

The Relationship between Perceptions of Mortality and Fertility Preferences from an Evolutionary Standpoint: Evidence from a Large Scale Internet Based Psychological Experiment involving Students at the London School of Economics

Extended abstract

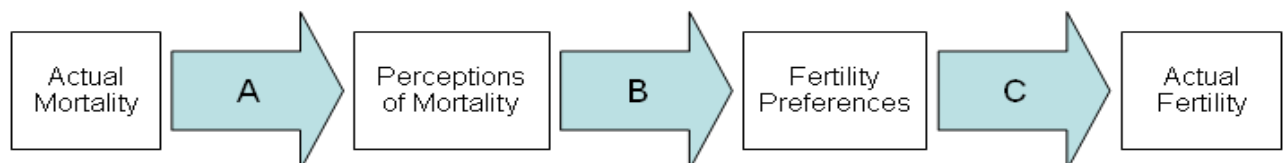
Background Theory

Classic demographic transition theory highlights the association between fertility and mortality rates, principally arguing that declines in mortality are followed by declines in fertility. Due to the temporal order of the changes an implicit causal argument was developed, whereby fertility decline was seen as an underlying 'demographic response' to changes in mortality (e.g. Davis 1963). The research presented here attempts to revisit this linkage between fertility and mortality, but at the individual level and within an evolutionary psychology context.

Except for suicide death cannot readily be described as a 'choice'. Fertility on the other hand is much more the result of choice of individuals. As set out by Cleland and Wilson there is an 'almost universal recognition of the link between coitus and procreation' (Cleland and Wilson 1987: p13) and therefore even within populations without contraceptives abstinence represents a choice against fertility, though of course with the high cost of non-sexual gratification. The extent to which fertility is now a choice is even stronger in populations with high education levels and contraceptive prevalence where sexual activity can be undertaken with a very minimal risk of pregnancy. Actual fertility in low fertility populations predominately occurs as the result of a net demand for children. Of course the translation of fertility preferences / intentions into actual final family size is far from straightforward (Berrington 2004). Nevertheless an understanding of fertility decision making is clearly important for understanding trends in fertility themselves, with some authors attributing as much as 90% of the variance in fertility rates between countries to desired fertility (Pritchett 1994).

This research is not concerned with the effect of actual mortality levels, but with psychological perceptions of mortality and how these feed into fertility decision making, either at the conscious or subconscious level. This is part B of the pathway given in Figure 1 below. Some research, such as that by Rodgers et al into the Oklahoma city bombing, has suggested that fertility does respond to events which cause a sudden increase in mortality, (Rodgers, Craig et al. 2005) but there appears to be limited research on the direct influence of mortality perceptions on fertility preferences per se.

Figure 1: Causal psychological process linking mortality to fertility



Evolutionary theory would predict that individuals in high mortality environments have preferences for higher fertility, and ultimately produce more children, than those in low mortality environments. A key element of human behaviour is its flexible adaptability to varying environmental conditions (Laland and Brown 2002). For our species, as with all others, energetic trade-offs exist between somatic investment (i.e. investment in the individual) and investment in reproduction. For humans as with other iteroparous species, trade-offs exist between investment in current and future offspring; and between quantity and quality of offspring. Generally speaking, in relatively high

mortality environments genetic fitness maximising strategies would require investing energy in offspring relatively early in an individual's life history to mitigate against the risk of death occurring before successful reproduction and nurturing. Similarly it would be adaptive to divide investment among a greater number of lower quality offspring to mitigate against the risk of those offspring dying before they can successfully reproduce. Conversely, in a more benign environment it would be adaptive to limit the number of offspring but for the parents to invest heavily in them to give them an advantage when competing against the next generation for successful reproduction. This study then tests the hypothesis that mortality priming will increase desired fertility.

Methodology

Data were collected via an internet based experiment which surveyed students at the London School of Economics. This population was chosen to control for the potentially confounding factors of socio-economic status and education. It used a series of 11 closed questions on death and dying to act to operationalise the mortality priming treatment. The treatment group was given a questionnaire which firstly asked a set of questions that primed participants to consider death and mortality. The second section collected information on fertility preferences, and also attitudes towards the costs and benefits of children. For the control group the sections were reversed. Two key measures of fertility preferences were used, one looking at desired family size and the other the cost/ benefits of children. 872 individuals participated in the experiment and basic descriptive statistics of the participatory population are given below.

