A Slow Life History is Related to a Negative Attitude towards Cousin Marriages: A Study in Three Ethnic Groups in Mexico

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Abstract: Little is known about current attitudes towards cousin marriages. Using data from a rural population in the Mexican state of Oaxaca, the present research examined how life history was related to attitudes towards cousin marriages in various ethnic groups. Participants were 205 parents from three ethnic groups, i.e., Mestizos (people of mixed descent, n = 103), indigenous Mixtecs (n = 65), and Blacks (n = 35). Nearly all men in this study were farm workers or fishermen. Participants reported more negative than positive attitudes towards cousin marriage, and women reported more negative attitudes than did men. The main objection against marrying a cousin was that it is wrong for religious reasons, whereas the risk of genetic defects was considered relatively unimportant. Cousin marriage was not considered to contribute to the quality and unity of marriage and the family. The three ethnic groups did not differ in their attitude towards cousin marriages. However, a slower life history was related to a more negative attitude towards cousin marriages, especially among Blacks, less so among Mixtecs, and not at all among Mestizos. In addition, and independent of the effect of life history, with increasing levels of parental control over mate choice, the attitude towards cousin marriage was more positive, but among men the attitude was more negative the more religious they were. The results are discussed in the context of theorizing on life history theory and the benefits and costs of cousin marriages.

Keywords: life history theory, mate choice, cousin marriage, Mexico, consanguineous marriage

Introduction

Attitudes towards cousin marriage have varied considerably through human history, and vary considerably across the world. Often these attitudes have been not particularly negative, and presently in some places these attitudes are still relatively positive. For
example, according to Kuper (2002), marriage between cousins was permitted in ancient Israel and was practiced in classic Greece and Rome. Although in the 4th century, Emperor Theodosius I introduced a ban on marriage between cousins, this practice continued and among the people attitudes were generally more or less neutral. Much more recently, in the 18th and 19th century in England, cousin marriages became increasingly accepted in especially the higher classes. Up until the middle of the 19th century, cousin marriage was permitted in the United States, and in many European countries. However, since the 19th century attitudes towards cousin marriage in the Western world began to change drastically. The main reason for this was that the progeny of cousins were believed to be inflicted with genetic defects and poor breeding, resulted in delays in progress within society (see e.g., Bittles and Neel, 1994). Currently, thirty-one states in the United States have laws that prohibit the marriage of cousins or laws that regulate the practice (Ottenheimer, 1996). And while presently, cousin marriage is legal in all European countries, attitudes towards this type of union remain generally rather negative (Paul and Spencer, 2008). Particularly negative attitudes towards cousin marriage also exist in a number of East Asian countries. For example, in northern India, prior to marriage, pedigrees are examined up to five generations on the female side and seven on the male in order to ensure that the bride and groom are not related (Bittles, 2002). In contrast, currently, attitudes towards cousin marriage tend to be particularly positive in a number of Islamic countries. About 50% and more of the marriages in countries such as Jordan, Kuwait and Saudi Arabia occur among cousins (Jaber, Shohot, and Halpern, 1996). Not much is known about the rate of cousin marriage in African countries outside of the Middle East, yet it is estimated that about 35-50% of all sub-Saharan African ethnic groups allow or prefer marriage between cousins (Bittles, 1994).

The historically and cross-culturally often observed accepting attitude towards cousin marriages clearly suggests that there is as such not an evolved mechanism against mating with cousins. In fact, we would like to suggest that such marriages may be, or may have been, adaptive under certain conditions. For instance, cousin marriages may have had direct biological benefits. Hoben, Buunk, Fincher, Thornhill, and Schaller (2011) showed that cousin marriages may have arisen as an adaptive response to high pathogen prevalence and may function to maintain co-adapted gene complexes and local adaptation that defend against local pathogens. In a similar vein, a study in a French Canadian isolate demonstrated that women who were biologically related to their partner experienced lower intrauterine mortality, which in turn resulted in greater fertility (Philippe, 1974; see also Bittles, Grant, Sullivan, and Hussain, 2002). From the perspective of inclusive fitness, marrying a cousin may also allow for a smoother transition for a woman to her husband’s family, as the woman may receive more support from the family of her husband because she is genetically related. In addition, there may be various proximate factors that make cousin marriages acceptable. For instance, in areas of lower socioeconomic levels, cousin marriage may help facilitate finding a spouse among the poor because it allows them to avoid payments that are traditionally associated with marriage such as a dowry or bride wealth. For the more prosperous, marrying cousins may keep familial wealth together as it may prevent land and other wealth from distribution outside of the family; thus it may maintain or increase the status and power of the family in society (e.g., Thornhill, 1991;
Geographical isolation may also play an important role. In small, isolated populations, individuals have limited access to mates except from within their group, increasing the frequency of cousin marriage. Finally, in the Middle East, cousin marriage seems in part an extension of the wider phenomenon of agnatic (father’s lineage) solidarity. A marriage within the father’s line (i.e., father’s brother’s son) allows male relatives to remain in close contact with their daughter, sister or niece, thus preventing dishonorable behavior such as infidelity or premarital sex (Holy, 1989).

