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Slow and steady wins the race: Life history, mate value, and mate settling

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ABSTRACT

Life history theory explains how individuals decide to invest their limited resources, which involves several trade-offs. Particularly relevant to the current work, individuals can choose to invest in current or delayed reproduction (a slow life history strategy), which implicates a trade-off between the quantity and the quality of one's offspring. Choosing to delay reproduction allows for increased self-investment, and previous research has demonstrated that traits requiring self-investment are related to higher mate value. As such, the current study hypothesizes that slow life history strategy will predict high personal mate value and high levels of partner mate-value within heterosexual partnerships. Similarly, those with a slow life history strategy should display fewer tendencies toward mate-settling. The current work employs both subjective and objective measures of mate value within mateships to investigate these hypothesized relationships. As hypothesized, significant positive relationships among life history and mate value were detected, suggesting that a slower life history strategy corresponds to high ratings of mate value for both self and partner. Also, life history strategy is a significant predictor of subjective, objective, and Mate Value Inventory ratings of partner and self. Further implications and potential future works are discussed.

1. Introduction

Physiological and social growth of organisms across their lifespans can be described in terms of the allocation of a finite amount of resources to various tasks or goals. Early in the lifespan, most resources are spent on somatic effort (investing in growth and survival), as they age it becomes advantageous to begin investing in reproductive effort (investing in the continuation of one's genes into subsequent generations; Figueredo et al., 2005). Since organisms have limited resources to spend (e.g., energy, time), deciding how to invest them involves trade-offs; at any given point in time, it could be more advantageous for organisms to invest in their own success and survival or the growth of their family. However, investing resources in the latter must involve a sacrifice of resources from the former. Humans can, for example, decide to invest relatively more resources in upward social mobility *or* in building a genetic legacy (Aarssen & Altman, 2006) – a decision with dramatic consequences. Deciding to postpone marriage and parenthood in order to pursue career success has become much more prevalent in the last few decades (Calwell, Caldwell, & McDonald, 2002; Martin, 2000). The current work will focus on reproductive decision making; exploring the relationship between life history and mating-relevant outcomes.

Life history theory provides a theoretical framework from which we can explain how individuals decide to invest their limited resources. The trade-off decisions explained by life history theory include the trade-off between current or delayed reproduction, the trade-off between investing in parenting efforts or mating efforts, and the trade-off between the investing in the quantity or the quality of one's offspring (Kaplan & Gangestad, 2004). If an organism has a short life expectancy, either because of an unstable environment (Quinlan, 2007) or because of natural maturation that occurs within its species (MacArthur & Wilson, 1967; Wilbur, Tinkle, & Collins, 1974), life history theory predicts that that organism should invest more in currently producing greater amounts of offspring, rather than delaying reproduction to accumulate resources to invest considerably in a few, high-quality offspring. Alternatively, organisms within resource-rich, stable environments (Griskevicius, Delton, Robertson, & Tybur, 2011) and species with relatively long maturation periods (Fowler, 1981) should delay reproduction and invest more resources in fewer offspring.

The importance of mate choice within an evolutionary framework cannot be overstated. Buss (2002) put it best: "successful mating requires solutions of a number of formidable adaptive problems" (p. 47). Selecting a fertile, genetically fit mate that is attainable based on one's own mate value (Buss, 1985),

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intra-sexual competitions (Daly & Wilson, 2001), courting, and copulating can have far-reaching, potentially dangerous consequences, so why is it that humans spend so much of their time pursuing mates?

In its original formulations, life history theory was r/K selection theory, and was used to describe differences between species (MacArthur & Wilson, 1967). r selected species have short life spans and maturation periods and therefore invest almost exclusively in current reproductive efforts. For example, cockroaches are an r selected species; they live entirely to reproduce. Humans, however, have extremely long periods of development (offspring mature over an extended period of time; Leigh, 2004) and often invest highly into somatic efforts and few offspring – therefore humans are categorized as a K selected species. In other words, humans are inherently slow in life history strategy when compared to species that put *all* of their effort into mating (such as many species of insects or rodents), but investigating variations within the human species can provide us with important insights about human decision-making processes within the domain of mate choice.

