

Is Chastity an Obsolete Virtue? Contrasting Cues of Chastity and Parental Investment for Mate Evaluation

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ABSTRACT

Sex and gender differences in mate preferences have been studied cross-culturally, and across time. While there are robust effects for some trait preferences, such as attractiveness or resources, effects are less consistent for other traits including chastity. Although chastity has been suggested as a proxy cue for the *absence* of parental investment, and thus should be preferred in potential long-term mates – especially by males, it may also be a cue that diminishes in utility as societies change over time. For our study we created mock online dating profiles to isolate cues of chastity and parental investment in order to test whether university students would be more affected by a potential partner's sexual experience, or by evidence that a potential partner was already investing in a child. Our results support predictions made by parental investment theory. Results revealed that chastity is a poor predictor of mate choice when contrasted with cues of parental investment. Further, while there are gender differences in willingness to engage in mating opportunities, profiles of men and women were evaluated similarly with respect to cues of parental investment and chastity.

KEYWORDS

Mate Preferences, Mate Choice, Chastity, Parental Investment, Gender Differences

Significant cultural changes occurred in the 20th century, including civil rights movements and subsequent legislation in most Western countries, as well as the effects of world wars and a general increase in democracy, secularism, and public education. The rate of change experienced during the last century was greater than any in other century recorded in human history (Buss, Shackelford, Kirkpatrick, & Larsen, 2001) and this trend continues into the 21st century. Concurrent with cultural changes are changes in common reproductive strategies and mate choice preferences. With regard to sex, gender, and reproduction, significant changes include the advent of equal rights legislation for women, the invention of birth control, and societal shifts regarding the roles of spouses and parents. In 2001, Buss and colleagues examined changing trends in mate preferences occurring from

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1939 to 1996. Their results showed that the responses of American men and women became more similar, with 1996 responses quite different from responses in 1939. Buss and colleagues referred to these changes as a cultural evolution of values. The same 18-item mate-preference scale has been administered, by Buss and his international colleagues, across 37 different cultures. Those results replicated known gender differences, and highlighted traits with greater variability in preferences (Buss, 1989). The value that participants placed on the trait of chastity varied widely across cultures (Buss, 1989) and across time (Buss et al., 2001), which suggests that there is a strong cultural, rather than biological, contribution to the value placed on chastity. Much like other studies of mate-choice preferences, results of these large-scale studies were consistent with the predictions of parental investment theory. Although chastity has been examined in the context of parental investment theory, its independent effects are less clear.

Parental Investment Theory

The most replicated and robust gender differences in mate preference are the oft-paired findings that men prioritize physical attractiveness more than do women, and women prioritize success and good financial prospects more than do men (Buss et al., 2001). These differences are predicted by parental investment theory (Trivers, 1972), which explains that biological differences related to reproduction by males and females determine what selection pressures each sex must overcome to maximize reproductive success. Although men do tend to invest in offspring, their obligate parental investment is much lower than that of women. The minimum parental contribution of a man is a sperm emission, whereas the minimum contribution for a woman is much higher, including fertilization, the physical costs of bearing and nourishing a fetus, the often-dangerous process of childbirth, followed by lactation and other postnatal feeding (Buss, 2005). Human infants require an especially high level of postnatal parental investment due to their initial altricial state and long childhood, and it is much more common for women, rather than men, to take the largest role in the childrearing process (Trivers, 1972).

Men and women also have different reproductive potentials (Trivers, 1972). Women have a shorter reproductive window prior to menopause, are limited to one pregnancy at a time, and have a finite number of ova (Feingold, 1992). Men can potentially reproduce from puberty to death, and the time required between one insemination and the next is minimal. In accordance with parental investment theory, it appears that the biggest challenge for male reproductive success is accessing as many fertile mates as possible, whereas the biggest challenge for female reproductive success is accessing resources and assistance to nourish and support their offspring (Trivers, 1972). This suggests that members of each sex should seek mates with traits that can enhance their own reproductive success by satisfying whichever selection pressure poses the biggest threat (Buss, 1989). Therefore males should prioritize cues of fertility, associated with youth and physical attractiveness, and females should prioritize cues of capacity to provide resources (Buss, 1995).

