SOUNDING HOT? EXPERIMENTAL RESEARCH ON VERBAL PROFICIENCY AS A MENSTRUAL CYCLE-DEPENDENT FEMALE MATE CHOICE CRITERION

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Summary: Female fertility, which changes across the menstrual cycle, as an important factor in human mate choice has been in the scope of evolutionary psychological research for some time now. Many studies report effects of fertility on the female perception of many different mate choice-relevant traits, especially in short-term mating. One trait not studied so far from this perspective is verbal proficiency, a trait closely related to creativity and thus possibly a potential indicator of good genes. Using an experimental design, we tested whether high male verbal proficiency is more preferred by fertile than by non-fertile women. Three audio files were used as stimuli in which a male actor performed scripted verbal self-presentations. The script content was the same in each presentation but was delivered with three levels of verbal proficiency with respect to lexical, grammatical, and speech fluency features. Fertile and non-fertile women ($N = 305$) had to rate one randomly selected audio file for short-term and long-term attractiveness. An effect on short-term attractiveness was found, but not on long-term attractiveness. Contrary to the expectation, non-fertile women rated men with the highest verbal proficiency as more attractive as a short-term mate than high-fertile women. Verbal proficiency may be an indicator of resources (e.g., via income) that can be provided in long-term mating rather than an indicator of good genes in short-term mating.

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Introduction

Despite the assumption of many researchers that human female ovulation is cryptic, as opposed to the estrus of other mammals, is has been shown that female ovulation is not totally cryptic but can, under particular circumstances and certain aspects, be detected by males. Indeed, female fertility, as changing across the menstrual cycle, has been demonstrated to have robust effects on female as well as male behavior [Gangestad, Thornhill 2008, Gildersleeve et al. 2014, Haselton, Gildersleeve 2011, Thornhill, Gangestad 2008].

For instance, as a recent study shows, men find the body movements (walking and dancing) of fertile women more attractive than those of non-fertile women [Fink et al. 2012]. This and other research (e.g., [Beall, Tracy 2013]) suggests that in the fertile window of the menstrual cycle, female behavior and preferences are somewhat altered. In the middle of their menstrual cycle, when conception is most likely, women seem to especially prefer men of high genetic quality, that is, men possessing traits which serve as indicators for good genes, as genes are probably the only resource women can get during this cycle phase in short-term mating [Gildersleeve et al. 2014, Pillsworth, Haselton 2006]. Although women should prefer to select for good genes in their long-term mates as well, they trade-off the ability for paternal care to good genes in long-term mating [Haselton, Miller 2006].

Several indicators for good genes in males have been proposed by previous research, such as symmetry, masculinity, social presence, and competitiveness [Gangestad et al. 2004, for an overview, see also Gildersleeve et al. 2014]. Also a low male voice pitch is preferred especially by women in a short-term mating context and in the fertile phase of their cycle [Puts 2005].

Mental traits such as cognitive abilities and cultural skills as mate choice criteria have also been studied from an evolutionary perspective for more than a decade now (for an overview, see Lange et al. 2013, Miller 2000]. Intellectual abilities in general and creativity, for instance, have also been shown to be important mate choice criteria for fertile women in short-term mating [Haselton, Miller 2006, Miller 2000].

One trait not examined in this context so far is verbal proficiency. Most recent research has stressed the importance of verbal proficiency in mate choice [Lange, 2011] and has shown that women assort more importance to male verbal proficiency than men do with respect to female verbal proficiency, just as sexual selection theory would predict [Lange et al. 2014]. Verbal proficiency is a cognitive trait that is closely related to intellectual abilities as well as to creativity [Griskevicius et al. 2006, Kemper, Sumner 2001, Lange 2012, Lange et al. 2014, Miller 2000, 2002, Wechsler 1958]. Not only creativity is probably a genetically very complex trait, also language is massively polygenic [Jenkins 2000, Lieberman 2000, Pinker 2003], has hence a large mutational target size, and may thus serve as a good genes indicator. Therefore, it can be hypothesized that fertile women, who must be careful what genes they get via sexual intercourse, attach more importance to a verbally proficient mate than do non-fertile women. This should be more prominent in short-term than in long-term mating. This hypothesis was tested in the current study using an experimental design.

Materials and Method

We conducted an online study with female participants. It was assured by means of exclusion criteria (see below) that none of the participants were already menopausal, pregnant, breast-feeding, homosexual or using hormonal contraception. All participants who did not fulfil these criteria were excluded from the sample as were all participants who reported to have an irregular menstrual cycle. This resulted in a final sample of 305 female heterosexual participants (age: $M = 24.76$, $SD = 5.78$).

Each participant listened to one randomly selected audio file out of a total number of three audio files, in which an actor presented himself by talking about his person, his education, his job, his hobbies, and so forth. The content for all three stimuli was the same (i.e., the actor always told the same details about himself) but differed systematically with respect to the level of verbal proficiency (with respect to lexical, grammatical, and speech fluency features). The files were the same as were used by Lange et al. [2014] in their second study (for further details on the stimuli, see also [Lange 2012]). The respective stimulus then had to be rated for short-term and long-term attractiveness.