Remarkably, there has hardly been any investigation of the actual attitudes and beliefs regarding cousin marriage in current populations, and of the factors that may explain these attitudes. In the present research, which was conducted in three ethnic groups in the state of Oaxaca in Mexico, we examined the attitudes and beliefs towards cousin marriages in a sample of parents of children in the mating age. We assessed first the beliefs on the positive and negative consequences of cousin marriages. Next, we investigated the central assumption in our research that a negative attitude towards cousin marriages is related to a slow life history strategy. We also examined if parents who favor a high degree of influence on the mate choice of their children, have a less negative attitude towards cousin marriages. Finally, we paid attention to sex differences. From the perspective of the inbreeding hypothesis, we hypothesized that mothers will be more disapproving of marriage between cousins than fathers will be. For women, the immense investment that is necessary to gestate a child and the amount of postnatal care is so great that it is more costly for a female to invest in a child that may suffer from harmful recessive mutations. For men, the initial investment of time for copulation and contribution of sperm is the minimum investment necessary (Trivers, 1972). Consequently, the potential biological harm of mating with a cousin will not be as costly for men, which may make women more attuned to the potential disadvantages of cousin marriages.

**Life history strategy: The “slow” vs. “fast” continuum**

The central issue examined in the present research is whether current population attitudes towards cousin marriage might reflect differences in life-history strategy. In general, because of limited resources, individuals, in order to successfully reproduce, are forced to make trade-offs between mating effort, i.e., locating a mate and courting him or her, and parenting efforts, i.e., gestation, childbirth, and postnatal care of children (e.g., Chisholm, 1993; Figueredo, Vasquez, Brumbach, Schneider, Sefcek, et al., 2006). These trade-offs can be arranged on a continuum that was originally usually described in terms of the r-K model of reproductive strategies (e.g., Charles and Egan, 2005, Ellis, 1988), but is now more commonly referred to as the “fast” vs. “slow” continuum of life history strategy. Individuals at the faster end of the continuum seek to produce many offspring without great investment in their welfare (i.e., low parental and high mating effort), whereas individuals at the slower end of the continuum produce fewer offspring and provide greater nurturing (i.e., high parental and low mating effort). Although both strategies may have been equally favored by natural selection, they differ in the type of reproductive success they maximize. Whereas the fast strategy particularly maximizes short-term reproductive success, the slow life history strategy maximizes long-term reproductive success (e.g., Figueredo et al., 2006; Kaplan and Gangestad, 2005). That is, having fewer, high quality, offspring may result,
ultimately, in more descendants in distant future generations than having numerous lesser quality offspring, whose reproductive success depends more on luck. In general, as a species, humans tend to follow a “slow” life history strategy (Bjorklund and Shackelford, 1999; Chisholm, 1993). However – as in many other species – in order to adapt to changing environmental conditions, individuals in each new generation also show variation regarding their position on the “fast” vs. “slow” life history continuum (Figueredo, Vásquez, Brumbach, and Schneider, 2007). That is, some individuals are “slower” in their life history strategy than others (Chisholm, 1993). Overall, a faster life history strategy may be the optimal reproductive strategy when the environment is adverse or unstable (e.g., Chisholm, 1993), and when populations are still growing (e.g., Rushton, 2004). In contrast, when population size stabilizes, and mortality rates are low, slower life history strategy individuals come to predominate because under steady state conditions, they are more competitively successful at raising young and organizing the more complex societies that sustain them (e.g., Buunk, Klavina, and Figueredo, 2009; Figueredo et al., 2005). There is considerable evidence that stressful experiences in and around their families of origin – such as marital discord, father absence, or traumatic separation from one’s parents – lead to a faster life history strategy. This particular strategy is characterized by investing disproportionately in mating and in early reproduction, whereas a slower life history is characteristic of individuals who grow up in harmonious homes and homes where the father is present. Such individuals tend to mature later, to postpone sexual activity and to display greater investment in the fewer children they produce (e.g., Belsky, Steinberg and Draper, 1991; Bjorklund and Shackelford, 1999; Ellis, 2004; Pesonen, Räikkönen, Heinonen, Kajantie, Forsén, and Eriksson, 2008; Tither and Ellis, 2008).

