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DOES FATHER ABANDONMENT HAVE CONSEQUENCES FOR THE REPRODUCTIVE STRATEGIES OF GIRLS? A STUDY IN CURAÇAO

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Abstract. The present research examined the consequences of father abandonment for the reproductive strategies of girls from the Caribbean island of Curaçao. The sample consisted of 189 girls with an average age of 19.11 ($SD = 2.97$). Respondents were categorized in three groups, namely: ‘early father absence’ (abandoned between 0–5 years of age), ‘late father absence’ (abandoned between 6–13 years of age) and ‘father presence’ (father present during childhood). The results showed that compared to ‘late father absence’ girls and ‘father presence’ girls, ‘early father absence’ girls initiated sexual intercourse at a significant younger age. Moreover, they were less interested in getting married and in having grandchildren. These differences could not be explained by differences in educational level of the participants or occupational level of the father and the mother. There were no significant differences between the three groups in the age of menarche, the total number of sexual partners and the desire to have children. From an evolutionary life history perspective, we discuss possible explanations for, and implications of, these findings.

Keywords: father absence, reproductive behavior, menarche, marriage, Curaçao

INTRODUCTION

In Curaçao, an island in the Southern Caribbean, the rate of teenage pregnancy is relatively high. In 2010, 7.3% of women under the age of 20 became pregnant (Samenwerkende Fondsen, Aruba en Nederlandse Antillen, 2010). This figure is comparable to other Caribbean countries such as Aruba and Bonaire, but considerably higher than in countries such as the Netherlands, where the rate of teenage pregnancies is 0.34% (Central Bureau of Statistics the Netherlands, 2012) and the United States, where the rate is 3.4% (Hamilton & Ventura, 2012). According to a recent study, only 36.2% of the women in Curaçao who became pregnant in their teenage years had used contraceptives during their first

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sexual experience (Samenwerkende Fondsen, Aruba en Nederlandse Antillen, 2010). Not surprisingly, teenage pregnancy in Curaçao is one of the major reasons why girls drop out of school and therefore fail to complete secondary school. In addition, a great majority of single mothers accept that the fathers play a marginal role in the upbringing of their children. Many single mothers even report that they are proud of being able to raise their children alone (Ministerie van Binnenlandse Zaken en Koninkrijksrelaties, 2010). Extended families are very common and generally accepted, usually consisting of grandmothers, aunts and other relatives who provide help raising the children, which compensates for the father absence. Nevertheless, approximately 50% of the female headed households live in poverty compared to two-earner households and are often not able to pay for the educational development of their children due to a lack of a second earner (Central Bureau of Statistics Curacao, 2011).

The marginal role of father and the acceptance of father absence in Curaçao is supposed to have its origins in part in the period of slavery (Marcha & Verweel, 2005). The first slaves arrived on the island in 1665 because Curaçao functioned as an important slave trade market for many years, until slavery was abolished in 1863. The laws and regulations during slavery had an enormous influence on the relationship between the male slave and the female slave and their children. Since the male slave was not considered a legal person, it was not possible for him to close a civil marriage (Allen, 2009). Because of this, the male slave was not allowed to function as a father for his children and the responsibility of raising his children was completely left to the female slave. The slave family therefore usually consisted of a female slave and her children (Barrow, 1996). Male slaves had no obligation to their children, because the plantation-owners were primarily responsible for the care of the female slave and her children. According to Beckles (1989) there was ‘paternal alienation’ during slavery, due to the father absence in the life of the slave’s children. In the past decades, the family structure has shifted from only female headed households to more two-earner households in comparison to the slavery period. Currently, both parents are able to live closer to their maternal kin than they could do during slavery. In addition, the father has a choice to invest in his family because this is not prohibited anymore. However, still today approximately 40% of the families consist of female-headed households (CBS, 2011), which suggests that in many families the father is still having a marginal role in the upbringing of his children.

The effects of father absence on reproductive strategies

The present research examined the effects of paternal absence and abandonment on the reproductive strategies of girls in Curaçao. Only a few studies on this is-

sue have been conducted in less developed countries and in non-western societies (e.g., Sheppard, Snopkowski & Sear, 2014). Many studies in Western societies have demonstrated the effects of father absence not only on the mortality and health (e.g., Sear & Coall, 2011; Sear & Mace, 2008; Winking, et al., 2009), but also on the reproductive behavior of children (e.g., Alvergne, Faurie & Raymond, 2008; Bogaert, 2008; Mendle et al., 2009; Nettle, Coal & Dickens, 2010). According to life history theory, because of limited resources, individuals have in general to make trade-offs between mating efforts and parenting efforts in order to reproduce (e.g., Chisholm, 1993; Figueredo et al., 2006). These trade-offs can be arranged on a continuum that is now commonly referred to as the fast–slow continuum of life history strategy. In general, a fast life history strategy is considered to be the optimal reproductive strategy when the environmental conditions are adverse or unstable (e.g., Chisholm, 1993). According to Ellis (2004) low quality environments, including low paternal investment and father absence, will trigger an early menarche because girls in such environments assume they may have a relatively short life expectancy. Characteristic of a fast life history strategy is not only an early menarche, but also having many sexual partners, often without emotional attachment; getting one's first child at an early age; and having more offspring, often from different men (e.g., Figueredo et al., 2006, Kaplan & Gangestad, 2005). There is considerable evidence that girls who were abandoned by their father consider marriage as unstable and men as unreliable investors compared to girls who grew up with their father (e.g., Draper & Harpending, 1982; Ellis & Essex, 2007; Ellis et al., 2003). Hence, given these conditions it may be more advantageous for girls who were abandoned by their father to reproduce on an early age instead of delaying reproduction and waiting for the perfect, highly investing partner while this expectation is unlikely to happen.

