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Impact of Paternal Investment Among Women in Sandzak*

An evolutionary model of facultative reproductive strategies explains much of women's life history strategy in terms of the absence or presence of their fathers and parental investment they made. This paper assesses direct paternal investment and behavioral outcomes in 164 women in the Sandzak region, using human behavioral ecology approach, with a special emphasis on female reproductive strategy.

Key words:

paternal investment, women, Sandzak, human behavioral ecology

Introduction

This paper assesses direct paternal investment and behavioral outcomes in 164 women, using human behavioral ecology approach, with a special emphasis on female reproductive strategy. This study incorporates genetic influences, as well as simultaneously assessing paternal effects, in order to more firmly establish a causal relation between paternal investment and the outcomes for women. The study will also asses the effects of paternal investment across cultures.

Human behavioral ecology is the application of evolutionary biology models to the study of behavioral variations in humans. The approach is sometimes referred to as evolutionary ecology, while evolutionary approaches to the study of human behavior fall under a variety of names such as sociobiology, biosociology, biocultural science, human ethology and evolutionary psychology (Cronk 1991). Human behavioral ecology attempts to explain behavioral diversity as a conse-

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quence of environmentally dependent responses made by individuals in their attempts to maximize their inclusive fitness. The specification of environmental factors that constrain an individual's attempt to maximize fitness is crucial to this goal. As a consequence, individuals develop behavioral strategies designed to solve adaptive goals.

In general, the amount of investment an offspring receives from parents depends on relatedness between parent and offspring, the effect of investment on the offspring and the effect of investment on parent's future reproduction and survival. These hypotheses have been positively evaluated using cross-cultural and ethnographic case studies (ref). Life history theory organizes research into the evolutionary forces shaping the timing of life events, with a particular focus on age-schedules of fertility and mortality (Kaplan, Hill, Hurtado & Lancaster 2001:293). According to life history theory, each species or subspecies has developed a characteristic life history adapted to the particular ecological problems met by its ancestors (Wilson, 1975). Life history deals with important developmental events such as age at first and last reproduction, growth rates, birth intervals and senescence. Furthermore, life history strategies reflect two basic decisions: to reproduce now or later, and the amount of resources to invest in each offspring. Choosing one over the other depends on the costs and benefits of alternatives. Humans have evolved psychological mechanisms that use father absence during childhood as a cue for developing life history strategies (Draper and Harpending 1982, 1988).

Even among the few mammalian species in which paternal investment is common, human paternal care is unique in many ways (Geary 2000). Paternal investment usually includes provisioning and protecting young. Across many different species, a combination of improved offspring survival rate, quality, paternity certainty, and alternative mating strategies is the main social and ecological correlate of the evolution and proximate expression of paternal investment (Clutton-Brock 1991, Thornhill 1976, Williams 1966, Dunbar 1995). Human parental investment is complex, involving different types of resources: there is a trade-off between investment in direct childcare and indirect investment (Quinlan 2003). Some parents emphasize investment in education, status symbols at a cost to direct care. High levels of paternal investment in humans – income, play time, quality time – are correlated with better child outcomes such as social and academic skills.

An evolutionary model of facultative reproductive strategies explains much of women's life history strategy in terms of the absence or presence of their fathers and parental investment they made (Belsky, Steinberg and Draper 1991). This model proposes that the absence/presence of a woman's father during her childhood can provide a predictive cue for the amount of paternal investment that a woman can expect from her own partner later on. Hence, women have developed facultative response to such cue that they mature earlier if their father is absent during the childhood than if he is present (Kanazawa 2001). There are many studies that empirically support this model (Ellis, McFadyen-Ketchum, Dodge, Pettit and bates 1999, Surbey 1990, Wierson, Long and Forehand 1993), but theories put forward to explain why women should respond to father absence in this way are not being apparently rationalized (Kanazawa 2001, Geary 2000). Father absence could serve as

a cue for canalization of reproductive strategies (Draper and Harpending 2000, Ellis 2000), or may change patterns of parental care influencing development (Barber 2000, Ellis et al. 2003). In addition, father absence may affect development through shared genes, modeling of mothers' sexual behavior and exposure to unrelated males (Comings, Muheleman, Johnson and macMurray 2002, Amato 1999, Ellis 2002). There are unique relations between paternal investment and some child outcomes. In modern Western cultures, father absence is a risk factor for many undesirable developmental outcomes, such as early sexual activity, teen and adolescence pregnancy, unstable marriage patterns later in life (Quinlan 2003, Bumpass, Martin and sweet 1991, Ellis et al. 2003, Glenn and Kramer 1987, Hogan and Kitagawa 1985). All of these findings are consistent with the view that the lack of parental investment is linked with decrements in children's later social and cultural success (Geary 2000:64). Vandamme and Schwartz (1985) found that children from father-present homes tend to score higher on standardized tests. However, these findings between paternal investment and child outcomes are confounded by genetic and child evocative effects (Geary 2000, Parke and Buriel 1998). Kaplan and his colleagues (Kaplan et al. 1998) found that intelligent and motivated children are more likely to receive (education related) paternal investment than other children are, but even these might be related to shared genes (intelligence).