These individual differences in life history strategy (LHS) (related to individual differences in environment resource abundance and stability; Roff, 2002) have more recently been assessed via the "K factor" (Figueredo, Vásquez, Brumbach, & Schneider, 2004). This measurement provides a way to assess LHS in humans, which addresses an assortment of LHS indicators such as sexual, reproductive, and social behaviors. Consistent with this application of life history theory to within-species variation, past research has demonstrated that individuals do vary in terms of their life history strategy – i.e., how much individuals invest into current mating and high-quantity reproductive efforts versus how much individuals invest in delayed, high-quality reproductive and somatic efforts. Figueredo et al. (2004) refer to individuals who put forth a lot of effort into mating as displaying a *fast* LHS, whereas those who delay mating and put more effort into survival (or *somatic effort*) display a *slow* LHS. Someone with a *slow* LHS delays mating and puts more effort into upward social mobility, which will provide benefits to the survival and success of that individual and their subsequent offspring.

While several empirical studies have related elements of self-investment (health, attractiveness, intelligence, social status etc.) to mate value (Buss & Barnes, 1986; Johnston, 2006; Shackelford, Schmitt, & Buss, 2005; Thornhill & Gangestad, 1999), the relationship between LHS and mating is not well understood (Hunt, Brooks, & Jennions, 2005). Figueredo and Wolf (2009) did examine assortative pairing with life history strategy, but their population was taken from various cultures and the participants were collected from bars. The current work aimed to examine the relationship between life history strategy and mate value in a population of monogamous individuals. Assortative mating differs from mate setting in that assortative mating assumes an equal playing ground, high mate value individuals are paired with other high mate value individuals, low with low, and so forth, whereas settling indicates people of high mate value "settling" for someone of lower status. (H1) Consistent with these findings that suggest that higher levels of these traits, which require self-investment, are related to higher mate value, we propose that slow LHS will predict high personal mate value.

It is anticipated that those with a slow life history strategy should be able to secure more high quality mates. This proposal is supported in a few ways; first, if individuals with slow LHS do have higher mate values, compared to those with fast LHS, they have a higher market value and will therefore be able to secure high quality mates (Buss, 1985; Buss & Barnes, 1986; Penke, Todd, Lenton, & Fasolo, 2007). Beyond this, life history theory suggests that those employing slow LHS will delay childbearing in lieu of personal development investments – if we consider securing a high quality mate as an investment in one's own future and the future of one's offspring, then this should be a particular priority for individuals with slow LHS. It has been hypothesized that choosiness within the domain of mate choice would be favored in an environment with abundant, stable resources (Kruger & Nesse, 2006). (H2) The current work hypothesizes slow LHS will predict higher levels of partner mate-value.

To the extent that life history strategy influences one's own 'mating market value' (Pawlowski & Dunbar, 1999) and the value of one's romantic partner, life history strategy might also predict mate value discrepancies within mateships. While patterns of assortative mating are prevalent (Buss, 1985; Figueredo & Wolf, 2009; Penke et al., 2007), instances where there are moderate to large discrepancies between an individual and their partner's mate value can have important consequences and implications regarding intimate partner violence and relationship longevity (Buss & Shackelford, 1997; Tooby & Cosmides, 1990; White, 1980). Because the mating-relevant decision-making processes predicted by life history theory for individuals with slow life history strategies focus on quality over quantity, those with a slow LHS are predicted to have higher mate value themselves, as well as report high mate value for their partners. (H3) We can interpret this as predicting that those with a slow LHS are hypothesized to display *fewer* tendencies toward mate-settling (i.e., smaller discrepancies).

