politicians, and tech entrepreneurs, for example, each form peer cultures that innovate and transmit culture differently. But non-home-field sub-cultural groups within WEIRD countries (e.g., minorities or lower-status groups) may *asymmetrically* contribute to cultural adaptation given their lower populations and status, specifically *because* their *markedness* promotes the formation of more coherent, self-contained, identity-based peer groups (Lamont & Molnár, 2002). By the time such peer cultures' innovations eventually "escape" their peer cultures, they may be more fully formed and impactful, having had time to evolve independently and enter mainstream culture as recognizably novel. For examples of this with minority and low-SES peer cultures with *music*, see Baraka (2002) or Roy (2010), but parallel examples can be seen in minority and low-power groups' influences on a broad range of domains from clothing styles, to cuisine, to vernacular.

In short, while any article can only do so much, and Lew-Levy and Amir's piece does a great job highlighting the underappreciated role of children in cultural adaptation, it would have benefited by acknowledging that both adults and children are just examples (albeit good ones), the former of an *unmarked* group inappropriately used to generalize about cultural evolution, and the latter of a *marked* group, inappropriately overlooked. When reified as a privileged two categories driving cultural adaptation, they risk reinforcing the underappreciation of social-cultural diversity in what it means to be human.

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Group transmission and niche construction in peer cultures

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Abstract

Our commentary expands upon Lew-Levy and Amir's insights into the role of peer culture in cultural evolution. Drawing on field data from the Koygu, Nyangatom, and Aka communities, we identify two modes of group transmission (concerted and cumulative) that contribute to the stability of peer cultures over time. We describe how culturally constructed niches shape peer learning, helping explain the intercultural diversity of peer cultures.

Lew-Levy and Amir's paper presents a compelling argument for recognizing peer cultures as central to cultural evolution. They demonstrate that children do not merely acquire adult knowledge but actively produce, refine, and transmit cultural elements within peer groups. Our recent field data with hunter–gatherers and pastoralists support several of their claims. For example, in 160 hours of observation among transitional hunter–gatherers and pastoralists, we found that child-to-child teaching was common, occurring in 42% of learning events. While our findings align with some of Lew-Levy and Amir's insights, our commentary focuses on two aspects of peer culture that help explain cultural evolutionary issues raised in the paper: concerted and cumulative group-based modes of transmission that may contribute to the stability of peer culture and culturally constructed niches that shape the diversity and evolution of peer cultures. We draw on field data from Koygu transitional hunter–gatherers, Nyangatom pastoralists in Ethiopia, and Aka hunter–gatherers in the Central African Republic.

The authors note the relatively stable nature of peer cultures but do not elaborate on the mechanisms maintaining this stability. We hypothesize that two modes of group transmission – concerted and cumulative – may contribute to peer culture stability over time (Hewlett et al., 2024). Concerted transmission occurs when multiple group members communicate the same skill or knowledge to an individual (Cavalli-Sforza et al., 1982). This mode, observed in 38% of 494 learning events among the Koygu and Nyangatom, fosters group homogeneity and trait conservation and reduces rates of culture change. Notably, 45.5% of these concerted transmission events occurred in child-only groups, with an average of 3.7 children per event – more than in mixed adult-child groups (3.1).

It may be useful to provide examples of concerted transmission. Among the Aka, an entire group of children will make sounds of disgust if a child takes more than their share of food, does not share food, or hits another child. Spear hunting for mice is a child-only activity among the Aka, and it is common for multiple children to comment on how to throw the spear, where the mouse is, or how to divide it with others.

Another example from the Koygu involves a mixed-age group of boys (6–15) swimming in the Omo River. When the youngest hesitated to swim, an older boy invited him in and offered help. After some teasing from the group, the younger child agreed to try. The older boy reassured him, offering his hand in the water and instructing him to move his hands and legs. Another child demonstrated the motions, guiding the younger boy's leg, while the rest encouraged his efforts.

Another mode of group transmission we want to consider is cumulative transmission. This mode refers to specific knowledge or skills individuals acquire from repeated multimodal experiences and interactions with several group members with those skills or knowledge (Hewlett et al., 2024). It is cumulative because the transmission builds upon the child's previous lived experiences; i.e., it involves scaffolding of abilities. It tends to contribute to group homogeneity and trait stability over time.

For instance, the Aka are net hunters, and children participate with other children on net hunts. They make nets together, pick up nets sitting around camp, and try to trap chickens together; they joke about children who made mistakes on the hunt (chasing game animals in the wrong direction) and listen to imaginative stories about net hunting from older children.

Similarly, among the Nyangatom, cumulative cultural transmission is evident in herding games. Young children often played herding games together, building miniature kraals and placing small stones inside to represent cattle. They also followed older boys to herding fields and, by 8–10 years old, began herding goats themselves.