As marrying cousins over generations may involve genetic risks, we predicted that individuals who adopt a slow life history strategy will have a more negative attitude towards cousin marriages, whereas individuals with a fast life history strategy cannot afford to be too selective in their mate choice, and may therefore have a more open attitude cousin marriage. We do not assume that the effect of slow life history upon a negative attitude towards cousin marriages reflects the operation of a cousin-specific adaptation; rather it may be just be one aspect of a more general tendency to be selective in one’s mate choice, and to be overall more cautious and risk-avoidant – typical features of a slow life history.

Parental control of mate choice

Whereas the previous reasoning may apply to individuals whether they are parents or not, we also examined a factor that may specifically explain attitudes of parents towards cousin marriages, i.e., the desire of parents to maintain and strengthen the in-group through controlling the mate choice of their offspring. In most cultures and throughout history, parents have exerted a strong influence on the mate choice of their offspring (Buunk, Park, and Duncan, 2010; Murstein, 1974). Apostolou (2007; 2010a) showed that in hunting and gathering societies as well as in agricultural and postural societies, parental arrangement was the most frequent type of marriage, especially for females. Even near the end of the 20th century, about half of the marriages of Indian immigrants in the US were arranged (Menon, 1989). In a study among second-generation South Asian immigrants living in North America, about a quarter of the participants indicated that their parents would likely
arrange their marriage (Talbani and Hasanali, 2000). Also within cultural groups and societies where ‘love based marriages’ are the norm, parents may exert a considerable degree of control over their children’s mate-choice. For example, through controlling the child’s social networks, and through imposing curfews on children that may serve to limit contact with members of the opposite sex and peers (Das Gupta, 1997; Faulkner and Schaller, 2007; Perilloux, Fleischman, and Buss, 2008; Wight, Williamson, and Henderson, 2006; Sussman, 1953).

Parents do not randomly control the mate choice of their children. Apostolou (2010b) found that in preindustrial societies, in addition to a good character, a good family background and a similar social status were among the most important characteristics mentioned by parents for a son-in-law and a daughter-in-law. A series of studies conducted by Buunk, Parks, and Dubbs (2008) showed that in current societies individuals perceive that their parents would object when they would choose a mate with traits indicating a low cooperation with the in-group, such as a different ethnicity, a different religion, and coming from a lower social class. These results were established in culturally diverse samples including young people from the United States, Kurdistan (Iraq), the Netherlands, Uruguay and Argentina (Buunk and Castro Solano, 2010; Park, Buunk, and Dubbs, 2009). In addition, in a study among parents with children between 15 and 25 years of age, participants perceived characteristics of a son-in-law or a daughter-in-law indicating a lack of cooperation with the in-group as more unacceptable to themselves than to their offspring (Dubbs and Buunk, 2010; see also Apostolou, 2007; 2008). Choosing a cousin as a mate may be the most effective way of ensuring the spouse comes from the in-group. In addition, relatedness between a person and his cousins is .125, but relatedness between a person and his nieces and nephews is .25. Thus, parents will tend to want their children to cooperate more with their cousins than they might naturally want to. We therefore hypothesized that the attitude towards cousin marriage would be more positive among those parents favoring more parental control over mate choice.

The Mexican context

The present research was conducted among parents from a rural population in Oaxaca, one of the poorest states of Mexico, and focused primarily on the indigenous group of the Mixtecs. Around 30% of the Mexican populations considers themselves to be American Indian (or predominantly so), and the Mixtecs are an indigenous people who number somewhere between 250,000 and 500,000. They are the descendants of the people who constituted one of the major civilizations of Middle America - people that are well known for their exceptional mastery of jewelry, their codices (phonetic pictures), their history, their art and their genealogy. The Mixtec region covers most of the current state of Oaxaca. The Mixtecs are considered to be a very cohesive ethnic group that maintains its identity despite the high level of migration (see e.g., Joyce, 2010). However, historically, indigenous cultures such as the Mixtecs have been considered as inferior, (e.g., see Stutzman, 1981)

