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Brewer, Gayle and Riley, C. (2009) Height, Relationship Satisfaction, Jealousy, and Mate Retention. Evolutionary Psychology, 7 (3). pp. 477-489. ISSN 1474-7049

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Original Article

Height, Relationship Satisfaction, Jealousy, and Mate Retention

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Abstract: Male height is associated with high mate value. In particular, tall men are perceived as more attractive, dominant and of a higher status than shorter rivals, resulting in a greater lifetime reproductive success. Female infidelity and relationship dissolution may therefore present a greater risk to short men. It was predicted that tall men would report greater relationship satisfaction and lower jealousy and mate retention behavior than short men. Ninety eight heterosexual men in a current romantic relationship completed a questionnaire. Both linear and quadratic relationships were found between male height and relationship satisfaction, cognitive and behavioral jealousy. Tall men reported greater relationship satisfaction and lower levels of cognitive or behavioral jealousy than short men. In addition, linear and quadratic relationships were found between male height and a number of mate retention behaviors. Tall and short men engaged in different mate retention behaviors. These findings are consistent with previous research conducted in this area detailing the greater attractiveness of tall men.

Keywords: height, relationship satisfaction, jealousy, mate retention, mate value

Introduction

Previous research has outlined the female preference for tall partners and the extent to which this impacts on a range of mating behavior. We will examine whether tall men are more satisfied with their relationship, less prone to jealousy and whether male height is associated with the use of mate retention behaviors.

Male height, quality, and attractiveness

Male height provides a clear indication of mate quality and health (Silventoinen, Lahelma, and Rahkonen, 1999), with only high quality men able to allocate the resources required to develop their stature. In addition, research has demonstrated that male height is associated with established indicators of genetic quality such as fluctuating asymmetry

(Manning, 1995) and self-reported physical health (Samaras and Elrick, 1999). Height may also indicate a man's status relative to other men, for example tall men are perceived as more dominant and assertive than shorter men (Melamed, 1992). In part, this perception may reflect the fact that the higher levels of testosterone associated with male height (Heald et al., 2003) also results in other observable features associated with dominance such as a prominent jaw and brow ridge (Enlow, 1990). Male stature may also signal the possession of desirable non physical qualities. For example, male height is associated with socioeconomic status and access to resources (Judge and Cable, 2004; Peck and Lundberg, 1995; Silventoinen et al., 1999).

As a consequence of the physical and non-physical qualities associated with male stature, tall men experience a number of reproductive advantages. Stature is an important element of male attractiveness (Pawlowski and Koziel, 2002) and women are most attracted to tall men (Kurzban and Weeden, 2002; Pawlowski and Jasienska, 2005). In fact both men and women (at least in Western post-industrial societies) report a desire for relationships in which the man is taller (Gillis and Avis, 1980). Consequently, tall men receive more responses to 'lonely hearts' column advertisements (Lynn and Shurgot, 1984) and women report dating tall men more frequently than short men (Shepperd and Strathman, 1989). The average number of dates for men one standard deviation above the mean was twice that of men one standard deviation below the mean. Tall men also obtain more attractive partners (Feingold, 1982) are less likely to be childless (Nettle, 2002) and have a greater number of children (Mueller and Mazur, 2001) than their shorter rivals. The increased reproductive success of tall men may reflect the greater likelihood that tall men obtain a second or subsequent wife. As height can be a cue to a man's ability to provide protection and resources or a cue to heritable fitness (Silventoinen, Kapiro, Lahelma, Viken, and Rose 2001; Schousboe et al., 2004) there are a number of reproductive advantages afforded to women that select tall mates.

Cuckoldry and reproductive success

The female preference for tall partners may present an increased risk of desertion or cuckoldry (paternity by another male) to shorter men. The mixed mating or dual strategy hypothesis (Gangestad and Simpson, 2000) suggests that women may cuckold their long term partner by mating with a man that has a high genetic quality (in order to produce high quality offspring) whilst retaining the resources of their primary (lower quality) partner. Whilst cuckoldry represents a substantial problem for all men (Baker and Bellis, 1995; Platek and Shackelford, 2006), it may be of greater concern for short men. Women unable to secure the most desirable (i.e. tall) partner for a long term relationship could adopt a dual strategy, retaining the investment of a less attractive (i.e. short) man whilst engaging in extra pair copulations with a more desirable (i.e. tall) man.