Conversely, a slow life history strategy is more common when environmental conditions are favorable and stable and when one is growing up in a stable home in which a father is present (e.g., Ellis, 2004; Kaplan & Gangestad, 2005). Under such conditions, a long-term reproductive strategy will be more successful (e.g., Figueredo et al., 2005; Figueredo et al., 2006; Kaplan & Gangestad, 2005). As individuals will assume they have a longer life-expectancy, they will mature later, will postpone sexual activities, will have fewer offspring, will display greater investment in this offspring, and search for a stable long-term relationship (e.g., Belsky, Steinberg & Draper, 1991; Bjorklund & Schakelford, 1999; Ellis, 2004; Pesonen et al., 2008; Quinlan & Flinn, 2003; Tither & Ellis, 2008). Given the previous reasoning, in the present research in Curaçao we expected that, overall, girls whose father was absent during their childhood will have a relatively early menarche, will start their sexual activities relatively early, will be more interested in having children, will be less inter-

ested in marrying and will have a reduced long-term perspective aimed at having grandchildren.

Timing of father absence

Father absence or abandonment by the father will have a stronger effect on the reproductive strategies of children, the younger age of the child since the father was absent. Particularly the first five to seven years of life will shape an individual's attitudes towards pair-bonding and child rearing (e.g., Belsky et al., 1991). Draper and Harpending (1982) argued that especially children growing up without a father since this early stage in their life will expect that paternal investment will not be forthcoming and that romantic relationships will not endure. However, father absence may have different *types* of effects at different childhood stages. For instance, Alvergne et al. (2008) found in their study conducted in France that abandonment by the father before the age of 5 was associated with an early age of menarche, but abandonment by the father during adolescence was associated with heightened sexual activity. Several studies have shown that children whose father was present during the sensitive childhood period of 5–7 years compared to children whose father was absent during this period tend to show an earlier age of first sexual intercourse and to have significantly higher rates of teenage pregnancy (e.g., Ellis et al., 2003; Quinlan, 2003; Wight, Williamson & Henderson, 2006). In a similar vein, Belsky et al. (1991) showed that girls exposed to father absence during the first 7 years of life, showed an early onset of puberty and precocious sexuality and had unstable relationships as adults. In studies conducted in the US and New Zealand, Ellis et al. (2003) found that girls whose father was absent before the age of 5 showed the highest rates of early sexual intercourse and of teenage pregnancies, followed by girls whose father left after the age of 5, with the lowest rate occurring among the girls who grew up with their father. In fact, the US sample of teenage pregnancies was approximately 5 times, and in New Zealand 3 times higher among early father absence girls than among father presence girls.

In sum, given the above information we assumed that father abandonment or absence, especially during the first years of one's life compared to late father abandonment or father presence would affect the reproductive strategies of girls. We assumed that early father abandonment would be associated with a fast life history strategy and that therefore early father abandonment would be associated with several fast life history traits including (1) an earlier age of their first menarche; (2) an earlier age of their first sexual intercourse; (3) a higher number of sexual partners; (4) a stronger desire to have children; but (5) a weaker desire to marry; and (6) a weaker desire to have grandchildren.

MATERIALS AND METHODS

Participants

The sample consisted of 189 girls with an average age of 19.11 ($SD = 2.97$), who were born in Curaçao, and who were living on Curaçao during the period of the study. On the island of Curacao there are several nationalities with their own specific cultural backgrounds and practices that differ from that of the population of Curacao. Therefore, girls who were born in other countries such as Surinam, Venezuela, the Dominican Republic, Colombia or the Netherlands were excluded from the study to prevent the confounding effect of cultural differences, and to have an unambiguous population to which the results may be generalized. Some participants did not answer all questions and for this reason the number of participants may vary across analyses.

Materials

The participants completed a pen and paper questionnaire consisting of multiple questions, which took approximately 10 minutes. The questionnaire included a demographics section, in which questions were asked such as age, place of birth, educational level and the presence of a biological father. Participants were asked to report their age of menarche, their age at first sexual (penile-vaginal penetrative) intercourse, and their lifetime number of sexual partners. Next, participants were asked to indicate on a dimension from 1 (not applicable) to 7 (completely applicable) how important they found it to 1) have children; 2) have grandchildren; and 3) marry.

