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East meets West in mate preferences, except when it doesn't:

An international budget-allocation study

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Abstract

Objective: Mate choice involves trading-off several mate preferences. Previous research has revealed that as mate choice becomes constrained people give priority to those traits fundamental to reproductive success in the ancestral environment. The aim of this study was to examine whether this pattern of prioritization, and its accompanying sex differences, is consistent across Eastern and Western cultures.

Method: A large international sample of participants (N = 2,477) designed an ideal long-term partner by allocating mate dollars to eight traits using various budgets. Unlike previous versions of the task, we also included traits known to vary in importance by culture (e.g., religiosity and chastity).

Results: When using the smallest budget, the culture groups differed in their dollar allocation for almost every trait (average d = 0.42). Despite this, both groups prioritized those traits historically fundamental for reproductive success and consistent sex differences in the desire for physical attractiveness and good financial prospects in a partner were found.

Conclusion: The tendency to prioritize traits fundamental to reproductive success is present in both Eastern and Western culture groups. While culture norms may temper this process, they do not override it, supporting the idea that we have evolved robust psychological mechanisms for this purpose.

Keywords: Mate choice; sex differences; cultural differences; mate preferences; evolutionary psychology

From humor and creativity to sexual history and body composition, psychologists have comprehensively catalogued the mating preferences of men and women (Buss, 1989; Chang, Wang, Shackelford, & Buss, 2011; Lukaszewski & Roney, 2010; Phelps, Rand, & Ryan, 2006; D. Singh & Young, 1995; Stewart-Williams, Butler, & Thomas, 2017). Still, knowledge of how these preferences are integrated and prioritized when choosing mates remains an underdeveloped area within both psychology and ethology (Li, Bailey, Kenrick, & Linsenmeier, 2002; Rosenthal, 2017). For this research, we used a large, international sample to examine how long-term mating preferences are prioritized, and how this pattern changes between the sexes and different culture groups. To do so, we use a well-established budget allocation task that requires participants must make tough choices about which traits to prioritize in a mate.

Measuring preference interaction

Historically, the traits that people prefer in their mates have been studied independently of one another (Buss, 1989; Kenrick, Groth, Trost, & Sadalla, 1993; Ting-Toomey, 1994; Yue, Chen, & Zhang, 2005), a tendency that has largely continued to the present day (Buss, Shackelford, & LeBlanc, 2000; Little, Jones, & DeBruine, 2011; Meltzer, McNulty, Jackson, & Karney, 2014). In reality, mate choice is a multivariate process that includes integrating and trading-off several preferences (Conroy-Beam, Goetz, & Buss, 2016; Rosenthal, 2017). Some studies have examined how humans trade-off their various mate preferences. For example, the relative importance of faces over bodies when judging attractiveness has been studied using a forced-choice task that had participants reveal them one at a time (Wagstaff, Sulikowski, & Burke, 2015). Similarly, multivariate analysis has been used to map the relationships between facial attractiveness, sexual dimorphism, and intelligence on overall attractiveness (Lee, Dubbs, Von Hippel, Brooks, & Zietsch, 2014). Other research has shown that social norms (e.g., age of consent) can affect how people judge

physical attractiveness (Bennett, Lowe, & Petrova, 2015) and that sufficient amounts of good looks must be present before other traits, like intelligence, play a role in mate choice (Jonason et al., 2019). One common element these studies share is that they tend to focus on interactions between relatively small numbers of variables within fairly homogenous samples (e.g., Australian college students). A more effective way to examine the design features, and performance parameters, of evolved psychological mechanisms is to test how they react to a variety of input across different contexts (Confer et al., 2010). Thus, there is scope to examine preference trade-offs within a diverse sample to determine how canalized trade-off patterns are.

One method of examining how preferences are traded-off, and the one which we use here, involves asking participants to construct a hypothetical partner using "mate dollars" to acquire a certain level of an trait (Li et al., 2002). When given a large budget to do this with, their decision-making is relatively unconstrained, as with most preference surveys, which allows them to satisfy all of their preferences. However, when given a smaller budget, participants have to choose among their conflicting preferences and decide which traits are most important to them. This forced-choice method provides unique insights over the typically separate Likert-style assessments of mate preferences because it is more ecologically valid – real-life mate choice requires one to consider and weigh-up the variety of features in a whole person, not atomized, isolated traits (e.g., Buss, 1989; Kenrick et al., 1993).

Comparing how participants allocate their mate dollars when budgets are small versus large gives us insight into how they prioritize traits. Participants allocate their most important traits (i.e., *necessities*) a large proportion of dollars first, causing these to dominate low budgets. Then, as budgets become relaxed, these traits attract fewer and fewer additional dollars as participants turn their attention to the other characteristics. In contrast, the least

important traits (i.e., *luxuries*) tend to take a back seat when budgets are low, then receive more dollars as budgets increase. Finally, some traits are given priority when budgets are low but to a lesser extent than necessity traits and then continue to attract dollars at a similar rate when budgets are relaxed (indispensables; Li et al., 2002).

Findings from the budget allocation task tend to support the *mate preference priority model*. According to this model, ancestors who chose long-term partners that were unable to reproduce or function within a pair-bond, even if they had other desirable characteristics, risked having their genetic lineage cut short. Thus, there was a selection pressure for men and women to prioritize those traits crucial to reproductive success when picking a mate. This pressure led humans to evolve at least one psychological mechanism that biases our mate preferences towards ensuring, first and foremost, that we obtain a sufficient level of those attributes fundamental to reproductive success (Jonason, Nolland, & Tyler, 2017; Li et al., 2002; Li, Valentine, & Patel, 2011; Li et al., 2013).

Three traits that consistently emerge as necessities in tests of the model are physical attractiveness, kindness, and social status. Each of these would have been fundamentally important for successful reproduction in the ancestral past. Physical attractiveness would have been a cue of fertility, and offspring produced with a physically attractive partner would likely be desirable mates themselves in the future (Bovet, Barkat-Defradas, Durand, Faurie, & Raymond, 2018; Cornwell & Perrett, 2008; Pflüger, Oberzaucher, Katina, Holzleitner, & Grammer, 2012; Rosenthal, 2017). Choosing a kind and empathetic partner would have been fundamental to successful pair-bonding, the primary mating arrangement in humans (Geary, 2000; Stewart-Williams & Thomas, 2013). Kindness is also associated with greater parenting skills (e.g., responsiveness, Prinzie, Stams, Deković, Reijntjes, & Belsky, 2009) and may reflect the extent to which a partner is capable of cooperating and willing to share his or her reproductive resources (Jensen-Campbell, Graziano, & West, 1995; Li et al., 2002). Finally,

having a high status partner would have been beneficial for both sexes, because of its association with preferential access to resources within the community (Mulder & Beheim, 2011; Nelissen & Meijers, 2011; von Rueden, 2014).

Group differences in prioritization

The attributes in a partner that are most fundamental to reproductive success have historically differed between the sexes due to asymmetries between them in the costs and benefits of having sex (Buss & Schmitt, 1993; Jonason, Li, & Cason, 2009; Li et al., 2002; Li & Kenrick, 2006). For example, because female fertility tends to decline relatively quickly with age, men may have evolved to prioritize having at least a moderate amount of physical attractiveness in both their long- and short-term mates. Such prioritization is adaptive because in ancestral times, a moderately physically attractive woman was likely sufficiently healthy and fertile (D. Singh & Young, 1995). In contrast, because men's fertility declines more slowly over the lifespan, ensuring male fertility is not as much of an adaptive problem. However, men do differ widely in their ability to provide resources for a family. Thus, women may have evolved to prioritize having at least a moderate amount of social status and resources – a level that likely ensured offspring survivability in the ancestral past – in their long-term mates (Li et al., 2002).

These sex differences are often least evident in long-term relationships where the sexes' interests converge, and most in short-term relationships, where the greatest conflicts arise (Buss & Schmitt, 1993; Jonason et al., 2009; Stewart-Williams & Thomas, 2013; Thomas, 2018; Trivers, 1972). Thus, it is not surprising that previous versions of the budget allocation task have found that the prioritization of traits changes depending on the participant's sex and proposed relationship context. For example, men tend to place a greater premium on physical attractiveness than women, and both sexes prioritize kindness more in a long-term mate than a short-term one (Li & Kenrick, 2006; Li et al., 2011).

Although humans have likely evolved to prioritize reproductively fundamental traits, this process may nevertheless be influenced by cultural norms. For example, while an American MTurk sample and a sample of Australian undergraduates did not differ in how they prioritized traits (Jonason et al., 2017), differences were found when comparing students from Singapore and the U.S. (Li et al., 2011), arguably more discrepant groups. As in previous research, both groups of participants gave priority to traits like physical attractiveness and kindness over creativity, and sex differences were found in line with the unique reproductive asymmetries associated with each sex. However, cultural differences were also found. For example, women from Singapore placed more of a premium on social status and less on physical attractiveness than their U.S. counterparts. The authors attributed this finding to the high value of hierarchical position and "face" in East Asian cultures (Ting-Toomey, 1994; Yue et al., 2005). In other words, while women typically give high priority to social status, due to its historical reproductive advantages, this was intensified by local cultural norms.