Extra pair copulations with tall men would be less beneficial for women in a long term relationship with a tall as opposed to a short man. The relative difference between the attractiveness of the long term and extra pair partners would be lower for these women and the quality of the partner lost (if the extra pair copulation were discovered and abandonment followed) would be greater. The suggestion that short men may be at most risk of cuckoldry is supported by the finding that the female preference for tall men is heightened when selecting a man for a short term relationship or during the fertile phase of the menstrual cycle (Pawlowski and Koziel, 2002) and the greater jealousy of less attractive

men when their partner is most fertile (Haselton and Gangestad, 2006). This is also consistent with other research indicating that women paired to low quality males are most likely to seek extra-pair relationships with higher quality men (Waynforth, 1998).

In addition, short men may have greater difficulty increasing their reproductive success through short term or extra pair matings than tall men and be most likely to restrict their reproductive output to the level of their long term partner. The greater reliance on the success of a long term relationship for lifetime reproductive success further highlights the threat that cuckoldry or relationship dissolution poses for short men. This may be further exacerbated by a greater difficulty attracting a new partner as suggested by the female preference for tall mates (Pawlowski and Jasienska, 2005). Consequently, being sensitive to the threat that cuckoldry and desertion presents and investing in mate retention may be of most benefit to short men.

Jealousy and mate retention

Jealousy is often perceived as a negative emotion (Buunk and Bringle, 1987) and has been related to a range of destructive events or behaviors such as domestic violence and marital problems (Aronson and Pines, 1980; Barnett, Martinez, and Bluestein, 1995). Jealousy however, may serve a number of adaptive functions (Buss, 2000). The elicitation of jealousy allows an individual to identify those individuals or circumstances that present the greatest threat to their relationship. Importantly, the identification of a specific threat may promote the use of mate retention behaviors intended to strengthen the pair bond or deter rivals (Buunk, Massar, and Dijkstra, 2007). Jealousy therefore has the potential to reduce desertion or cuckoldry and promote reproductive success if elicited by an appropriate threat. In addition, it has been suggested that jealousy protects and promotes love in other ways (Dugosh, 2000; Mathes, 1986; Mathes and Severa, 1981). For example, a partner's jealousy could be interpreted as a sign of caring, promoting a belief that the partner is committed and ready to invest in a long term relationship. Alternatively, individuals that believe their partner is desired by others (and respond jealously to a potential rival) may raise their perceptions of the partner's mate value or attractiveness, increasing their attraction to their partner. The level of jealousy experienced may reflect the level of threat. For example, men that are concerned with their partner's jealousy experience more jealousy when the rival is attractive (Maner, Miller, Rouby, and Gailliot, 2009).

In this context, Buunk, Park, Zurriaga, Klavina and Massar (2008) demonstrate that tall men are less jealous than short men. Specifically, tall men are less jealous than short men when faced with the prospect of a physically attractive and dominant rival. This research made an important contribution to the field, demonstrating that male height is related to romantic jealousy and that these responses can be elicited in response to hypothetical scenarios. The present study investigates the relationship between height and jealousy further, and considers the manner in which male height is related to three jealousy dimensions. Pfeiffer and Wong (1989) identify three jealousy dimensions: emotional jealousy which concerns how a person responds to potentially provoking situations; cognitive jealousy which comprises of the individual's appraisal of a situation and behavioral jealousy which includes a range of behaviors intended to reduce a specific threat.

The current study and predictions

We predicted that the potential threats to lifetime reproductive success experienced by short men (outlined above) would result in greater suspicion or concern (cognitive jealousy), efforts to minimize the threat (behavioral jealousy) and reaction to events that threaten the relationship (emotional jealousy). Based on their relatively high attractiveness, increased ability to obtain high quality mates and hypothesized lower risk of cuckoldry or desertion, we also predicted that tall men would report higher levels of relationship satisfaction than shorter men. To explore the relationship between height and behaviors that may minimize the risk of cuckoldry or desertion further, we considered a range of mate retention behaviors (Buss, Shackelford and McKibbin, 2008). These included behaviors intended to deter potential rivals and those expected to increase a partner's desire to remain in the current relationship.

Therefore, the current study extends previous research in this area beyond initial attraction (e.g. Pawlowski and Koziel, 2002) or reproductive success (e.g. Mueller and Mazur, 2001) to the dynamics within a relationship. In particular, the research explores the extent to which male height is associated with relationship satisfaction, jealousy and mate retention.

