

## Review of the doctoral dissertation by Zsófia Csajbók Mate preferences and their integration to mate choice

The dissertation focuses on description of mate preferences, mathematical models of mate preferences and mating market processes, including how mate preferences integrate to influence mate choice and how they evolve during mating. It consists of four papers, 3 already published, and 3 with Zsófia as the principal author. The large introduction section is a summary of these 4 papers, which systematically reviews topics covered by the papers. The strength of the introduction lies in structuring of the problems approached by these papers, rather than bringing additional topics or views. It should be noted, however, that the topic covered by the presented papers is sufficiently complex.

Overall, the thesis is an outcome of fruitful integration of evolutionary psychological approach with complex mathematical analysis. The topic clearly needs mathematical approach and needs researchers who are familiar with both the psychological and mathematical ground, such as Zsófia is. The thesis does not rely solely on presenting models that describe collected data on mate choice or which simulate mate choice processes. It also systematically presents key controversial themes (such as how individuals integrate their mating preferences or how characteristics translate into mate value), and tries to explain particular models while including critique of limits to such modelling. In general, this goes well, just sometimes the text is difficult to be understood because for instance, it relies that the reader has specific previous knowledge or studies additional papers that are cited. Just to bring an example, the chapter 2.5.2.5 on implicit measures of mate preferences was incomprehensible for me, the example with ice cream and dumpster did not elucidate to me how measures of reaction times can add to knowledge on importance of mate preferences. Similarly, response surface analysis remained beyond my abilities to catch the main idea. A systematic description of the basic idea or perhaps a graphical schema would help. But I am not very good at statistics and in general, I was often not sure if feelings of “something is not right here” are due to my lack of expertise in statistics or weakness of the thesis.

On the other hand, I especially liked some topics being discussed, such as the error management theory – the idea of dealbreakers that might in fact influence mate choice more than positive mate preferences. However, I have one note - I do not fully agree that in psychological research, the number of destructive and negative events in a relationship better predict relationship satisfaction and other relationship outcomes than the number of positive events – this is a belief that has been abandoned in social psychology during the last two decades and it is thought that it had been partly produced by biased methodology which omitted everyday positive behaviour.

When introducing mate value, I think Zsófia could have been more careful with the definition, since the one she used „According to some scholars, mate value is the fitness of the individuals as a potential partner that predicts their mating success (Kirsner, Figueredo, & Jacobs, 2003; Miller & Todd, 1998).“ is either not precise or it is based on some other authors than the cited ones. Kirsner et al. do not say anything like that and Miller and Todd base their concept of mate value on an economic market theory. Mate value could reflect individual's fitness to a certain degree but it definitely *is* not fitness, and I also doubt that

any authors would claim that mate value predicts an individual's mating success. It only predicts how high the individual can aim in terms of partner's qualities and how likely it is that he/she will be successful when seeking for such a partner, but additional factors play a much stronger role in mating success (such as the mating strategy, optimal mate choice preferences and skills, mate retention skills...). But I agree very much with the definition derived from Fisher, that mate value means how much others desire someone as a potential partner. When discussing mate value, I appreciate that Zsófia discussed how self-perceived mate value is influenced by the pool of available or desired partners, how it is associated with self-confidence etc., but I missed a distinction between mate value considered as an absolute value of an individual on the mating market and a dyad specific mate value. I also very much like some other ideas such as that a correlation between valuable characteristics within potential mates could explain why there are no great gender differences in desirability of partners varying in attractiveness or status. Or the idea that evaluation of a partner might be abstract at the very beginning and during established relationships whereas during a date with a potential mate, details and gut feelings might play a better role. In fact, there seems to be a completely different level of implicit mating criteria during dating, for instance led by olfactory or other nonverbal signalling cues.

The four papers attached with the thesis all represent an important contribution to the topic. I believe that Zsófia did a great part of the work, in all parts of the process.

