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Short Communication

## How disgust predicts the adoption of mate shortage solutions

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## ABSTRACT

When people cannot find desirable mating prospects, they may abstain, lower their standards, or travel farther to solve this mate shortage. We examined people's ( $N = 306$ ) willingness to adopt these three solutions to mating shortages in relation to individual differences in disgust in men and women and for long-term and short-term partners. Those with more sexual disgust were more willing to abstain during a shortage of short-term mates and were less willing to lower their standards and to travel farther for short-term partners. Pathogen and moral disgust were associated with choosing to travel farther in the long-term contexts for men only. Our findings support the idea that how people evaluate costs and benefits in mating is expressed in their personality.

Even the most desirable people may experience shortages of appealing mating partners. This recurrent problem may have led people to develop strategies to solve mate shortages. Three such strategies may be abstaining, searching farther, and lowering their standards (Apostolou, 2017; Jonason et al., 2020; Regan, 1998). Resorting to these strategies as compensatory mating tactics may expose people to risks (1) like sexually transmitted infections when lowering one's standards for short-term mates, (2) reproductive oblivion if abstention is employed incorrectly, and (3) exposure to mate defection, travel costs, and the stresses of engaging in a long-distance relationship when opting to travel farther. Whether a person chooses to employ these strategies may be sensitive to the risks and benefits associated with the strategies, sex differences in parental investment, and the nature of the relationship. The recurrent risks faced in different mating contexts suggest that individual differences in responsiveness to risk might be important personality traits to better inform willingness to adopt these solutions.

Disgust mechanisms evolved to help people avoid pathogens (i.e., pathogen disgust), threats to their reproductive success (i.e., sexual disgust), and people who may inflict costs on a person or their community (i.e., moral disgust; Tybur et al., 2009). A person's sensitivity within these domains of disgust (Frederick et al., 2018; Tybur et al., 2009) will likely manifest in their mating psychology. For example, heightened disgust may lead to reduced interest in interpersonal contact (Brown & Sacco, 2020; Sawada et al., 2018). Additionally, having less

sexual disgust is associated with an orientation toward short-term mating (Al-Shawaf et al., 2015; O'Shea et al., 2019), a mating strategy that would be difficult to employ if a person was easily repulsed by potential threats to their reproductive success (i.e., sexual disgust; Tybur et al., 2009). Therefore, people are likely constrained by their disgust sensitivity, such that they are restricted to a mate searching strategy that avoids the disgust threats most salient to them and optimizes their reproductive success. However, researchers have yet to examine how disgust may guide preferences for mate shortage solutions.

We predict that people with more pathogen and sexual disgust are unlikely to lower their standards or travel farther, instead choosing to abstain during a mating shortage. This would allow people to avoid the potential pathogen and reproductive risks in either mating context. Because long-term partners have a greater potential to inflict costs on a person and their community, people with more moral disgust sensitivity may be likely to travel farther and expand their search radius when experiencing a shortage of long-term partners. This would allow people who are more sensitive to social norm violations to increase their mating pool, without increasing their willingness to mate with people who may pose risks to them or their community (Tybur et al., 2009).

Beyond the role of disgust mechanisms to predict the adoption of different solutions to mate shortages, we also replicate several established effects. First, due to the greater obligatory parental investment required by women compared to men (Trivers, 1972), women likely

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have a greater disgust sensitivity than men do (Al-Shawaf et al., 2015; Crosby et al., 2020; Tybur et al., 2009). We seek to replicate these sex differences in disgust. Alternatively, given the robust sex differences in mating psychology (Buss & Schmitt, 1993; Trivers, 1972), we expect to replicate sex differences in the appeal of these solutions from previous research (Jonason et al., 2020). Men should be more willing to lower their standards for short-term mates given the potential reproductive benefits ancestral men could have amassed through opportunistic matings, whereas because of the higher costs women may face for making mating mistakes, they should be more willing to abstain than men.

## 1. Method

### 1.1. Participants & procedures

Participants were 306 (131 men) Amazon Mechanical Turk workers from America who were 18 to 68 years old ( $M = 27.87$ ,  $SD = 9.04$ ) and signed up to participate in a “relationship research” study. We determined our sample size based on the average effect size ( $r \approx 0.20$ ) in personality psychology and the guidelines ( $N \approx 250$ ) for reducing estimation error (Gignac & Szodorai, 2016). Participants provided tick-box consent, completed a series of self-report measures, completed a demographics questionnaire, and were thanked and debriefed. The ethical board at Charles Sturt University (H20189) approved our study.

### 1.2. Measures

Individual differences in disgust were measured with the Three Domains of Disgust Scale (Tybur et al., 2009). The scale is composed of 21 items where participants were asked to rate how disgusting (1 = *Not at all disgusting*; 7 = *Extremely disgusting*) each item was to them. Seven items reflected each of the domains of sexual (e.g., “A stranger of the opposite sex intentionally rubbing your thigh in an elevator.”), pathogen (e.g., “Seeing some mold on old leftovers in your refrigerator.”), and moral (e.g., “Forging someone’s signature on a legal document.”) disgust. We averaged items to create indexes of each trait, where sexual disgust was correlated ( $p < .01$ ) with pathogen (0.45) and moral (0.31) disgust, and pathogen and moral disgust were correlated (0.31).