Materials and Methods

Participants

Ninety-eight heterosexual men aged between 19 and 72 years (mean = 27.3, *SD* = 11.09) participated. Men were recruited from the local community (i.e. local business) through opportunity sampling. All participants were in a romantic relationship at the time of the study. Men's height ranged from 155cm to 196cm (mean = 178.4, *SD* = 8.14) and was comparable with the UK average (Mean 175.3cm, Health Survey for England, 2007, 2009).

Procedure

Participants were presented with a questionnaire which asked a range of autobiographical questions (age, own height). The use of self-report rather than directly measured height is consistent with previous research (e.g. Pawlowski, 2003) and the reliability of this method is well documented (Himes and Roche, 1982). Participants were then asked to rate their relationship satisfaction on a 7 point Likert scale. Participants were also asked to complete the 24 item Multidimensional Jealousy Scale (Pfeiffer and Wong, 1989), assessing cognitive (8 items), emotional (8 items) and behavioral jealousy (8 items). Example items include 'How would you emotionally react to X flirting with someone of the opposite sex?' and 'How often do you call X unexpectedly, just to see if he or she is there?' Each subscale proved to be reliable (Cronbach's alpha: cognitive: .92; emotional: .86 and behavioral: .90). All items relating to jealousy were completed on a 7 point Likert scale.

Finally, participants completed the Mate Retention Inventory-Short Form (Buss, Shackelford, and McKibbin, 2008), consisting of 38 items. Example items include "Called to make sure my partner was where she said she would be" and "Perform sexual favors to keep my partner around." The scale proved to be reliable (Cronbach's alpha: .88). Each subscale of the questionnaire was also largely reliable (Cronbach's alpha: vigilance: .77;

concealment of mate: .75; monopolization of time: .86; jealousy induction: .89; punish mate's infidelity threat: .39; emotional manipulation: .78; commitment manipulation: .45; derogation of competitors: .66; resource display: .88; sexual inducements: .68; appearance enhancement: .90; love and care: .71; submission and debasement: .72; verbal possession signals: .57; physical possession signals: .79; possessive ornamentation: .82; derogation of mate: .60; intrasexual threats: .89; violence against rivals: .59 (2 items per subscale).

Results

Consistent with previous research (e.g. Buunk et al., 2008), regression analyses were used to test for linear and quadratic effects. The analyses controlled for participant age. As shown in Table 1, significant linear and quadratic relationships were identified between men's height and relationship satisfaction, cognitive jealousy and behavioral jealousy. An inspection of the residuals suggests that the linear regressions provided a closer approximation of the data. As shown in Figures 1-3, tall men reported greater relationship satisfaction and reported lower levels of jealous cognitions or jealous behavior. However, neither significant linear nor quadratic relationships were revealed between men's height and emotional jealousy or overall use of mate retention strategies.

Table 1. Linear and quadratic relationships between height and relationship satisfaction, jealousy and mate retention.

	Linear	Quadratic
Relationship satisfaction	$F(2, 90) = 3.29, p = .017^*$	$F(2, 81) = 5.37, p = .007^{**}$
Cognitive jealousy	$F(2, 94) = 8.38, p < .001^{**}$	$F(2, 81) = 7.34, p = .001^{**}$
Behavioral jealousy	$F(2, 94) = 7.69, p = .001^{**}$	$F(2, 81) = 12.62, p < .001^{**}$
Emotional jealousy	$F(2, 94) = 1.43, p = .329$	$F(2, 81) = 1.04, p = .358$
Overall mate retention	$F(2, 86) = .14, p = .972$	$F(2, 81) = .098, p = .907$

* $p < .05$, ** $p < .01$

Figure 1. Linear and quadratic relationships between men's height and relationship satisfaction.

