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A Cultural Evolutionary Behavior Genetics Will Need a More Sophisticated Conceptualization of Cultural Traits

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Abstract

A framework that brings together cultural perspectives and behavior genetics has long been needed. To be successful, however, we need sophistication in the conceptualization of culture. Here, we highlight three imperatives to this end: the need for a clear definition of cultural traits, inclusion of the role of societal power, and recognizing the distinction between traits and characteristic adaptations.

Uchiyama et al. (2021) provide a much-needed framework for integrating cultural perspectives into behavior genetics research. Although we agree with the broad strokes of their arguments, we found some of the critical details lacking. In this commentary we highlight how inattention to the definition of *cultural traits*, *societal power*, and distinction between *traits* and *characteristic adaptations*, can derail the proposed framework and potentially lead to a murky literature that does more harm than good.

Remarkably, given the centrality of cultural traits to their arguments, Uchiyama et al. never provide a definition of the concept. From the text we infer that they use cultural traits equivalently to *cultural syndromes* (Triandis, 1996), which are culturally shared patterns of individual differences in beliefs, attitudes, and norms (e.g., individualism/collectivism, tightness/looseness). Syndromes are trait descriptions of the supra-individual level, most commonly nations, and are taken as indicative of the national psychology. Accordingly, an index of the syndrome is a proxy for the psychologies of the individuals therein. This *ecological fallacy* is common in cultural psychological work that focuses on syndromes, clearly evident in the research that takes a dichotomous view of cultures as individualistic or collectivistic and applies that to understand individual psychological phenomena (e.g., Kitayama & Park, 2021). Some argue that the ecological fallacy is irrelevant because inferences are restricted to the national versus individual level. However, measures of syndromes are based on aggregate individual-level reports (Brewer & Venaik, 2014), using highly select (Hofstede, 1980) or small (Gelfand et al., 2011) samples that are not representative of the populations. Uchiyama et al. magnify the problem by suggesting that cultural tightness/looseness (a proxy for individuals' beliefs) can itself serve as a proxy for *tolerance for diversity*, which, in turn, is one possible factor that may contribute to cultural heterogeneity and rate of innovation. This line of argument thus goes through several layers of abstraction and assumptions. The flaws of using proxies is evident, but their convenience perpetuates their use. If we take the authors' goal seriously--the importance of understanding cultural and environmental characteristics beyond simple national boundaries--then abandoning convenient practices in favor of rigorous practices is a must. This is a larger problem for behavior genetics research, which tends to favor complex designs over well-measured phenotypes (Tam et al., 2019). Using a proxy measure (tightness/looseness) as a proxy for another concept (tolerance for diversity) will yield poor answers to otherwise good questions.

Moreover, there is no clear criteria that demarcates a set of traits as constituting a syndrome, and thus they can be any random assortment of traits that are bundled together and labeled. Indeed, Muthukrishna et al. (2020) did exactly this by unsystematically aggregating responses from the World Values Survey to create the cultural fixation index (CF_{ST}), promoted in the target article. Similarly, the WEIRD (Western, Educated, Industrialized, Rich, Democratic; Henrich et al., 2010) acronym was developed through a non-systematic process that omits highly relevant dimensions of variation (e.g., race, religion). So, what makes a set of traits *cultural*? Following the authors' arguments on the pervasive influence of cultures, wouldn't all traits be cultural traits? How would we decide the degree to which a trait is cultural?

Additionally, on whose authority do a set of traits become cultural? Any conceptualization of culture, related to traits or otherwise, is necessarily incomplete without a serious consideration of societal power structures, which is jarringly absent from Uchiyama et al. This is not necessary only for the conceptualization of cultural traits, but for their whole set of arguments. How is innovation promoted or constrained? How are cultural clusters formed? Why is the environment more variable for some groups than others? The authors seem to suggest these conditions just emerge as part of a natural process rather than being intentional acts by those in power. Any model of cultural genetics must take societal power into consideration. The authors make brief references to colonial influences on the clustering of cultural groups, but this requires more explicit attention, given how it is a powerful driving force to forming the clusters central to the proposed model.

Finally, the conceptualization of cultural traits raises questions not only about how traits are bundled together into syndromes, but whether what is bundled are traits at all. Personality psychology has coalesced around a distinction between traits and characteristics adaptations (McAdams & Pals, 2006). Whereas traits are relatively stable patterns of individual differences in attitudes, behaviors, and cognitions that exist in all societies (e.g., extraversion, sensation-seeking), characteristic adaptations are goals, interpretations, and strategies grounded in culture (DeYoung, 2015). Given the loose definitions and lack of psychometric work, it is not clear whether cultural traits consist of traits, characteristic adaptations, or a mix of both.

The distinction between traits and characteristic adaptations is of central importance not only to the conceptualization of cultural traits, but also to the target phenotype when trying to understand what heritability tells us about cultural evolutionary processes. Although the majority of behavior genetic research has focused on traits, the evidence suggests that characteristic adaptations show lower heritability and greater shared environment compared to traits (Nguyen et al., 2021). Using an example from Uchiyama et al., political ideology (trait) has higher heritability and lower shared environment than party affiliation (characteristic

adaptation; Alford et al., 2005). Failing to appreciate these taxonomic distinctions in individual differences could lead to erroneous conclusions within a cultural evolutionary behavior genetic framework. This problem can be difficult to detect, though, because a construct might be conceptualized as a characteristic adaptation but measured as a trait (or vice-versa), and characteristic adaptation-like items in aggregate might also create a trait measure. The lack of attention to this distinction highlights the potential problems of using heritability estimates of phenotypes to infer cultural evolutionary processes.

To reiterate, we are broadly supportive of the framework outlined by Uchiyama et al., and anticipate it will generate greater sophistication in work bringing together cultural evolution and behavior genetics. It will only be successful, however, by incorporating a more sophisticated understanding of cultural traits.

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