To determine the onset of father absence, the participants were asked to indicate if they were raised with or without a father. Participants were classified as experiencing early father absence if they were either born into a single mother family or born into an intact two-parent family, but subsequently experienced father absence at or before the age of 5. We chose this cut-off to allow comparison with studies done in the past, which have also defined 'early father absence' as occurring in the first 5 years (Bereczkei & Csanaky, 1996; Blain & Barkow, 1988; Ellis et al., 2003; Hetherington, 1972). Late father absence was defined as growing up without the biological father at home beginning during ages 6 through 13. We chose the age of 13 as the next cut-off in order to allow comparison with the study done by Ellis et al. (2003). In their study they chose this age as cut-off because the girls who became pregnant were older than 13. Father presence was defined for girls who were born with their biological father at home, and who co-resided with him until age 13 or later. Girls who grew up with a stepfather were also classified as early father absence or late father ab-

sence on the basis of the age of the abandonment by the biological father. Thus, the sample was split in three groups namely ‘early father absence girls’ ($n = 54$), ‘late father absence girls’ ($n = 38$) and ‘father presence girls’ ($n = 97$). A total of 21 participants who were categorized as early father absence girls and 14 participants who were categorized as late father absence girls indicated to have grown up with a stepfather. Finally, a total of 185 participants, 97.88% of the final sample, indicated that they were enrolled in an educational course at the time of the study. As indicated in *Table 1*, an ANOVA showed that the three groups did not differ significantly in age $F(2, 183) = .54, p = .57$. Chi-square analyses showed no significant differences between the three groups in the BMI-index, $F(2, 124) = 1.29, p = .28$, educational level, $\chi^2(4, N = 183) = 1.17, p = .88$, occupational level of the father, $\chi^2(4, N = 143) = 6.50, p = .17$, and occupational level of the mother, $\chi^2(4, N = 150) = 1.39, p = .85$.

Table 1. Descriptive statistics by father status

Timing of onset of father absence			
<i>M (SD)</i>	Early father	Late father	Father
	Absence	Absence	Presence
1. Age	19.41 (3.02)	18.97 (3.20)	19.16 (3.26)
2. BMI	24.62 (5.23)	22.99 (2.87)	23.57 (4.10)
3. Educational level of the participants:			
Low	28.3%	30.6%	30.9%
Middle	49.1%	41.6%	40.4%
High	22.6%	27.8%	28.7%
Total	100%	100%	100%
4. Occupational level of the mother:			
Low	32.4%	26.7%	13.2%
Middle	51.4%	53.3%	67.1%
High	16.2%	20.0%	19.7%
Total	100%	100%	100%
5. Occupational level of the father			
Low	22.9%	21.2%	18.8%
Middle	64.6%	63.6%	60.9%
High	12.5%	15.2%	20.3%
Total	100%	100%	100%

Procedure

This study was approved by the Ethical Committee for Social Sciences at the University of Curacao dr. Moises da Costa Gomez. The participants at this study were recruited in places where young people commonly go to relax after their school day, such as the Brion Plein and fast food restaurants in Willemstad, the capital of Curaçao. We also took into consideration that the partici-

pants should have enough time to answer the questions seriously when they were relaxing. After filling out the questionnaire, participants were offered a biscuit as a sign of gratitude for their cooperation. The questionnaires were offered in both Dutch and Papiamentu. The questionnaire was translated from Dutch in Papiamentu by a professional translator of the University of Curacao. Consequently, the translation was checked by two members of the research team who were fluent in both Dutch and Papiamentu. Papiamentu is the native language of Aruba, Bonaire and Curaçao and is a Creole language in part derived from the African languages with considerable influence of Portuguese and Spanish, as well as some influence of Amerindian, English, French and Dutch. Papiamentu is the most spoken language on Curaçao followed by Dutch, Spanish and English.

RESULTS

Age of first menarche

An ANOVA with the three groups of father presence versus absence as independent variable showed that the mean age of first menarche did not differ among the three groups, $F(2, 136) = .65$, $p = .52$ (early father absence girls, $M = 11.68$, $SD = 1.86$; late father absence girls, $M = 11.45$, $SD = 1.32$; father presence girls, $M = 11.84$, $SD = 1.45$).

Age of first sexual intercourse

An ANOVA showed an overall significant difference between the three groups in the age of first sexual intercourse, $F(2, 111) = 3.48$, $p = .03$ (early father absence girls, $M = 15.38$, $SD = 1.79$; late father absence girls, $M = 16.24$,