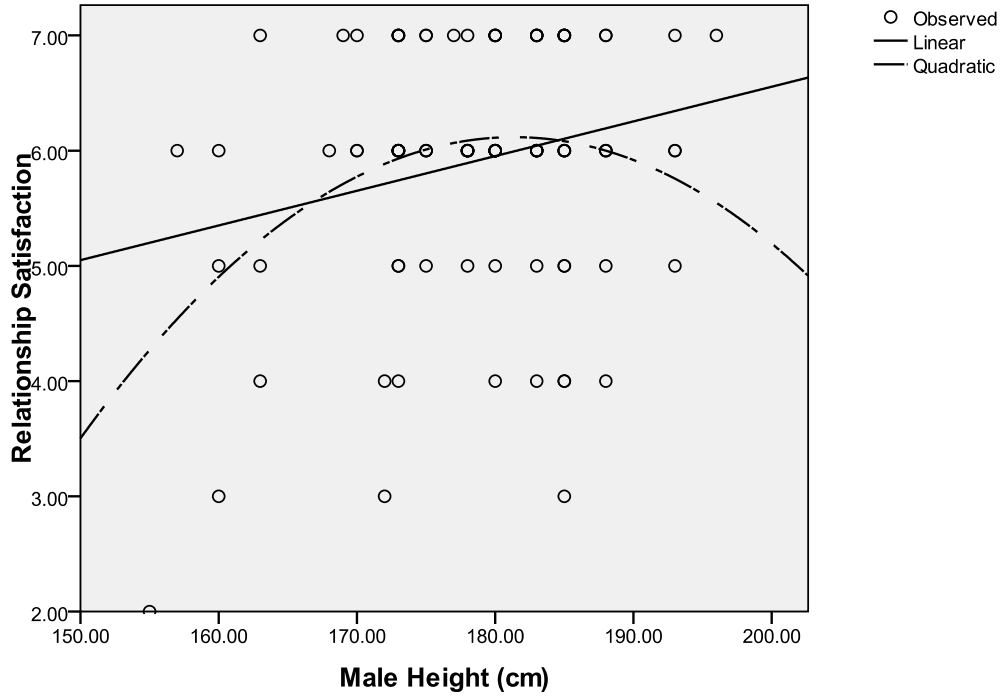


Figure 2. Linear and quadratic relationships between men's height and cognitive jealousy.

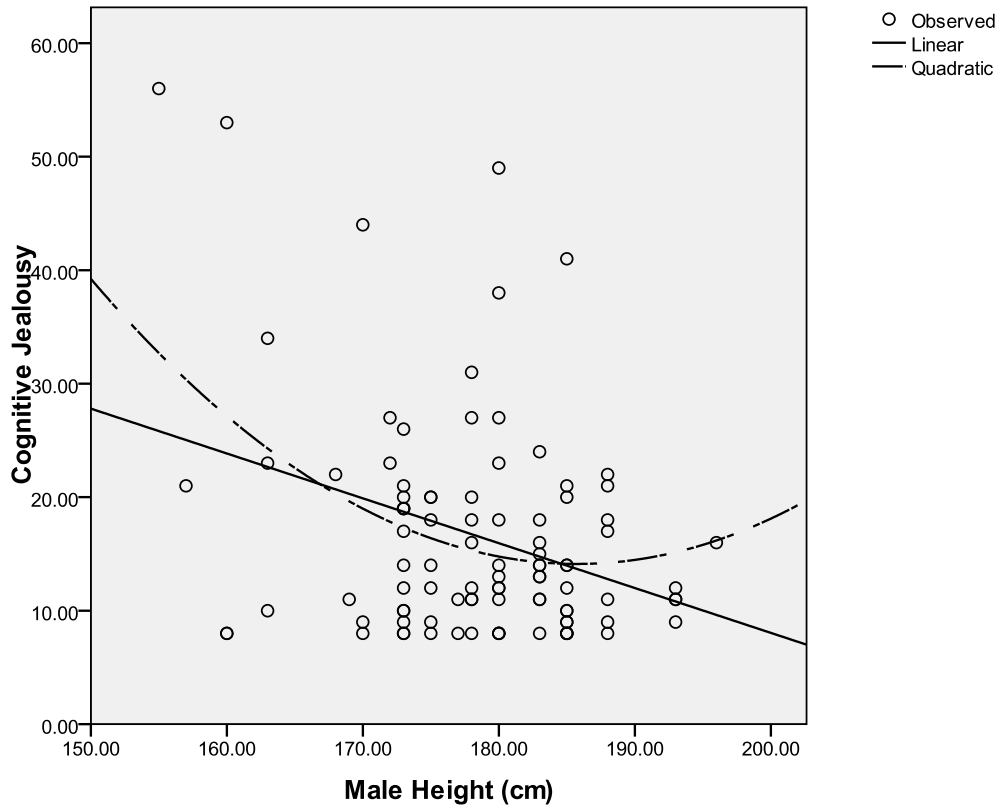
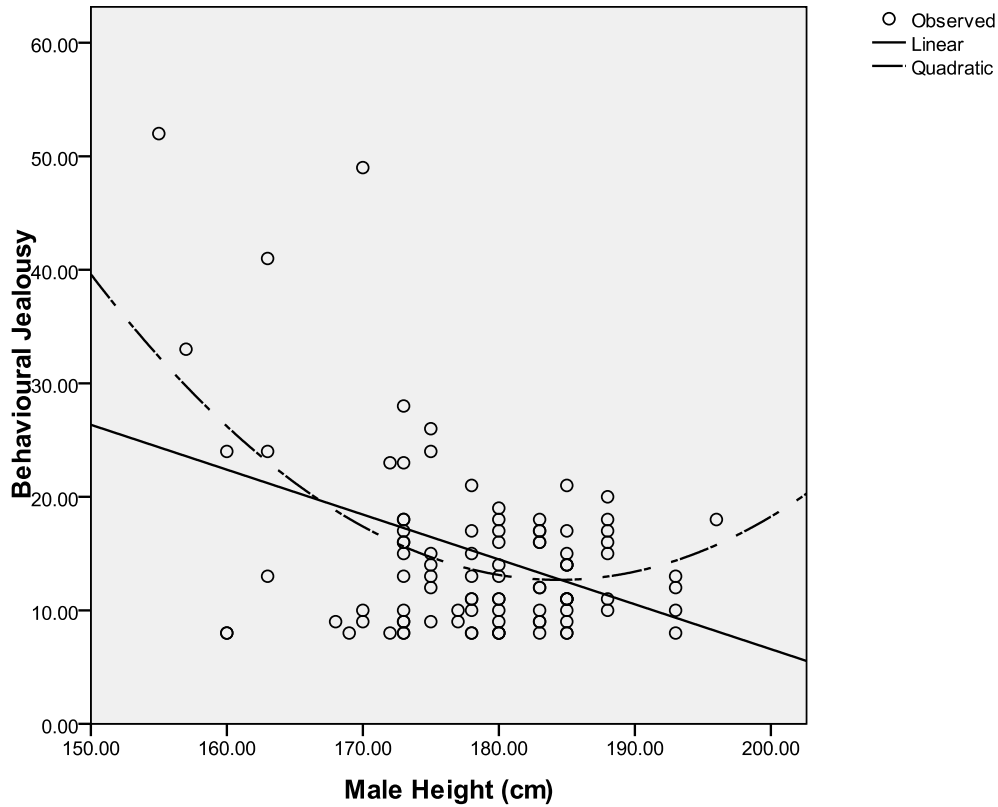


