Commentary

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How to Compare Across Species

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In our original study (Haun, Rekers, & Tomasello, 2014), we showed that after having learned a successful individual strategy for obtaining a reward, human children were more likely than chimpanzees and orangutans to change their response after observing three peers preferring an alternative response. These results, while novel, are not discrepant with those of other studies. Chimpanzees have repeatedly been shown to be conservative learners (Bonnie et al., 2012; Hrubesch, Preuschoft, & van Schaik, 2009), and children have repeatedly been shown to conform to the behavior of peers (Haun & Tomasello, 2011). Hence, we have great confidence in our original results. Nevertheless, Scheel, Shaw, and Gardner (2016) present a series of critiques, which we now address.

Internal Validity

In our study, we used conspecific peer demonstrators to avoid potential shortcomings of using human demonstrators for all species. Scheel et al. remark that our groups of peer demonstrators in the two nonhuman ape species had a wider age range relative to our human demonstrators and were therefore more likely to include individuals of lower social rank relative to the observer, which in turn might reduce rates of conformity. While the premise is true, the conclusion does not follow: The larger age variance in the nonhuman groups also increased the likelihood of individuals of higher social rank relative to the observer—and was therefore neutral with respect to the dominance relations between demonstrators and learners. Nonetheless, characteristics of demonstrator groups might impair cross-species comparisons if they varied systematically across species. More studies investigating the effects of characteristics of conspecific peer demonstrators on learners in both humans and chimpanzees will be helpful here.

Scheel et al. also argue that social-learning patterns might vary across species because observers and demonstrators in the nonhuman sample were separated by a cage barrier, while children were separated by distance only. To our knowledge, there is only one study to date that directly compared social learning in human children and other apes with barriers present for both species (Herrmann, Call, Hernàndez-Lloreda, Hare, & Tomasello, 2007). This study showed that even under those matched conditions, children imitate more than do chimpanzees. However, Herrmann et al.'s study, in contrast to ours, did not use conspecific demonstrators. Hence, matching both barriers and demonstrators might reveal similarities in social learning across great apes.

Scheel et al. also discuss the possibility that testers might have cued participants to choose one option over another. We took the utmost care to act neutrally toward the different response options. Cases in which testers inadvertently touched one of the sides of the box or in other visible ways guided participants' choices were excluded from final analysis. Two children and one chimpanzee were excluded for this reason.

External Validity

We tested our nonhuman samples in great-ape sanctuaries, that is, facilities in which apes are taken care of after they were injured or orphaned. Scheel et al. argue that such traumatic early experience in participants of one species but not the other renders data incomparable. Very few studies to date track the consequences of early trauma in nonhuman great apes in sanctuaries. The most relevant study reports comparisons between chimpanzee populations in sanctuaries and zoos, that is, living in similar conditions but with and without early trauma. They report no differences in social behavior and behavioral indicators of psychological health (Wobber & Hare,

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2011). More studies would be helpful to understand the consequences of early trauma in sanctuary-housed nonhuman great apes. Generally speaking, there is evidence that in humans, individual differences affect conformist tendencies (Bond & Smith, 1996), but to our knowledge, there are no data showing that early trauma affects the tendency to conform in any species. This does not, of course, prove the absence of a relationship between early trauma and conformity, but there is ample evidence of species differences in conformity (Haun, van Leeuwen, & Edelson, 2013), which suggests to us that a species-based interpretation is likely correct, if not necessarily complete.

Finally, Scheel et al. propose an alternative to our approach of comparing captive nonhuman apes with noncaptive human children: to compare human children with nonhuman apes that have been reared in humanlike homes. While such projects have been attempted (e.g., Gardner & Gardner, 1969), we believe that raising chimpanzees under humanlike conditions is ethically unsustainable and might even be illegal under the Endangered Species Act of 2015 (Reardon, 2015). We furthermore believe that such an approach is unhelpful in regard to cross-species comparisons since rearing one sample in species-appropriate conditions (humans in a human home) and the other in species-inappropriate conditions (nonhuman great apes in a human home) is not a match but a mismatch in rearing conditions.

Summary

Because it is impossible to randomly assign participants to one of two species, confounds between variables are unavoidable. Scheel et al. propose to minimize confounds by establishing identical physical and social scenarios during rearing and testing. This might entail raising chimpanzees in a human home and testing human children in chimpanzee enclosures. We disagree. We believe that in a good comparative study, psychological equivalency outweighs literal correspondence. We agree with Scheel et al. that, with respect to external validity, one population of humans or chimpanzees should not necessarily be assumed to be representative of the species as a whole. We disagree with the argument that one population, such as sanctuary chimpanzees, are by default unrepresentative, in the absence of direct comparisons of behavior in the domain in question. What is required is an experimental investigation of the variation of great-ape behavior across populations within species.

In human experimental psychology, the renewed attention to the problem of external validity (Henrich, Heine, & Norenzayan, 2010; Nielsen & Haun, 2015) has sparked an increase in cross-cultural experimental studies, and this has sharpened theories of what makes humans humans (Haun, 2015). While there has been great progress in documenting differences in behavioral repertoires across, for example, chimpanzee populations (Luncz, Mundry, & Boesch, 2012; van Leeuwen, Cronin, & Haun, 2014; van Leeuwen, Cronin, Haun, Mundry, & Bodamer, 2012), within-species comparisons in controlled experimental settings remain rare (but see, e.g., Cronin, van Leeuwen, Vreeman, & Haun, 2014). Considering population-level variation, especially in combination with cross-species comparison, is crucial if the field of comparative psychology is to move forward.

Action Editor

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Author Contributions

D. B. M. Haun and M. Tomasello wrote the manuscript.

Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

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