Chastity

The trait of chastity, which is a lack of previous sexual experience, is assumed to be more preferred by men than by women when evaluating a potential mate. Such a preference has been theoretically linked back to parental investment theory because chastity is correlated with youth, and therefore reproductive potential (Symons, 1979) and also because of the risk of cuckoldry (Buss, 2007). Because of internal fertilization, women can be certain of investing in their own offspring, but men experience paternal uncertainty. Men are generally expected to provide resources for their mates' offspring, but risk inadvertent investment in the biological children of other men. Buss hypothesized that men should therefore consider chastity as more important in a mate than do women because men who preferred chaste women as long-term partners would reduce the risk of investing in another man's offspring. When he tested this hypothesis cross-culturally in 1989, he found that men ranked chastity higher in 23 out of 37 samples. Those results supported the hypothesis, but only weakly. It is not clear whether the cross-cultural results reveal that men care less about chastity, or that women care more than had been assumed.

When tested on North American samples, the mate preference that showed the largest change in ranking over time was chastity (Buss et al., 2001). It dropped in importance for both sexes, going from a preference of mid-importance to one of low importance. Boxer, Noonan and Whelan (2015) asked participants to list their top three most important traits in a mate. Of 3435 respondents, only three put chastity on their lists. This places it as 25th out of the 27 characteristics derived from the study. When studying the preferred level of sexual experience in a mate, Sprecher and colleagues (Sprecher, Regan, McKinney, Maxwell & Wazienski, 1997) found that chastity was rated as more desirable than sexual experience, but less important than most other traits by participants of both genders.

Possible explanations for this steep drop in the importance of chastity include the sexual revolution of the 1960s which coincided with the mass availability of birth control for women (Buss et al., 2001). Decreased stigmatization of female sexuality and promiscuity may have further decreased the importance of chastity in a mate (Boxer et al., 2015). Additionally, modern abortion procedures are both safe and legal in the event of unwanted pregnancy, and paternity testing is available in the event of contested paternity. It is also possible that the apparent worldwide increase in secularization reduces the religious social pressure to remain chaste or to punish promiscuity. Unlike other traits that are more directly linked to parental investment, preference for chastity appears to be progressively more flexible.

Adaptation and Socialization

Traits that pass from one generation to the next either help solve some sort of adaptive problem, or are carried along by traits that do. Adaptations tend to be species-typical, meaning they should be present to some extent in most, if not all, members of a species but may also be sex-typical within a species (Buss, Haselton, Shackelford, Bleske & Wakefield, 1998). As indicated previously, some gender differences in mate preference rankings – men's preference for looks and women's preference for resources - show strong cross-cultural agreement (Buss, 1989;

Conroy-Beam, et al., 2015). In North America alone, these specific preferences have remained relatively stable over half a century of rapid social change, which suggests the possibility of such preferences being evolved adaptations (Buss et al., 2001).

It is also possible that mate preference trends are evidence of evolved cognitive mechanisms that require interaction with sociocultural factors in order to operate at an optimal level in varying environments (Bjorklund & Shackelford, 1999). Buss (2003) has noted that humans have the capacity to employ several different kinds of mating strategy, with each strategy either being activated by cultural context or lying dormant. With this perspective, one might imagine each strategy and its corresponding preferences as an evolved cognitive mechanism that can be switched on or off, muted or enhanced, depending on cultural context.

According to Zentner and Eagly (2015) the underlying purpose of mate preferences is to aid in selecting a mate whose traits complement one's own, in such a way that will help to elevate one's position in society or capability to withstand the specific environmental pressures that individual will face. They propose a biosocial constructionist theory, which states that the domain-specific way evolutionary psychologists discuss mate preferences should be replaced with a domain-general explanation of biological and social flexibility caused by the frequent and extreme variance in human evolutionary environments.

Wood and Eagly (2012) proposed that sex differences in behavior result from an interaction between biological constraints caused by reproductive needs, socialization, hormonal moderation, and labour roles. For women, childbearing and rearing make many other activities difficult, causing a division of labour between the sexes. This is a biological factor that underlies and perhaps determines the social structure of all human societies. This division of labour is hypothesized to trigger psychological and social processes that serve to perpetuate and normalize a division of labour. So, in contrast to a strict evolutionary psychology perspective, the biosocial constructionist perspective proposes that mate choice behaviours are determined by the immediate environment, rather than the ancestral environment.