To examine whether the pattern we found would be characteristic of the Mixtecs, and not of the Mexican population as a whole, we included also a sample of Mestizos. In total, around 60% of the Mexican population perceive themselves to be Mestizos. Whether
Life history and cousin marriage in Mexico

one considers oneself as a Mestizo is to an important extent dependent on political and
cultural factors, and in Mexico one’s social identity seems rather fluid, and is not only
dependent on ancestral origins (e.g., Knight, 1990). Following the Mexican revolution, the
Mestizos were promoted as the prototypical Mexicans, when a new ideology of mestizaje
emerged that defined Mexico as essentially a Mestizo nation. To examine if the pattern
found among the Mixtecs was typical for this indigenous population and not for a minority
population as such, we included a quite different ethnic minority group, i.e., Mexican
Blacks. It is not widely known that Mexico has a black community, but it has been
estimated that around 250,000 African slaves were brought to Mexico (Bennett, 2009). In
line with anthropologist Laura Lewis (2000) who studied Mexican Blacks in depth, we
simply refer to Afro-Mexicans as Blacks (negros), a term generally used in Oaxaca to refer
to them. Although most Blacks were absorbed into the Mestizo population, and by the end
of the colonial era Blacks were rarely recognized as a distinct racial or ethnic group
(Villarreal, 2010; Lewis, 2000), over the past years, however, there has been somewhat
more attention for the African roots of the Mexican Blacks. Veracruz and Oaxaca - where
the present research was conducted - have substantial Black populations.

Materials and Methods

Selection of respondents and data collection

In line with the study among Dutch parents on parents’ attitudes towards their
children’s mate choice (Dubbs and Buunk, 2010), we chose the age range of 15 to 25 for a
couple reasons. By the age of 15, most children have reached puberty, and have begun to
show interest in the opposite sex. In Mexico, the mean age at marriage for women is 22.4
and for men 24.6. Therefore, parents of children in the age range we chose, will generally
be, or recently have been, confronted with potential prospective marital partners; thus for
them whom their child marries will be a salient issue. A collaborator from the region who
was affiliated with the Centro de Investigaciones y Estudios Superiores en Antropología
Social (CIESAS) did the data collection. To collect the data, the collaborator first went to
the local officials (comisariado) that represented the people, and explained them how to fill out the
questionnaire by explaining each of the questions. The letter of recommendation given by the CIESAS helped
considerably, because it convinced the officials that she just was going to collect data and
not promote any political viewpoint. The officials arranged the day and time at which she
could administer the questionnaire. At these times, people were approached and asked if
they did fit the criteria, and next asked if they were willing to fill out the questionnaire. The
participants were all paid 65 Mexican pesos (around $6) for their participation. For the vast
majority of participants, this was more than their daily income. Although a number of
people felt the money was not enough, in most places, the people were nice and
cooperative, and the sample can be considered quite typical for the local population.

Sample

The sample consisted of 205 respondents from three rural ethnic groups. Half of the
sample (51%, n = 103) were indigenous Mixtecs, 17% (n = 35) were Blacks, and 32% (n =
65) were Mestizos (for two participants the ethnic background was unknown). A large majority (94%) was Roman Catholic. There were about equal numbers of males (n=100), and females (n=105), and the sexes were nearly equally distributed over the three ethnic groups. The mean age in the sample was for women \( M = 44.79 \) (\( SD = 8.09 \)), and for men = \( 49.85 \) (\( SD = 9.91 \)). For the following percentages, because of rounding off and missing values, the total percentage is sometimes different from 100%. Most women (90%) were homemakers, 5% had a profession, and 6% indicated not to have a profession. Of the men, the large majority (74%) were farmers, 10% were fishermen, 16% had a variety of other professions, and 2% indicated to have no profession. Among women, there was no difference between the ethnic groups in type of profession, \( \chi^2(6, 103) = 9.58, p = .14 \), but among men the difference was significant, \( \chi^2(6, 100) = 36.06, p < .01 \). Among the Mestizos (85%) as well as Mixtecs (77%), the large majority were farmers, and virtually nobody was a fisherman (0% and 2%, respectively), with similar numbers of other professions (15% and 17%, respectively). In contrast, only half of the Blacks were farmers (50%), and nearly as many were fishermen (45%), with few (5%) involved in other professions. The incomes were low; 63% had an income of less than 55 pesos a day (less than +/- $4.50), 31% between 55 and 200 pesos a day (between $4.50 and $16), and 6% more than 200 pesos a day (> $16). In this respect, the three ethnic groups did not differ, for women \( \chi^2(4, 77) = 2.25, p = .69 \), for men \( \chi^2(8, 97) = 9.77, p = .28 \). The women had on average 5.35 (\( SD = 2.57 \)) children, whereas the men had on average 5.34 children (\( SD = 2.42 \)). There was no sex difference in the number of children \((t(173) = .02, p = .99)\).

