



Invited Commentary

The shape of preference functions and what shapes them: a comment on Edwards

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Many of us have been baffled by the myriad of terminology in the field of mate choice. Edwards (2014) does us all a favor by clearing up some of this confusion. He points to advantages in being clear about our chosen descriptor of mate choice and he advocates a preference function approach in empirical studies of mate choice. The last point has been championed by many previous contributors to this field and we can only concur: focusing on if and how phenotypic variation in 1 sex relates to reproductive responses in the other captures the gist of sexual selection and avoids many logical pitfalls. However, the relevance of various metrics to some extent depends on the questions asked. For those that are interested in how selection operates within populations, preference functions best define both the source and the shape of sexual selection. Parameters such as mate search effort, mate assessment effort, responsiveness, and discrimination are not so relevant here, but can be of value for those interested in, for example, the economics of mating or condition dependence of mate choice.

In reading Edwards (2014), we were struck by the vexing disconnect between the level of detail of discussions about preference functions in our field and what we feel is the key unanswered question in the study of mate choice—why does it exist in the first place? From an evolutionary biologist's point of view, it seems difficult to motivate studies that focus on the fine details of the shape of preference functions, such as whether the threshold evolves rather than the slope, when we are ignorant about why there are mating biases in the first place. Specifically, we need to know what the forces of selection are that generate, maintain, and shape mating biases. There remains a black hole in the universe of mate choice research that has been identified on several occasions over the last few decades. To quote Kirkpatrick (1987):

Empirical studies of the forces acting on mating preferences are badly needed. These studies will have to (a) identify variation in female mating behavior and (b) quantify selection acting on that variation.

Very few studies have even made efforts to assess genetic variation in preference functions during the last 25 years (e.g., Hedrick and Weber 1998; Gray and Cade 1999; Brooks and Endler 2001; Ritchie et al. 2005) and, to our knowledge, not a single study has actually estimated phenotypic selection on preference functions (but see Qvarnström et al. 2006; Maklakov and Arnqvist 2009). Edwards (2014) reiteration of the importance of focusing on preference functions is very helpful in the sense that it may stimulate studies that can then estimate phenotypic selection on components of these functions. That, it seems, is what we should be doing.

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