The current work uses both subjective and "objective" measures of mate value within mateships to investigate the hypothesized relationships between LHS, personal mate value, partner mate value, and mate value discrepancies within relationships. The objective measures are not truly objective because all data was gotten through self-report. However, the "objective" measure is being called "objective" because it asked participants to rate themselves and their mates through the eyes of a beauty pageant judge. Importantly, subjective and objective mate value assessments have been found to cooperatively contribute to assortative mating (Montoya, 2008). As Montoya (2008) explains, objective mate value might set the lower limit for the value of a mate one would approach, while subjective mate value might set the upper limit of the quality of mate perceived as attainable. Therefore, this methodology incorporates both measures of mate value.

2. Methods

2.1. Participants

Heterosexual participants in monogamous relationships were recruited using both a State University of New York subject pool as well as Facebook™. Participants had to be at least 18 years of age and currently in a monogamous relationship in order to participate. 545 completed surveys were included in the analysis. Of the surveys used, 79.1% (435) were female, and 20.7% (114) were male, between the ages of 18 and 50 (M = 22.30, SD = 4.42). Relationship length ranged from 1 month to 27 years, with an average length of 2.12 years and a standard deviation of 2.7 years. The data in the current paper were taken from a larger data set.

2.2. Materials

Materials included the use of http://www.qualtrics.com. The online survey consisted of demographic questions such as sex, time with partner, life history strategy, ratings of physical attractiveness, and the Mate Value Inventory (MVI) which examines mate value through 17 items regarding personality traits, compatibility, resources, physical attractiveness, desire to have children, etc. The MVI was also completed for both self and partner.

2.2.1. Life history strategy

To investigate the LHS of the individuals participating in the study, we employed the mini-K (Figueredo et al., 2006) which addresses the level of somatic effort versus reproductive effort an individual puts into his/her life – for example, items included "I often make plans in advance" and "While growing up I had a warm relationship with my biological mother". Responses ranged from "−3: Strongly Disagree" to "3: Strongly Agree" and demonstrated adequate internal consistency within the current sample, showing a Cronbach's $\alpha = .761$.

2.2.2. Mate value

Subjective personal and partner mate value was assessed through the Mate Value Inventory (Kirsner, Figueredo, & Jacobs, 2003), which also demonstrated adequate internal consistency, Cronbach's $\alpha = .711$. Subjective personal and partner mate value were also measured with an individual item that asked participants to disregard social standards and rate their mate's physical attractiveness on a scale from one to ten. In this case, by "subjective" we mean that we are garnering participants' impressions of their own (as well as their partner's) attractiveness purposefully disregarding an explicit social reference. We also measured "objective" impressions of their own and their partner's attractiveness by providing them with celebrity references and asking them to provide attractiveness ratings from another's perspective.

"Objective" personal and partner mate value was assessed via a vignette describing a beauty contest for males and females. Participants were presented with 12 images of male and female celebrities (torso and head visible), and informed that these people had received "10s" from the judges. These celebrities were chosen to represent both sexes and a variety of ethnic backgrounds; specifically, at least one male and female celebrity pictured was of Hispanic, African American, Asian, and Non-Hispanic/White descent. Celebrities were also chosen to increase the chances that they were known to the participants, in the hopes that having celebrities who are often in the media would increase the likelihood that participants could imagine more than just the chosen image of the attractive stimulus. Participants were then asked to rate themselves and their mate on the standards set forth by the "beauty pageant judges". Discrepancy was then computed for each mate-value variable, by subtracting partner ratings from self-ratings. Consequentially, a slow LHS is posited to predict a lower likelihood of an individual to report being an under-benefited partner in a relationship.

2.3. Procedure

Participants logged onto Qualtrics.com and were given an informed consent statement before being prompted to continue. Instructions to answer the questions as honestly as possible were given, as well as a statement indicating participants could skip any questions or stop at any time.

2.4. Reliability of measures

To ensure the mate-value variables were reliable, an inter-variable correlation matrix was examined (see Table 1). All the mate-value variables correlated with one another, $p < 0.05$. This suggests that the measures are reliable, due to their inter-correlation with one another. Further, the MVI (Kirsner et al., 2003) has been found to be reliable in prior research (Figueredo & Wolf, 2009; Kirsner, Figueredo, & Jacobs, 2009), which, due to the inter-correlations among all of the mate-value variables, suggests a pattern in which all of the outcome variables are measuring mate-value similarly.

