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Types of intelligence predict likelihood to get married and stay married: Large-scale empirical evidence for evolutionary theory

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ABSTRACT

Decisions related to marriage and divorce are key life events for individuals. In the present research, we provide large-scale evidence of the role of individual intelligence in marriage and divorce behavior, controlling for tangible resources such as income and social status symbols. We find that male individuals' intelligence score at early adulthood has a positive relationship with their subsequent likelihood to get married, in a sample of 120,290 males. Intelligence also predicts continued marriage (non-divorce) in a separate sample of 68,150 married males. The relatively easier-to-perceive verbal intelligence predicts the likelihood of getting married (bivariate correlation $r = 0.07$) slightly better than the harder-to-observe numeric ($r = 0.06$) and logical intelligence ($r = 0.05$). The likelihood to stay married is predicted to an equal extent by verbal, numeric, and logical intelligence ($r \approx 0.05$). A series of regression models confirms the direct effect of residualized intelligence on marriage behavior over and above its indirect effect through income, social status, and other control variables. These findings provide empirical evidence for the notion of evolutionary psychology that human intelligence, as an intangible fitness indicator, directly influences mating prospects, rather than merely exerting its influence through the tangible resources of income and social status.

1. Introduction

While marriage and divorce decisions substantially depend on culture and individuals' learned traits (Yates & de Oliveira, 2016), recent research (e.g., Jerskey et al., 2010) suggests that fundamental, largely biologically-determined traits of human individuals may also affect their marriage prospects. One such fundamental trait is the general cognitive ability, or intelligence of individuals (e.g., Miller, 2000). Indeed, even in a relatively small sample of individuals, a positive correlation was found between the intelligence scores of males and their likelihood to get married (Taylor et al., 2005). In a similar vein, psychology scholars have also long been interested in the relationship between in individuals' intelligence and likelihood to stay married vs. divorce (Carter & Foley, 1943): "… it would look as if far too many [individuals] were entering into the married state without being intelligently prepared to maintain it." (p. 275).

As a general explanation for the potential correlation between intelligence and marriage prospects, it has been suggested that female individuals favor partners with higher intelligence, because of intelligent males' greater "fitness" to survive and support the partner and offspring (e.g., Ellis, 2001; Miller, 2000; Symons, 1979). However, to date, the literature is inconclusive about whether intelligence *directly* attracts mating partners, or merely *indirectly* attracts them through being correlated with tangible fitness resources, most notably income and social status (Neisser et al., 1996; Nettle & Pollet, 2008; Taylor et al., 2005). Against this backdrop, the primary aim of the present research is to seek large-scale empirical evidence to test which of these two theoretical mechanisms—the direct or indirect effect of intelligence—may hold true.

Specifically, according to the latter, indirect mechanism, intelligence is positively associated with tangible fitness indicators such as income and social status symbols (e.g., large car or house), which in turn represent tangible resources for being a good provider (Neisser et al., 1996). That is, intelligence would affect marriage prospects indirectly via income and social status, due to the empirical correlation between intelligence on one hand, and income and social status on the other (Neisser et al., 1996). In contrast, according to the former mechanism, the correlation between intelligence and marriage prospects might also be direct, because intelligence per se may directly appeal to mating partners (Miller, 2000), independent of income and social

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status. Further, in this notion, different types of intelligence may potentially differ in their effects. For instance, when initiating a romantic relationship, during courtship and other social interactions (Lewak, Wakefield, & Briggs, 1985), easier-to-perceive types of intelligence (cf. Judge, Colbert, & Ilies, 2004)—such as verbal intelligence (Thorndike, 1942) and related communication skills (Mayer, Caruso, & Salovey, 1999)—could particularly appeal to mating partners. In turn, when it comes to continuing the relationship and staying married, harder-to-observe numeric and logical intelligence (Holley, Yabiku, & Benin, 2006), which may only be observed over a longer period of time, might become more consequential.