I appreciate very much the first paper for its bottom up inductive methodology and I think that it allowed the authors to hit the point in mate choice very well. In contrast, I would not be so sure about that in the second paper using Czech and British data, which was more theory driven, despite the factor structure obtained in it resembled more previous studies. I very much agree that „...the resulting factor structure heavily depends on the items submitted into the analysis...” I would add that the final structure will depend on the composition of items submitted – many items describing the same thing will result in a strong factor, and this will not have anything in common with the real importance of the variable. There were other nice moments too, for instance that participants were not forced to give their short-term preferences, if they were not interested in short-term mating. I was a little confused about using importance and not ideal level of mate preferences to be compared with descriptions of actual level of traits in partner in this study, because in the introductory part of her thesis, Zsófia called for not mixing the two.

Nevertheless, what could be discussed more in this study is the sample which consists of young participants, mainly university students and participants with higher education. The place of residence is not given, but a high proportion city inhabitants can be also expected. It is a question if the factor structure would change if other samples, such as rural populations or older subjects were included. I would expect for instance, something like skillfulness to appear in rural areas, or a factor of responsibility and some kind of vitality (see my problems with definition of vitality below) to appear in older subjects whereas some factors could disappear e.g. in an older sample.

A few notes to the second paper: I had some problems with the Vitality factor. In terms of loading items, it is different from Fletcher et al's Vitality. Here it is more about physical

strength and dominance, which has nothing to do with active life style. The difference could partly explain some surprising results such as that actual partners were found to be rated higher in "Vitality" than mate preferences in terms of vitality were. If "vitality" was exchanged for strength and dominance, the results would not be surprising any more. Also here the sample is not unproblematic, it turns out to be rather small when it comes to the key questions of the study – comparison of pre- and post-mating preferences, and predominantly composed of females. A minor note - the first item loading on Warmth/Thrustworthiness should probably be empathetic, not emphatic – this might lead to great confusion. Also here I was confused by a methodological step, because this study used varimax rotation which was criticized in the first study. Which approach is supposed to be more suitable after all? By the way, how exactly do you know that continuously coupled participants are not psychologically different from other participants, because they simply have lower requirements?

I very much like the third paper which clearly shows how relying on self-report shifts constructs that we measure and their predictive validity. Here such qualities of a short mate value scale having just 4 very simple and similar items were tested and it was found that participants do not evaluate their mate value as compared with the whole pool of mates, but only to those relevant in the social group.

Also the fourth study is interesting and important. The method is clear, but its weakness perhaps is that it does not test how the Euclidean distance model, which has proven best in previous studies, would work in comparison with the Additive and the Threshold model. The discussion, in its current state, is somewhat difficult to follow. A very confusing moment is that there are ample citations of Conroy-Beam and Buss (2016), but these are two different studies and the work that „employed simulated agents programmed to choose a partner in a described way and then to reproduce“ is missing (mixed up with the other Conroy-Beam and Buss (2016)) in references, so I had really hard time to find out what these authors did. Besides that, I think that many important points are missing in discussion – such as that Conroy-Beam and Buss (2016b!) use 23 characteristics along which people express their mating performances, and that is a great difference to having 3, 4 or 7 of them. For instance, there is a much greater chance that a mate violates a threshold in one out of 23 characteristics than in just 4 of them, therefore it must not be a big deal, whereas to violate a threshold in one out of 3 main characteristics might be a serious problem.

Lastly, I have a problem with Figure 8 from the last paper, which is also presented as Figure 2 in introduction. Its variant b should represent a case when below reaching a breakpoint, participants are markedly more penalized for being low on this characteristic, but still do not get 0 of "points for the mating market". This is, however, not what the picture shows. The picture b shows a breakpoint where mates start being LESS penalized by having a low score on such a characteristic. I would understand breakpoint in this context as a point where the line below and above it is disconnected. So I think, the figure should either show two disconnected lines, or alternatively, which might match real processes of mate choice more accurately, an S-curve where the steep part of the curve would lie around the breakpoint. Also, why is the desirability line in both cases so much skewed so that very high scores in a

characteristic combined with zero in another pay more than medium characteristics in two traits?

Despite my remarks as a whole, I consider the work as a cohesive contribution to the field of mate choice. The work is creative, thorough, and showing Zsofia's deep knowledge in both evolutionary psychology and statistics. I recommend the thesis to be defended.

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