Similarly, to ensure that the "objective" measure was truly different from the subjective measure, paired samples *t*-tests were run. Objective scores were significantly lower than the subjective scores; partner: $t(547) = 33.41$, $p < .001$, objective mean = 5.98, subjective mean = 8.48. Self: $t(547) = 28.25$, $p < .001$, objective mean = 5.86, subjective mean = 7.28. While this does not guarantee that the "objective" measure is truly objective, it does lead us to speculate that participants attempted to view themselves and their partners from a third party perspective.

3. Results

Dependent variables all measured mate value or the discrepancy of reported mate value of members within a given couple. Please see Table 2 for sex differences among the dependent variables as well as life history strategy.

3.1. The relationship between life history strategy and mate-value

Correlations between life history strategy and mate-value variables were performed indicating significant positive relationships among LHS and mate value. In other words, a slower LHS corresponds to high ratings of mate value for both self and partner. For instance, life history strategy positively correlates with subjective ratings physical attractiveness, partner: $r = .24$, $p < .01$, self: $r = .19$, $p < .01$ (see Fig. 1). This suggests that a slow LHS predicts higher ratings of physical attractiveness (recall that higher scores on the LHS scale indicate a slow strategy whereas lower scores indicate a fast strategy).

Life history strategy also positively correlates with objective reports of physical attractiveness, partner: $r = .11$, $p < .01$, self: $r = .09$, $p < .05$ (see Fig. 2). LHS also positively correlates with the MVI scores, partner: $r = .32$, $p < .01$, self: $r = .49$, $p < .01$. Slow LHS correlates with high mate value for each mate-value variable included in the current work, for reports of both self- as well as partner-mate-value; a trend not seen consistently across all independent variables.

3.2. Biological sex's impact on the relationship between life history strategy and mate value

Unsurprisingly, given the nature of this research, the relationship between LHS and our mate value variables was affected by sex. The correlation between LHS and MVI score for self increased for females (male $r = .443$, female $r = .503$). For MVI of partner, males and females had the same correlations. Interestingly, a split-file correlation for the mate value variables and LHS showed that the relationship between life history strategy and subjective partner ratings, subjective self ratings, objective partner ratings, and objective self ratings showed that this relationship was only significant for females.

3.3. The relationship between biological sex and mate-value discrepancies

Biological sex was hypothesized to predict direction of mate value discrepancy- females were predicted to have a positive discrepancy between themselves and their partner, whereas males were predicted to have a negative discrepancy. A positive discrepancy indicates settling – the mate value of the individual is larger than the mate value of the partner. In other words, females were predicted to do more settling than males. Previous work indicated a trend showing higher mate value in females (pilot data indicated a significant sex difference in ratings of physical attractiveness of self, $t(19) = -3.26$, $p < .001$, (Female $M(7.21)$, Male $M(6.16)$). Mills

Table 1
Intercorrelations among mate value variables.

	Subjective partner	Subjective self	Objective partner	objective self	MVI partner	MVI self
Subjective partner	–					
Subjective self	.137**	–				
Objective partner	.515**	.164**	–			
Objective self	.140**	.646**	.473**	–		
MVI partner	.389**	.199**	.278**	.119**	–	
MVI self	.310**	.342**	.178**	.226**	.553**	–

** $P < .01$.

Table 2
Descriptive statistics for mate value variables.

	Mean	Standard deviation	*P*	Cohen's *d* for significant differences
Subjective partner (total)	8.48	1.32	ns	
Male	8.40	1.25		
Female	8.50	1.34		
Subjective self (total)	7.28	1.56	.03	.22
Male	7.00	1.40		
Female	7.35	1.60		
Objective partner (total)	5.98	2.01	.001	.35
Male	6.54	2.02		
Female	5.83	1.99		
Objective self (total)	5.36	2.06	ns	
Male	5.19	1.95		
Female	5.40	2.10		
MVI partner (total)	99.73	11.10	.003	.32
Male	96.93	10.90		
Female	100.46	11.04		
MVI self (total)	98.20	10.38	ns	
Male	96.82	10.52		
Female	98.56	10.33		
K (total)	101.54	12.98	<.001	.50
Male	96.37	12.31		
Female	102.89	12.83		