2. Materials and methods

2.1. Samples

Two samples of individuals were studied: (1) initially non-married male individuals (n = 120,290) who were aged 18–45 years and resided in the Uusimaa region in Finland in 2007 (age *M* = 28.4; SD = 8.1), and (2) initially married males (n = 68,150 individuals) of same age range, residing in the same region at the same point of time (age *M* = 37.1; SD = 8.1). As such, these samples were censuses, instead of random or convenience samples. Up to 70% of the initial populations in question were included in the final samples, while approximately 30% of the individuals from the two populations were excluded because of missing values on intelligence score. See the Supplementary Material (online) for details. See also Aspara, Luo, and Dhar (2017), wherein partly the same sample of males and the same intelligence test data were used to study behavior non-related to marriage (pro-environmental behavior).

2.2. Measures and variables

Data for the individual's intelligence score were obtained from the Finnish Defense Forces, which conducts cognitive testing on all conscripts entering the military service. In the test, 120 question items assess intelligence according to cognitive functioning in three domains: (i) numerical, (ii) verbal, and (iii) non-verbal logical abilities. The (i) numerical and (ii) verbal test items reflect the theory that intelligence constitutes of two main factors, which pertain to numerical and verbal proficiency (Thurstone, 1924). The (iii) non-verbal logic test, in turn, largely corresponds with the widely used Raven Advanced Progressive Matrices Test of Intelligence Quotient (IQ) (Gray & Thompson, 2004). In our main analyses, we utilize a composite intelligence score formed of the aforementioned three measures of intelligence provided by the Defense Forces. This composite measure is standardized to follow the stanine distribution (i.e., scaled to a nine-point standard scale (Thorndike, 1982)). In the additional analyses of different intelligence types, we utilize stanine scores for numerical, verbal, and logical intelligence, respectively.

The main outcome variables of getting married and staying married were based on the registers of Finland's governmental Population Register Center. The former variable of getting married received the value 1, in case the individuals who were non-married at 2007 were officially registered as married five years later, at the end of 2011 (and 0 if still registered non-married). The latter variable of staying married received the value 1, if the individuals who were initially married at 2007 were still officially registered as married (and 0 if registered as divorced) at the end of 2011. With the same time of measurement for all sampled individuals within the 5-year period, we avoid confounding effects by changing societal preferences related to marriage and divorce over time (Buller, 2005; Courtiol, Pettay, Jokela, Rotkirch, & Lummaa, 2012; Nettle & Pollet, 2008; Pérusse, 1993).

Of the key control variables, income was measured from data supplied by Finnish Tax Authority, as a constructed measure based on an individual's total yearly income (work and capital income). The individuals' social status was proxied by their car possession, based on records of the Finnish Vehicle Administration. This variable received the value 0, if the individual did not possess a car, the value 1 if the individual possessed a small car, and the value 2 if the individual possessed a large car (based on median-split). Additional control variables included age, work commuting costs, residence in the Finnish capital, and language group. The measurement of these variables is described in detail in the Supplementary Material, and descriptive statistics for all variables are presented in Tables S1 and S2.