While Lew-Levy and Amir describe peer cultures across societies, they do not explore how cultural niche construction influences the diversity and evolution of peer cultures. For example, child teaching occurred in 52.4% of learning events among the Koygu but only 35.3% among the Nyangatom. Similarly, concerted transmission was more frequent among the Koygu (57.9%) than the Nyangatom (32.9%). Koygu child-only concerted transmission events involved an average of 4.5 children, compared to 3.6 among the Nyangatom.

Culturally constructed niches (Laland et al., 2001) can help explain some of the observed variability in peer cultures. Foundational schema (ways of thinking and feeling that pervade several domains of life: Shore, 1996), social structures, settlement patterns, and proxemics are part of these niches to which children have to adapt. Among the Nyangatom, generational hierarchy is a dominant schema: respect for elders, especially male elders, governs much of social life (Tornay, 1981; Bedasso, 2016). These ways of thinking and structures contribute to hierarchical teaching from adults. In contrast, the egalitarian nature of the Koygu provides individuals autonomy to navigate their environment with others. Constraints do not exist for children teaching children, and adults minimize their interventions in children's learning.

Settlement patterns also affect adaptations and evolution in peer cultures. The Koygu live in large, densely populated villages (some over 100 households with houses only a few feet apart), partly due to inter-ethnic conflict and the need for security (Turton, 1986). This proximity creates ample opportunities for peer interaction and learning. The Nyangatom, while more populous overall, live in smaller, more dispersed villages – some larger villages have 10–15 households, others as small as 1–5. These spatial arrangements limit the size and frequency of peer group interactions.

Koygu egalitarianism and dense social living help explain why both child-only concerted transmission and child teaching are more frequent than among the Nyangatom. The contrast between the egalitarian, densely populated Koygu villages and more hierarchical, dispersed Nyangatom settlements illustrates how these niches create divergent developmental ecologies that shape peer culture and cultural evolution.

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Lew-Levy and Amir provide a foundation for understanding the central role of peer cultures in cultural evolution. Our data from the Koygu, Nyangatom, and Aka communities complement and build upon their insights by identifying two forms of transmission that contribute to the stability of peer cultures over time (concerted and cumulative transmission) and describing how culturally constructed niches contribute to the diversity of peer cultures.

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Social cognitive development prepares children to be agents of cultural adaptation: bidirectionality of peer interaction and cognitive development across urban and indigenous landscapes

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Abstract

Greater emphasis on the *bidirectionality* of peer interaction and cognitive development would complement the suggested framework of children's contribution to cultural evolution. We outline different aspects/forms of socio-cognitive development to illustrate their roles in cultural processes: social learning, theory of mind, and pretend play. We encourage the consideration of peer cultures in urban settings and the role siblings play.

Lew-Levy and Amir provide a strong rationale for the important role children and peer culture play in cultural adaptation. We agree that peer interaction plays a pivotal role in acquiring, transmitting, maintaining, and innovating culture. However, absent from this target article is how peer-to-peer interactive experiences can inspire learning of new skills and accelerate the development of particular cognitive capacities fundamental to peer culture. Thus, we would like the authors to consider the *bidirectionality* of the role cognitive development plays in these cultural processes and how these social interactions shape cognition. We further note the importance of paying equal attention to Indigenous and urban observations to avoid a biased representation of peer culture.

Firstly, the paper would benefit from some acknowledgment that peer interactions provide unique social learning opportunities that a child does not otherwise experience in adult–child interactions. These opportunities may foster further development of key cognitive skills vital for acquiring and creating culture. For example, the authors describe a study by McGuigan et al. (2017) where 3- to 4-year-olds worked together and collectively innovated and transmitted increasingly complex tools to solve a novel puzzle box. However, they missed a crucial point: the skills and insights gained from collaborative social learning are what enabled these preschoolers to achieve what 3- to 4-year-olds could not do on their own in an asocial condition or in a typical dyadic, pedagogical interaction with an adult. Prior work has shown that children younger than 8 years are not able to create the tools required to solve these tasks on their own, largely in part to immature cognitive skills (Beck et al., 2011; Cutting, Apperly, & Beck, 2011; Rawlings, 2022). Thus, peer-to-peer interaction may shape preschooler's learning in unique ways.

Secondly, we emphasize that social cognitive skills are needed for social interaction, and social interaction facilitates the development of these skills. Theory of mind is one example of an important cognitive skill where development is enhanced with social experiences and, in turn, eases social interactions where children attempt to understand intention and perspective of others (Lane & Bowman, 2021). Indeed, social interest and opportunities of observation of others advance the development of theory of mind (e.g., Brink, Lane, & Wellman, 2015; Moore, Bosacki, & Macgillivray, 2011), especially compared to children who are socially anxious and disengage from social situations (e.g., Lane et al., 2013).

Additionally, Lew-Levy and Amir include an example of pretend play in San children (section 5.6) as an activity that enables the preservation of traditional knowledge, but details about the underlying mechanisms and functions seem lacking. Joint pretend play is a rich context where social cognitive skills are utilized amongst peers to explore and experiment with novel ideas inspired by their daily encounters, forming the foundations for cultural

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