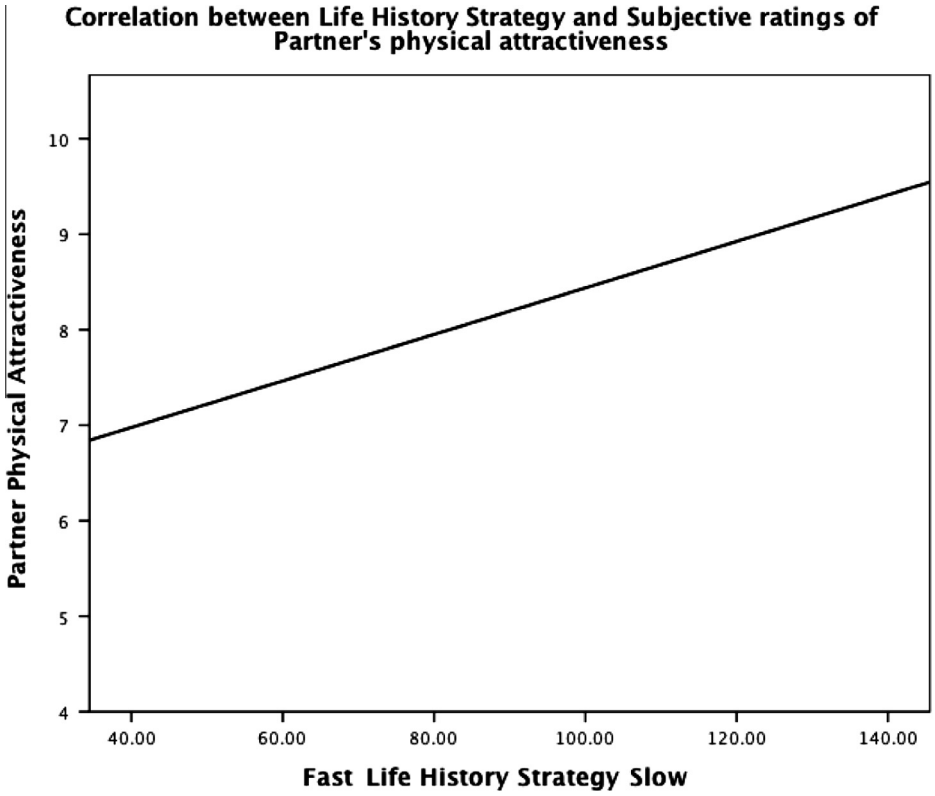

Fig. 1. Correlation between life history strategy and ratings of partner physical attractiveness. The Pearson Correlation Coefficient is $r = .24$, $p < .01$.