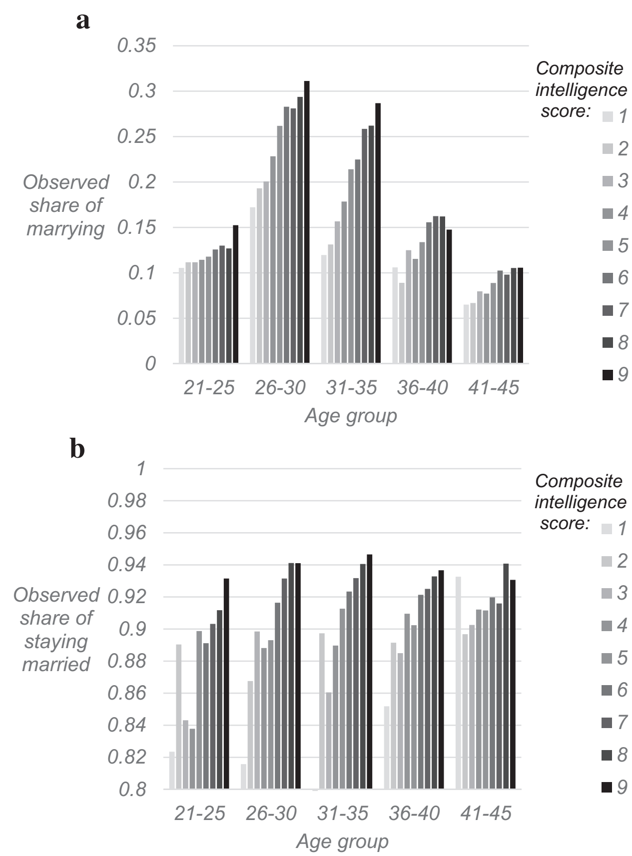

Fig. 1. Bar chart showing the observed shares of (a) non-married male individuals who married in a five-year period (2007–11), and (b) married male individuals who stayed married, as a function of composite intelligence score.

3. Results

3.1. Model-free evidence

We begin by depicting the observed shares of individuals who were not married at the beginning of 2007 but got married during the 5-year period, as a function of composite intelligence score, in Fig. 1a. In turn, Fig. 1b shows the observed shares of individuals of the second sample: those who were married in 2007 and stayed married (vs. divorced) for the 5-year period. As the overall tendency to marry as well as divorce depends on age (see Tables S3 and S4 in Supplementary Material for bivariate correlations), we depict the observed shares by age group.

Both Fig. 1a and b provide preliminary support to the evolutionary theory's general notion that intelligence has a positive predictive relationship with likelihood to get married as well as to stay married: In each age group, the shares of individuals getting married and staying married are visibly higher (lower) for individuals with higher (lower) intelligence scores. Moreover, in both Fig. 1a and b, the relationship between intelligence score and marriage likelihood is somewhat more pronounced in the younger age groups than in the older ones.

Table 1
Intelligence directly predicts the likelihoods to marry and stay married over and above income and social status. Logistic regression parameter estimates suggest that even when controlling for income and social status (car possession), intelligence has a direct, independent effect on likelihoods to marry and stay married.

	Likelihood to marry			Likelihood to marry with control function			Likelihood to stay married			Likelihood to stay married with control function		
	b	Confidence interval	β	b	Confidence interval	β	b	Confidence interval	β	b	Confidence interval	β
Intercept	− 2.27	[− 2.36, − 2.18]***		− 1.97	[− 2.05, − 1.88]***		1.60	[1.37,1.83]***		2.01	[1.79,2.23]***	
Age	− 0.02	[− 0.02, − 0.01]***	− 0.07	− 0.02	[− 0.02, − 0.01]***	− 0.07	0.00	[− 0.01,0.01]***	− 0.00	0.00	[− 0.01,0.00]	− 0.00
Cultural group (Fin)	− 0.14	[− 0.19, − 0.08]***	− 0.04	− 0.10	[− 0.16, − 0.05]***	− 0.03	− 0.04	[− 0.17,0.09]	− 0.01	0.03	[− 0.1,0.15]	0.01
Cultural (other)	0.28	[0.18,0.38]***	0.05	0.22	[0.11,0.32]***	0.04	− 0.11	[− 0.36,0.13]	− 0.02	− 0.23	[− 0.47,0.02]†	− 0.03
Residence in capital	− 0.29	[− 0.33, − 0.26]***	− 0.08	− 0.27	[− 0.31, − 0.23]***	− 0.07	− 0.31	[− 0.37, − 0.25]***	− 0.07	− 0.29	[− 0.35, − 0.22]***	− 0.07
Work commute cost	0.00	[0.00,0.00]***	0.03	0.00	[0.00,0.00]***	0.03	0.00	[0.00,0.00]	− 0.01	0.00	[0.00,0.00]	− 0.001
Income	0.13	[0.12,0.13]***	0.24	0.14	[0.13,0.14]***	0.26	0.03	[0.03,0.04]***	0.11	0.04	[0.03,0.04]***	0.13
Large car possession	0.19	[0.17,0.21]***	0.10	0.18	[0.16,0.20]***	0.09	0.13	[0.10,0.16]***	0.06	0.13	[0.10,0.16]***	0.06
Composite intelligence	0.07	[0.06,0.08]***	0.07				0.09	[0.07,0.10]***	0.09			
Control function residual: composite intelligence				0.07	[0.06,0.08]***	0.07				0.09	[0.07,0.10]***	0.08
n	120,290			120,290			68,199			68,199		
AIC	95,871.60			95,871.60			38,352.95			38,352.95		
SC	95,958.88			95,958.88			38,435.12			38,435.12		
− 2LL	95,853.60			95,853.60			38,334.95			38,334.95		