		TREATMENT	CONTROL	Approximate LSE wide
Total number of respondents		428 (49%)	444 (51%)	
Sex	Male	166 (39%)	169 (38%)	4400 (49%)
	Female	261(61%)	271 (61%)	4600 (51%)
	Missing / prefer not to say	1 (0%)	4 (1%)	
Age	Under 25	276 (65%)	266 (60%)	
	25 or over	151 (35%)	174 (40%)	
	Missing / prefer not to say	1 (0%)	4 (1%)	
Biological parent to one or more children	Yes	10 (97%)	29 (94%)	
	No	414(97%)	410 (94%)	
	Missing / prefer not to say	4 (1%)	5 (1%)	
Religion	Agnostic	78 (18%)	96 (22%)	
	Atheist	143 (33%)	114 (26%)	
	Religious (Sum of choice of the 6 major religions and "other") Buddhism	190 (44%)	221 (50%)	
	Missing / Prefer not to say	17 (4%)	18 (3%)	
Region of origin	East Europe	17 (4%)	19 (4%)	290 (3%)
	West Europe	126 (29%)	111 (25%)	1,520 (18%)
	UK	128 (30%)	118 (27%)	2,960 (34%)
	N America / Australia	75 (18%)	85 (19%)	1,180 (14%)
	LEDCS	76 (18%)	97 (23%)	2690 (30%)
	Missing / Prefer not to say	6 (1%)	14 (4%)	15 (0%)
Partnership Status	Married	25 (6%)	44 (10%)	
	Cohabiting with partner	63 (15%)	68 (15%)	
	In a long term non-cohabiting relationship	107 (25%)	100 (23%)	
	Divorced	4 (1%)	2 (1%)	
	Single	221 (52%)	216 (49%)	
	Widowed	2 (1%)	0 (0%)	
	Missing / Prefer not to say	6 (2%)	14 (4%)	

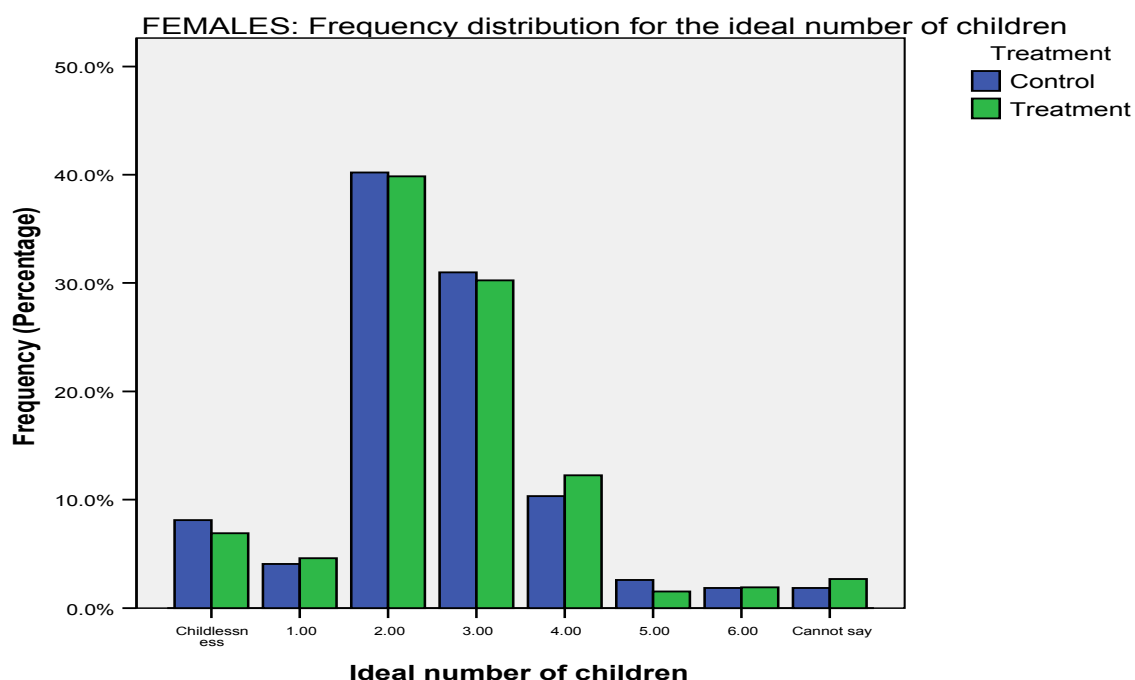
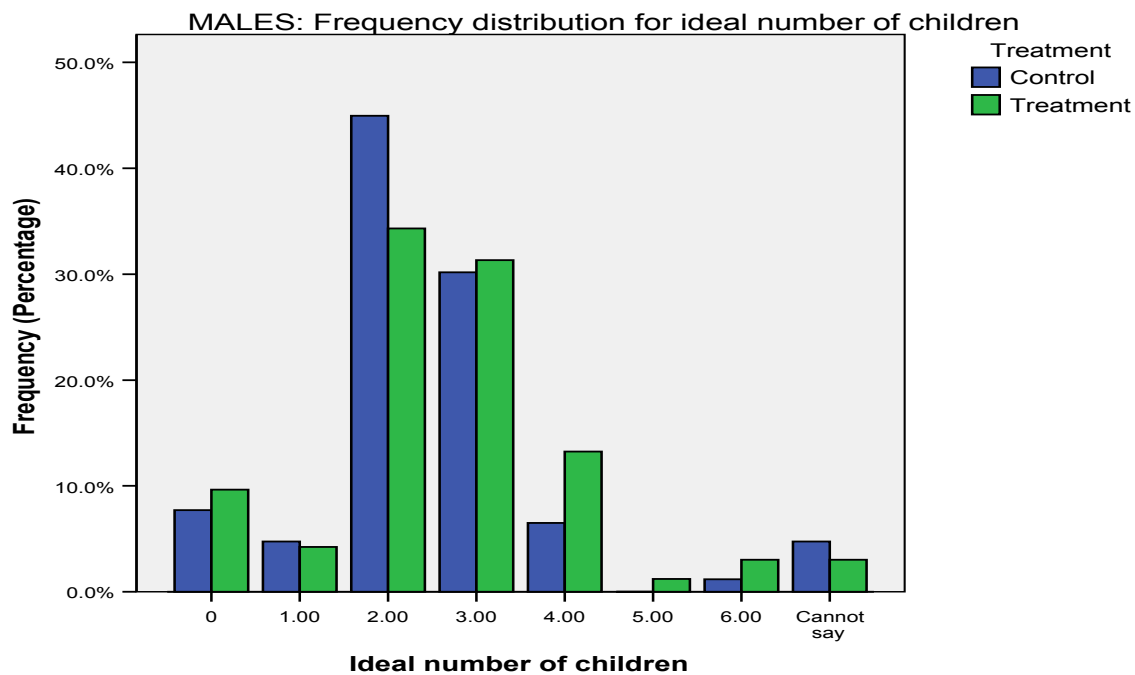
Results