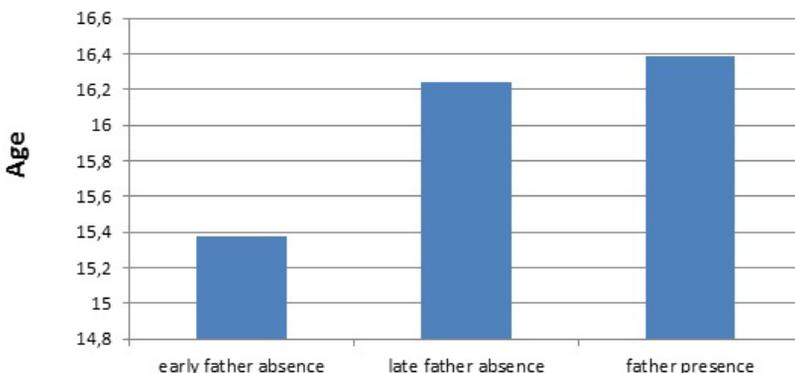


Figure 1. Age of first sexual intercourse

$SD = 1.55$; father presence girls, $M = 16.39$, $SD = 1.98$). However, the post-hoc LSD-test showed that only the difference between ‘early father absence’ girls and ‘father presence’ girls was significant, $p = .01$. As *Figure 1* illustrates, the age of first sexual intercourse was lower among ‘early father absence’ girls than among ‘father presence’ girls. Furthermore the post-hoc LSD-test showed that ‘late father absence’ girls and ‘father presence’ girls differed marginally from each other, $p = .09$.

Number of sexual partners

An ANOVA showed no significant differences in the overall number of sexual partners between the three groups, $F(2, 144) = .38$, $p = .66$ (early father absence girls, $M = 1.21$, $SD = 1.15$; late father absence girls, $M = 1.44$, $SD = 1.33$; father presence girls, $M = 1.39$, $SD = 1.32$).

Number of sexual partners during the past year

We did not find an overall significant difference between the three groups concerning the number of sexual partners during the past year, $F(2, 152) = 2.18$, $p = .12$ (early father absence girls, $M = .89$, $SD = .84$; late father absence girls, $M = 1.13$, $SD = 1.00$; father presence girls, $M = .77$, $SD = .67$). However, the post-hoc LSD-test showed that there was a significant difference in the number of sexual partners during the past year between ‘late father absence’ girls and ‘father presence’ girls, $p = .04$. As illustrated in *Figure 2*, the ‘late father absence’ girls had more sexual partners during the past year than the ‘father presence’ girls. Furthermore the post-hoc LSD-tests showed no significant difference between ‘early father absence’ girls and ‘father presence’ girls, $p = .41$, neither between ‘early father absence’ girls and ‘late father absence’ girls, $p = .21$.

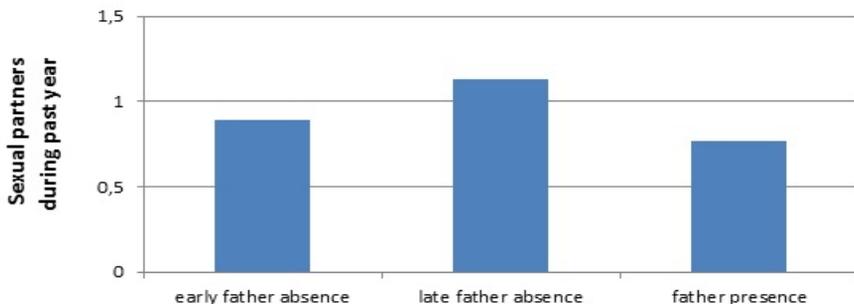


Figure 2. Number of sexual partners during the past year

Desire to have children

An ANOVA showed no overall significant difference between the three groups in the desire to have children, $F(2, 189) = 1.03$, $p = .36$ (early father absence girls, $M = 4.41$, $SD = 1.92$; late father absence girls, $M = 4.95$, $SD = 1.99$; father presence girls, $M = 4.76$, $SD = 1.81$).

Desire to marry

An ANOVA showed an overall significant difference between the groups in the desire to marry, $F(2, 189) = 3.83$, $p = .02$ (early father absence girls, $M = 4.28$, $SD = 1.82$; late father absence girls, $M = 4.34$, $SD = 2.01$; father presence girls, $M = 5.04$, $SD = 1.76$). The post-hoc LSD-tests showed that 'father presence' girls had a significantly stronger desire to marry than the group of the 'early father absence' girls, $p = .02$ and the group of the 'late father absence' girls, $p = .05$ (see *Figure 3*), whereas the difference between 'early father absence' girls and 'late father absence' girls was not significant, $p = .87$.

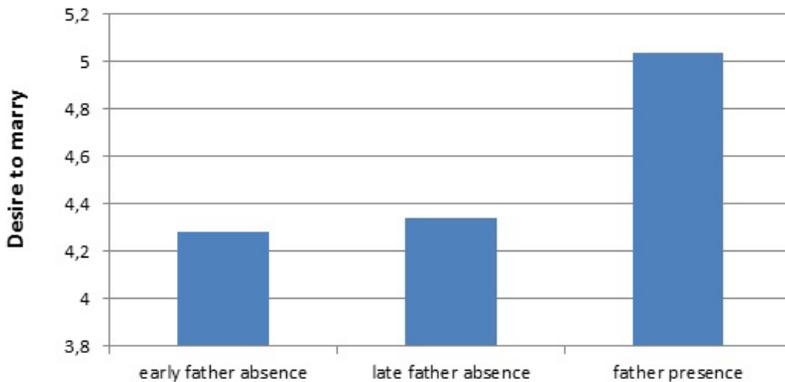


Figure 3. Desire to marry

Desire to have grandchildren

An ANOVA showed an overall significant difference between the three groups in the desire to have grandchildren, $F(2, 188) = 5.84$, $p = .00$ (early father absence girls, $M = 3.70$, $SD = 1.75$; late father absence girls, $M = 4.95$, $SD = 2.01$; father presence girls, $M = 4.53$, $SD = 1.79$). More specifically, the post-hoc LSD-test showed that 'early father absence' girls differed significantly from

‘late father absence’ girls, $p = .00$ and from ‘father presence’ girls, $p = .01$. In other words, both ‘father presence’ girls and ‘late father absence’ girls had a significantly stronger desire to have grandchildren than ‘early father absence’ girls (see also *Figure 4*), whereas the difference between ‘late father absence’ girls and ‘father presence’ girls was not significant, $p = .23$.