*** $P < 0.001$.
** $P < 0.01$.
* $P < 0.05$.
† $P < 0.10$.

3.2. *Testing indirect vs. direct effect of intelligence on marriage prospects*

To obtain conclusive evidence of whether intelligence directly or indirectly affects mating, we conducted two tests. First, we estimated binary logistic regression analyses of the likelihood to marry and stay married. In the regressions, we included the composite intelligence score and the tangible fitness indicators of income and social status symbols (large car possession) as main predictor variables. We also included other demographic variables potentially correlating with marriage likelihood, as described above. Table 1 shows the results. The key finding is that the inclusion of the tangible fitness indicators, income and car possession, in the same model does not nullify the effect of intelligence on likelihood to marry and stay married. For likelihood to get married, the coefficient of composite intelligence score becomes highly significant ($P < 0.0001$) even when controlling for income and car possession. In terms of standardized effect coefficients, the composite intelligence score ($\beta_{\text{comp intel.}} = 0.072$, $P < 0.0001$) has an approximately equal-sized predictive effect on likelihood to marry as car possession ($\beta_{\text{car possession.}} = 0.095$, $P < 0.0001$), albeit smaller than income ($\beta_{\text{income}} = 0.244$, $P < 0.0001$). For likelihood to stay married, composite intelligence score has an even larger relative effect ($\beta_{\text{comp intel.}} = 0.086$, $P < 0.0001$): that is, approximately equal in size as income ($\beta_{\text{income}} = 0.105$, $P < 0.0001$) and larger than car possession ($\beta_{\text{car possession}} = 0.057$, $P < 0.0001$). These results suggest that individuals' intelligence score in early adulthood has a direct predictive relationship with their later life's likelihood to marry and stay married, partly independent of income and social status symbols.

Further assessing the relative magnitudes of the direct vs. indirect effects of intelligence, it can be noted that the bivariate correlation coefficient between intelligence and income is $r = 0.18$ (Table S3 in Supplementary Material), while the coefficient between income and likelihood to get married is $\beta_{\text{income}} = 0.24$ (Table 1). Thus, the indirect effect of intelligence via income corresponds with an approximate total correlation of $0.24 * 0.18 = 0.05$. According to a similar calculation, the indirect effect via the social status symbol of large car possession is $0.10 * 0.18 = 0.02$. Thus, together the indirect effects of intelligence on likelihood to marry via income and car possession $(0.05 + 0.02 = 0.07)$ are of similar size as the direct effect of intelligence reported above ($\beta_{\text{comp intel.}} = 0.07$). In turn, for the sample of likelihood to stay married, the correlation coefficient between intelligence and income is $r = 0.30$ (Table S4). Thus, the indirect effect of intelligence on likelihoods to stay married corresponds with an approximate total correlation of $0.11 * 0.30 = 0.03$ for income and $0.06 * 0.30 = 0.02$ for large car possession. In sum, these correlations together $(0.03 + 0.02 = 0.05)$ are also in the same order of magnitude, yet slightly smaller, than the direct effect of composite intelligence score reported above ($\beta_{\text{comp intel.}} = 0.086$). As a conclusion, intelligence not only has an indirect effect on the likelihoods to get and stay married via income and social status, but also a direct one, and the indirect and direct effects are of approximately the same order of magnitude.