To strict adaptationists, mate preferences that show robust sex differences are evidence of specifically evolved adaptations that serve to maximize reproductive fitness. These preferences would then be evident even if the immediate environment no longer demands or supports those preferences. To a biosocial constructionist, mate preferences are flexible and do not have true sex differences; any gendered differences should disappear if division of labour does, on an individual and societal level (Wood & Eagly, 2012).

While a number of gender differences in mate preferences have remained relatively constant, there have been some changes documented in the last few decades. Men's preference for a partner's domestic skills like cooking and housekeeping have dropped considerably in the United States (Buss et al., 2001). Mutual attraction and love saw a sharp rise in importance for both genders. Education, intelligence and sociability have also all risen in general importance. As Western society becomes more egalitarian, and marriage is more and more an institution of companionship, mate choice preferences change. Examples of this trend include the small shift towards the normalcy of stay-at-home fathers, of parental leave (rather than just maternity leave) and of same-sex marriages. More

women have entered the workforce, especially in professional and executive capacities, and the gender wage-gap is narrowing (Boxer et al., 2015). Women constitute the majority of bachelor's degree graduates in Canada, at a rate of 60% (Frenette & Klarka, 2007). If social trends affect gender differences in mate choice preferences, as is proposed by biosocial constructionist theory, then we should see gender differences gradually disappear as society becomes more egalitarian. Conversely, if preferences are driven by parental investment risks that have not been shared by men and by women, no matter how egalitarian the society, then the differences should persist. It is perfectly reasonable to conclude that some differences in mate preferences are highly socialized and flexible, and that others are more resistant to changes in socialization perhaps because of strong ancestral selective pressures.

Present Study

Because of the variability in the literature on gender or sex differences in preference rankings of chastity we decided to examine the hypothesis that preference – and especially men's preference - for chastity is *not* an adaptive preference, but rather serves as an imperfect but socially supported proxy for parental investment. In order to test this hypothesis we isolated cues of chastity and parental investment in online dating profiles. By measuring interest in a potential partner who shows conflicting cues of parental investment and chastity, we should be able to examine which factor is dominant, or more relevant. We ask the question: would university students be more affected by cues of a potential partner's sexual experience, which may predict the risk of parental investment, or by clear cues of already investing in a child.

Predictions

In the past, parental investment theory has predicted clear gender differences in mate preferences. As well, chastity has been considered to be an important trait in women, but not in men (Buss et al., 2001). There are a few possible reasons for the existence of this gender difference in preference. As the gender that is traditionally expected to invest more material resources in offspring, men may be cautious about where those resources go (Buss et al., 2001). This is amplified by paternal uncertainty associated with internal fertilization and long human gestation (Bjorklund & Shackelford, 1999). Ancestral males who favored chaste females may have been more likely pass on their own genes and spend resources on their own offspring, thereby passing along any heritable preference for chaste females. Further, preference for chastity should be strongest when choosing a long-term mate and research has shown that both genders prefer a mate with no previous sexual experience to one with moderate to high sexual experience (Sprecher et al., 1997). Creating profiles that advertise both cues of chastity and having a dependent child simultaneously may isolate which facet of chastity it is that people find more important: the lack of a dependent child or the lack of sexual experience.

Past research has shown that women are attracted to men who appear willing to invest in children, because it suggests that such men may invest in their future children (Guéguen, 2014). Women are also more open than men to marrying someone who already has children (Sprecher, Sullivan & Hatfield, 1994). Unfortunately, step-children are often viewed as an unwanted drain on resources (Gibson, 2009), and while this effect is more commonly observed in male step-parents (Daly & Wilson, 1998) it may also affect female responses. Women may be less interested in a man with diminished resources to invest in future offspring, and may not want to risk any of their own resources.

We predicted that profiles with the presence of a dependent child should activate parental investment pressures on mate choice and will be rated as less attractive regardless of the sexual experience or gender of the person described the profile. Sexual experience should have a weak effect on mate choices, but there may be a gender difference such that a woman who is chaste will be rated more highly than a woman who is sexually experienced, whereas we do not expect to find much difference in ratings of chaste or experienced men.