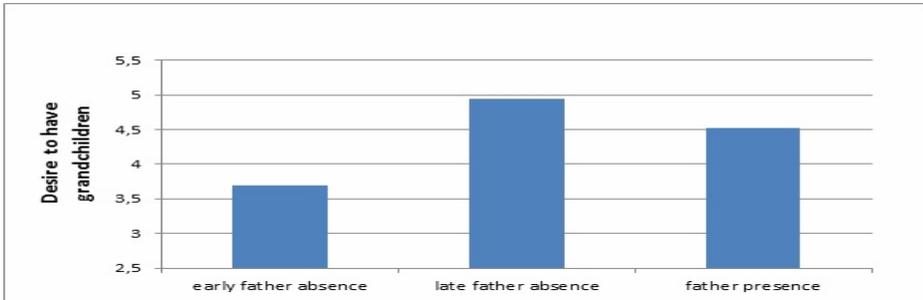


Figure 4. Desire to have grandchildren

Role of the stepfather

Given evidence that exposure to a stepfather may also influence reproductive scheduling (e.g., Ellis & Garber, 2000; Mendle et al., 2006; Mendle et al., 2009), we examined possible differences between father abandoned girls exposed to a stepfather and father abandoned girls not exposed to a stepfather. We executed a series of ANOVA's with these two groups as the independent variable and the various life history traits as dependent variables. These analyses showed that only the age of first sexual intercourse was significantly different between father abandoned girls not exposed to a stepfather and father abandoned girls exposed to a stepfather, $F(1, 58) = 4.51$, $p = .04$ (father abandoned girls without stepfather, $M = 15.29$, $SD = 1.75$; father abandoned girls exposed to a stepfather, $M = 16.25$, $SD = 1.60$). That is, the age of first sexual intercourse was lower among father abandoned girls who were not exposed to a stepfather than among father abandoned girls who were exposed to a stepfather. Our results showed no further significant differences between these two groups regarding the age of first menarche, number of sexual partners, number of sexual partners during the past year, desire to have children, desire to marry, neither desire to have grandchildren, $p > .05$.

Potentially confounding variables

We examined whether potentially confounding variables, including the educational level of the participants, and the occupational level of their parents might be responsible for the observed effects of father absence versus father presence. For each of the seven life history traits separately we conducted three ANOVA's, with father absence versus father presence as factor, and educational level of the participants, occupational level of the father, and occupational level of the mother, respectively as covariates. These analyses demonstrated that all effects of father absence versus father presence stayed virtually the same, $p > .05$. In other words, the educational level of the girls, and occupational level of the parents did not influence our results. Given evidence that childhood obesity may influence the mean age at first menarche (e.g., Al-Awadhi et al, 2013), we also controlled if BMI did influence our result regarding the age of first menarche. Therefore, we entered age of menarche as dependent variable, father absence versus presence as fixed factor and the BMI of the participants as covariate. However, the analysis showed no effect of BMI, $p = .65$, and there still was no effect of father absence versus presence, $p = .43$.

DISCUSSION

The present results demonstrated in a Caribbean sample from Curaçao that growing up without a father may have important consequences for the reproductive strategy of girls. We measured different life history traits and the results were quite different for the various reproductive scheduling measures. In a number of respects, our findings were in line with our expectations based on life history theory. That is, girls who were abandoned by their father before the age of five, initiated sexual intercourse at a significantly younger age than girls who were abandoned by their father between the age of six and thirteen and girls who grew up with their father. These findings are in line with several other studies that have shown that children who were abandoned by their father had their first sexual intercourse at an earlier age than children who grew up with their father (Ellis et al., 2003; Quinlan, 2003; Wight et al., 2006). Our findings thus provide evidence from Curaçao that girls who grew up without a father may follow a fast life history strategy and are therefore more inclined to accelerate their reproductive strategies by starting with sexual intercourse at an earlier age than girls who grew up with a father. An alternative explanation for our findings may be the daughter guarding hypothesis, because according to that hypothesis we would find similar results for father abandoned girls exposed to a stepfather and father present girls, assuming that their fathers or stepfathers are

intensively involved in monitoring the sexual behavior of their daughters (e.g., Perilloux, Fleischman & Buss, 2008, see also Flinn, 1988). Our results indicate indeed that father abandoned girls who were not exposed to a stepfather showed an earlier age of sexual intercourse than father abandoned girls exposed to a stepfather. Thus, it seems that the stepfather may compensate in this respect for the absence of the biological father by monitoring the sexual behavior of their stepdaughters.