This study examines direct paternal investment (the amount of time and effort the fathers have spent with their daughters) and its associations with women's reproductive strategies in Sandzak, a southern province of Serbia. As such, this study extends the relation between "father absence", and genetic effect (intelligence) and the evocative effects dependent variables only rarely studied (Reiss 1995).

Method

The fieldwork was conducted in three settlements in the Sandzak area, in close proximity of the largest town of Novi Pazar in 2006-2007. The names and locations of the settlement are undisclosed. This is an area with the largest concentration of Serbian Muslim population, known as Bosniaks. The other populations, which make national or ethnic minorities, consist of Orthodox Serbs and Montenegrins, and smaller groups of Turks and Albanians. The populations of Sandzak are largely gender stratified, characterized by patrilineal descent, patrilocal residence, and hierarchical relations in which the patriarch or his relatives have considerable autonomy over family members, regardless of the religious affiliation (Mušović 1985, Gavrilović 1985, Rudić and Stepić 1993). Strong control is exerted on women in almost every sphere of their lives: freedom of movement, decisions in family affairs, economic independence, and their relation with their husbands. Sandzak has been one of the poorest areas of Serbia, but in the nineties it experienced a startling economic boom, thanks to private activity and small businesses mainly concentrated in the textile and footwear sectors. However, the beginning of transition period has produced a sudden collapse of this economic expansion resulting in mass unemployment. Nevertheless, many local people engage in a not-so-secret black

economy, smuggling goods to and from Serbia to Kosovo and taking advantage of differences in prices and duties. According to the National Employment Agency, about one third of the local, healthy working-age adults are jobless, where young women make more than 40%.

I report results from self-questioner and cognitive achievement test (Raven's Standard Progressive Matrices –SPM-, the most widely used of all culture-reduced tests) administered to 164 women. In this present sample, raw scores obtained on SPM were used in statistical analyses. Several variables measured reproductive strategy: age at first and last reproduction, fertility (number of children ever born, miscarriages, mortality of children), birth spacing, patterns of marriages, husband's paternal investment, sexual intercourse frequencies and birth control. Other variables measured age, religion, socioeconomic background, employment, education, patterns of parental marriages, paternal investment (time and effort invested, measured numerically) and cognitive achievement.

Descriptive Statistics

ethnicity	gender	age	N	minimum	maximum	mean	Std. deviation
Bosniak	F		97	17	65	35.51	10.41
		Years of schooling	94	2.00	16.00	10.5319	3.2018
		Age at 1st reproduction	97	16	34	21.08	3.83
		No miscarriages	97	0	5	.40	0.91
		Intercourse frequency per year	97	.00	364.00	163.6804	82.6972
		Women autonomy	97	.00	7.00	2.6907	1.6225
		Valid (listwise)	94				
	M	age	138	22	60	36.12	8.72
		Years of schooling	135	2.00	16.00	10.7704	3.3855
		Age at 1st reproduction	138	17	39	23.50	3.63
		No miscarriages	138	0	3	0.19	.48
		Intercourse frequency per year	138	.00	364.00	150.0725	79.7223
		Women autonomy	138	.00	7.00	2.6377	1.6387

		Valid (list-wise)	135				
Serbs	F	age	67	22	61	38.51	10.31
		Years of schooling	67	8.00	16.00	12.4776	2.7434
		Age at 1st reproduction	67	19	39	24.69	4.96
		No miscar-riages	67	0	1	7.46	0.26
		Intercourse frequency per year	67	2.00	208.00	51.0746	44.9324
		Women autonomy	67	.00	7.00	6.2836	1.3462
		Valid (list-wise)	67				
	M	age	61	22	60	41.18	10.02
		Years of schooling	61	8.00	16.00	12.3934	2.6031
		Age at 1st reproduction	61	18	38	26.74	4.00
		No miscar-riages	61	0	1	4.92	.22
		Intercourse frequency per year	61	2.00	156.00	47.3279	36.8541
		Women autonomy	61	2.00	7.00	5.6393	1.1110
		Valid (list-wise)	61				

Results

All women in the sample were born into a two-parent family. 89% stayed with the two parents, while 11% of women's parents divorce/separated.