METHODS

Participants

Participants in our primary analyses were 466 students at a western Canadian university who each earned course credit for research participation. Within the sample, 193 identified as men, 264 identified as women, and 9 either preferred not to answer the question about gender or identified as neither a man nor a woman. In addition to our question about gender, we also asked whether participants were primarily attracted to men or to women, or both men and women equally. Based on these two questions we inferred that 96.4% of men and 89.4% of women in our sample expressed heterosexual preferences.

Materials & Procedure

Participants completed the study online. They viewed a photograph and a brief profile of a target named 'Sam' (See Appendix A) in the context of a study that examined online dating preferences. Each participant viewed a profile photo that was consistent with their stated preferred partner gender. Thus, heterosexual males viewed a profile of 'Sam' as a woman, and so did non-heterosexual women. The photos used in the study were previously rated by a focus group as being moderately attractive.

The experiment was modeled as a 2 (Sam's Gender) x 2 (Sam's Chastity) x 2 (Sam's Parental Investment) factorial between-subjects design. Participants were randomly assigned to view one of four versions of the target profile. For each Gender the four profiles were as follows: 'Sam' is a virgin who has no child in his/her care, 'Sam' is a virgin who has a nephew in his/her care, Sam has sexual

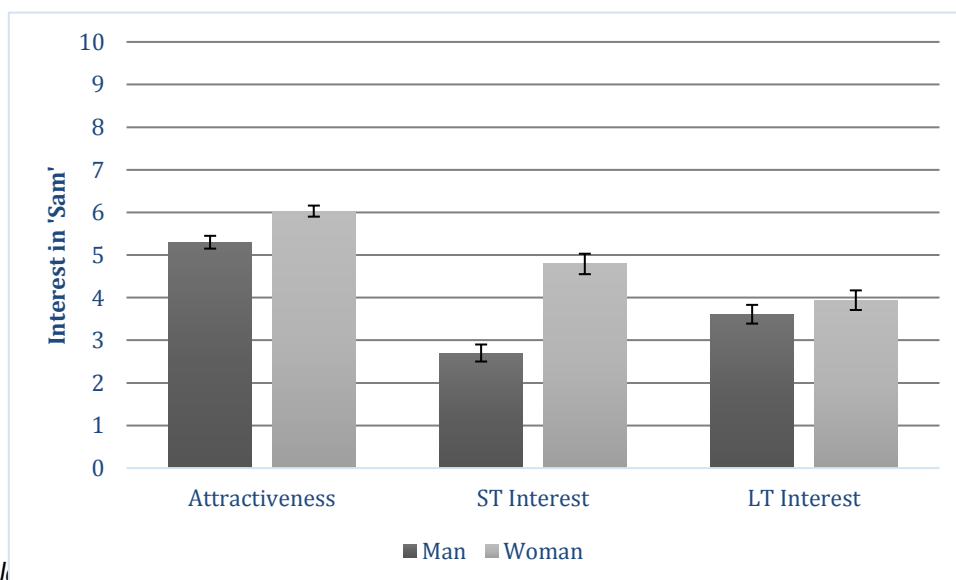
experience and has no child in his/her care, 'Sam' has sexual experience and has a nephew in his/her care.

After viewing the target profile participants were asked to answer a series of questions by rating on a scale of 0-10 with 0 representing a strong negative answer and 10 representing a strong positive answer. Participants in a relationship were asked to answer as if single. The questions were: How attractive is Sam? How likely would you be to contact Sam? How likely would Sam be to contact you? If you sent a message, how likely would Sam be to respond? Would you want to ask Sam out on a date? Would Sam want to date you? Would you be interested in a long-term relationship with Sam? Would you be interested in having sex with Sam? Do you think Sam would want to have sex with you? We intended to analyze only the questions about Sam's attractiveness, and participants' interest in either having sex with Sam or having a long-term relationship with Sam.

After viewing the target profile, participants were asked a series of demographic and attitude questions such as age, gender, relationship status, plans to have children, attitude towards adoption and marriage, and a question assessing religious affiliation. Participants also completed the Sociosexual Orientation Inventory (SOI) (Simpson & Gangstead, 1991) as a measure of relative sexual inhibition/disinhibition. At the completion of the study participants were asked a probe question to see if they were able to determine the hypothesis. No participants indicated that they identified sexual experience or having a child as relevant to our study interests.