Second, we utilized a control function approach to seek further evidence of the independent effect of intelligence on likelihoods to get and stay married, over and above income and social status symbols. To this end, we regressed the composite intelligence score on income, car possession, and the other control variables, and substituted the residual from this regression for the intelligence variable in the binary logistic regressions of likelihood to marry and stay married. The residual represents that portion of intelligence score that is not correlated with income, car possession, and other control variables. The results, presented in the second and fourth columns of Table 1, show that the intelligence residuals have approximately similar-sized effects on likelihood to marry ($\beta_{\text{comp intel. residual}} = 0.07$, $P < 0.0001$) and stay married ($\beta_{\text{comp intel. residual}} = 0.083$, $P < 0.0001$) as the original intelligence scores had on likelihood to marry ($\beta_{\text{comp intel.}} = 0.072$, $P < 0.0001$) and stay married ($\beta_{\text{comp intel.}} = 0.086$, $P < 0.0001$) (1st and 3rd columns of Table 1). These results confirm the direct effect of

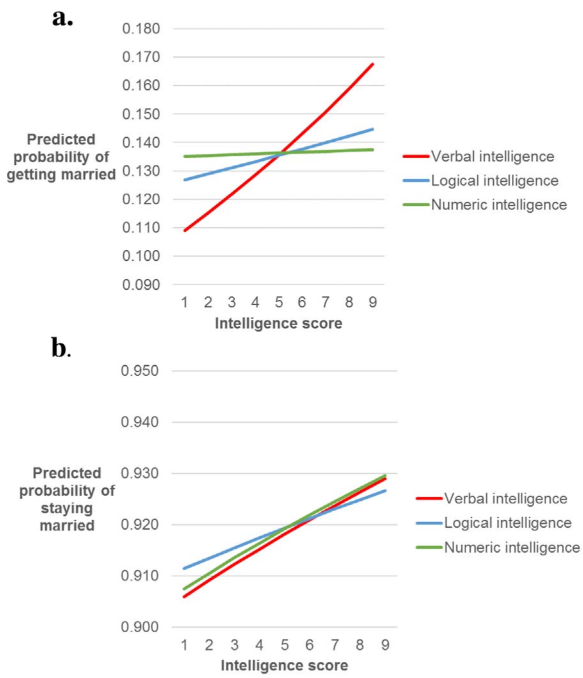

Fig. 2. Line plot showing the predicted probability of (a) getting married and (b) staying married. The lines indicate that the relationship between intelligence and predicted probability to marry is most pronounced for verbal intelligence (Panel a.), whereas the relationship between intelligence and predicted probability to stay married is equally pronounced for verbal, logical, and numeric intelligence (Panel b).

residualized intelligence on marriage behavior over and above intelligence's indirect effect through income, social status, and the other control variables. Nevertheless, it should be noted that in relative terms, income per se still has somewhat higher predictive ability for both likelihood to marry ($\beta_{comp\ intel.} = 0.26$) and stay married ($\beta_{comp\ intel.} = 0.13$) than the residualized intelligence (likelihood to marry: $\beta_{comp\ intel.\ residual} = 0.07$; likelihood to stay married: $\beta_{comp\ intel.\ residual} = 0.08$), and that the predictive ability of large car possession (likelihood to marry: $\beta_{comp\ intel.} = 0.09$; likelihood to stay married: $\beta_{comp\ intel.} = 0.06$) is also of similar magnitude as that of residualized intelligence. In other words, the results should only be interpreted to confirm that intelligence does have a direct effect on marriage likelihood over and above income and social status—but not a larger effect than each of these alone.