Figure 3. Linear and quadratic relationships between men's height and behavioral jealousy.



As shown in Table 2, further regression analyses were conducted with each subscale of the Mate Retention Inventory revealing significant linear and quadratic relationships between men's height and vigilance, monopolization of time, jealousy induction, appearance enhancement, and love and care. A significant quadratic relationship, but not a linear relationship was found between men's height and the resource display subscale of the Mate Retention Inventory. Tall men were less likely to use appearance enhancement or love and care to retain a partner but were more likely to employ vigilance, monopolization of time and jealousy induction.

Table 2. Linear and quadratic relationships between height mate retention subscales.

	Linear	Quadratic
Vigilance	$F(2, 95) = 9.91, p < .001^{**}$	$F(2, 95) = 15.41, p < .001^{**}$
Monopolization of time	$F(2, 94) = 4.16, p = .008^{**}$	$F(2, 94) = 7.83, p = .001^{**}$
Jealousy induction	$F(2, 95) = 4.24, p = .007^{**}$	$F(2, 95) = 3.21, p = .045^*$
Appearance enhancement	$F(2, 95) = 1.31, p = .046^*$	$F(2, 95) = 3.60, p = .031^*$
Love and care	$F(2, 94) = 4.08, p = .007^{**}$	$F(2, 94) = 7.81, p = .001^{**}$
Resource display	$F(2, 94) = 1.81, p = .083$	$F(2, 94) = 3.95, p = .023^*$
Concealment of mate	$F(2, 95) = 3.12, p = .074$	$F(2, 95) = 2.59, p = .080$
Punish infidelity threat	$F(2, 95) = .09, p = .807$	$F(2, 95) = .03, p = .967$
Emotional manipulation	$F(2, 95) = 1.55, p = .304$	$F(2, 95) = 1.50, p = .228$
Commitment manipulation	$F(2,93) = .37, p = .918$	$F(2,93) = .14, p = .874$
Derogation of competitors	$F(2,94) = .02, p = .989$	$F(2,94) = .64, p = .531$
Sexual inducements	$F(2,93) = .39, p = .700$	$F(2,93) = 1.80, p = .172$
Submission and debasement	$F(2,94) = .03, p = .837$	$F(2,94) = .03, p = .972$
Verbal possession signals	$F(2,94) = 2.37, p = .643$	$F(2,94) = .47, p = .625$
Physical possession signals	$F(2,94) = 2.37, p = .643$	$F(2,94) = 1.66, p = .196$
Possessive ornamentation	$F(2,95) = 2.27, p = .795$	$F(2,95) = .01, p = .990$
Derogation of mate	$F(2,95) = 1.05, p = .151$	$F(2,95) = 2.03, p = .137$
Intrasexual threats	$F(2,95) = .47, p = .768$	$F(2,95) = .26, p = .769$
Violence against rivals	$F(1,95) = .65, p = .421$	$F(2,95) = .38, p = .688$