RESULTS

There was a main effect of Sam's Gender (see Figure 1) on ratings of Sam's attractiveness (Man: 5.30 ± 0.15 , Woman: 6.03 ± 0.13 , $F(1, 361) = 14.29$, $p < 0.001$), as well as interest in having sex with Sam (Man: 2.70 ± 0.20 , Woman: 4.79 ± 0.24 , $F(1, 361) = 51.34$, $p < 0.001$), but no main effect on interest in a long-term relationship with Sam (Man: 3.61 ± 0.22 , Woman: 3.94 ± 0.23 , $F(1, 361) = 1.32$, $p = 0.25$).



EvoS J

Figure 1. Mean (\pm SEM) ratings of Sam's attractiveness, and interest in having sex with Sam differed depending on Sam's gender. Interest in a long-term relationship with Sam did not differ significantly based on Sam's gender.

There was also a main effect of Parental Investment (see Figure 2) on interest in having sex with 'Sam' (Child: 3.39 ± 0.21 , No Child: 4.16 ± 0.24 , $F(1, 361) = 7.46$, $p = 0.007$), and interest in a long-term relationship with 'Sam' (Child: 3.36 ± 0.21 , No Child: 4.22 ± 0.23 , $F(1, 361) = 8.23$, $p = 0.004$).

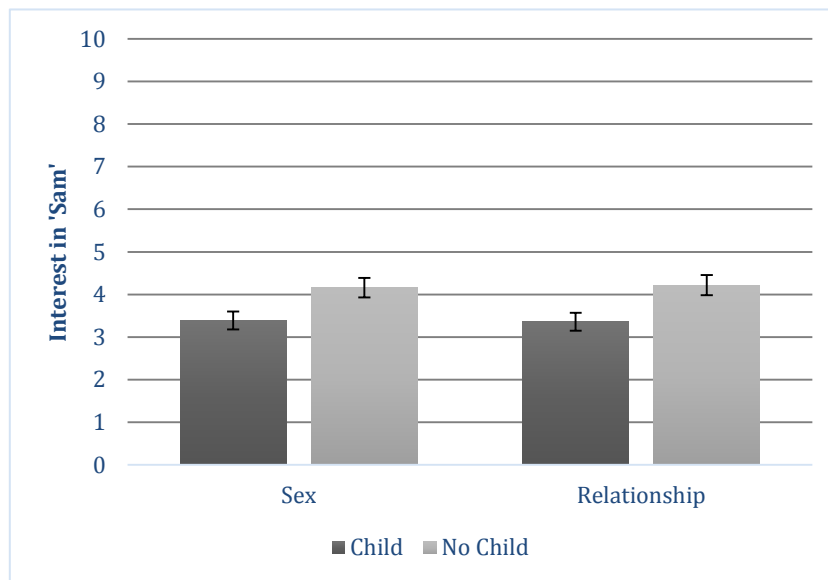


Figure 2. Mean (\pm SEM) ratings of interest in having sex with Sam or having a long-term relationship with Sam were higher when Sam had no child.

There was no main effect of Chastity. There was a significant interaction effect of Chastity and Parental Investment (see Figure 3) on ratings of interest in a long-term relationship with 'Sam' ($F(1, 361) = 4.69$, $p = 0.03$), such that the highest ratings went to profiles with cues of Chastity but no Parental Investment (4.64 ± 0.31), and the lowest ratings went to profiles with cues of Chastity and Parental Investment (3.13 ± 0.26).