3.3. Testing the effects of different intelligence types

For further evidence, we estimated another set of binary logistic regression analyses with different types of intelligence as predictors. As to the results, Fig. 2a shows the predicted probability to get married as a function of verbal, numerical, and logical intelligence, while Fig. 2b shows the predicted probability to stay married (see Table S5 in Supplementary Material for statistical details). Fig. 2a suggests that verbal intelligence clearly has the largest effect on marriage likelihood ($\beta_{verbal\ intel.} = 0.066$, $P < 0.0001$; Table S5). The effect of logical intelligence on likelihood to marry is only one third in size compared with that of verbal intelligence ($\beta_{logic\ intel.} = 0.0202$; $P = 0.0009$) and the effect of numeric intelligence is statistically insignificant ($\beta_{numeric\ intel.} = 0.003$; $P > 0.5$). A Z-test comparing the coefficients indicates that the effect of verbal intelligence is also significantly greater statistically, than the effect of logical intelligence (pairwise $Z = 5.13$, $P < 0.0001$) and the effect of numeric intelligence (pairwise $Z = 6.85$, $P < 0.0001$). These findings support the notion that especially verbal intelligence, the type of intelligence that is easiest to observe by others through, e.g. a person's communicative ability (Lewak et al., 1985), especially predicts the likelihood of getting married.

Fig. 2b indicates that numeric intelligence ($\beta_{numeric\ intel.} = 0.0393$; $P < 0.01$; Table S5) and logical intelligence ($\beta_{logic\ intel.} = 0.0259$; $P < 0.01$) have a similar predictive ability for the likelihood to stay married, as verbal intelligence ($\beta_{verbal\ intel.} = 0.0385$; $P < 0.01$). Hence, compared with the results on likelihood to get married, the effect of verbal intelligence on the likelihood to stay married is less dominant, while the relative effects of numeric and logical intelligence get equal in size. The Z-test comparing the coefficients indicates that the differences between the coefficients are not statistically significant ($P > 0.05$), either. This further supports the notion that besides verbal intelligence, even numeric and logical intelligence, the types of intelligence that can mainly be observed during and in a longer-term relationship (Holley et al., 2006), are consequential for staying married.

3.4. Additional analyses

To further examine the role of age, we conducted additional logistic regression analyses with the interaction terms between intelligence and age. The results (Tables S6 and S7) show that the interaction effects of intelligence score and age on both likelihood to marry ($\beta_{comp\ intel.\times age} = -0.067$; $P = 0.01$; Table S6) and likelihood to stay married ($\beta_{comp\ intel.\times age} = -0.35$; $P < 0.0001$; Table S7) are negative. Fig. 3a and b visualize the predicted probabilities of getting and staying married, estimated separately for the different age groups (Tables S8 and S9). These figures show that the relationship between intelligence and likelihood to marry (Fig. 3a) and to stay married (Fig. 3b) are visibly more pronounced in younger (< 36 years) rather than in older (> 36 years) age groups. This pattern is consistent with the model-free evidence in Fig. 1, and supports the evolutionary notion that the influence of fitness indicators on marriage prospects in general should be more pronounced at younger years, because when mating partners age and approach the end of fertility, they tend to become less demanding of their partners' resources and fitness indicators (Waynforth & Dunbar, 1995).

