

Different Outcomes Require Different Explanations:

Reply to Cross and Campbell (2016)

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**Author Note**

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In general, we agree with almost everything mentioned in the commentary by Cross and Campbell (2016). We feel, however, that their line of argumentation is largely based on a central misunderstanding that we will try to clarify in this reply. It is a valuable thought that we should be careful not to fall back into the traditional competition of sexual selection theory (SST) *versus* social role theory (SRT). In fact, we believe that it is less helpful to prioritize one theory, but to consider both equally in our conceptual reasoning and analytic models when explaining sex differences in aggressive behavior, as we did in our original paper (Wölfer & Hewstone, 2015) and in line with recent integrative approaches that consider both sides of the nature-nurture debate underlying this theoretical competition (Eagly & Wood, 2013; Geary, 1999; van den Berghe, 2009).

What has to be differentiated – and this is actually the key point of our paper – are intrasex and intersex aggression (or same-sex and other-sex aggression), because they represent different outcomes that are based on different mechanisms and, consequently, require different explanations. As outlined in our original paper, literature indicates that intrasex aggression can be better explained by SST as a result of same-sex competition in order to achieve reproductive success, while intersex aggression can be better explained by SRT as a result of the socialized gender roles within a particular setting. At the same time, SST falls short in explaining intersex aggression, because male-female aggression is, at least in humans, evolutionarily ineffective compared to non-violent and stable long-term relationships that facilitate biparental care which, in turn, increases the chance that the offspring attains reproductive age (Fernandez-Duque, Vallengia, & Mendoza, 2009). In turn, SRT falls short in explaining intrasex aggression, because male-male aggression, despite continuous socialization experiences, does not increase evenly over the life course but reaches a peak in early adulthood when men enter the 'mating arena' (Daly & Wilson, 1990).

In their commentary, Cross and Campbell argued that SST already addresses intersex aggression and SRT already addresses intrasex aggression, because mediating domain-general traits shaped by sexual selection (e.g., risk-taking) or social roles (e.g., gender norms) facilitate aggression in general. It is correct that these factors influence sex differences in aggressive behavior, but the importance of these underlying mechanisms, in turn, differs between intra- and intersex aggression in the sense of a moderated mediation. More specifically, the mediating effect of risk-taking behavior between sex and aggression is stronger for intra- than intersex aggression, as Cross concluded in a different paper: "*Aggression towards opposite-sex partners has been shown to relate less strongly than aggression towards same-sex targets to [risky] impulsivity.*" (2010, p. 789). Similarly, the mediating effect of gender norms between sex and aggression is stronger for inter- than intrasex aggression, as indicated by research demonstrating a stronger effect of (culturally varying) gender norms on intersex aggression compared to (historically varying) gender norms on intrasex aggression (cf., Archer, 2009).

Disentangling both types of sex differences in aggressive behavior will not only improve the theoretical fit between SST as well as SRT and sex differences in aggressive behavior, but also the accuracy of our analytic models. Table S1 in the Supplemental Material available online presents a reanalysis of our original paper, which is based on the same data, applies the same analytic design, and models the same predictors; the only difference is that the outcome now represents total sex differences in aggressive behavior. In contrast to our original paper, these analyses reveal that all predictors, with the exception of gender norms, lose their predictive power when explaining total sex differences. This comparison indicates the very usefulness of differentiating between intra- versus intersex aggression.

For this purpose, our study provided initial evidence for a dual-theory approach that considers both theories, while *emphasizing* (n.b., which does not mean relying exclusively on)

SST for the explanation of intrasex aggression and SRT for the explanation of intersex aggression. That is, as incorrectly indicated by Cross and Campbell, we do not claim that SST is the only theory that explains intrasex aggression, nor that SRT is the only theory that explains intersex aggression. Rather, we argue, that both theories differ in their appropriateness for explaining intra- and intersex aggression; that is, they are *more or less* powerful and should, therefore, be combined in a dual-theory approach that explains the different types of sex differences in aggressive behavior separately.

We are not saying, however, that this dual-theory approach represents a complete and fully integrated model with no room for improvement. Future research and further theoretical refinements might advance this dual-theory approach by explaining each type of sex differences in aggressive behavior with a more complex interaction of SST and SRT. Any attempt at further theoretical and empirical refinements must, however, differentiate the outcome variable of interest, because intrasex aggression and intersex aggression are different phenomena and, consequently, differ in their underlying mechanisms; something that has been almost completely neglected in this field of research so far (for an exception see for example: Hilton, Harris, & Rice, 2000).

In sum, we wholeheartedly agree with Cross and Campbell that "integrating approaches requires more than a division of labor". However, a separate explanation of intrasex and intersex aggression has to be one aspect of a fully integrated model and – independently of our own theoretical position – we should be open-minded enough to acknowledge that different theories have specific strengths and weaknesses for explaining different mechanisms that underlie different types of sex differences in aggressive behavior. In this sense, our paper should merely be understood as a starting point for further research. Despite some limitations that are inevitably part of any single-study paper, we believe that the presented dual-theory approach that separately explains intra- and intersex aggression as well

as the use of aggression networks as a method for differentiating them are novel and valuable ideas that deserve further theoretical and empirical attention and will hopefully be subject to revision, refinement, and advancement in future research.

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### **Author Contributions**

R. Wölfer drafted and M. Hewstone edited this reply.