In this research, we continued this exploration of cultural similarities and differences in mate preference priority by asking a diverse international sample of participants from both Eastern and Western cultures to design long-term partners using the budget allocation task. We used eight traits in the task, which included a sample of those used in previous mate preference research (e.g., Buss, 1989; Li et al., 2002): *kindness*, *physical attractiveness*, *good financial prospects*, *humor*, *creativity*, *chastity*, *wants children*, and *religiosity*. According to the mate preference priority model, participants should prioritize those traits historically crucial to reproductive success (Li et al., 2002). Of the eight traits, we predicted that kindness, physical attractiveness, and good financial prospects (a modern proxy of social status), would receive priority due to their likely ties to reproductive success in the ancestral environment (see above) and the fact that they have consistently been given priority in

previous iterations of the budget allocation task (Li et al., 2002; Li & Kenrick, 2006; Li et al., 2011).

The two traits of creativity and humor may have been somewhat important for reproductive success in our ancestral past, functioning as sexually selected ornaments and, in the case of humor, a means of reinforcing pair-bonds (Hall, 2017; Li et al., 2009; Miller, 2000). However, under constrained budgets we expect preferences for these traits to take a back seat to those historically fundamental for reproductive success. The benefits of having a creative partner do not outweigh the costs of pair-bonding with someone who is unable to produce attractive offspring, bring resources into the relationship, or co-operate and lend support.

We can apply a similar logic to traits that have a short evolutionary history or little association with reproductive success. We included three such traits in this study, each one known to vary in importance between cultures and previously unused in a budget allocation study: religiosity, chastity, and the desire for children (Buss et al., 2000; Chen, Austin, Miller, & Piercy, 2015; Pearce, Chuikova, Ramsey, & Galyautdinova, 2010). Depending on culture, these attributes are often considered important traits for suitors to have. For example, chastity was selected as important by less than 5% of a British sample compared to 31% of women and 46% of men in a Chinese one (Higgins, Zheng, Liu, & Sun, 2002) and chastity may be particularly unimportant in Norway (Kennair, Nordeide, Andreassen, Strønen, & Pallesen, 2011). Including these types of traits will allow us to observe how culturally variable preferences influence the prioritization of the more reproductively relevant ones. This constitutes a unique test of the mate preference priority model, which has traditionally been used with attributes that are reliably favored across cultures. As with humor and creativity, we anticipate these attributes to fall by the wayside when pit against kindness,

physical attractiveness, and good financial prospects, despite cross-cultural differences in their importance.

We tested three main hypotheses. First, in the overall sample the traits of good financial prospects, physical attractiveness, and kindness will emerge as necessities (H1). Second, women will tend to give good financial prospects greater priority than men, who in turn will tend to prioritize physical attractiveness more than women (H2). Finally, these necessities and sex differences will be present across culture groups, despite differences between them (H3).

Materials and methods

Participants

Participants were recruited at seven academic institutions across five countries: Australia, Malaysia, Norway, Singapore, and the United Kingdom. Although participants were primarily students, our data collection occurred online which allowed us to recruit from the wider population and from neighboring nations using a snowballing method. In total, 3,223 participants completed the task. After excluding those who did not provide sufficient information, the final sample consisted of 2,587 participants from 59 different countries.

To allow for cross-cultural comparisons, we took the top 10 countries represented in the sample and collapsed them into two groups (Table 1). The first group contained countries that were either in Europe or historically influenced by European culture (i.e., Australia, Norway, the United Kingdom, the United States of America, and New Zealand). The second group contained countries from East and South East Asia (i.e., Malaysia, Singapore, Hong Kong, China, and Indonesia). For simplicity, we refer to these groups as “Western” and “Eastern” respectively. The application of these labels is not without controversy (Hermans & Kempen, 1998; Vignoles et al., 2016); however, continuing with countries as a unit of

analysis would have introduced problems of unequal sample sizes. Thus, collapsing these countries into larger culture groups allowed us to retain more participants in the analysis.

[Table 1 near here]

There were three notable differences in demographics between the Eastern and Western groups. The Eastern sample was younger (M = 21.48, SD = 2.59) than the Western sample (M = 27.03, SD = 9.64; $t(2485) = 15.76$, $p < .001$, Cohen's $d = 0.79$) and were less likely to be in a committed relationship (31.70% vs 55.00%, $\chi^2(1, N = 2{,}487) = 116.15$, $p < .001$; $\varphi = .22$). To control for these differences, we included age and relationship status as covariates in the analysis. Importance of religion was also markedly different between the groups. On a scale from 1 (*not important at all*) to 5 (*very important*), Eastern participants typically reported that religion was of average importance to them (M = 3.20, SD = 1.47), whereas Western participants reported that it was fairly unimportant (M = 1.70, SD = 1.20; $t(2393) = 26.05$, $p < .001$, $d = 1.12$). However, because religiosity was one of the preferences featured in the task, we did not include it as a covariate. See the supplementary materials for general demographic information about the culture groups.

Country of socialization

The participants self-reported their country of socialization by answering the question "In which country were you raised?" If this was unavailable, we used the country in which they were born. The only exception to this was the Norwegian sample. Here, the local ethics board did not allow us to ask about country of birth or socialization, as they were concerned that the sample would be so homogenous that these questions could threaten the anonymity of any non-Norwegian native. However, given that this version of the study was completed in Norwegian, it is highly likely that all the participants were either born or raised in Norway. Thus, we categorized all participants from the Norwegian sample as Western.

Materials and procedure

The first author received ethical approval for the study from his local ethics committee in the UK. Other authors sought additional approval from their local ethics boards where deemed necessary. All institutions conducted the study in English apart from in Norway, where the materials were translated into Norwegian by one of the co-authors.

Participants began by providing informed consent and completing a standard demographic form which also asked their country of birth and socialization. They were then given an introduction to percentiles using height as an example (e.g., that a person at the 50th percentile of height would be taller than 50% of all other people) and given a description of the traits they were about to use in the budget allocation task. Next, they created three long-term partners by allocating dollars to these traits whereby $1 bought a 10-percentile increase for a given attribute. The task was repeated three times using low ($16), medium ($32), and high ($48) budgets. See the supplementary materials for full details and participant instructions. At the conclusion of the study, participants received a full debrief.

Data analysis and handling

Following Li et al. (2002), we began by subtracting the number of dollars assigned to each attribute in the medium budget from their equivalents in the high budget. This told us how the participants allocated their last 16 mate dollars. For simplicity, we refer to this as the "high budget" condition. By comparing this to how they allocated their first 16 dollars, which we call the "low budget" condition, we were able to observe how the participants' allocation pattern changed as the budgets increased and choice became less constrained. We also converted these numbers into percentages, which allowed us to retain participants who allocated slightly too few or too many dollars (up to +/- 10%) during the task.

Results

Our analyses consisted of general linear models incorporating the within-subjects factors of budget and trait and the between-subjects factors of sex and culture group. We

explored significant interactions using simple effects and contrasts with Bonferroni corrections for multiple comparisons. Age was included as a covariate, as was relationship status (1 = *married or in a committed relationship*, 2 = *divorced, single, or in an uncommitted relationship*).

As a reminder, *necessity* traits are those that are (a) given priority during the allocation of the first 16 dollars (i.e., the low budget condition) and (b) receive fewer dollars during the allocation of the last 16 dollars (i.e., the high budget condition). *Indispensable* traits are also prioritized when using a low budget but then receive a similar amount of dollars in the high budget. Finally, *luxury* traits are not prioritized and receive more dollars when using the high budget than the low one. To determine whether a trait was given priority, we used one-sample *t*-tests to see if it was allocated more than 12.5% of the dollars in the low budget condition (typically $2). As there were eight traits, we would expect a trait to receive this many dollars by chance alone.

As with previous versions of the task (Li et al., 2002; Li & Kenrick, 2006), there was a main effect of trait ($F(7, 17297) = 54.99$, $p < .001$, $\eta_p^2 = .02$) and a significant interaction between trait and budget ($F(7, 17297) = 13.103$, $p < .001$, $\eta_p^2 < .01$). These significant effects confirmed that (a) participants spread their dollars unevenly among the traits and (b) this pattern differed between low and high budgets.

Follow-up analyses revealed that kindness, physical attractiveness, and good financial prospects were necessities. Humor, despite being a priority, received more dollars in the high budget condition than the low one, for reasons that became clear as we broke down larger interactions. The remaining traits were all luxuries (see Figure 1).