Individual differences in response to mating shortages were measured by first asking participants to imagine an inability to find mates (i.e., “For the next questions, imagine you are single and are struggling to find a prospective short-term/long-term partner, you have been actively trying for 6 months. Think about how that would make you feel and answer the questions below with that in mind.”). Participants were then asked how likely (1 = *Not at all*; 5 = *Very Much*) they would be to search farther in distance from them, to lower their standards of how particular they are about whom they date, or to make no changes at all and remain single.

## 2. Results

We began with a 2 (sex)  $\times$  2 (mating context)  $\times$  3 (solutions) mixed model ANOVA (see Table 1). We found a main effect for mate shortage solutions ( $F[2, 608] = 63.45$ ,  $p < .01$ ,  $\eta_p^2 = 0.17$ ), revealing lowering standards as the, overall, least popular solution. Solutions and sex interacted ( $F[2, 608] = 9.39$ ,  $p < .01$ ,  $\eta_p^2 = 0.03$ ) such that men were more willing than women to lower their standards ( $t[304] = 4.23$ ,  $p < .001$ , Cohen’s  $d = 0.49$ ) and travel farther ( $t[304] = 2.22$ ,  $p = .03$ ,  $d = 0.26$ ), but were less willing to abstain ( $t[304] = 2.12$ ,  $p = .04$ ,  $d = 0.25$ ). Solutions and mating context also interacted ( $F[2, 608] = 58.51$ ,  $p < .01$ ,  $\eta_p^2 = 0.16$ ). Abstaining ( $t[305] = 5.55$ ,  $p < .001$ ,  $d = 0.32$ ) and lowering standards ( $t[305] = 5.03$ ,  $p < .001$ ,  $d = 0.29$ ) were more popular in the short-term context than in the long-term context. Traveling farther ( $t[305] = 9.23$ ,  $p < .001$ ,  $d = 0.53$ ) was more popular in the long-term than in the short-term context. In the short-term context ( $F[2, 305] = 36.82$ ,  $p < .01$ ,  $\eta_p^2 = 0.11$ ,  $d = 0.35$ ) abstaining was the most popular

**Table 1**

Descriptive statistics and sex difference tests for solutions to mate shortages and the domains of disgust.

	Mean (SD)			<i>t</i>	<i>d</i>
	Overall	Men	Women		
Abstaining <sub>STM</sub>	3.26 (1.41)	3.08 (1.42)	3.41 (1.39)	-2.03*	-0.24
Lowering standards <sub>stm</sub>	2.31 (1.22)	2.62 (1.19)	2.09 (1.19)	3.87**	0.46
Traveling farther <sub>stm</sub>	2.66 (1.29)	2.90 (1.38)	2.48 (1.19)	2.80**	0.35
Abstaining <sub>LTM</sub>	2.76 (1.38)	2.63 (1.40)	2.86 (1.36)	-1.44	-0.17
Lowering standards <sub>lrm</sub>	1.97 (1.02)	2.18 (1.10)	1.81 (0.93)	3.13**	0.39
Traveling farther <sub>lrm</sub>	3.42 (1.22)	3.48 (1.17)	3.38 (1.26)	0.74	0.09
Sexual disgust	3.47 (1.33)	2.77 (1.13)	3.99 (1.22)	-9.96**	-1.06
Pathogen disgust	4.35 (1.00)	4.05 (0.94)	4.57 (1.00)	-4.64**	-0.55
Moral disgust	4.64 (1.44)	4.39 (1.50)	4.82 (1.37)	-2.58**	-0.32

Note. STM = short-term mating; LTM = long-term mating; *d* is Cohen’s *d* (<https://lbecke.uccs.edu/>).

\*  $p < .05$ .

\*\*  $p < .01$ .

solution, followed by traveling farther and, then lowering standards. In the long-term context, traveling farther ( $F[2, 305] = 100.73$ ,  $p < .01$ ,  $\eta_p^2 = 0.25$ ,  $d = 0.57$ ) was the most popular, followed by abstaining, and then lowering standards.

Women had more disgust sensitivity than men in all three domains. In Table 2 we report the correlations between the disgust traits and willingness to adopt different solutions to long-term and short-term mate shortages overall and in each sex. Sexual disgust was positively correlated with abstaining and negatively correlated with lowering standards and traveling farther in short-term contexts. Within the sexes, pathogen and moral disgust were associated with choosing to travel farther in the long-term context for men only.

