

Why Father Absence May Precipitate Early Menarche

The role of polygyny



Satoshi Kanazawa
Department of Sociology at
Indiana University of Pennsylvania
Indiana, PA

Received 6 February 2001, accepted 7 May 2001



What is polygyny?

- Not to be confused with polygamy, which is the practice of having two or more spouses at one time.
- Also not to be confused with polyester, which is an non-breathable fabric which should have stayed in the 70's.
- The practice of having many women for one man.
- Simultaneous vs serial polygyny.



Theory

- An evolutionary model of conditional reproductive strategies argues that girls whose fathers are absent or make little parental investment experience early puberty.



Support

- In a strictly monogamous society, all adult males are mated with adult females, so there is no advantage for a 12 year old girl to go through early puberty.
- Polygamy produces a shortage of sexually mature females, thus there is an advantage to maturing early, which is being able to get married younger.



More support

- Significant correlation between degree of polygyny and the mean age difference between grooms and brides across all societies.
- Mean age difference is 3.0 in largely monogamous societies and 4.5 in largely polygynous societies.
- $P < .001$, $t = 4.18$



Hypothesis

- If the theory is true (father absence is related to menarche) then there will be a relationship between the data sets.



Theoretical construct

- Polygyny
- How much parental investment (time and effort) is made by the fathers.



Operational Definition

- Data from *Encyclopedia of World Cultures* (Levinson, 1991-1995) for level of polygyny.
- Annual rate of divorce comes from published sources such as *The Economist*, 1990, and United Nations, 1992).



Theoretical Construct II

- Mean age of menarche



Operational definition II

- Mean age of menarche is taken from Eveleth and Tanner's comprehensive review of human growth.



Design

- Quasi-experimental
- Correlation Analysis



Subjects

- Societies reviewed in *Encyclopedia of World Cultures* (Levinson, 1991-1995) to determine level of polygyny.
- Annual divorce rate taken from two published sources, *The Economist* and United Nations.
- Subjects used to determine the mean age of menarche in Eveleth and Tanner's (1990) comprehensive review of human growth.



Independent Variable

- Polygyny
- Qualitative nominal
- Measure varies continuously from strict monogamy (0) to strict polygyny (3).



Independent variable

- Divorce rate
- Quantitative ratio
- Annual rate of divorce per 1000 inhabitants



Dependent variable

- Mean age of menarche
- Quantitative ratio
- Measure is taken from studies on the mean age of menarche conducted throughout the world



Variables controlled for

- Year- adjusted for cohort effect and trend toward earlier puberty.
- Race- dummy variables entered for black and Asian samples.
- Economic welfare- measured GDP per capita.
- Nutritional conditions- percentage of literate women in a society.



Results

- Main effect I: OLS regression analysis
- Two tailed test
- Degree of simultaneous polygyny statistically significant ($P < .10$) negative effect on mean age of menarche.



Discussion

- Did the operational definitions correspond well to the theoretical constructs?
- I would have to go back to the original publications and determine some way to measure their validity and reliability.



Discussion

- If the results were significant, did they have a big effect?
- Because this was a correlation I don't think effect size is relevant.



Discussion

- What are the potential confounds?
- Menarche in relation to biological mother- age at which mother reached menarche is a good indicator of when daughter will begin.
- Cross cultural study- difficult to control across cultures for nutrition, genetics, hormone levels and overall health.

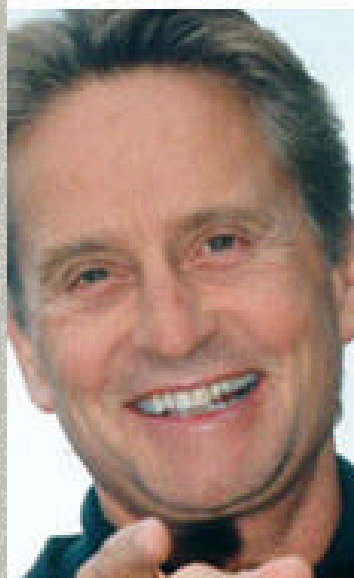


More potential confounds

- Uncertainty of paternity and/or stepfathers- how would this effect paternity?
- Divorce does not imply lowered investment, many fathers are granted custody of their daughters.
- Intergenerational blended families, remarried widows.



What about these situations?



- Michael Douglas has grown children from a prior marriage.....
- And also has very young children with Catherine Zeta Jones.
- As a younger father he didn't have as much time as he does now with an established career.



What about this?



- Melanie Griffith has a teenage daughter with Don Johnson...
- And also has a five year old with Antonio Banderas.
- Will having a stepfather influence the menarche of her older daughter but not effect her younger daughter?



Do you agree with the authors?

- Because there are such a large number of potential confounds, I find it difficult to support the author's theory. I think the study was done on much too large of a scale and with too many uncontrollable confounds.



How would you have done the study differently?

- I would have used an actual sample rather than entire populations, or theoretical numbers.