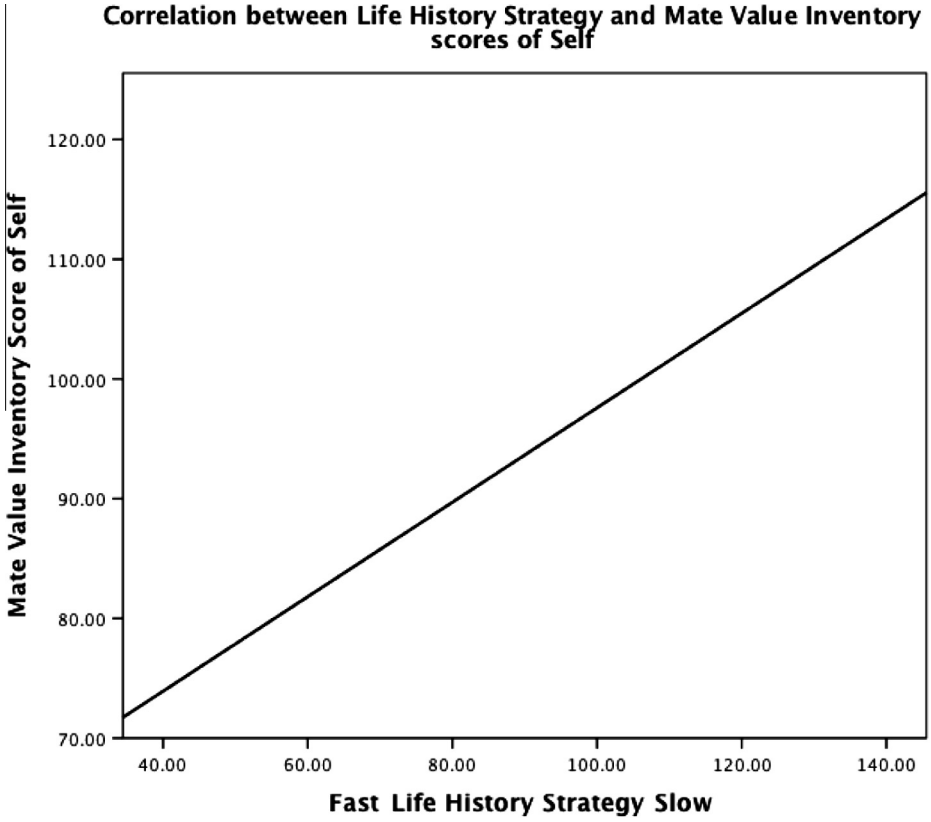

Fig. 2. Correlation between life history strategy and scores in the Mate Value Inventory for self. $r = .49$, $p < .01$.

(2011) examined this phenomenon – finding evidence that women are rated more attractive than men.

In the current study, a one-way analysis of variance was performed using biological sex as the factor variable, and all of the mate-value and mate-value-discrepancy variables as dependent variables. Several dependent variables emerged as significant between the sexes: Subjective ratings of physical attractiveness of self: $F(1,545) = 4.52$, $p = .04$, males: $M = 7.00$, $SD = 1.40$, females: $M = 7.35$, $SD = 1.60$, indicating a higher mean rating of self-physical-attractiveness among females, compared to males, supporting the hypothesis. Ratings of partner-mate-value through the objective eyes of beauty pageant judges yielded a significant difference between males and females ($F(1,545) = 11.36$, $p = .001$, males: $M = 6.54$, $SD = 2.02$, females: $M = 5.83$, $SD = 1.99$). Males rated their partners higher than females in the "objective" measure. The MVI (Kirsner et al., 2003) showed significant differences between the sexes for partner mate-value, but not self-mate-value – males rated their partners significantly higher than females rated their partners.

Unlike results from physical attractiveness variables, in terms of the MVI, females were rating their partners higher than did males: $F(1,545) = 9.22$, $p = .003$, males: $M = 96.92$, $SD = 10.89$, females: $M = 100.46$, $SD = 11.09$. Note that for physical-attractiveness-relevant variables, a different pattern emerged than for the multi-faceted Mate Value Inventory.

In terms of discrepancy between ratings of self and partner, an independent samples t-test was used to determine whether males or females were "settling" by the difference between the ratings of themselves, and their partners. The discrepancy for the MVI scores emerged significant, with male discrepancies smaller and more positive than female discrepancies. This trend was not in the direction hypothesized; $t(544) = 1.97$, $p < .05$, male: $M = .21$ $SD = 10.61$, female: $M = -1.90$ $SD = 9.90$). These results indicate that, for MVI scores (i.e., the only mate value variable in the current work comprised of more than physical attractiveness), *males* have higher mate-value than females. This reversal may be due to a slight bias in the survey toward males (i.e., there were items regarding resources which would increase the mate value for males, but may not affect the mate value of females). The statistics indicate that both males and females report themselves being settled for (i.e., negative discrepancy scores, suggesting that participants reported higher mate values for their partners than for themselves).