[Figure 1 near here]

Sex differences

A larger interaction between trait, budget, and sex ($F(7, 17297) = 41.830$, $p < .001$, $\eta_p^2 = .02$) suggested that the pattern of necessities and luxuries might differ by sex. When we broke down this interaction, we found that, similar to the sample as a whole, kindness and physical attractiveness were necessities for both sexes. Good financial prospects, however, was now a luxury for men, and a necessity for women (see Figure 2).

[Figure 2 near here]

We also found that a partner's humor was indispensable for men, receiving a similar amount of dollars across both budgets. The unusual pattern surrounding humor in the overall sample appeared to be driven by women, who, despite prioritizing humor, tended to assign slightly more dollars in the high budget, as is typical with luxury traits.

Of the remaining traits, chastity, creativity, and wants children were luxuries for both sexes. Religiosity, however, was only a luxury for men, women instead continued to allocate a similar number of dollars to religiosity in both budgets. As with humor above, this pattern departs from what is normally found for luxury traits.

Sex differences were found in the low budget condition for all traits with the exception of kindness and humor. The most noticeable sex differences were for physical attractiveness ($d = 0.55$), which tended to receive more dollars from men, and good financial prospects ($d = 0.56$), which tended to receive more dollars from women (see Table 2).

[Table 2 near here]

Cross-cultural differences

The largest interaction in the analyses was between trait, budget, sex, and culture group ($F(7, 17297) = 6.810$, $p < .001$, $\eta_p^2 < .01$), suggesting that budget and sex differences in dollar allocation may further vary by culture group.

Eastern and Western women. Like the sample as a whole, kindness, physical attractiveness, and good financial prospects were necessities for both groups of women.

However, humor was indispensable for Western women and a luxury for Eastern women. These two divergent patterns, when collapsed, made it difficult to categorize how women prioritized humor within the previous analysis (see Table 3).

[Table 3 near here]

Of the remaining traits, chastity and creativity were luxuries for both groups of women as was religiosity for Western women. However, Eastern women, much like their male counterparts, followed a pattern unusual among non-priority traits. Namely, they allocated fewer dollars to religiosity in the high budget condition. Similarly, while the desire for children was a luxury for Eastern women, Western women allocated a similar amount of dollars to it across both budgets, despite it not being a priority.

Within the low budget, the groups of women differed in the number of dollars they allocated to all traits with the exception of physical attractiveness. The most noticeable culture group differences were for religiosity, which tended to receive more dollars from Eastern women, and the desire for children, which tended to receive more from Western women. With the exception of humor, these differences did not tend to change which traits were necessities and which were luxuries (see Table 4).

[Table 4 near here]

Eastern and Western men. Kindness and physical attractiveness were necessities for both groups of men. Humor was also a necessity, but only for Western men. Eastern men considered it a luxury (see Table 3). Though not significantly above the "priority trait" threshold that we set, Eastern men gave slightly more dollars to good financial prospects than expected by chance in the low budget (13.06%) and as the budget increased, they assigned roughly the same amount of dollars, similar to *indispensable* traits (12.53%). In contrast, a partner with good financial prospects was a clear luxury for Western men.

Of the remaining traits, chastity, creativity, and the desire for children were luxuries for both groups of men as was religiosity in Western men. However, Eastern men allocated a similar amount of dollars to religiosity across both budgets, a pattern not usually found among non-priority traits.

Within the low budget, Eastern and Western men differed in the number of dollars they allocated to all traits with the exception of the desire for children. The most noticeable culture group differences were for humor, which tended to receive more dollars from Western men, and religiosity, which tended to receive more from Eastern men. With the exception of humor, these differences did not affect which traits were necessities and which were luxuries (see Table 4).

Other sex and cultural differences. All within-culture sex differences are displayed in Table 3. For brevity, we only discuss those relevant to our third hypothesis. As predicted, men allocated more dollars to physical attractiveness than women did in both Eastern (d = 0.44) and Western (d = 0.73) cultures. In turn, women allocated more dollars to good financial prospects than men did in both Eastern (d = 0.71) and Western (d = 0.48) cultures.

We also found a general cultural difference of note in how important good financial prospects was in a partner. Both Eastern men (d = 0.24) and women (d = 0.47) allocated more dollars to good financial prospects than their Western counterparts. While these differences did not result in good financial prospects being a necessity in one culture group and a luxury in the other, this came close in the case of men (see above). The increase in importance of good financial prospects appeared to come at the expense of physical attractiveness (in men) and kindness (in women; see Table 4).

Summary of findings

Despite a host of differences between the sexes and culture groups, kindness and physical attractiveness were consistent necessities and creativity and chastity were consistent

luxuries. Good financial prospects was a necessity for the sample as a whole. However, follow-up analyses revealed that women drove this pattern. Men did not prioritize good financial prospects in a partner, but while this followed the typical pattern of a luxury for Western men, Eastern men did not differ in their allocation between budgets. Eastern participants of both sexes appeared to place an additional premium on good financial prospects compared to their Western counterparts.

We found that sex differences in the number of dollars given to physical attractiveness and good financial prospects in the low budget condition were similar for both culture groups. Men tended to allocate more dollars to physical attractiveness than women, though this difference was smaller in the Eastern sample. Conversely, women typically allocated more dollars to good financial prospects than men, though this difference was smaller in the Western sample.

The task also revealed some interesting cultural differences in the importance of a partner's humor. When looking at the sample overall, dollars were allocated to humor in an unusual way. Namely, while participants gave it priority, they also tended to increase their allocation to humor in the high budget as if it were a luxury. Further analysis revealed that this pattern was the collective result of differences between the subgroups. Western participants of both sexes prioritized humor in a partner, with it being a necessity for men and indispensable for women. However, humor was a luxury for Eastern participants of both sexes. Despite cultural differences being present for almost every trait, humor was the only trait where these differences led to it being a luxury for one culture group and a necessity/indispensable trait for the other.

Among the non-priority traits most followed a luxury pattern, with two noticeable exceptions: (1) Western women allocated a similar amount of dollars to the desire for

children in both budgets and (2) Eastern men continued to allocate the same amount of dollars to religiosity during the high budget while women gave less.

Discussion

Previous research on mate choice trade-offs has revealed that individuals prioritize reproductively fundamental traits when their ability to fully realize their mating desires is restricted and that this pattern of prioritization may be influenced by culture (Li et al., 2002; Li et al., 2011). In the present research, we used the budget allocation task to explore similarities and differences between Eastern and Western culture groups using a large international sample. We also included traits in the task that have not been used before and are known to vary in importance across cultures (i.e., religiosity, chastity, and the desire for children). Overall, we found good support for our hypotheses. As predicted, kindness, good financial prospects, and physical attractiveness were necessities for the sample overall, replicating previous research in more homogenous samples (H1; Buss, 1989; Li et al., 2002; Li & Kenrick, 2006).

When the sexes were examined separately, both gave similar priority to kindness (d = 0.08). However, the sexes differed in how they prioritized physical attractiveness and good financial prospects (H2). Namely, physical attractiveness was typically more important to men (d = 0.55) and good financial prospects was more important to women (d = 0.56). These sex differences are consistent with the evolutionary psychological literature and reflect the sexual asymmetry in the benefits of having these traits in a partner (Buss, 1989; Jonason et al., 2019; Jonason, Valentine, & Li, 2012). Furthermore, having a partner with good financial prospects was only a necessity for women, and was actually a luxury for men. In contrast, physical attractiveness remained a necessity for both men and women.

Finally, despite variation in how they allocated their mate dollars, we found the same pattern of necessities and sex differences in both culture groups (H3). However, good

financial prospects came close to our "priority threshold" in Eastern men, likely because of an enhanced interest in this trait within Eastern participants overall. Recent research by some of the co-authors gives a possible explanation for this increased premium. In East Asian cultures, collectivist values that emphasize hierarchy and respect of authority combine with a desire for social harmony which channels intrasexual competition for status away from direct confrontation and towards the acquisition of prestigious occupations (Yong, Li, Jonason, & Tan, 2019).

Together, these results further support the mate preference priority model. More importantly, they support the idea that while cultural differences may temper mate preferences, they do not override the prioritization of traits essential for reproductive success. Indeed, this was the case even when the task included traits known to vary in importance from culture to culture (i.e., chastity, religiosity, and the desire for children). It appears then, that those traits that are fundamental to successful reproduction are somewhat canalized, though cultural norms can exaggerate and attenuate them to some degree.