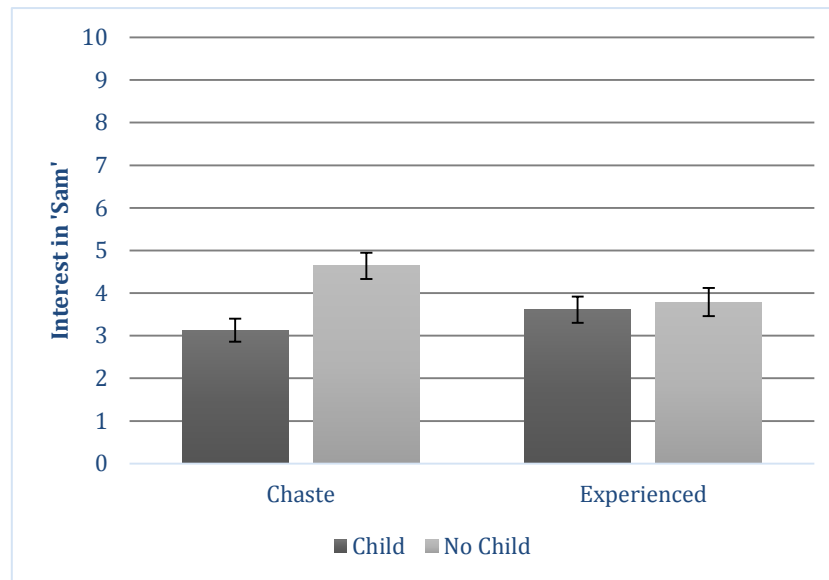


Figure 3. Cues of chastity and parental investment interacted, such that chaste-Sam was rated higher without a child but experienced-Sam's ratings did not differ between parental investment conditions. Ratings are mean (\pm SEM).

In addition to the effects of the main independent variables, we also explored whether ratings of 'Sam' were affected by participants' SOI scores, religiosity, plans to have children, and current relationship status. High SOI scores are associated with sexual disinhibition, and in our study SOI score was positively correlated with interest in sex with 'Sam' ($r(240) = 0.20, p = 0.002$). Men in our sample had higher SOI scores than did women (Men: 65.3 ± 2.05 , Women: $43.3 \pm 3.51, F(1, 453) = 31.64, p < 0.0001$). Participants who explicitly did not want children also gave lower ratings of interest in a potential long-term relationship ($F(1, 325) = 6.85, p = 0.009$). None of the other demographic or personal variables revealed significant gender differences, nor did they significantly affect ratings of 'Sam'.

Please note that we analyzed these data using the gender of the target profile as an independent variable, rather than using the gender of participants. We repeated the analyses using participant gender, and again with a sample that included only participants with heterosexual orientations. The patterns of significance were the same, so we have elected to present our results using responses from all participants. Although we would have liked to evaluate non-heterosexual and non-binary choices independently, our sample was simply too small to do so with appropriate statistical power.

DISCUSSION

Our results are consistent with predictions from parental investment theory. When the dating profile was a man (and rated, primarily, by heterosexual women), he was judged as somewhat less attractive and less appealing for casual sex, compared to when 'Sam' was depicted as a woman (and rated, primarily, by heterosexual men). Men in our sample also had significantly higher SOI scores, consistent with the test norms (Simpson & Gangestad, 1991). These results are consistent with female choosiness and caution about casual sex, predicted by parental investment theory (Trivers, 1972). With regard to long-term mate preferences, participants were not particularly interested in 'Sam'. Average ratings were below the midpoint of the scale, so we can't suggest that any combination of our independent variables made 'Sam' attractive to potential long-term mates. It would be more reasonable to suggest that cues of parental investment made 'Sam' more unattractive than in the absence of those cues. Further, chastity was associated with the lowest ratings for potential long-term mates when it was paired with cues of parental investment, and chastity was associated with the highest ratings (although still under the midpoint of the scale) when associated with the absence of parental investment. It is possible that chastity serves as a weak cue of the absence of parental investment but only when concrete cues of parental investment are not provided.

Although we had predicted that chastity might have a more powerful effect on ratings of a woman, because heterosexual men would be more likely to prefer a chaste potential partner and societies tend to look less favourably upon female sexual experience (as in Buss et al., 2001), we did not find a gender difference in the effect of a chastity cue. Although it is possible that cues of chastity would be preferred by heterosexual men because a chaste partner reduces the risk of investing in another man's child, there may be additional benefits to chastity in any partner. Chaste partners bring less 'baggage' to a relationship, such as former sexual partners, diseases, or expectations. Women and men may equally benefit from a partner who has no history of sexual behaviour, and no hidden parental investment or other potential drains on relationship resources (Buss, 2003). It is also possible that in our modern society, with easy access to birth control, sexual experience is no longer a strong risk factor for parental investment. Chastity is generally associated with the absence of parental investment but for young adults in Western culture, sexual experience is also generally associated with the absence of parental investment. Thus, chastity has weakened as a prioritized trait for mate choice (Buss et al., 2001) and chastity may have a weak effect when presented as a cue for the purpose of mate choice.