We did not find an overall significant effect of father absence or presence on the total number of sexual partners. This finding suggests that it is simply the longer duration of sexual activity that leads to more sexual partners. Of course, this is a quite preliminary finding that would need replication in future research. Furthermore we found evidence that girls who were abandoned by their father between the age of six and thirteen seem to have changed their reproductive behavior in the past year by engaging in significantly more sexual activities than the girls who grew up with their father. Thus, our results suggest that girls who were abandoned by their father between the age of six and thirteen is a special group of which the sexual behavior is notably different than that of the other two groups (see also Alvergne et al., 2008). In future research it would seem important to also assess this shift.

Our findings also showed that there were meaningful differences in the desire to get married between girls who grew up with a father (at whatever age) and girls who were abandoned by their father. That is, girls who grew up with a father had a stronger desire to marry than girls who were abandoned by their father. This finding is in line with several studies that have shown that girls who were abandoned by their father are less optimistic about their marriages being stable and about men being reliable investors (e.g., Draper & Harpending, 1982; Ellis & Essex, 2007; Ellis et al., 2003). A possible explanation may be that girls who were abandoned by their father have not experienced a marriage as a model and therefore have a lower desire to get married than girls who grew up with their father.

Although we did not find any significant differences between girls who grew up with or without a father in their desire to have children, we found, as predicted, significant differences in the desire to have grandchildren. Girls who were abandoned by their father before the age of five had a significantly weaker desire to have grandchildren than girls who were abandoned by their father between the age of six and thirteen and girls who grew up entirely with a father. Although these findings were in line with our expectations, they may seem in contrast with the work of Nettle (2010) that suggests that girls who grew up without a father would consider childbearing at an earlier age by taking into consideration to be in good health until their oldest grandchild is five year of age. However, we still consider our findings in line with life history theory as a

fast life history strategy implies a lack of a long term perspective. That is, those girls who were abandoned by their father before the age of five may not be certain to be around for the birth of grandchildren, because they expect a high mortality in their environment.

In contrast to the effect of growing up without a father on early menarche established in previous research (Bogaert, 2005; Doughty & Rodgers, 2000; Ellis & Garber, 2000; Ellis, Mc-Fadyen-Ketchum, Dodge, Pettit & Bates, 1999; Hoier, 2003), we did not find a difference in the age of the first menarche between girls who grew up without a father and girls who grew up with a father. Nevertheless, this finding is in line with a study conducted in Malaysia, where an effect of father absence on the age of menarche was neither found (Sheppard et al., 2014). Our finding may be attributed to the fact that obesity among young women in Curacao is quite common. As many studies have shown that overweight may accelerate the maturation process, the effect of obesity may have overridden any effect of father absence (e.g., Al-Awadhi et al, 2013). However, we did not find that BMI was related to the age of menarche. Of course, we did not assess the BMI-index during the maturation period, but BMI is known to be quite stable, especially over a low number of years. Based on previous studies (e.g., Ellis & Garber, 2000; Mendle, 2006; Mendle et al., 2009) we assumed that being exposed to a stepfather may also have important consequences for the reproductive strategies of girls, but contrary to these studies we did not find an association between being exposed to a stepfather and an early age of menarche.

The present research has a number of strengths. First, the study looked at several life history variables instead of examining just one life history trait. Second, this study was not limited to poor inner-city women like many studies in the United States on the effects of father absence, but was executed in a unique setting (i.e., the island of Curaçao), with a predominantly Afro-Caribbean population where early reproduction and single parenthood occur frequently. Third, unlike many similar studies, the groups did not differ in educational level and occupational level of the parents, and the effects we found can therefore quite unequivocally be attributed to the role of the father. Despite these strong points, the present research has also a number of limitations. First, we did not examine the quality of paternal investment, while several studies have demonstrated that the quality of the relationship between father and daughter may also have consequences for the reproductive behavior of their daughter (e.g., Belsky et al., 1991; Ellis, 2004). Second, our study focused only on one type of sexual intercourse and we did not assess other forms of adolescent's sexual behavior. Therefore it is necessary that future research also focuses on this aspect. Third, the measures we used to examine the importance of having children, grandchildren and desire for marriage were somewhat limited simply

because these involved a single rating scale relying on the conscious evaluations of the participants.

To conclude, the present study substantiated the notion based on the life history theory that being abandoned by their father may have a number of consequences for the reproductive strategies of girls. We demonstrated again that the timing of father abandonment is crucial and that it is therefore important to make a distinction between girls who were abandoned by their father before the age of five and girls who were abandoned by their father between the age of six and thirteen. It seems that girls who were abandoned by their father before the age of five are more inclined to follow a fast life history strategy compared to late father abandoned girls and father presence girls, while the differences between late father abandoned girls and father presence girls are less obvious. In other words, girls tend to use the cue of their father presence (absence) to make important reproductive scheduling decisions for their lives and this can be considered as a relevant cue to use. However, we do not want to suggest that this is the only cue, nor that it does affect all reproductive scheduling. In general, the present findings are important for several reasons. First, we have shown that many effects of growing up without a father documented in several western societies can also be observed in the Caribbean island of Curaçao. Second, after controlling for possible confounding factors it was shown that the educational level of the participants and the occupational level of their parents were not influencing the effects obtained. Therefore, our findings cannot be attributed to the factors that are often associated with father absence, including a lack of financial resources and a low educational level, and may indeed be attributed to growing up without a father. Third, our findings may contribute not only to life history theory, but also to policies emphasizing the important role of fathers in recognizing their children and in spending quality time with them.