Additional findings

In addition to these key findings, we found differences between the sexes and culture groups that we did not predict *a priori*. Of these, the most noticeable difference involved humor. This was the only trait that was prioritized in one culture group (Western) but not the other (Eastern). This should not be taken as evidence that having a humorous partner is not important in Eastern cultures. Rather it appears that Eastern participants spread their dollars more evenly than Western ones. For example, in the low budget condition, the smallest percentage of the budget Western participants allocated to a trait was 1.20% and 2.49% for men and women respectively (both to religiosity). In contrast, the smallest percentage for Eastern men and woman was 6.24% and 4.94% (both to creativity). The knock on effect of this distribution was that the Western group had more free dollars to allocate to other traits,

while Eastern participants were more constrained. The result was that humor did not receive a proportion of the low budget greater than chance levels in the Eastern group. This suggests that humor may be fairly high up the mating "hierarchy of needs" becoming a priority when needs for culturally important traits are satisfied, perhaps pointing to the fact that humor has potential reproductive implications but that these are less fundamental to reproductive success than kindness, physical attractiveness, and social status (Hall, 2017; Li et al., 2009; Miller, 2000).

The fact that Western women showed a stronger preference than all other sub-groups for their partner to desire children may warrant further investigation. We did not predict this finding *a priori*, and so limit our speculation as to its cause. However, possible sources include (a) differences in age and relationship status of the Eastern and Western samples, despite out attempts to statistically control for them (see limitations section) and (b) differences in family planning between the culture groups including birth rate and contraceptive availability and use (Najimudeen & Sachchithanantham, 2014; K. Singh, Fong, & Loh, 2002).

A final noteworthy finding concerned the small number of non-priority traits that showed an unusual pattern of change between budgets. Luxury traits tend to attract fewer dollars in low budgets, when participants focus on their necessities. Then, once these preferences are satisfied, participants begin to allocate more dollars to them. The result is that luxury traits receive fewer dollars in low budgets than in high ones. Yet, in a few cases here (e.g., religiosity in the Eastern group, wants children in Western women) participants gave non-priority traits the same amount of dollars, regardless of budget. One possible explanation for this finding is that the benefits of these traits suffer from diminished returns. Religion is a highly assortative trait (Watson et al., 2004) and a small amount of commitment to the same religion may indicate that a partner's belief system is compatible with one's own, rather than

following a different denomination or being an atheist. This can be important in cultures where intra-faith marriage is the social norm (Shenhav, Campos, & Goldberg, 2017; Yahya & Boag, 2014). However, increases in religiosity beyond this level may not yield the same assortative benefits. Moving from a partner who is an atheist to one who follows the same faith but is not committed to it, is a larger qualitative shift than moving from a partner who is somewhat committed to their faith to one who is committed to it.

Limitations

The study had two main limitations. First, there was a large discrepancy in the sample sizes between the Eastern and Western groups. While unlikely to affect the analysis itself, a more balanced sample of Eastern participants would have allowed us to investigate country-specific effects. With the current sample, we could only do this for the Malaysian and Singaporean subsamples, leading to the exclusion of participants from China, Hong Kong, and Indonesia. Second, the smaller, Eastern sample was considerably younger than the Western one, and less likely to be in a relationship. It is well established that mate preferences can change with age (e.g. Schwarz & Hassebrauck, 2012) and so we attempted to control for these differences during the analyses. However, given that the differences were so large this may not have sufficiently accounted for them and this may explain why we found such a large cross-cultural difference in the desire for children.

Future directions

Understanding how mating preferences are integrated and traded-off as part of mate choice remains a relatively unexplored area of psychology, both in human and non-human animals (Conroy-Beam et al., 2016; Rosenthal, 2017). In humans, this exploration is generally limited to considering how a small number of preferences interact within typically homogenous groups (e.g., Bennett et al., 2015; Lee et al., 2014; Wagstaff et al., 2015). The budget allocation task allows one to examine similarities and differences between groups and

across contexts while allowing many traits to be included. Thus, it constitutes a powerful tool for establishing the design features of our psychological adaptations responsible for mate choice.

Future research could use the task to examine trade-offs in a more nuanced manner by looking at sub-components of reproductively important traits. For example, although good looks is consistently found to be a dominant trait, there is scope to explore this in a more nuanced manner by considering several elements of physical attractiveness, such as facial symmetry, skin complexion, body composition, muscle mass and so on (Lassek & Gaulin, 2009; Little et al., 2011). Similarly, social status could be broken down into its different facets, including dominance and prestige (von Rueden, Gurven, & Kaplan, 2011).

Another fruitful research path could expand on the influence of relationship context on trade-offs. While the task has been applied to short-term and long-term relationships (e.g. Li & Kenrick, 2006) and partner proximity (e.g., Jonason et al., 2017) other types that might be worthy of study include polyamory, booty calls, friends-with-benefits, and swinging (Jonason et al., 2012). Similarly, change in preference patterns over time or following exposure to evolutionarily relevant cues (e.g., threat, resource availability) could be measured using budget allocation (Thomas & Stewart-Williams, 2018).

Using an international sample, we found that kindness, physical attractiveness, and good financial prospects (a proxy for social status) were necessities within both Eastern and Western culture groups and that these groups showed similar sex differences in the importance of physical attractiveness and good financial prospects. These findings are further evidence that (a) humans prioritize traits that are fundamental for reproductive success when selecting mates and (b) the mechanisms responsible for this process produce similar prioritization patterns despite varying cultural input. At the same time, we found that cultural norms may enhance or diminish these preferences, though not necessarily override them, with

a greater Eastern premium on good financial prospects and a Western premium on sense of humor providing good examples. These insights demonstrate that using diverse samples to examine mate preference trade-offs can help us understand the context-dependent nature of mating preferences, which ultimately offers us a deeper insight into the mechanisms of human mate choice.

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Tables & Figures

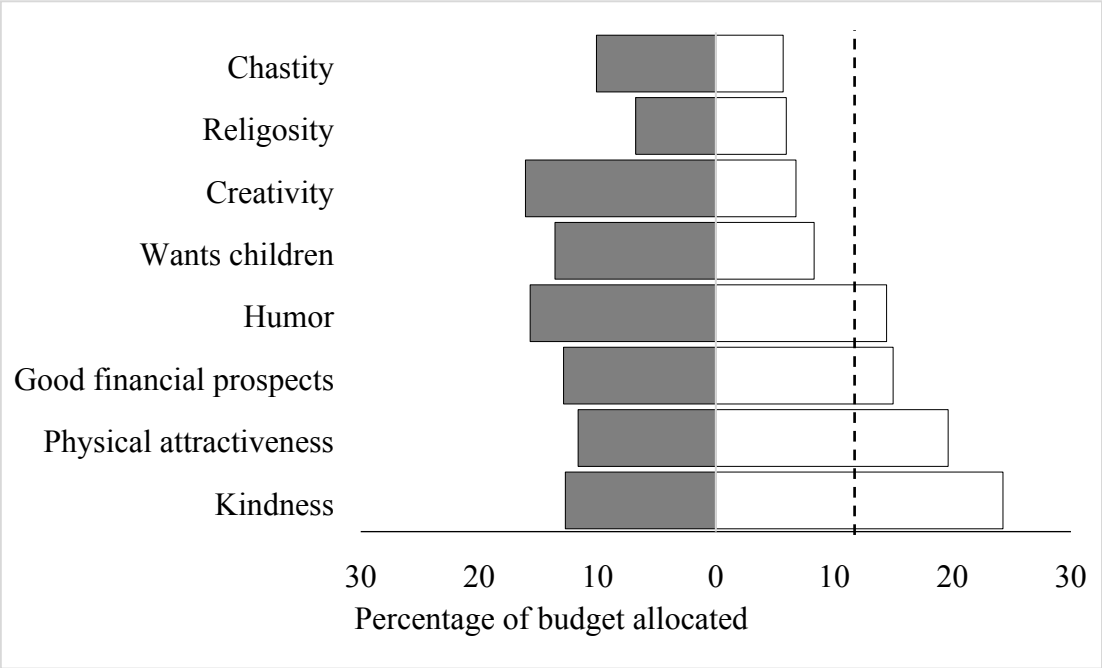

Figure 1. Percentage of mate dollars assigned to each trait in the low budget (white) and high budget (grey) conditions. The vertical dashed line indicates how many dollars we would expect each trait to receive by chance.