This sample was taken from a population that includes women who are young, educated, have their own financial prospects, and live in a relatively egalitarian society. Biosocial constructionist theory would predict that such women should answer flexibly and perhaps less selectively than women who are less educated, lack financial independence, or live in a less egalitarian society (Wood & Eagly, 2012). Because women with their own income would not be as strongly affected by gender division of labour or need as much help from a mate to survive their own reproductive function, constructionist theory would predict few gender differences in mate choice preferences or even in sexual disinhibition. Although

there were no gender differences in our study with regard to long-term mate choice there were clear gender differences associated with short-term mate choice and with sociosexuality. While it is certainly the case that women with the potential for financial independence and social equality may have been raised with strong social messages about sexual double-standards, their immediate environment is such that they have the option to prevent unwanted pregnancies and other consequences of sexual activity. Thus, even in an environment where women can reduce or eliminate the risks that parental investment theory outlines as consequences of sexual activity, women on average continue to behave in a manner that is more sexually cautious than do men.

The overall deficit in interest in 'Sam' when cues of parental investment are present, even when cues of chastity are present, supports our hypothesis that parental investment is a stronger predictor of mate choice than is sexual experience. This implies that parental investment is more relevant to sexual selection, and that a preference for chastity is not essential to male reproductive success. However, we cannot entirely rule out the possibility that an historical or ancestral preference for chastity increased the reproductive fitness of males. Rather, we provide support for the hypothesis that both men and women are sensitive to cues of parental investment and less sensitive to cues of chastity.

Our hypotheses were tested on a western, educated, industrialized, rich, and democratic (W.E.I.R.D) sample (Heinrich, Heine, & Norenzayan, 2010), and would be more generalizable if tested on broader samples cross-culturally. The photos we used were of young White individuals, which may also have biased our results. It would also be valuable to test these preferences on large enough groups of individuals who identify as non-binary and individuals who do not identify as heterosexual in order to determine whether sex, gender, and orientation have independent effects on mate choice preferences predicted by parental investment theory.

Beyond expanding this research by expanding the sample, it would be worthwhile to examine whether cues other than outright statements of chastity would have equivalent or different effects on mate choice preferences. It is possible that stating that one is a virgin (or that one has had some sexual experience) is perceived as odd or overly candid, and may have effects on the evaluation of a dating profile in a way that is unrelated to any effects of sexual experience. For example, statements about birth control use or adhering to traditional gender roles or religious teachings might have strong effects without stating that one is experienced or chaste. There are a variety of subtleties of language that could be explored, to determine whether cues of chastity significantly affect mate choices.

In summation, our results support predictions made by parental investment theory and offer only weak support for biosocial constructionist theory. We found robust gender differences in short-term mate evaluation, with men generally showing a stronger inclination toward short-term mating opportunities. Participants typically prefer mates without existing children in care, regardless of gender. Both parental investment theory and biosocial constructionist theory predict that mate preference behaviors express the tendency to avoid potential mates that will incur costs, and seek mates that will provide benefits. These costs and benefits appear to be specific to the biological, physical, and social constraints consistent with sex

differences in reproductive function, however it remains to be determined whether this is the result of biological factors influencing social structure as proposed by evolutionary theorists or a result of social structure and biology continuously influencing each other as proposed by biosocial constructionist theory.

Chastity was not a strong predictor of mate choice in our study. It is highly unlikely that a preference for chastity is a domain-specific evolved mate preference that specifically increases the reproductive fitness of males, but rather perhaps served as an indicator of the absence of parental investment in a naturalistic environment where cues of chastity and parental investment are typically mutually exclusive.

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Appendix A

Exemplars of Dating Profiles



My name is Sam.
I'm just a regular 24 year old.
My friends would describe me as down to earth, kind and understanding.
I'm pretty easy going, I'm fun loving, but I know how to work hard.
My favorite thing to do is spend time with my family and friends.
I am raising my little nephew and will be adopting him as soon as possible. He's two and lives with me in my apartment.
I've had a few previous sexual partners, and I believe in old school romance.



My name is Sam.
I'm just a regular 24 year old.
My friends would describe me as down to earth, kind and understanding.
I'm pretty easy going, I'm fun loving, but I know how to work hard.
My favorite thing to do is spend time with my family and friends.
Still, it's great to have an apartment to myself!
I am a virgin, and I believe in old-school romance.