Desired fertility

Univariate analysis indicated that the experimental treatment did affect fertility preferences, at least for men. In response to the question 'if you could chose the ideal number of children that you would have during your whole life, how many would that be?' males in the treatment group gave a value of 2.51 relative to 2.29 in the control group. This is a difference significant at the 10% level using a standard t-test. For females the corresponding difference was not significant with women in the treatment desiring 2.50 children compared to 2.47 for women in the control group.

Comparisons looking at other background control variables suggested an interaction between treatment and religion: religious males desired a family size of 3.02 in the treatment group and 2.36 in control group, the difference being significant at the 1% level.

Multivariate analysis was then used to test for a treatment effect, controlling for factors such as age. This Poisson regression confirmed the existence of a positive effect of the treatment on fertility preferences for religious males.



Costs and benefits of children

The second concept that feeds into fertility preferences is the costs and benefits of children: individuals who view children as less costly and more beneficial are likely to have preferences for higher fertility than those who view children as costly and bringing few benefits. Costs and benefits of children were measured first via a battery of attitude questions looking at the extent of agreement with various cost / benefit statements (for example: 'children provide support in old age'; 'having children is an economic risk'). An aggregate score from the responses to these attitudinal question on cost and benefits was standardised around a mean of zero. Linear regression models were fitted for both sexes to test for a treatment effect on this aggregate score. Both regression models showed a positive treatment effect while controlling for other variables, such as age.

Conclusions

The results provides two key findings:

- 1) There some evidence, though it is not wholly conclusive, to support the hypothesis that mortality perception priming increases fertility preferences.
- 2) Males had a greater treatment effect relative to females for both measures of fertility preference.

The research therefore highlights that psychological perceptions of mortality should be included with other factors when understanding fertility decision making, and suggests that there may be a link between mortality and fertility, even in an industrialised population. Thus evolutionary demography provides support for the demographic transition's theory central causal tenet: mortality decline may act through psychological mechanisms to cause fertility decline.