As a final robustness check, we considered an alternative operationalization of the control variable of car possession, as a social status symbol. Specifically, as an alternative to the possession of a large-sized car (as in our main models above), we operationalized social status as the possession of a *new* car. Similar to the large car possession variable of our main models, the new car possession variable was specified as an ordered variable, receiving the value 0 if the individual possessed no car, the value 1 if the individual possessed an older-than-median car, and the value 2 if the individual possessed a newer-than-median car. The results of the re-estimation of the main model (Table 1), where we substituted large car possession with the new car possession variable, are presented in Table S10 of Supplementary Material. The results suggest that while new car possession has slightly higher predictive ability of likelihood to get married ($\beta = 0.12$, $P < 0.0001$) and stay married ($\beta = 0.07$, $P < 0.0001$) than large car possession in the main model (Table 1: likelihood to marry $\beta = 0.09$; likelihood to stay married: $\beta = 0.06$), the predictive ability of residualized intelligence remains essentially unchanged for both likelihood to get married ($\beta = 0.07$, $P < 0.0001$) and stay married ($\beta = 0.08$, $P < 0.0001$). These results suggest that our main results are not highly sensitive to the precise operationalization of social status in terms of car possession.

4. Discussion

In summary, we find that individuals' intelligence scores in early adulthood can directly influence the likelihood to marry and stay married in their later lives. In parallel to the effect of a peacock's mysterious tail on its mating success (cf. Luxen & Buunk, 2006), the present findings represent the first large-scale evidence supporting the notion that human intelligence has a direct positive effect on human mating prospects in terms of marriage. While the effects of the tangible

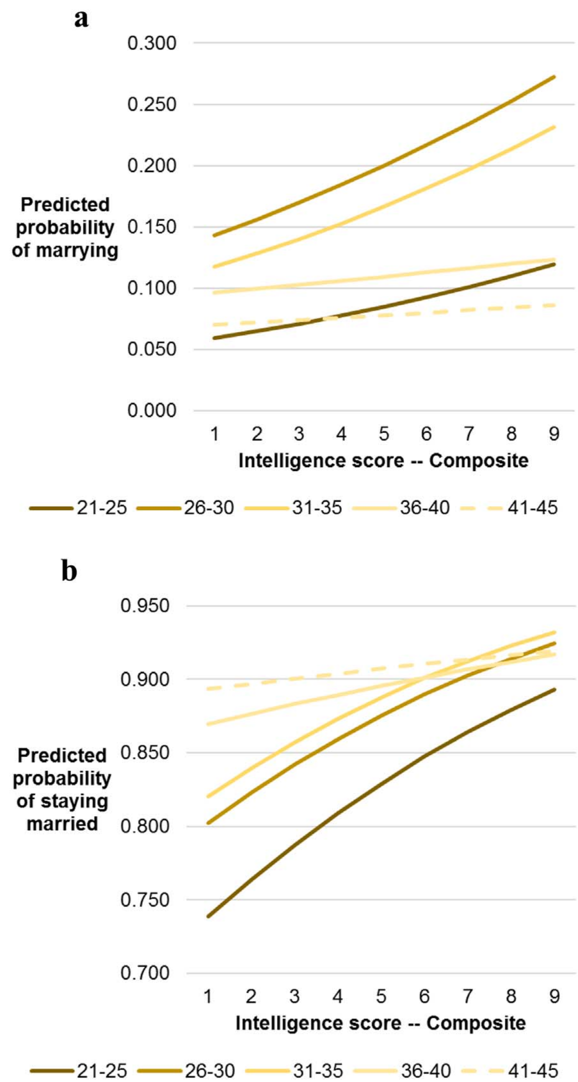

Fig. 3. Line plots showing the predicted probability of (a) getting married and (b) staying married, as a function of intelligence in different age groups. The lines indicate that the relationship between intelligence and likelihood to marry (Panel a) and to stay married (Panel b) is more pronounced in younger age groups (< 36 years) than older ones (> 36 years).

fitness indicators of income and social status on marriage prospects have been established in previous research, our findings confirm that even the intangible fitness indicators of verbal, numeric, and logical intelligence can directly influence marriage prospects. Further, verbal intelligence, i.e. the type of intelligence that is easier to observe, was found to especially predict the likelihood of getting married, while the harder-to-observe numerical and logical intelligence were also found to predict the likelihood to stay married, to an equal extent as verbal intelligence. This is analogous to earlier literature's suggestion that both observable and less observable measures of intelligence may have an influence on individuals' perceived attractiveness as well as actual behaviors, such as charisma and leadership (Judge et al., 2004).

