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The type of behavior and the role of relationship length in mate choice for prosociality among physically attractive individuals.

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### **Abstract**

Two further key aspects of prosociality as a sexual signal are explored here. Firstly, the context in which it is used (in particular relationship length), and, second, also the different types of prosocial behaviors that exist in social interactions. Therefore, this commentary can show why prosocial behaviors are biased towards physically attractive individuals, as they can gain valuable information from them.

## Main text

The role of prosocial behaviors as courtship displays has received a great deal of attention (e.g. Farrelly, Lazarus, & Roberts, 2007; Iredale, Vugt, & Dunbar, 2008; Miller, 2000; Phillips, Barnard, Ferguson, & Reader, 2008). As such, it has contributed greatly to our understanding of why humans behave altruistically from a Darwinian perspective. That the target article not only recognizes this, but also suggests from the body of evidence that mating motives are a key cause of prosocial biases to attractive individuals is pleasing to see, and I agree fully. However, I believe that the target article curtailed its investigation of this too early, and a more interesting and revealing understanding can be gleaned when one goes further. This commentary aims to do just that, by focussing on the *contexts* in which prosocial biases are used in mate choice as courtship displays (as suggested in the conclusion of the target article) and also importantly, on the different *types* of prosocial behavior that exist. As part of this, it is also important to not just concentrate on research findings of actual prosocial behaviors, which the target article has done so comprehensively. Instead this commentary will also discuss more research that shows the counterpart to this, if indeed a key cause is mating motives; namely, what is it about prosocial behaviors that all individuals (including of course, physically attractive ones) find desirable in mate choice?

A particularly important context to consider is the role of length of relationship. Here there is very strong experimental support for prosocial behaviors being more desirable for longer relationships (Barclay, 2010; Farrelly, Clemson, & Guthrie, 2016; Farrelly, 2011, 2013; Guo, Feng, & Wang, 2015; Moore et al., 2013; Oda, Okuda, Takeda, & Hiraishi, 2014) as well as having an important role cross-culturally in actual long term relationships (Stavrova & Ehlebracht, 2015; Tognetti, Berticat, Raymond, & Faurie, 2014). This suggests that prosocial behavior is signalling good phenotypic quality, that is the ability of the signaller to provide and support as a good partner or parent (Farrelly, 2011; Kokko, 1998; Miller, 2007). Furthermore, the lack of preferences for prosocial males for short term relationships among females at the fertile stage of their menstrual cycle (Farrelly, 2011; Oda et al., 2014) as well as *non*-prosocial men being preferred by women for short term relationships (Farrelly et al., 2016) suggests that an alternative signal, that of good genetic quality (Miller, 2000), cannot account for mate choice preferences for prosocial behavior. Therefore these findings offer

support for the sexual signalling hypothesis of the target article because, as the authors highlight, it suggests that prosocial behaviors are signalling desirable mate choice traits. More importantly however, the role of relationship length makes an important contribution as we are now able to surmise more precisely *what* is being signalled.

Additionally, more can be revealed about the target article's aims if we consider that there exist a myriad of types of behaviors that can be considered 'prosocial'. Once this is recognised, a more in-depth investigation of the role of such behaviors in mate choice can be revealing. For example, from the research in the target article that looks at economic games, it is suggested that the parameters of different games mean different types of prosocial behaviors are being signalled. Although, as the target article recognises, different games tend to produce similar findings with regards to the effects of physical attractiveness, this is not always the case. For instance, Jensen (2013) found no increased prosociality to attractive opposite-sex individuals with the trust game. This raises a particularly interesting question; can behavior signalled in this game, *trustworthiness*, be considered clearly distinctive from that of other games such as the dictator or ultimatum game, which can perhaps be associated with generosity, or the prisoner's dilemma game which is often considered a measure of reciprocal cooperation? In a similar vein, *fairness* in a particular interaction rather than indiscriminate prosociality (i.e. helping anyone) will be interpreted differently, so is there a difference in individuals' biases to display these to physically attractive observers? Little research exists to answer this, but a recent study found that behaving fairly occurred more than overall prosociality towards physically attractive partners in an ultimatum game (Bhagal, Galbraith, & Manktelow, 2016). Elsewhere, Guo et al. (2015) found that a cultural norm among Chinese undergraduates had a great influence over the role of kin altruism, making this type of prosocial behavior unusual in mate choice as it was preferred more by men (and signalled more by women). Finally, heroism can be considered an additional category of prosocial behavior, which although this too has been shown to be an important trait in mate choice (Farthing, 2005, 2007; Kelly & Dunbar, 2001) and therefore be more likely to be biased towards attractive individuals, it is unfortunately not addressed in the target article. Overall this is not to say that the premise of the target article and the body of research is flawed, as the majority of prosocial behaviors researched do indeed show their value in mate choice scenarios, suggesting that they signal a similar

value. However, a more nuanced and careful view of what 'prosocial behavior' may constitute in future research that examines such biases towards attractive individuals is clearly warranted.

To conclude, the aims of this commentary were to not only support the argument of the target article that evolutionary explanations can best account for biases in prosocial behavior towards physically attractive individuals, but also to build on this further with a more detailed analysis of research into the role of such behaviors in mate choice. The analysis of the latter aim suggests that one should expect such biases to be more prominent in mating contexts where individuals may be seeking more long term, committed relationships (perhaps the modern workplace, which the target article does show often happens), and also to pay attention to what aspect of 'prosociality' the biases are signalling, in order to enlighten and help us understand further.

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