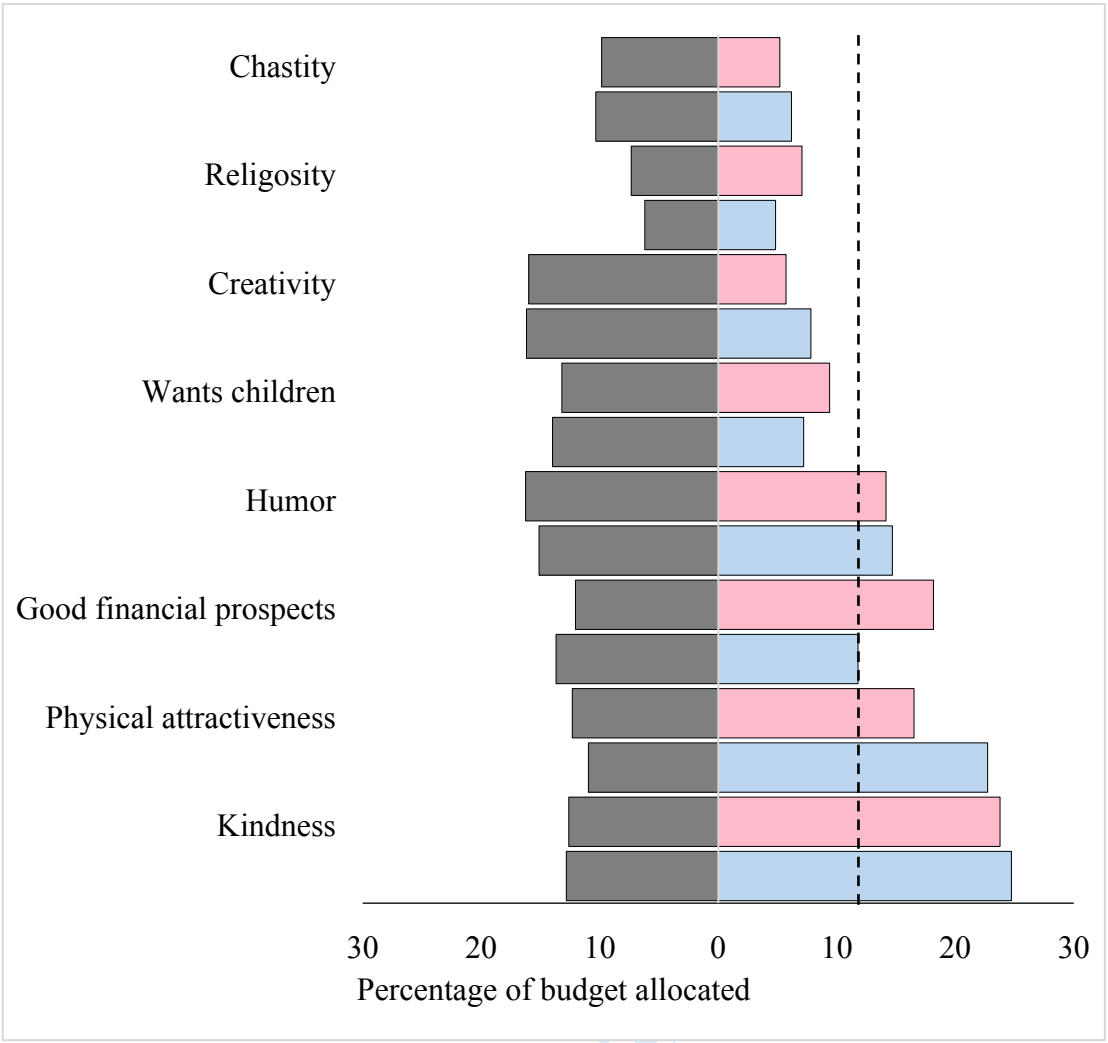

Figure 2. Sex differences in mate dollar allocation. The colored bars indicate the percentage of mate dollars assigned to each trait in the low budget condition (blue = men, pink = women). The grey bars indicate the percentage assigned in the high budget condition.

Table 1. Culture group allocation based on self-reported country of socialization.

Eastern cultures (n = 773)		Western cultures (n = 1,704)	
Country	n	Country	n
Malaysia	445	Australia	819
Singapore	269	Norway	492
Hong Kong	37	United Kingdom	357
China	11	United States	23
Indonesia	11	New Zealand	13

Table 2. The percentage of dollars allocated to each trait when spending the first (low budget) and last (high budget) 16 mate dollars. Changes between budgets are displayed as well as sex differences.

	Women				Men				Sex differences			
	M *(SE)*				M *(SE)*				Low		High	
Trait	Low	High	Δ	*d*	Low	High	Δ	*d*	Δ	*d*	Δ	*d*
Kindness	23.78_{a} (0.35)	12.61_{a} (0.25)	-11.17**	-1.01	24.74_{a} (0.37)	12.82_{a} (0.27)	-11.92**	-1.14	-0.96	-0.08	-0.20	-0.02
Physical attractiveness	16.52_{b} (0.31)	12.31_{a} (0.24)	-4.21**	-0.41	22.73_{b} (0.34)	10.95_{b} (0.25)	-11.78**	-1.22	-6.21**	-0.55	1.36**	0.16
Good financial prospects	18.16_{c} (0.31)	12.04_{a} (0.26)	-6.12**	-0.57	11.80_{c} (0.34)	13.69_{a} (0.28)	1.89**	0.19	6.37**	0.56	-1.64**	-0.17
Humor	14.16_{d} (0.32)	16.25_{b} (0.28)	2.10**	0.19	14.69_{d} (0.34)	15.12_{c} (0.30)	0.43	0.04	-0.53	-0.05	1.13**	0.11
Wants Children	9.40_{e} (0.31)	13.20_{a} (0.32)	3.80**	0.33	7.21_{e} (0.33)	13.98_{ac} (0.34)	6.77**	0.61	2.19**	0.2	-0.78	-0.07
Creativity	5.72_{f} (0.24)	15.99_{b} (0.30)	10.27**	1.02	7.82_{e} (0.26)	16.18_{c} (0.33)	8.36**	0.88	-2.10**	-0.24	-0.19	-0.02
Religiosity	7.07_{g} (0.29)	7.34_{c} (0.26)	0.28	0.03	4.84_{f} (0.31)	6.20_{d} (0.28)	1.36**	0.14	2.23**	0.21	1.14**	0.12
Chastity	5.20_{f} (0.28)	9.84_{c} (0.30)	4.64**	0.43	6.18_{g} (0.30)	10.33_{b} (0.33)	4.16**	0.41	-0.98*	-0.1	-0.50	-0.05

M = Estimated Marginal Mean, *SE* = Standard Error of the Mean, *d* = Cohen's *d* effect size, Δ = Difference between marginal means. Within each column, means with different subscripts are significantly different. *$p < 0.05$, **$p < 0.01$.

Table 3. The percentage of dollars allocated to each trait when spending the first (low budget) and last (high budget) 16 mate dollars. Sex and culture groups are displayed separately.

Trait	Women				Men				Sex differences			
	M *(SE)*				M *(SE)*				Low		High	
	Low	High	Δ	*d*	Low	High	Δ	*d*	Δ	*d*	Δ	*d*
Eastern sample												
Kindness	21.57_{a} (0.59)	12.05_{a} (0.43)	-9.53**	-0.94	25.57_{a} (0.60)	11.86_{a} (0.43)	-13.71**	-1.37	-3.99**	-0.34	0.19	0.02
Physical attractiveness	16.23_{b} (0.54)	11.39_{ab} (0.41)	-4.84**	-0.51	20.90_{b} (0.55)	10.38_{ab} (0.41)	-10.52**	-1.13	-4.67**	-0.44	1.01	0.13
Good financial prospects	20.71_{a} (0.54)	10.65_{ac} (0.45)	-10.07**	-1.02	13.06_{c} (0.55)	12.53_{ac} (0.45)	-0.531	-0.05	7.65**	0.71	-1.89**	-0.21
Humor	11.06_{c} (0.54)	15.98_{d} (0.48)	4.92**	0.49	11.03_{cd} (0.55)	14.72_{cde} (0.49)	3.69**	0.36	0.03	0.00	1.26	0.13
Wants children	6.19_{de} (0.53)	12.91_{ae} (0.55)	6.72**	0.63	6.58_{efg} (0.54)	14.47_{ce} (0.56)	7.89**	0.74	-0.39	-0.04	-1.55*	-0.14
Creativity	4.94_{d} (0.41)	15.17_{de} (0.52)	10.23**	1.11	6.24_{eh} (0.42)	14.85_{de} (0.53)	8.61**	0.93	-1.30*	-0.16	0.32	0.03
Religiosity	11.64_{c} (0.50)	9.92_{bcf} (0.45)	-1.72*	-0.18	8.48_{dfi} (0.51)	8.53_{b} (0.45)	0.06	0.01	3.16**	0.32	1.39*	0.16
Chastity	7.64_{e} (0.48)	11.60_{af} (0.52)	3.96**	0.40	8.14_{ghi} (0.49)	12.50_{ae} (0.53)	4.35**	0.44	-0.50	-0.05	-0.90	-0.09
Western sample												
Kindness	25.98_{a} (0.37)	13.18_{a} (0.27)	-12.80**	-1.27	23.91_{a} (0.44)	13.77_{a} (0.31)	-10.14**	-1.02	2.07**	0.18	-0.60	-0.07