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REFERENCES

- Allen, R. (2009). *Chronologische schets slavernij en gezinsleven: Gezinnen en gezinsvorming op de Nederlandse Antillen en Aruba in historisch perspectief*. Retrieved from <http://www.rijksoverheid.nl/bestanden/documenten-en-publicaties/rapporten/2010/04/20/onderzoek-vrouwen-van-de-nederlandse-antillen-en-aruba/vrouwen-van-de-na-enaruba.pdf>.

- Alvergne, A., Fuarie, C., & Raymond, M. (2008). Developmental plasticity of human reproductive development: Effects of early family environment in modern day France. *Physiology and Behavior, 95*, 625–632.
- Al-Awadhi, N., Al-Kandari, N., Al-Hasan, T., AlMurjan, D., Ali, S., & Al-Taiar, A. (2013). *Age at menarche and its relationship to body mass index among adolescent girls in Kuwait*. Retrieved from <http://www.biomedcentral.com/1471-2458/13/29>.
- Barrow, C. (1996). *Family in the Caribbean: Themes and perspectives*. Kingston, Jamaica: Ian Randle.
- Beckles, H. (1989). *Natural rebels: A social history of enslaved black woman in Barbados*. New Brunswick N.J.: Rutgers University Press.
- Belsky, J., Steinberg, L., & Draper, P. (1991). Childhood experience, interpersonal development, and reproductive strategy: An evolutionary theory of socialization. *Child Development, 62*, 647–670.
- Berezkei, T., & Csanaky, A. (1996). Evolutionary pathways of child development: Lifestyles of adolescents and adults from father-absent families. *Human Nature, 7*, 257–280.
- Bjorklund, D. F., & Shackelford, T. K. (1999). Differences in parental investment contribute to important differences between men and women. *Current Directions in Psychological Science, 8*, 86–89.
- Blain, J., & Barkow, J. H. (1988). Father involvement, reproductive strategies, and the sensitive period. In: K. B. MacDonald (Ed.), *Sociobiological perspectives on human development*. New York: Springer-Verlag.
- Bogaert, A. F. (2005). Age at puberty and father absence in a national probability sample. *Journal of Adolescence, 28*, 541–546.
- Bogaert, A. F. (2008). Menarche and father absence in a national probability sample. *Journal of Biosocial Science, 40*, 623–636.
- Central Bureau of Statistics the Netherlands. (2012). Population. Retrieved from <http://www.cbs.nl/nl-NL/menu/themas/bevolking/publicaties/artikelen/archief/2012/2012-3663-wm.htm>.
- Central Bureau of Statistics Curacao. (2011). Poverty. Retrieved from http://www.cbs.cw/index.php?option=com_jumi&fileid=31&t=14&Itemid=75.
- Chisholm, J. S. (1993). Death, hope, and sex: Life history theory and the development of reproductive strategies. *Current Anthropology, 34*, 1–24.
- Doughty, D., & Rodgers, J. L. (2000). *Genetic influences on human fertility and sexuality. Theoretical and empirical from the biological and behavioral sciences*. New York: Springer US.
- Draper, P., & Harpending, H. (1982). Father absence and reproductive strategy: An evolutionary perspective. *Journal of Anthropological Research, 38*, 255–273.
- Ellis, B., J. (2004). Timing of pubertal maturation in girls: An integrated life history approach. *Psychological Bulletin, 130*, 920–958.
- Ellis, B., & Essex, M. J. (2007). Family environments, adrenarche, and sexual maturation: A longitudinal test of a life history model. *Child Development, 78*, 1799–1817.
- Ellis, B. J., & Garber, J. (2000). Psychosocial antecedents of variation in girls' pubertal timing: Maternal depression, stepfather presence, and marital and family stress. *Child Development, 71*, 485–501.
- Ellis, B. J., Bates, J. E., Dodge, K. A., Fergusson, D. M., Horwood, L. J., Pettit, G. S., & Woodward, L. (2003). Does father absence place daughter at special risk for early sexual activity and teenage pregnancy? *Child Development, 74*, 801–821.
- Ellis, B. J., McFadyen-Ketchum, S., Dodge, K. A., Pettit, G. S., & Bates, J. E. (1999). Quality of early family relationships and individual differences in the timing of pubertal maturation in girls: A longitudinal test of an evolutionary model. *Journal of Personality and Social Psychology, 77*, 387–401.