39% of the women experienced teenage and adolescent pregnancies (between the ages 15 and 20 years). For the sake of comparisons, approximately 10% of girls in the United States become pregnant each year, at the same age span, and this is considered to be the highest rate of teenage pregnancy among Western industrialized countries (Ellis et al. 2003:801). The high rate of teenage and adolescence pregnancies in the Sandzak sample could be explained by cultural (religion) and traditional influences, however, when religion is controlled for, the rate….In addition, Christian fathers made more paternal investment then Muslim fathers did.

Husband investment-father investment

				Father Investment			Total
GENDER				Very little investment (in time, resources, care)	Relative investment (in time, resources, care)	Great investment (in time, resources, care)	
F	ETHNICIT	BOSNIAK	Count	53	38	6	97
			% within ETHNICIT	54.6%	39.2%	6.2%	100.0%
		SER	Count	3	49	15	67
			% within ETHNICIT	4.5%	73.1%	22.4%	100.0%
	Total		Count	56	87	21	164
			% within ETHNICIT	34.1%	53.0%	12.8%	100.0%
M	ETHNICIT	BOSNIAK	Count	32	82	24	138
			% within ETHNICIT	23.2%	59.4%	17.4%	100.0%
		SER	Count	6	49	6	61
			% within ETHNICIT	9.8%	80.3%	9.8%	100.0%
	Total		Count	38	131	30	199
			% within ETHNICIT	19.1%	65.8%	15.1%	100.0%

Chi-Square Tests				
GENDER		Value	df	Asymp. Sig. (2-sided)
F	Pearson Chi-Square	45.940(a)	2	.000
	Continuity Correction			

	Likelihood Ratio	54.096	2	.000
	Linear-by-Linear Association			
	N of Valid Cases	164		
M	Pearson Chi-Square	8.360(b)	2	.015
	Continuity Correction			
	Likelihood Ratio	8.913	2	.012
	Linear-by-Linear Association			
	N of Valid Cases	199		
a 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.58.				
b 0 cells (.0%) have expected count less than 5. The minimum expected count is 9.20.				

Symmetric Measures						
GENDER			Value	Asymp. Std. Error(a)	Approx. T(b)	Approx. Sig.
F	Nominal by Nominal	Phi	.529			.000
		Cramer's V	.529			.000
	N of Valid Cases		164			
M	Nominal by Nominal	Phi	.205			.015
		Cramer's V	.205			.015
	N of Valid Cases		199			
a Not assuming the null hypothesis.						
b Using the asymptotic standard error assuming the null hypothesis.						

After controlling for all the variables, women whose fathers were absent or non-invested, have on average, an earlier age at first reproduction, more frequent miscarriages and child mortality, higher fertility, less education, more marriages (partners), more arranged marriages, and turbulent and conflict marital relationship (including the risk of partner violence) with the current partner, than women who reported substantial paternal investment. Cognitive achievement, measured in raw

test scores, does not influence paternal investment in this sample. Children evocative effect and genetic influence are not significant in paternal investment.

Discussion

In terms of mammalian reproduction, mothers throughout the world show a much greater engagement in their children than fathers do. This is due to biology of mammalian reproduction, resulting in higher levels of maternal than paternal care. Under these circumstances, the cross-species pattern is for the reproductive strategy of females to be centered on parental effort and the reproductive strategy of males to be focused on mating effort (Trivers 1972). From this perspective, the feature of human parental effort is that many fathers show some degree of care and indirect investment in their children. The degree of care varies across cultures.

It is possible that cultural (religious) forces influence reproductive behavior and timing. Human cultures tend to be father absent or father present, reflecting differences in the relative emphasis of men on mating and parenting (Draper and Harpending 1988). The so-called "father-absent" societies are characterized by aloof marital relationships, a polygynous marriage, local raiding and warfare and little or inconsistent direct paternal investment in children (Draper and Harpending 1988, Hewlett 1988, Whiting and Whiting 1975). In pastoral and agricultural societies many men are able to accumulate resources needed to support more than one wife; in cultures without the prohibition of having only one wife men compete with each other for the establishment, social dominance and control of resources that women need to raise children (Borgerhoff Mulder 1990). Social and economic dominance influence the number of women a man can have and the number of surviving children (Irons 1993). The investment of wealth in mating effort is a successful reproductive strategy for men in these cultures. In contrast, father-present societies are commonly found in unstable ecologies or large, stratified societies, and these are characterized by ecologically or socially imposed monogamy (Draper and Harpending 1988). High levels of paternal investment is necessary for children survival while ecological conditions limit men's ability to accumulate wealth, hence limiting mating opportunities.