* $p < .05$, ** $p < .01$

Neither linear nor quadratic relationships were revealed between men's height and the remaining Mate Retention Inventory subscales (concealment of mate linear, punish mate's infidelity threat, emotional manipulation, commitment manipulation, derogation of competitors, sexual inducements, submission and debasement, verbal possession signals, physical possession signals, possessive ornamentation, derogation of mate, intrasexual threats linear, violence against rivals).

Discussion

The results indicate that male height predicts relationship satisfaction, cognitive and behavioral jealousy and the use of various mate retention behaviors. The greater relationship satisfaction reported by tall men is consistent with research finding that tall men are more attractive to women (Pawlowski and Jasienska, 2005) and that women would rather be in a relationship in which the man is taller (Gillis and Avis, 1980). In order to guard against infidelity or desertion and promote mate retention, women partnered with a high quality mate may use a range of behaviors such as improving physical appearance to increase their mate's satisfaction with the existing relationship (Buss, 1988). Therefore tall men may report greater satisfaction with their relationship because their partner is more attentive. In addition, the greater desirability of tall men is expected to provide greater

access to attractive women. Consequently, tall men may report greater satisfaction with their relationship because they are partnered to highly desirable women. Future research is recommended to investigate the relative desirability and behavior of women partnered to tall and short men.

The current study revealed that tall men are less likely to report jealousy with respect to jealous cognitions (i.e. suspicion or concern) or behaviors (intended to minimize the threat). This is consistent with previous research indicating that high quality men experience the least mate oriented jealousy (Brown and Moore, 2003). Both tall and short men are at risk of cuckoldry (Baker and Bellis, 1995; Platek and Shackelford, 2006), however the greater desire for tall partners and heightened female preference for tall men during the fertile phase of the menstrual cycle or when selecting short term partners (Pawlowski and Jasienska, 2005) suggest that shorter men should be more alert to the risk of their partner's infidelity or the presence of male rivals than tall men. An increased propensity to experience jealous cognitions (suspicion) or to act on these concerns (jealous behaviors) may be adaptive for short men, reducing the risk posed by specific threats. These cognitions and behaviors may be less advantageous for tall men, for whom the risk (of cuckoldry or desertion) may be lower and for whom an increased physical attractiveness could increase the likelihood that a desirable alternative mate could be obtained. These findings further demonstrate the manner in which evolved psychological mechanisms (i.e. jealousy) may interact with functionally relevant individual differences (i.e. height) to affect the expression of behavior (Schaller, Park, and Mueller, 2003).

The relationship between male height and mate retention was less uniform than other findings which may explain the lack of association between male height and the overall use of mate retention behaviors. The results suggest that tall men engage in different mate retention behaviors and adopt different approaches to short men. Tall men were more likely than short men to engage in mate retention behaviors such as vigilance or monopolization of time. This tendency could reflect an ability to adopt undesirable behaviors without lowering their overall mate quality. In contrast, we suggest that short men may be reluctant to adopt these behaviors which could further reduce the attractiveness of the relationship, already compromised by a lower mate quality. The extent to which women's reactions to mate retention behavior is influenced by their partner's height has not been investigated and additional research is required to explore this issue.