For "objective" attractiveness discrepancies, male discrepancy was computed, with results indicating that males show a tendency to inflate their mates' value in comparison to their own value: $t(544) = -4.20$, $p < .001$. Male: $M = -1.34$ $SD = 2.35$, female: $M = -.43$ $SD = 1.98$. For averaged attractiveness, the same trend became apparent; neither sex was settling, but females showed a smaller discrepancy; $t(544) = -3.01$, $p < .01$. Male: $M = -1.37$ $SD = 1.94$, female: $M = -.78$ $SD = 1.76$ – implying that males had lower mate-value reports for themselves than females. Subjective discrepancies showed no significant difference among the sexes.

4. Discussion

The current work was designed to address the correlates of mate value. Specifically, we predicted that slow life history strategy would be associated with higher personal and partner mate value, support for these predictions was found.

As expected, those with slow LHS, focus more on attaining a life wherein they can survive and procreate for an extended period of time. Because of this increased somatic effort, a positive

correlation between LHS and mate-value variables was postulated. Those with slow LHS tend to have fewer offspring, but put more attention on acquiring a high-quality mate with whom to procreate. Therefore, it makes sense that those with slow life history strategies in our sample who invest more in somatic efforts would have higher mate values, and therefore be able to secure higher-quality mates.

Specifically, results indicated that life history strategy is a significant predictor of subjective, objective, and MVI ratings of partner and self. In other words, a slow LHS predicts higher ratings of mate value for both self and other, regardless of the mate-value measure employed. It is interesting to note that LHS positively correlates with both physical attractiveness mate-value variables and the MVI, which encompasses a greater array of traits relevant to mating. The current finding that LHS correlates with both aspects of mate value may suggest that LHS is a better all-over indicator of mate value, or that LHS is a more all-encompassing factor in determining a mate. In other words, those with slow life history strategy focus on increasing both their own physical attractiveness (which has been correlated with health and fitness, see Gallup & Frederick, 2010) and traits such as parental investment indicators, resource acquisition (e.g., upward social mobility), and personality variables.

Slow life history strategy was hypothesized to predict higher mate value – this was also supported by the data, across all mate-value variables. The findings regarding LHS may lead to further studies regarding the implications of LHS in daily life – that is, does a slow life history strategy guarantee better mating due to the increased likelihood of having a mate of high value? An alternative explanation for this correlation would be that those who already have a high mate value might be more likely to delay mating and thus follow a slow life history strategy. We do not want to imply directionality, but LHS seems to be a more constant variable across the lifespan, whereas mate value can vary, which leads us to believe that LHS predicts mate value rather than the other way around.

Limitations to the current work may be related to the population used. In the current work, only those currently enrolled in college were able to participate. It can be assumed that those in college may already be using a slower life history strategy, which is evidenced by the relatively high mean for K (101.54) and the relatively small standard deviation (12.98). Additionally, the current work was limited to heterosexual participants. Future studies may include more sexual orientations, which would give us a broader understanding of life history strategy's effect on mate value. Similarly, because all of the participants self identified as being in a monogamous relationship, we may be dealing with a population that is already high K; those low in K might be less likely to engage in long term relationships.

One key limitation to this study is the type of "objective" measure used. While the authors believe that this measure is more objective than the other measures, it is impossible for self-reports to be truly objective. Future research may include less self-report and have mate value assessed by third parties. Concurrently, while the MVI has been found to be a reliable measure of mate value, we cannot attest to its ability to predict genetic quality.

Beyond these limitations, current findings provide important contributions to our understanding of the relationship between life history strategy and mating. Specifically, the current work extends previous findings which suggest that individuals who invest more in themselves are more desirable in the mating market (Buss & Barnes, 1986; Johnston, 2006; Shackelford et al., 2005; Thornhill & Gangestad, 1999), indicating that not only are individuals with slow LHS higher in mate value, but that they are also more likely to obtain higher-quality mates, and are less likely to settle for lower-quality mates. While others have found that individuals with slow LHS are more likely to assortatively mate (Figueredo & Wolf, 2009), the current work suggests that this assortative mating reflects the ability of individuals with slower LHS to acquire mates that are similarly high in mate value.

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