With these findings, the primary contribution of the present research is to resolve the previous uncertainty in evolutionary theory (Ellis, 2001; Lewak et al., 1985; Symons, 1979; Taylor et al., 2005), of whether the effect of intelligence on mating prospects is indirect or direct. Indeed, our findings clearly imply that human intelligence, despite being an intangible fitness indicator, directly influences mating prospects, even if it also exerts its influence through the tangible fitness indicators of income and social status symbols. Moreover, our findings also overrule the alternative notion that intelligence would primarily affect individuals' mating prospects through education. That is, as alternative explanation, intelligent individuals may tend to invest more time in their education career than less intelligent people (cf. Taylor et al., 2005), leading them to get married at an older age, e.g., after having finished their education. For this alternative explanation to hold, however, the correlation of intelligence and marriage should have been more pronounced in older age groups. Instead, we found that the correlation between intelligence and likelihood to both marry and stay married was more pronounced in younger age groups. Thus, our results are consistent with the broader evolutionary theory, which suggests that females as mating partners of males tend to become less demanding of their mates' fitness indicators when approaching the end of fertility age (Waynforth & Dunbar, 1995), rather than with the notion of time spent on education. In other words, the stronger correlation between intelligence and marriage likelihood in younger age groups constitutes further evidence of the role of intelligence as an evolutionary fitness indicator influencing human mating in general and males' attractiveness as mating partners in particular.

Beyond the primary contribution to the evolutionary literature on mating, our research also adds to two other literatures on individual decision-making. First, our results extend the emerging economic psychology literature on the influence of intelligence on individual decision-making, by demonstrating that intelligence has a direct influence on a key life decision (i.e., marriage)—over and above previously-studied financial and consumption behaviors (e.g., Aspara et al., 2017; Ballinger, Hudson, Karkoviata, & Wilcox, 2011; Gerardi, Goette, & Meier, 2013; Grinblatt, Keloharju, & Linnainmaa, 2012), job attachment behaviors (Burks, Carpenter, Goette, & Rustichini, 2009), and leadership behaviors (Judge et al., 2004). Second, our research contributes to the literature on the fundamental link between human intelligence and social cooperation (e.g., Chen, Chiu, Smith, & Yamada, 2012; Millet & Dewitte, 2007; Pinker, 2010), as we provide new evidence of the fact that intelligence also seems to enhance individuals' social cooperation abilities in terms of establishing and sustaining a marriage. Indeed, as a conclusion, our results vividly demonstrate that smarter individuals are not only more likely to get married than less smart individuals, but they are also more likely to be able to sustain their marriages. This finding implies that intelligence provides individuals with "fit" and cooperative abilities that are essential in sustaining and preserving this key social relationship of human individuals.

As the main limitation of the present research, our sample only included male individuals, as similar large-scale, population-level intelligence data are not available for females. Notably, because females' behaviors may be more influenced by situational, social, and cultural factors than by biologically-determined traits (see Lippa, 2003), it is possible that intelligence, as a largely biologically-determined trait, might not affect females' mating behaviors or prospects to the same extent that it affects those of males. Another possible reason for a potentially smaller influence of intelligence on the mating prospects of females than males is that males, in choosing their mates, may pay relatively less attention to the partners' intelligence than females pay to that of males—while possibly paying more attention to physical attractiveness (Li, Bailey, Kenrick, & Linsenmeier, 2002). At any rate, for males, the present results clearly demonstrate that intelligence is a fitness indicator in mating, directly predicting their prospects of entering into, as well as staying in marriage. This also implies, indirectly, that females pay substantial attention to males' intelligence in their mate choices—albeit that our data do not directly pertain to females' attention or preferences (i.e., part of our results may be explained by intelligent males' persuasive abilities in getting and staying married, rather than by females' fundamental preferences).

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.paid.2017.09.028.

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