Physical attractiveness	16.81_{b} (0.34)	13.23_{a} (0.25)	-3.57**	-0.38	24.56_{a} (0.40)	11.52_{b} (0.30)	-13.04**	-1.40	-7.76**	-0.73	1.71**	0.22
Good financial prospects	15.61_{b} (0.34)	13.44_{a} (0.28)	-2.17**	-0.22	10.53_{b} (0.40)	14.84_{ac} (0.33)	4.31**	0.44	5.08**	0.48	-1.40**	-0.16
Humor	17.25_{b} (0.34)	16.53_{b} (0.30)	-0.72	-0.07	18.35_{c} (0.40)	15.52_{c} (0.36)	-2.83**	-0.28	-1.10*	-0.10	1.01*	0.11
Wants children	12.61_{c} (0.33)	13.48_{a} (0.34)	0.87	0.08	7.84_{d} (0.39)	13.50_{a} (0.40)	5.66**	0.54	4.77**	0.46	-0.02	0.00
Creativity	6.50_{d} (0.26)	16.81_{b} (0.33)	10.31**	1.11	9.40_{bd} (0.30)	17.51_{d} (0.39)	8.11**	0.89	-2.90**	-0.36	-0.70	-0.07
Religiosity	2.49_{e} (0.31)	4.76_{c} (0.28)	2.27**	0.24	1.20_{e} (0.37)	3.86_{e} (0.33)	2.66**	0.29	1.29*	0.13	0.90*	0.10
Chastity	2.76_{e} (0.30)	8.07_{d} (0.33)	5.32**	0.53	4.21_{f} (0.35)	8.17_{f} (0.39)	3.96**	0.40	-1.46**	-0.15	-0.10	-0.01

M = Estimated Marginal Mean, *SE* = Standard Error of the Mean, *d* = Cohen's *d* effect size, Δ = Difference between marginal means. Within each column, means with different subscripts are significantly different. **p* < .05, ***p* < .01

Table 4. Cultural differences in the percentage of dollars allocated to each trait for the first (low budget) 16 mate dollars spent during the task. Men and women are shown separately.

	M (*SE*)			
	East	West	Δ	*d*
Women				
Kindness	21.57_{a} (0.59)	25.98_{a} (0.37)	-4.41**	-0.38
Physical attractiveness	16.23_{b} (0.54)	16.81_{b} (0.34)	-0.57	-0.05
Good financial prospects	20.71_{a} (0.54)	15.61_{b} (0.34)	5.11**	0.47
Humor	11.06_{c} (0.54)	17.25_{b} (0.34)	-6.19**	-0.58
Wants children	6.19_{de} (0.53)	12.61_{c} (0.33)	-6.42**	-0.61
Creativity	4.94_{d} (0.41)	6.50_{d} (0.26)	-1.56**	-0.19
Religiosity	11.64_{c} (0.50)	2.49_{e} (0.31)	9.15**	0.93
Chastity	7.64_{e} (0.48)	2.76_{e} (0.30)	4.88**	0.51
Men				
Kindness	25.57_{a} (0.60)	23.91_{a} (0.44)	1.66*	0.14
Physical attractiveness	20.90_{b} (0.55)	24.56_{a} (0.40)	-3.66**	-0.34
Good financial prospects	13.06_{c} (0.55)	10.53_{b} (0.40)	2.54**	0.24
Humor	11.03_{cd} (0.55)	18.35_{c} (0.40)	-7.32**	-0.69
Wants children	6.58_{efg} (0.54)	7.84_{d} (0.39)	-1.26	-0.12
Creativity	6.24_{eh} (0.42)	9.40_{bd} (0.30)	-3.15**	-0.39
Religiosity	8.48_{dfi} (0.51)	1.20_{e} (0.37)	7.28**	0.74
Chastity	8.14_{ghi} (0.49)	4.21_{f} (0.35)	3.93**	0.42

M = Estimated Marginal Mean, *SE* = Standard Error of the Mean, *d* = Cohen's *d* effect size, Δ = Difference between marginal means. Within each column, means with different subscripts are significantly different. *$p < .05$, **$p < .01$

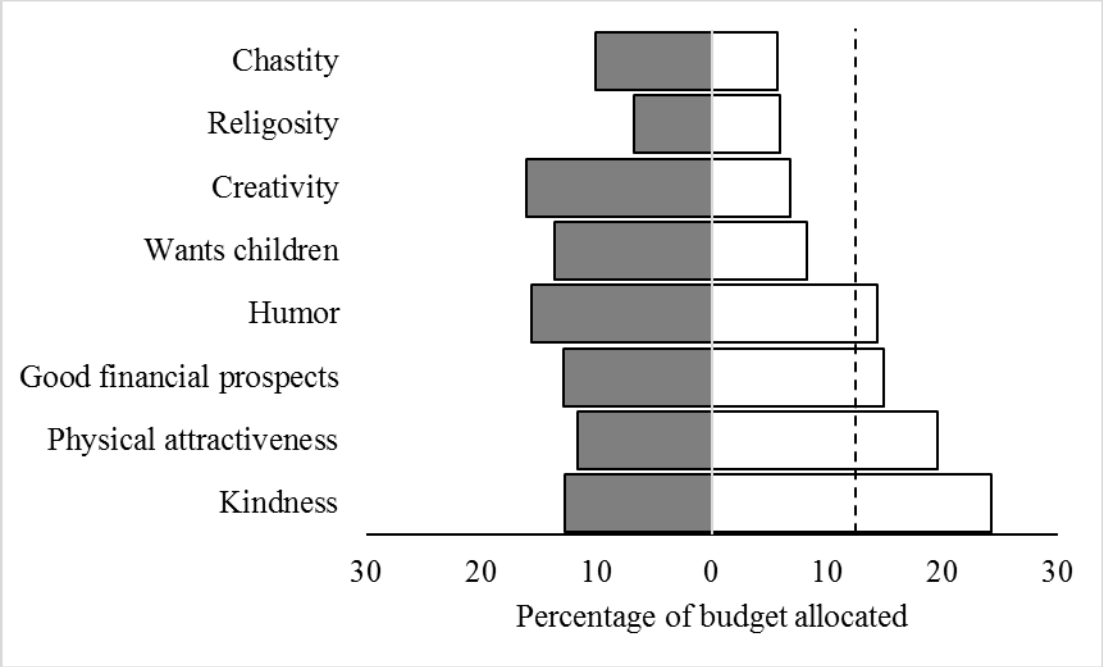

Figure 1. Percentage of mate dollars assigned to each trait in the low budget (white) and high budget (grey) conditions. The vertical dashed line indicates how many dollars we would expect each trait to receive by chance.

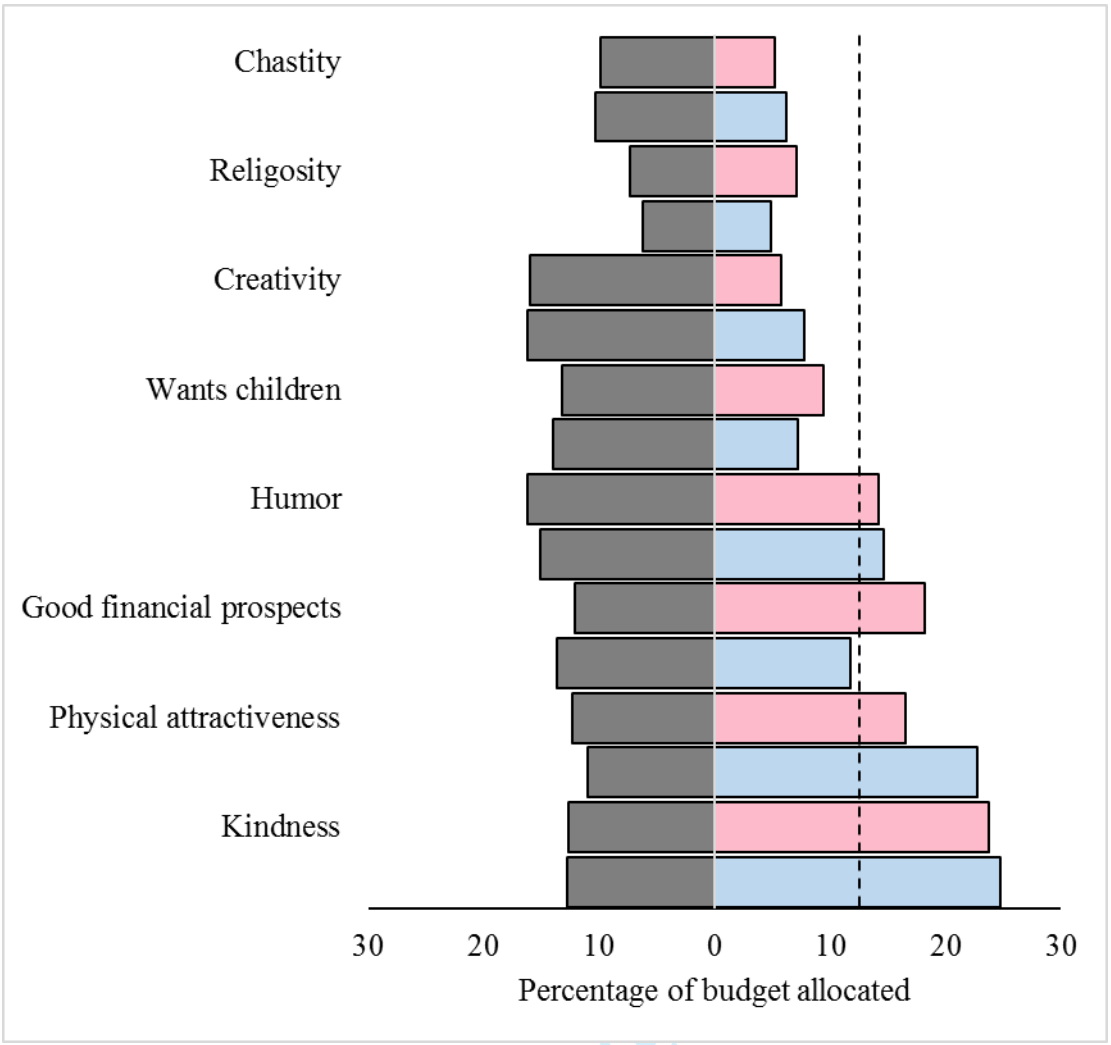

Figure 2. Sex differences in mate dollar allocation. The colored bars indicate the percentage of mate dollars assigned to each trait in the low budget condition (blue = men, pink = women). The grey bars indicate the percentage assigned in the high budget condition.