**Attitude towards cousin marriage**

To assess the attitudes towards cousin marriage, a paper and pencil questionnaire was created that assessed the beliefs about the positive and negative effects of marrying a cousin. As is recommended in social psychological research, when assessing the beliefs we referred to a specific behavior and the attitude was considered more positive, the more positive effects and the less negative effects, marrying a cousin was assumed to have. The questionnaire was based on an extensive review of the literature on the assumed advantages and disadvantages of cousin marriages, as well as on a series of informal interviews with students and people from the community. The questionnaire consisted of 9 items, 4 of which expressed a negative, and 5 of which expressed a positive consequence of marrying a cousin. At the beginning of the questionnaire, participants were presented with the statement “Marrying a cousin….” Then the 9 items followed. The five positive statements included 1) means that you marry someone with the same values; 2) enhances the unity in the family; 3) keeps wealth in the family; 4) makes it easier to get along with your spouse; 5) makes your marriage more stable. The four negative statements included: 1) may lead to children having a high risk of defects; 2) is wrong for religious reasons; 4) leads to family conflict; 5) leads to a relationship without passion. Participants were asked to indicate on a scale from 1 (extremely disagree) to 5 (extremely agree) how much they were in agreement with the 9 statements. A scale was made with all the negative items (alpha = .65, which could be enhanced to .69 by deleting the item ‘Leads to a relationship without passion’), and a scale was made with all the positive items (alpha = .73). For the total scale of attitude towards cousin marriage, the negative items were recoded, so that higher scores indicated a
more positive attitude. The reliability of the total scale was .59 (which could be enhanced to by deleting the item ‘leads to a relationship without passion’, alpha = .64). The scores were divided by the number of items.

**Life history strategy.**

Life history strategy was measured with the *Mini-K Life History Strategy Short Form* (Figueroed et al., 2006), a 20-item short form of the Arizona Life History Battery (*ALHB*; Figueredo, 2007), which is a battery of cognitive and behavioral indicators of life history strategy compiled and adapted from various original sources. These self-report psychometric indicators measure graded individual differences on various complementary facets of a coherent and coordinated life history strategy, as specified by life history theory, and converge upon a single multivariate latent construct, the “slow” factor. The component scales are scored directionally to indicate a “slow” life history strategy on the “fast-slow” continuum. In a series of psychometric studies, Figueredo and his colleagues (e.g., Figueredo et al., 2005; 2006) have shown that a slow life history strategy can be conceptualized as a higher order construct characterized by a number of reproductive, parental and sexual behaviors, including good executive functions, positive relationships with one’s parents, positive attachment to an adult partner, low mating effort, low Machiavellianism, low levels of risk taking, more foresight and planning, and persistence and self-directedness. The Mini-K correlates 0.85 with the full *ALHB* (Gladden, Sisco, and Figueredo, 2008), and uses a 7-point Likert scale, which ranges from -3 (disagree strongly) to +3 (agree strongly). Alpha reliability in the present sample was .66.

**Parental control of mate choice.**

To assess the preferred degree of parental control of mate choice, the Parental Influence on Mate choice (PIM) scale developed by Buunk, Park, and Duncan (2010) was used. This scale covers the range of possible forms of parental influence on mate choice (varying from complete autonomy of children to complete control by parents), and was developed to be sensitive to variations in the degree of parental influence within and between cultures. For instance, it includes an item that seems to represent the extreme form of parental influence – the practice in which a daughter is treated as a kind of property that the father is allowed to give to another man. As well as an item that represents the other extreme – the norm that children have the right to select their own partner without any interference by their parents. All items had the format of a statement to which people could respond on a 5-point scale from I disagree completely to I agree completely. Seven items consisted of statements expressing parental influence on mate choice, whereas three items consisted of statements expressing individual choice. In the present sample, the reliability was low, alpha = .51. By omitting two items, the reliability could be raised to .60. However, to keep our results comparable to those of previous research, we decided to use the same scale. The low alpha reliability is in itself not necessarily a problem, as the items were explicitly chosen to represent the whole continuum of the scale, and when participants have a clear preference for one level of control, they do not necessarily have a moderate preference for a related level of control. We return to this issue in the Discussion. The sum of the scale was divided by the number of items, $M = 2.32$, $SD = .62$. 

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Results

Attitude towards cousin marriage

Results revealed that, overall, participants did agree most with the negative statements pertaining marrying a cousin and least with the positive statements (see Table 1). A paired samples t-test was then conducted to determine if there was a significant difference between the total mean ratings of positive and negative statements. Participants reported more negative \( (M = 3.81, SD = 1.00) \) than positive \( (M = 2.23, SD = .99) \), attitudes towards marrying a cousin, \( t(197) = 16.37, p = 0.00 \). In addition, women \( (M = 4.11, SD = .77) \) reported more negative attitudes than did men \( (M = 3.48, SD = 1.11) \), \( t(168.92) = 4.64, p < .001 \), a difference with a high effect size, Cohen’s \( d = 0.66 \). However, men \( (M = 2.29, SD = 1.00) \) and women \( (M = 2.17, SD = .98) \) did not differ in the positive attitudes towards marrying a cousin, \( t(199) = .98, p = .38 \). GLM analyses with gender and ethnic group as factors showed no significant main or interaction effects of ethnic group, \( Fs < 1.37, ps > .25 \). We also examined if life history differed between men and women, and between the three ethnic groups. A GLM analysis with gender and ethnic group as factors showed no significant effects, \( Fs < 1.37, ps > .26 \).