Finally, we employed commonly used indirect fertility measurements (as, for instance, used by [Haselton, Miller 2006, Pillsworth et al. 2004, Thornhill, Gangestad 1999], for an overview on indirect fertility measurements, see [Schwarz, Hassebrauck 2006]). Therefore we asked our female participants to give information on how many days ago their last menstrual cycle started (first day of menstrual bleeding) and in how many days they expected their next menstruation. If possible, we used only the first information, which meant to use the so-called reverse-cycle-day method by which ovulation can be estimated by assuming that it is 15 days prior to next menstrual onset [Gangestad et al. 2004, Haselton, Miller 2006, Thornhill, Gangestad 1999]. Information about the start of the last menstruation was only used if the participant would not tell about the onset of the next menstruation. Using this information, we were able to estimate whether the participants were fertile when rating the respective stimulus. All participants with a conception probability of at least 10 % (cf. [Haselton, Miller 2006]) were categorized as fertile. Hence, we compared 113 fertile to 192 non-fertile women.

Results

For short-term attractiveness, we found a statistically significant interaction effect between fertility and verbal proficiency ($F_{(2, 299)} = 3.415$, $p = .034$, $\eta_p^2 = .022$), but not for long-term attractiveness ($F_{(2, 299)} = 1.961$, $p = .143$, $\eta_p^2 = .013$). Contrary to the expectation, the significant interaction effect between fertility and verbal proficiency in short-term mating was driven by fertile women giving significantly lower ratings than non-fertile women for the highest level of verbal proficiency ($t_{(93)} = 2.108$, $p = .038$, $d = 0.44$; see Figure 1).

Fig. 1. Short-term attractiveness ratings of the three levels of verbal proficiency by fertile and non-fertile women.
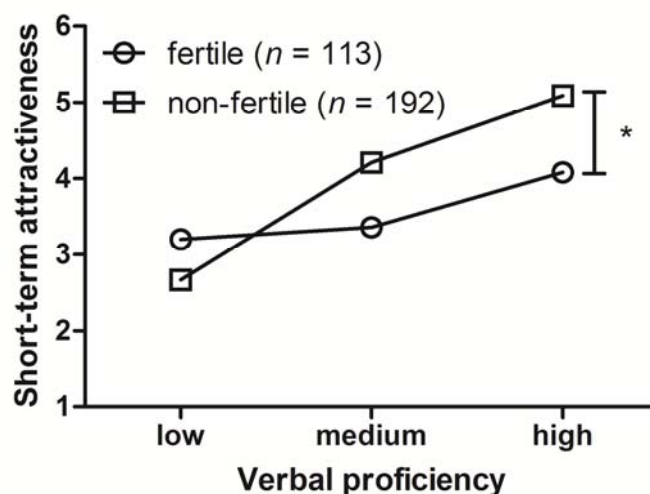
Note. * *p* < .05

Discussion

Female fertility seems to have an effect on the perception of a man's verbal proficiency, as we found a statistically significant interaction effect between fertility and the different levels of verbal proficiency. This was only found for short-term but not for long-term mating. Considering theoretical assumptions and past research, this could be expected. However, the effect in our study was driven by fertile women rating high verbal proficiency *lower* than non-fertile women. This could be interpreted as a preliminary falsification of the hypothesis of verbal proficiency as a good genes indicator, despite very sound theoretical reason that led us to assume it. We are thus in company with many fertility studies that were not able to prove their hypotheses, although most studies seem to have found effects [Gildersleeve et al. 2014].

One reason for our result could be that verbal proficiency might be a more important trait in long-term mating [Lange et al. 2014]. Indeed, verbal proficiency is correlated with formal schooling and thus income [Kanazawa 2008], which are important female long-term mate preferences [Schwarz, Hassebrauck 2012]. Language competence as a mate choice criterion might indeed be more a matter of long-term than of short-term mating, which could partially explain our results, as female fertility is more likely a factor in short-term mating.

It could also be that the fertile women, because of being very selective, which this is the whole mate choice-related behavioral consequence of being fertile after all, were more reluctant to give relatively high ratings, because they were in the phase of their cycle when conception is most likely, that is when a (bad) choice has more far-reaching consequences.

Also, every short-term mating might turn out to be long-term relationship. Every long-term relationship necessarily starts as some kind of short-term liai-

son. As stated above, non-fertile women should look for good paternal investors or, in other words, opt for a trade-off in which paternal qualities are more important than genetic quality. As verbal proficiency is predictive of the ability to provide resources, this could explain why the non-fertile women in our study rated high verbal proficiency as more important than fertile women, although this was the case for short-term attractiveness.

On first glance, one limitation of our study is the indirect estimation of female fertility (e.g., by relying on participants' estimation of mean cycle length) instead of measuring ovulation directly (e.g. by analyzing the LH peak in urine samples). In fact, this indirect method has been recently criticized [Harris et al. 2014, Wood, Carden 2014]. However, we are confident that our large sample size is immune to this critic. Even if, for instance, some participants estimated their mean cycle length too long, while other participants are expected to have estimated their mean cycle length too short, this should lead to error variance, making it harder to find significant results.

Future studies should focus again on verbal proficiency as a menstrual cycle-dependent mate choice criterion, possibly with different stimulus material and, if applicable, also by employing direct measures of fertility.

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