Shorter men were not more likely to engage in competitive behaviors such as violence against rivals. This is perhaps understandable as tall rivals are expected to be of a high quality (Manning, 1995; Samaras, 2007) and dominance (Melamed, 1992). Short men consequently risk retaliation and unfavorable comparisons with a higher quality rival if they decide to pursue these mate retention behaviors. As height is related to testosterone levels (Heald, et al., 2003), this finding is consistent with the finding that men with a high (2D:4D) digit ratio (indicating lower prenatal testosterone) are less likely to threaten competitors or use threats or aggression against their partner (Cousins, Fugere, and Franklin, 2009). In the current study, short men were most likely to adopt mate retention behaviors such as increasing the love and care that they show their partner. In this manner short men demonstrate that they are aware of the risk of cuckoldry but attempt to increase the desirability of a woman's current relationship rather than adopting more risky strategies that encourage comparisons with a rival or appear aggressive.

Male height was not related to emotional jealousy (reactions to events that threaten

the relationship). At first, the lack of association between height and emotional jealousy appears inconsistent with the greater cognitive and behavioral jealousy reported by short men or the more generalized relationship between height and jealousy revealed by Buunk, et al. (2008). Differences may reflect the focus of each subscale. The cognitive and behavioral jealousy subscales measure the propensity to interpret situations suspiciously or respond to that suspicion. In contrast, the emotional jealousy subscale asks participants to consider how they would feel in a range of situations such as a partner hugging and kissing someone of the opposite sex. In these less ambiguous situations, height does not influence men's emotional reactions. Although there may be less incentive for tall men to interpret ambiguous situations jealously (for example a lower likelihood that their partner would attract a higher quality mate than for short men), when unambiguous situations occur, men experience an emotional reaction, regardless of height. Alternatively, the results may reflect the relatively high level of emotional (compared to cognitive or behavioral) jealousy reported. Mean emotional jealousy was 38.26 ($SD = 8.64$) compared to 16.47 ($SD = 9.94$) and 14.65 ($SD = 7.84$) for cognitive and behavioral jealousy respectively, suggesting that men may report high levels of emotional jealousy regardless of the scenario or personal characteristics such as height.

Future Research and Limitations

Self reported male height was obtained rather than direct measurements. The reliability of self reported height is well documented (Himes and Roche, 1982) and the use of self reported height is now standard practice (e.g. Pawlowski, 2003) in research of this type. We acknowledge the limitations of this method however, and the greater accuracy afforded by direct measurements. In particular, the positive association between male height, attractiveness and socioeconomic status suggest that data may be systematically biased with men artificially inflating their self reported height. Additional research exploring this issue and establishing the reliability of self report measures is recommended.

Relationship experience was also assessed through self report questionnaires. Future research could obtain a more detailed retrospective or longitudinal account of an individual's relationship history including length of each relationship, relationship conflict and termination. This description would also provide important information about the relationship between male height and relationship behavior. The relative ease with which high quality men can obtain extra pair partners (Waynforth, 1998) suggests that relationships outside the primary pair bond and their impact on the pair bond should also be considered. For example, it may be predicted that women are more likely to forgive a taller (higher quality) partner when they are unfaithful than a lower quality short mate.

The current study focused on absolute male height. The relative height of men and women is also important however and both men and women adjust their preference for partner height in relation to their own height (Fink, Neave, Brewer, and Pawlowski, 2007; Pawlowski, 2003). The relative height of a man, in relation to his partner, operationalized as sexual dimorphism in stature (SDS: male height / female height) should also therefore be considered in relation to relationship satisfaction, jealousy and mate retention. As with much of the research conducted in this area, the current study investigated height in a Western post-industrial society. Sear and Marlowe (2009) find no evidence for the male taller norm or a relationship between male height and reproductive success in the more traditional Hadza community. Therefore the extent to which these results can be

generalized to non-Western cultures remains speculative and extensive cross-cultural research is required assessing both partner preference and mating behavior.

Conclusion

To conclude, the current study finds that tall men report greater satisfaction with their romantic relationship and are less likely to report cognitive or behavioral jealousy. The relationship between height and mate retention is less uniform with tall and short men reporting engaging in different mate retention behaviors. These results indicate that male height influences not just a man's ability to acquire a suitable mate, but his behavior whilst in the relationship and approach to mate retention. These findings compliment existing results and suggest new areas of research such as investment in a partner and extra-pair relationships.

Received 17 July 2009; Revision submitted 18 September 2009; Accepted 22 September 2009

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