## 3. Discussion

When people fail to achieve their mating goals, what they do is an important question to both understand the mating psychologies of people and inform people’s efforts to find a partner. This study provides insight into how disgust sensitivity may be related to solutions chosen during mating shortages. In addition to replicating sex differences in disgust (Tybur et al., 2009) and willingness to adopt different compensatory mating tactics (Jonason et al., 2020), we found that sexual disgust was positively correlated with abstaining in short-term contexts and negatively correlated with lowering standards and traveling farther in short-term context. This supports the notion that sexual disgust motivates the avoidance of threats to a person’s reproductive success (Tybur et al., 2009). Pathogen and moral disgust were associated with choosing to travel farther in the long-term context for men only, and men with high moral and pathogen disgust were willing to incur travel costs to not incur costs associated with the other compensatory mating tactics. That is, these men are uninclined to abstain, because of the costs to their reproductive success, and are uninclined to lower their standards, because of the threat to their reproductive success. Instead, traveling farther is a more appealing option that allows men to be selective in their mates without severely limiting their mating opportunities.

### 3.1. Limitations & Conclusions

Despite the straightforward replication and extension nature of our

**Table 2**

Correlations between the domains of disgust and solutions to mate shortages as a function of mating context and the sex of the participant.

Abstaining	Sexual disgust ( $\alpha = 0.82$ )			Pathogen disgust ( $\alpha = 0.73$ )			Moral disgust ( $\alpha = 0.90$ )		
	STM	LTM	Steiger's z	STM	LTM	Steiger's z	STM	LTM	Steiger's z
Overall	0.32**	0.08	3.87**	0.05	0.05	-0.11	-0.02	-0.05	0.45
Men	0.31**	-0.01	3.53**	0.03	-0.04	0.77	0.02	-0.05	0.80
Women	0.30*	0.08	2.46*	0.01	0.09	-0.85	-0.09	-0.08	-0.18
Fisher's z	0.06	-0.73		0.15	-1.13		0.96	0.19	
Lowering standards									
Overall	-0.15**	-0.07	-1.39	-0.03	-0.01	-0.38	-0.07	-0.02	-0.81
Men	-0.15	-0.08	-0.65	0.09	0.03	0.58	-0.01	0.03	-0.37
Women	-0.01	0.09	-1.27	-0.03	0.04	-0.87	-0.06	-0.01	-0.63
Fisher's z	-1.22	-1.49		1.01	-0.07		0.41	0.34	
Traveling farther									
Overall	-0.14*	-0.00	-2.11*	-0.00	0.05	-0.76	0.01	0.17**	-2.51*
Men	0.03	0.03	-0.08	0.11	0.23**	-1.25	0.07	0.34**	-2.75**
Women	-0.16*	0.01	-1.95	-0.01	-0.05	0.44	0.00	0.06	-0.71
Fisher's z	1.61	0.22		1.05	2.49*		0.54	2.44*	

Note. Fisher's z used to compare independent correlations (<http://quantpsy.org/corrttest/corrttest.htm>); Steiger's z used to compare dependent correlations (<http://quantpsy.org/corrttest/corrttest2.htm>);  $\alpha$  is Cronbach's  $\alpha$  for internal consistency; STM = short-term mate; LTM = long-term mate.

\*  $p < .05$ .

\*\*  $p < .01$ .

study, the research was limited. We have not captured all potential compensatory mating tactics (e.g., online dating or sexual coercion), our data was W.E.I.R.D. (i.e., Western, educated, industrialized, rich, and democratic; Henrich et al., 2010), we relied on a simple distinction for mating context, ignoring other kinds of relationships, and captured a narrow range of individual differences that might account for people's adoption of these compensatory mating tactics.

Here, we replicated and extended research on individual differences in willingness to adopt three solutions to mating shortages. Our findings suggest that when faced with mating shortages, different people may adopt different solutions that can be captured in sex differences and individual differences in disgust and may be sensitive to the level of commitment a relationship is characterized by. Such findings are consistent with the suggestion that disgust serves to help people avoid pathogenic, social, and mating threats. These findings also provide real world implications by revealing insights into how people deal with mating failures. Subsequent work should examine the adoption of compensatory mating tactics more broadly and in cross-cultural samples.

#### Authors note

Data for this study was collected as part of a larger study and her undergraduate thesis for the 3rd author.

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#### Ethics approval

This study was approved by the ethical board at Charles Sturt University (Ethics approval number: H20189).

#### Consent to participate

All participants included in this study provided informed consent.

#### Availability of data and material

The data will be publicly available on the Open Science Framework

([https://osf.io/whzbf/?view\\_only=2d31a72499604b7e8fc157eeeab3a5e4](https://osf.io/whzbf/?view_only=2d31a72499604b7e8fc157eeeab3a5e4)).

#### CRedit authorship contribution statement

**Kaitlyn P. White:** Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. **Stanisław K. Czerwiński:** Formal analysis, Writing – original draft. **Rachel Mulhearn:** Investigation, Conceptualization, Methodology. **Peter K. Jonason:** Conceptualization, Investigation, Methodology, Supervision, Writing – review & editing.

#### Declaration of competing interest

None.

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