Table 1. Culture group allocation based on self-reported country of socialization.

Eastern cultures (n = 773)		Western cultures (n = 1,704)	
Country	n	Country	n
Malaysia	445	Australia	819
Singapore	269	Norway	492
Hong Kong	37	United Kingdom	357
China	11	United States	23
Indonesia	11	New Zealand	13

Table 2. The percentage of dollars allocated to each trait when spending the first (low budget) and last (high budget) 16 mate dollars. Changes between budgets are displayed as well as sex differences.

	Women				Men				Sex differences			
	M *(SE)*				M *(SE)*				Low		High	
Trait	Low	High	Δ	*d*	Low	High	Δ	*d*	Δ	*d*	Δ	*d*
Kindness	23.78_{a} (0.35)	12.61_{a} (0.25)	-11.17**	-1.01	24.74_{a} (0.37)	12.82_{a} (0.27)	-11.92**	-1.14	-0.96	-0.08	-0.20	-0.02
Physical attractiveness	16.52_{b} (0.31)	12.31_{a} (0.24)	-4.21**	-0.41	22.73_{b} (0.34)	10.95_{b} (0.25)	-11.78**	-1.22	-6.21**	-0.55	1.36**	0.16
Good financial prospects	18.16_{c} (0.31)	12.04_{a} (0.26)	-6.12**	-0.57	11.80_{c} (0.34)	13.69_{a} (0.28)	1.89**	0.19	6.37**	0.56	-1.64**	-0.17
Humor	14.16_{d} (0.32)	16.25_{b} (0.28)	2.10**	0.19	14.69_{d} (0.34)	15.12_{c} (0.30)	0.43	0.04	-0.53	-0.05	1.13**	0.11
Wants Children	9.40_{e} (0.31)	13.20_{a} (0.32)	3.80**	0.33	7.21_{e} (0.33)	13.98_{ac} (0.34)	6.77**	0.61	2.19**	0.2	-0.78	-0.07
Creativity	5.72_{f} (0.24)	15.99_{b} (0.30)	10.27**	1.02	7.82_{e} (0.26)	16.18_{c} (0.33)	8.36**	0.88	-2.10**	-0.24	-0.19	-0.02
Religiosity	7.07_{g} (0.29)	7.34_{c} (0.26)	0.28	0.03	4.84_{f} (0.31)	6.20_{d} (0.28)	1.36**	0.14	2.23**	0.21	1.14**	0.12
Chastity	5.20_{f} (0.28)	9.84_{c} (0.30)	4.64**	0.43	6.18_{g} (0.30)	10.33_{b} (0.33)	4.16**	0.41	-0.98*	-0.1	-0.50	-0.05

M = Estimated Marginal Mean, *SE* = Standard Error of the Mean, *d* = Cohen's *d* effect size, Δ = Difference between marginal means. Within each column, means with different subscripts are significantly different. *$p < .05$, **$p < .01$.

Table 3. The percentage of dollars allocated to each trait when spending the first (low budget) and last (high budget) 16 mate dollars. Sex and culture groups are displayed separately.

Trait	Women				Men				Sex differences			
	M *(SE)*				M *(SE)*				Low		High	
	Low	High	Δ	*d*	Low	High	Δ	*d*	Δ	*d*	Δ	*d*
Eastern sample												
Kindness	21.57_{a} (0.59)	12.05_{a} (0.43)	-9.53**	-0.94	25.57_{a} (0.60)	11.86_{a} (0.43)	-13.71**	-1.37	-3.99**	-0.34	0.19	0.02
Physical attractiveness	16.23_{b} (0.54)	11.39_{ab} (0.41)	-4.84**	-0.51	20.90_{b} (0.55)	10.38_{ab} (0.41)	-10.52**	-1.13	-4.67**	-0.44	1.01	0.13
Good financial prospects	20.71_{a} (0.54)	10.65_{ac} (0.45)	-10.07**	-1.02	13.06_{c} (0.55)	12.53_{ac} (0.45)	-0.531	-0.05	7.65**	0.71	-1.89**	-0.21
Humor	11.06_{c} (0.54)	15.98_{d} (0.48)	4.92**	0.49	11.03_{cd} (0.55)	14.72_{cde} (0.49)	3.69**	0.36	0.03	0.00	1.26	0.13
Wants children	6.19_{de} (0.53)	12.91_{ae} (0.55)	6.72**	0.63	6.58_{efg} (0.54)	14.47_{ce} (0.56)	7.89**	0.74	-0.39	-0.04	-1.55*	-0.14
Creativity	4.94_{d} (0.41)	15.17_{de} (0.52)	10.23**	1.11	6.24_{eh} (0.42)	14.85_{de} (0.53)	8.61**	0.93	-1.30*	-0.16	0.32	0.03
Religiosity	11.64_{c} (0.50)	9.92_{bcf} (0.45)	-1.72*	-0.18	8.48_{dfi} (0.51)	8.53_{b} (0.45)	0.06	0.01	3.16**	0.32	1.39*	0.16
Chastity	7.64_{e} (0.48)	11.60_{af} (0.52)	3.96**	0.40	8.14_{ghi} (0.49)	12.50_{ae} (0.53)	4.35**	0.44	-0.50	-0.05	-0.90	-0.09
Western sample												
Kindness	25.98_{a} (0.37)	13.18_{a} (0.27)	-12.80**	-1.27	23.91_{a} (0.44)	13.77_{a} (0.31)	-10.14**	-1.02	2.07**	0.18	-0.60	-0.07

Physical attractiveness	16.81_{b} (0.34)	13.23_{a} (0.25)	-3.57**	-0.38	24.56_{a} (0.40)	11.52_{b} (0.30)	-13.04**	-1.40	-7.76**	-0.73	1.71**	0.22
Good financial prospects	15.61_{b} (0.34)	13.44_{a} (0.28)	-2.17**	-0.22	10.53_{b} (0.40)	14.84_{ac} (0.33)	4.31**	0.44	5.08**	0.48	-1.40**	-0.16
Humor	17.25_{b} (0.34)	16.53_{b} (0.30)	-0.72	-0.07	18.35_{c} (0.40)	15.52_{c} (0.36)	-2.83**	-0.28	-1.10*	-0.10	1.01*	0.11
Wants children	12.61_{c} (0.33)	13.48_{a} (0.34)	0.87	0.08	7.84_{d} (0.39)	13.50_{a} (0.40)	5.66**	0.54	4.77**	0.46	-0.02	0.00
Creativity	6.50_{d} (0.26)	16.81_{b} (0.33)	10.31**	1.11	9.40_{bd} (0.30)	17.51_{d} (0.39)	8.11**	0.89	-2.90**	-0.36	-0.70	-0.07
Religiosity	2.49_{e} (0.31)	4.76_{c} (0.28)	2.27**	0.24	1.20_{e} (0.37)	3.86_{e} (0.33)	2.66**	0.29	1.29*	0.13	0.90*	0.10
Chastity	2.76_{e} (0.30)	8.07_{d} (0.33)	5.32**	0.53	4.21_{f} (0.35)	8.17_{f}(0.39)	3.96**	0.40	-1.46**	-0.15	-0.10	-0.01

M = Estimated Marginal Mean, *SE* = Standard Error of the Mean, *d* = Cohen's *d* effect size, Δ = Difference between marginal means. Within each column, means with different subscripts are significantly different. *$p < .05$, **$p < .01$

Table 4. Cultural differences in the percentage of dollars allocated to each trait for the first (low budget) 16 mate dollars spent during the task. Men and women are shown separately.