Table 1. Attitudes towards cousin marriage

| Marrying a cousin … | M  | SD  |
|---------------------|----|-----|
| … means that you marry someone with the same values | 3.02 | 1.61 |
| … enhances the unity in the family | 2.00 | 1.30 |
| … keeps wealth in the family | 2.10 | 1.37 |
| … makes it easier to get along with your spouse | 2.02 | 1.46 |
| … makes your marriage more stable | 2.03 | 1.36 |
| … may lead to children having a high risk of defects | 3.86 | 1.55 |
| … is wrong for religious reasons | 4.28 | 1.25 |
| … leads to family conflict | 4.08 | 1.45 |
| … leads to a relationship without passion | 2.96 | 1.45 |

A closer look at the participants’ ratings of the statements (Table 1) reveals that participants reported to be in the least agreement with most positive statements; on average, they disagreed that marrying a cousin would enhance the unity in the family, would keep wealth in the family, or would make it easier to get along with one’s spouse. On average, participants were neutral with respect to the statement that marrying a cousin would mean that you would marry someone with the same values. They were on average most, and very much, in agreement with the statement that marrying a cousin is wrong for religious reasons, nearly as much with the statement that marrying a cousin leads to family conflict, and somewhat less with the statement that marrying a cousin would lead to relationship without passion. It is noteworthy that the notion that a marriage with a cousin would result in children with a higher risk of mental and physical defects was considered relatively unimportant.

Given the – somewhat unexpected – finding that the major objection against cousin marriage
marriage was the belief that it was wrong for religious reasons, we examined the association between attitudes towards marrying a cousin and religiosity. It was measured with one item with five possible answers (i.e., ‘I am not at all religious’, ‘I am hardly religious’, ‘I am a little religious’, ‘I am quite religious’, and ‘I am very religious’). Religiosity was indeed, albeit weakly, associated with a more negative attitude towards cousin marriages, $r = -.18, p = .014$.

**Effect of life history strategy, gender and ethnic group on attitude toward cousin marriages**

To examine the central issue in this research, i.e., how life history strategy is related to the attitude towards marrying a cousin among mothers and fathers and in the three ethnic groups, we used the total scale of the attitude towards cousin marriage. We conducted a univariate GLM analysis with gender and ethnic group as factors, and life history strategy as continuous variable. All main effects and interactions were included in the model. In the full model gender had a significant main effect, $F (1, 177) = 4.91, p = .028$, but there were no significant interactions involving gender, $F < 2.02, p > .15$. Therefore, we excluded these interactions from the final model. In this model there was, in addition to the significant main effects of gender, $F (1, 182) = 10.54, p = .001$, and of life history strategy, $F (1, 182) = 21.29, p < .001$, a significant interaction between ethnic group and life history strategy, $F (2, 182) = 3.07, p = .049$, while the main effect of ethnic group was not significant, $F (2, 182) = 2.15, p = .119$. Overall, as predicted, with increasing levels of a slow life history strategy, the attitude towards marrying a cousin was more negative, $\beta = -.30, t (189) = 4.24, p < .001$. Separate analyses within the three ethnic groups showed that this was especially true for the Mixtecs, $\beta = -.30, t (95) = 3.14, p = .002$, and the Blacks, $\beta = -.35, t (29) = 4.30, p < .001$, but not at all for the Mestizos, $\beta = -.07, t (59) = .57, p = .57$. The lack of an association between life history strategy and attitude towards cousin marriage among the Mestizos could not be due to a lower variance of these variables in this group, as there was no significant effect of ethnic group neither on the attitude towards cousin marriage, $F (2, 196) = 1.27, p = .28$, nor on life history strategy, $F (2, 195) = .72, p = .49$.

In addition, we examined if, when added to the model, parental control over mate choice had an independent effect. That proved to be the case, $F (1, 180) = 21.09, p < .001$. A regression analysis showed that, overall, as predicted, with increasing levels of parental control, the attitude towards cousin marriage was more positive, $\beta = .24, t (195) = 3.47, p < .001$, whereas the other significant effects remained as strong, or became even stronger.