In many industrial societies, monogamy is socially imposed, and the result is a relative shift in men's reproductive efforts, from mating to parenting (MacDonald 1995). Legal and social prohibitions against polygynous marriages are combined with women's preference for high-investment monogamous marriages, limiting men's mating opportunity and hence reducing the opportunity cost of paternal investment. On the other hand, though direct paternal investment in children tends to be lower in polygynous cultures, under some conditions high status men are able to invest more material resources if not their actual time than lower status and monogamously married men. Nevertheless, in cultures that allow polygyny, even monogamous men often divert social and material resources from their families to their mating efforts, in their attempts to attract and obtain more wives (Hames 1992).

Traditionally, Islam in Sandzak has tolerated polygyny and encouraged large families and numerous children. Although illegal since 1946, polygyny is encouraged by certain religious circles in Sandzak, and there is a current increase in number. For example, in spite that Serbian marriage law recognizes only one wife, that did not stop religious leader (mufti of Novi Pazar) Muharem Zukorlić from taking a second wife (Bakračević 2007). When social or ecological conditions do not impose monogamy, many men focus more on mating than on parenting. The available human data on polygyny and reproductive success tell that polygyny benefits the male: men gained in fitness from increasing degrees of polygyny (Daly and Wilson 1983). The care that females give becomes a resource for which males compete: the male who manage to inseminate a female also wins for his descendants a share of the female's parental investment.

Conclusion

This study posits a direct effect of quality of early paternal investment (father presence vs. absence, quality of paternal care giving, father-mother relationship) on women reproductive strategies and important behavioral outcomes. The analysis examined the unique effects of father investment on a variety of psychosocial and educational outcomes, after controlling for effects of familial and ecological stressors. The child evocative effect (more intelligent individuals receive more paternal care) was found insignificant. These results are consistent with life history theory. In addition, despite numerous studies on father absence, very few studies have examined the direct relation between paternal investment and behavioral outcomes for women. The current research suggests that, in relation to women's reproductive strategy, paternal investment is important in its own right. This does not imply that other correlates are unimportant, but rather that reproductive behavior and strategies may be sensitive to direct paternal care. Variation in parental care may be the causal link between types of environment and risks, and human life history (Wilson and Daly 1997).

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Јелена Чворовић

Утицај очинског улагања у кћерке: случај жена у Санџаку

Кључне речи:

родитељско улагање,
Санџак, екологија понашања

Еволуциони модел факултативних репродуктивних стратегија објашњава велики део животне историје жена, у зависности од присуства/одсуства оца и родитељског улагања. У овом раду је представљено истраживање очинског улагања и његових последица на понашање и животну историју 164 жене у регији Санџака. Као основни приступ, у истраживању се користи екологија понашања, са нарочитим освртом на женске репродуктивне стратегије. Такође, у анализу су укључени и потенцијални генетски ефекти. Екологија понашања је апликација модела еволуционе биологије у истраживању и објашњавању људских друштава. Овај приступ покушава да објасни различитости у понашању, као последицу одговора на зависност од услова средине, у напору индивидуа да максимизирају инклузивни фитнес. Спецификација фактора срединског и друштвеног окружења који ограничавају појединце да максимизирају фитнес представља можда најзначајнији чинилац. За последицу, имамо да појединци развијају стратегије понашања, дизајниране тако да реше адаптивне проблеме. Анализа је показала, после контролисања свих варијабли, да жене чији је отац био одсутан или чије је улагање било минимално имају, у просеку, ранију репродукцију, чешће побачаје и већу смртност деце, већи фертилитет, мање образовања, више бракова и партнера, више уговорених бракова, као и проблематичне и конфликтне брачне односе (укључујући и ризик од насиља у кући), у поређењу са женама код којих очинско улагање било сразмерно веће и континуирано. Когнитиво достигнуће, измерено у виду резултата теста, не утиче на родитељско улагање у овом узорку, а генетски и евокативни утицај деце нису статистички значајни. Ово истраживање сугерише да је родитељско улагање важно, само по себи, у односу на женске репродуктивне стратегије. Наравно, овакав закључак не искључује и друге факторе који могу бити једнако важни. Варијације у родитељском улагању могу бити каузална веза између врсте окружења и ризика и људских животних историја.