- Figueredo, A. J., Vásquez, G., Brumbach, B. H., Schneider, S. M. R., Sefcek, J. A., Tal, I. R., Hill, D., Wenner, C. J., & Jacobs, W. J. (2006). Consilience and life history theory: From genes to brains to reproductive strategy. *Development Review*, *26*, 243–275.
- Figueredo, A. J., Vásquez, G., Brumbach, B. H., Sefcek, J. A., Kirsner, B. R., & Jacobs, W. J. (2005). The K-factor: Individual differences in life history strategy. *Personality and Individual Differences*, *39*, 1349–1360.
- Flinn, M. (1988). Parent-offspring interactions in a Caribbean village: Daughter guarding. In: L. Betzig, M. Borgerhoff Mulder, & P. Turke (Eds.), *Human reproductive behavior: A Darwinian perspective* (pp. 189–200). New York: Cambridge.
- Hamilton, B. E., & Ventura, S. J. (2012). *Birth rates for U.S. teenagers reach historic lows for all ages and ethnic groups*. Retrieved from <http://www.collaborationcouncil.org/BirthRate.pdf>.
- Hetherington, E. M. (1972). Effects of father absence on personality development in adolescent daughters. *Developmental Psychology*, *7*, 313–326.
- Hoier, S. (2003). Father absence and age at menarche: A test of four evolutionary models. *Human Nature*, *14*, 209–233.
- Kaplan, H. S., & Gangestad, S. W. (2005). Life history theory and evolutionary psychology. In: D. M. Buss (Ed.), *The handbook of evolutionary psychology*. New York: Wiley.
- Marcha, V., & Verweel, P. (2005). *De Curaçaose man*. Amsterdam: SWP.
- Mendle, J., Harden, K. P., Turkheimer, E., Van Hulle, C. A., D’Onofrio, B. M., Brooks-Gunn, J., Rodgers, J. L., Emery, R. E., & Lahey, B. B. (2009). Association between father absence and age of sexual intercourse. *Child Development*, *80*, 1463–1480.
- Mendle, J., Turkheimer, E., D’Onofrio, B. M., Lynch, S. K., Emery, R. E., Slutske, W. S., & Martin, N. G. (2006). Family structure and age at menarche: A children-of-twins approach. *Developmental Psychology*, *42*, 533–542.
- Ministerie van Binnenlandse Zaken en Koninkrijksrelaties (Den Haag) [Ministerie of Internal Matters and Kingdom relations]. (2010). *Aan de slag met sterke vrouwen in het koninkrijk: onderzoek naar beleid en praktijk*. University of the Netherlands Antilles.
- Nettle, D. (2010). Dying young and living fast: Variation in life history across English neighbourhoods. *Behavioral Ecology*, *21*, 387–395.
- Nettle, D., Coall, D. A., & Dickins, T. E. (2010). Birth weight and paternal involvement predict early reproduction in British women: Evidence from the National Child Development Study. *American Journal of Human Biology*, *22*, 172–179.
- Perilloux, C., Fleischman, D. S., & Buss, D. M. (2008). The Daughter-Guarding Hypothesis: Parental influence on, and educational reactions to, offspring’s mating behavior. *Evolutionary Psychology*, *6*, 217–233.
- Pesonen, A. K., Räikkönen, K., Heinonen, K., Kajantie, E., Forsén, T., & Eriksson, J. G. (2008). Reproductive traits following a parent-child separation trauma during childhood: A natural experiment during World War II. *American Journal of Human Biology*, *20*, 345–351.
- Quinlan, R. J. (2003). Father absence, parental care & female reproductive development. *Evolution and Human Behavior*, *24*, 376–390.
- Quinlan, R. J., & Flinn, M. V. (2003). Intergenerational transmission of conjugal stability in a Caribbean community. *Journal of Comparative Family Studies*, *34*, 569–583.
- Samenwerkende Fondsen Aruba en Nederlandse Antillen [Cooperating funds, Aruba and Netherlands Antilles]. (2010). *Jong en moeder: een inventariserend onderzoek naar de situatie van tienermoeders op de Nederlandse Antillen*. Federatie Antilliaanse Jeugdzorg in collaboration with SIFMA.
- Sear, R. & Coall, D. (2011). How much does family matter? Cooperative breeding and the demographic transition. *Population and Development Review*, *37*, 81–112.
- Sear, R. & Mace, R. (2008). Who keeps children alive? A review of the effects of kin on child survival. *Evolution and Human Behavior*, *29*, 1–18.

- Sheppard, P., Snopkowski, K., & Sear, R. (2014). Father absence and reproduction-related outcomes in Malaysia, a transitional fertility population. *Human Nature, 25*, 213–234.
- Tither, J. M., & Ellis, B. J. (2008). Impact of fathers on daughters' age at menarche: A genetically and environmentally controlled sibling study. *Developmental Psychology, 44*, 1409–1420.
- Wight, D., Williamson, L., & Henderson, M. (2006). Parental influences on young people's sexual behavior. A longitudinal analysis. *Journal of Adolescence, 29*, 473–494.
- Winking, J., Gurven, M., Kaplan, H., & Stieglitz, J. (2009). The goals of direct paternal care among a South Amerindian population. *American Journal of Physical Anthropology, 13*, 295–304.