Given the – relatively weak – effect of religiosity on negative attitudes towards cousin marriages, we also examined if the model was upheld when adding religiosity to the model. It may be noted that there was no effect of ethnic group on religiosity, $F (2, 202) = .92, p = .40$, and neither of gender, $F (1, 204) = 1.13, p = .13$. A GLM analysis showed that there was a marginally significant effect of religiosity, $F (1, 188) = 3.38, p = .07$, upon attitudes towards cousin marriages, whereas the other significant effects remained as strong, with the exception of the interaction between ethnic group and life history strategy, that became marginally significant, $F (2, 188) = 2.65, p = .07$. Although there was no correlation between religiosity and life history strategy, given these findings, we also examined if religiosity interacted with ethnic group in their effects on attitudes towards
cousin marriage. We conducted a GLM analysis with gender and ethnic group as factors, and religiosity as continuous variable with all main effects and interaction effects included.

This analysis showed nor a main effect of ethnic group, a neither significant interactions involving ethnic group, $Fs < 1.09, ps > .33$, but again a strong main effect of gender, $F(1, 195) = 7.32, p = .007$, a main effect of religiosity, $F(1, 195) = 6.44, p = .012$, and a marginally significant interaction between gender and religiosity, $F(1, 195) = 3.22, p = .074$. Separate regressions for men and women showed that among women there was not a significant effect of religiosity, $\beta = -.04, t(102) = .36, p = .72$, whereas for men there was a significant, though moderate, effect $\beta = -.27, t(94) = 2.76, p = .007$. Thus, among men, but not among women, religiosity was associated with a negative attitude towards marrying a cousin.

Discussion

The present research was conducted among parents in three ethnic groups in the state of Oaxaca in Mexico. The results demonstrate that participants overall had a negative attitude to marrying a cousin, and that the three ethnic groups did not differ in this respect. Unlike what is often assumed, the main objection against marrying a cousin was that it is wrong for religious reasons, and the risk of genetic defects of children born out of such marriages was considered relatively unimportant. In line with this, we found that, albeit only among men, marrying a cousin was viewed more negatively the more religious one was. Cousin marriage was neither considered to contribute to the quality or unity of marriage and the family. These findings may suggest that the attitudes towards such marriages differ from those in Western cultures where especially the risk of genetic defects of offspring is considered important (Ottenheimer, 1996), as well as from those in Eastern populations where cousin marriages are considered to preserve the unity of the clan and the family (cf. Jaber et al., 1996). Furthermore, as predicted, we found a sex difference with women having overall a considerably more negative attitude towards cousin marriage than men. This is in line with parental investment theory (Trivers, 1972). Since females invest the most in conception, birth and postnatal care, investing in a potentially unviable offspring is extremely costly. Therefore, women may be more concerned that marrying a cousin leads to children that have a higher risk of being mentally and physically handicapped. Regardless of whether or not progeny of cousins actually have an increased risk of being handicapped, if it were believed that this indeed is the case then this would be more salient for females than for males. Furthermore, the negative view of cousin marriage may in part be the result of an evolved mechanism to prevent incest (Fessler and Navarrete, 2004; Lieberman et al., 2003, Westermarck, 1921). It seems that within some societies, including the populations in the present research, this mechanism has extended beyond the immediate family to include cousins. Cousins are always defined as family, and the notion of ‘family’ may have become strongly conditioned to the notion ‘no sex allowed’. Consequently, it is possible that the mere mention of sexual relationships between family members could activate the incest avoidance mechanism.

As far as we know, this is the first study providing evidence in an indigenous population, i.e., the Mixtecs in Mexico, that life history strategy is quite strongly related to
attitudes towards cousin marriage. Our findings clearly suggest that especially in this population, more negative attitudes towards cousin marriages do reflect primarily a slow life history strategy, characterized by typical features such as good executive functions, positive relationships with one’s parents, low mating effort, lower levels of risk taking, higher levels of foresight and planning, and more persistence and self-directedness. Individuals with this type of strategy do seem to be relatively less inclined to run the risk of having offspring with genetic defects because of mating with kin. From a theoretical point of view this slow life history strategy maximizes long-term reproductive success (e.g., Figueredo et al., 2006; Kaplan and Gangestad, 2005) by having fewer, high quality, offspring rather than having numerous lesser quality offspring, whose reproductive success depends more on luck. Vice versa, a relatively less negative attitude towards cousin marriage was found among those with a faster life history. As noted by Belsky et al. (1991), stressful experiences related to one’s family background – such as marital discord or father absence – may lead individuals to invest disproportionately in mating as opposed to parenting. This may make one more selective in the choice of a mate, and less concerned about the possible negative effects on fitness that mating with a cousin might have. Psychosexual development involves a self-assessment of one’s socio-sexual capabilities and opportunities, calibrating optimal utilization of physical assets such as size, strength, health, and attractiveness, as well as psychosocial assets such as intelligence, self-efficacy, social skills, personality, and socioeconomic status or prospects (e.g., Hunter and Figueredo, 2000).