	M (*SE*)			
	East	West	Δ	*d*
Women				
Kindness	21.57_{a} (0.59)	25.98_{a} (0.37)	-4.41**	-0.38
Physical attractiveness	16.23_{b} (0.54)	16.81_{b} (0.34)	-0.57	-0.05
Good financial prospects	20.71_{a} (0.54)	15.61_{b} (0.34)	5.11**	0.47
Humor	11.06_{c} (0.54)	17.25_{b} (0.34)	-6.19**	-0.58
Wants children	6.19_{de} (0.53)	12.61_{c} (0.33)	-6.42**	-0.61
Creativity	4.94_{d} (0.41)	6.50_{d} (0.26)	-1.56**	-0.19
Religiosity	11.64_{c} (0.50)	2.49_{e} (0.31)	9.15**	0.93
Chastity	7.64_{e} (0.48)	2.76_{e} (0.30)	4.88**	0.51
Men				
Kindness	25.57_{a} (0.60)	23.91_{a} (0.44)	1.66*	0.14
Physical attractiveness	20.90_{b} (0.55)	24.56_{a} (0.40)	-3.66**	-0.34
Good financial prospects	13.06_{c} (0.55)	10.53_{b} (0.40)	2.54**	0.24
Humor	11.03_{cd} (0.55)	18.35_{c} (0.40)	-7.32**	-0.69
Wants children	6.58_{efg} (0.54)	7.84_{d} (0.39)	-1.26	-0.12
Creativity	6.24_{eh} (0.42)	9.40_{bd} (0.30)	-3.15**	-0.39
Religiosity	8.48_{dfi} (0.51)	1.20_{e} (0.37)	7.28**	0.74
Chastity	8.14_{ghi} (0.49)	4.21_{f} (0.35)	3.93**	0.42

M = Estimated Marginal Mean, *SE* = Standard Error of the Mean, *d* = Cohen's *d* effect size, Δ = Difference between marginal means. Within each column, means

with different subscripts are significantly different. *$p < .05$, **$p < .01$

Budget allocation task information and participant instructions

The following pages contain the budget allocation task materials that were presented to the participants as part of the study. When it came to describing the eight characteristics, we did not provide 100th percentile examples as to do so would have been inconsistent between attributes. This is because it is easier to convey the total absence and average level of most traits than their natural ceiling. An example of the dollar allocation grid from the "high" budget is provided. This was modified with lower number for the "medium" and "low" budgets.

Introduction

For this survey, you will be using percentile scales to describe the characteristics pertaining to your ideal romantic partner. The percentile scales correspond to how a person measures against all others of the same sex that you might encounter on a busy street during a typical week.

For example, suppose you are male and that your relevant population of potential mates are women. . . Let's look at the characteristic of height. If we could rank all the women by their height, then the tallest woman would be at the 100th percentile of height - she is taller than 100% of all the women. The woman at the 50th percentile of height is taller than 50% of all the women - she is at the median, or roughly, average. The shortest woman is at the 0th percentile of height - she is taller than 0% of all the women.

There will be 8 characteristics that describe your romantic partner. The characteristics sheet tells you what each characteristic means and what a typical 50th percentile and 0th percentile person might be like. Please take a minute to read them over.

All your responses are anonymous, so please respond as honestly and candidly as possible (do not worry about how politically correct or socially desirable your selections are).

Please take your time because you may have some tough choices to make.

Characteristics Sheet

The population of comparison is anyone who might be seen on a very busy street in your local area during a given week.

Physical attractiveness

A person's physical appearance (i.e., body & face). Does not include how they dress.

• 50th percentile (average) = pleasant-looking, may have a nice feature or two, reasonable face, but they're not striking

• 0th percentile = least physically attractive person seen on the busy street

Good financial prospects

An individual's earning capacity, linked to the kind of job they have or intend to have.

• 50th percentile (average) = average earning capacity. Holds or will hold a full-time job. Will earn enough to cover the costs of living and a small amount of disposable income.

• 0th percentile = the individual has very poor job prospects. If they are able to maintain a job, they will still struggle to cover the costs of living.

Creativity

A person's level of artistic ability and originality – how artistically talented they are and the extent to which they stray off the beaten path.

• 50th percentile (average) = may occasionally demonstrate originality, perhaps able to write a poem or play a song

• 0th percentile = lowest creativity of anyone seen on the busy street - no creativity or artistic talent at all

Kindness

A person's benevolence or willingness to be helpful to others.

• 50th percentile (average) = usually helpful to close friends, especially when there is time

• 0th percentile = least kind person seen on the busy street - no willingness to help others

Humor

How funny and witty someone is – their ability to make you laugh or laugh at what you say.

• 50th percentile (average) = the person has an average sense of humour. They are funny at times, can tell a few good jokes and laugh at others' jokes

• 0th percentile = the person has no sense of humour, they are unable to make you laugh or be made to laugh and are very serious

Religiosity

How seriously the person takes religion and their contribution to the religious community.

• 50th percentile (average) = the individual is religious, observes mandatory services and rituals. Only occasionally engages in non-mandatory observances.

• 0th percentile = the person is not religious. He or she does not participate in any religious activities.

Chastity

How open the individual is to sexual activity before marriage.

• 50th percentile (average) = the person is somewhat hesitant to engage in a sexual relationship outside of marriage

• 0th percentile = the person definitely wants to have sex before they are married

Wants children

The person's desire to start a family and have children.

• 50th percentile (average) = the person would like to start a family, but wants only an average number of children.

• 0th percentile = this person never wants to have children

Long-term mate design (High budget example)

Please design your ideal long-term mate by circling a percentile level for each of the following 8 characteristics. Assume that this is someone who you will be with for many years and possibly marry and have a family with. Of course, you may not be currently looking for someone like this, but for this part of the survey, assume that you are.

To prevent you from choosing a "10" in everything, you will have to pay for each of your selections. Assume that each level is also your cost in "mate dollars" (example: 50th percentile = level 5 = 5 mate dollars; 80th percentile = level 8 = 8 mate dollars).

You have only 48 mate dollars to spend, so make sure that all the numbers you circle add up to 48. If you do not circle a level for a characteristic, it will be assumed that the bottom level is chosen for that characteristic!

Characteristics that describe your long-term mate								
Percentile	Physical Attractiveness	Good Financial Prospects	Creativity	Kindness	Humorous	Religious	Chaste	Wants Children
100th = the top	10	10	10	10	10	10	10	10
90th = above 90%	9	9	9	9	9	9	9	9
80th = above 80%	8	8	8	8	8	8	8	8
70th = above 70%	7	7	7	7	7	7	7	7
60th = above 60%	6	6	6	6	6	6	6	6
50th = middle	5	5	5	5	5	5	5	5
40th = above 40%	4	4	4	4	4	4	4	4
30th = above 30%	3	3	3	3	3	3	3	3
20th = above 20%	2	2	2	2	2	2	2	2
10th = above 10%	1	1	1	1	1	1	1	1
0th = the bottom	0	0	0	0	0	0	0	0
Add up the value of your selections (must equal 48): _____								

Table S1. General demographic information for the Eastern and Western samples.

	Eastern (n = 774)	Western (n = 1,723)
Sex (%)		
Women	51.1	58.6
Men	48.9	41.4
Sexuality (%)		
Heterosexual	93.5	89.1
Homosexual	2.3	3.1
Bisexual	3.2	6.5
Other	0.8	1.0
Relationship status (%)		
Married	0.8	16.4
Divorced	-	2.8
Committed	30.9	38.9
Uncommitted	4.9	5.7
Single	63.4	36.1
Other	-	0.1
Socio-economic status (%)		
Upper	1.0	1.3
Upper-middle	24.1	24.1
Middle	59.1	50.1
Lower-middle	11.6	19.6
Lower	3.2	4.6
Students (%)	98.6	80.5
Religiousness (%)		
Christianity	27	30.1
Islam	19.3	2.2
Hinduism	2.2	0.4
Buddhism	27.4	1.4
None	22.6	64.3
Other	1.4	1.7
Other descriptives (M (*SD*))		
Age	21.48 (2.59)	27.03 (9.64)
Importance of religion	3.20 (1.48)	1.70 (1.20)

Table S2. Full list of countries that participants represented in the task. Only the top 10 represented countries were included in the Eastern and Western culture groups.

Country	*n*
Eastern cultures (n = 774)	
Malaysia	445
Singapore	269
Hong Kong	37
China	11
Indonesia	11
Western cultures (n = 1,723)	
Australia	819
Norway	492
United Kingdom	357
United States	23
New Zealand	13
Not categorized (n = 110)	
India	8
Netherlands	7
Canada, France	6
Germany, Ireland, Vietnam	5
Philippines	4
Pakistan, Russia, South Africa, Sri Lanka	3
Argentina, Austria, Brunei, Cuba, Greece, Hungary, Iraq, Italy, Japan, Lebanon, Poland, Romania, Saudi Arabia, South Korea, Thailand	2
Other	1