While we did not find differences between the ethnic groups in their attitudes towards cousin marriage, the effect of life history strategy was not only apparent among the Mixtecs, but also among the Blacks. However, it was not found among the Mestizos, suggesting that it is more typical of groups that are relatively peripheral in society. Indeed, although we are reluctant to over-interpret this finding, it is noteworthy that the effect of life history strategy was not present among the group with the highest status in Mexican society, for whom apparently the attitude towards cousin marriage is not dependent on one’s preference for a fast or slow life history strategy. While the lower status groups – the Mixtecs and the Blacks – did not differ from the Mestizos in terms of life history strategy and attitudes towards cousin marriage, within both groups there was meaningful variation in these attitudes, dependent on the extent to which one favored a slow or fast life history. It must be emphasized that the lack of a relation between life history and attitudes towards cousin marriage among the Mestizos could not be due to a lower variance of these variables in this group, as the standard deviations did not differ between the three groups.

An additional finding was that, overall, those who approved of controlling the mate choice of their offspring had a more positive, or less negative, attitude towards cousin marriage. This suggests that, as expected, in general, fostering marriages with cousins may be the ultimate consequence of the preference to control the mate choice of one’s offspring by selecting in-group members as mates for one’s offspring. Indeed, a plethora of studies shows that in a wide variety of cultures, a major concern of parents is that the mate of their offspring comes from the same group (e.g., Buunk et al., 2008). A prime example of this are the various Islamic cultures such as Iran and Saudi Arabia where parents determine to an important extent whom their offspring marries, and where cousin marriages are very
common (Jaber et al., 1996). One of the benefits of having one’s offspring marry a cousin is that family and clan alliances are strengthened, and loyalty from one’s son and daughter-in-law better safeguarded.

This study has a number of potential limitations. First, except for life history strategy and parental control over mate choice, we did not explore other factors that might affect the attitude towards cousin marriage, including disease avoidance, social isolation and scarcity of potential mates. Second, we do not know which aspect of life history strategy is responsible for the effect on the attitudes towards marrying a cousin. For instance, it may be a result of the fact that those with a slow life history strategy are in general choosier, or are in general more cautious than those with a fast life history strategy are. Third, the reliability of the parental control measure was low in this sample, which may in part be because the items were developed to cover a wide range of behaviors and attitudes related to parental control of children’s mate choice. As these items can be scaled, this scale does not have the characteristics typical of a Likert scale. Nevertheless, the fact that we did find such rather consistent and strong effects with this scale, suggests that the scale is a useful measure. Fourth, we had uneven numbers of participants in the three groups, and especially Blacks were underrepresented, which may have reduced the power to find effects. However, it seems that most effects were robust enough to be found even in the relatively small Black sample. Fifth, while we were primarily interested in the attitudes of the parents towards the mate choices of their children, and therefore collected data from parents with children of a marriageable age, the attitudes towards marrying a cousin were framed in a general way, and not particularly as they applied to the mate choice of their children. However, it seems very unlikely that parents would not have thought about their children when filling out the questions, or would have different standards in this respect for their children than for people in general. Finally, we cannot say with absolute certainty that the samples were representative for the populations studied, as, for example, a number of people refused to participate, and it was not possible to draw a random sample from each group. Nevertheless, the data collection was done very conscientiously, and there is no reason to assume that there is a substantial bias in the sample. To conclude then, we collected data from parents in a unique setting, i.e., a rural region with different ethnic groups that live in close contact with each other. We included in our research in addition to an indigenous people, i.e., the Mixtecs, also Mestizos – who constitute the majority of Mexican inhabitants – as well as the rarely studied Black Mexican people. By examining how cultural factors may affect the factors affecting attitudes towards cousin marriage, our research underlines that a resistance against cousin marriage is, dependent on the ethnic group, related to life history, and overall, to parental control of the mate choice of one’s offspring. This suggests that marrying a cousin may often not just be a matter of individuals freely selecting a mate, but may to an important extent be affected by the parents. In general, our research further exemplifies that for a more complete understanding of human mating, future research must attend more carefully to the role of life history and parental control of mate choice in affecting attitudes and behaviors concerning cousin marriages.

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