

Intergenerational Transmission of Family Formation Attitudes in Singapore: The Role of the Father¹

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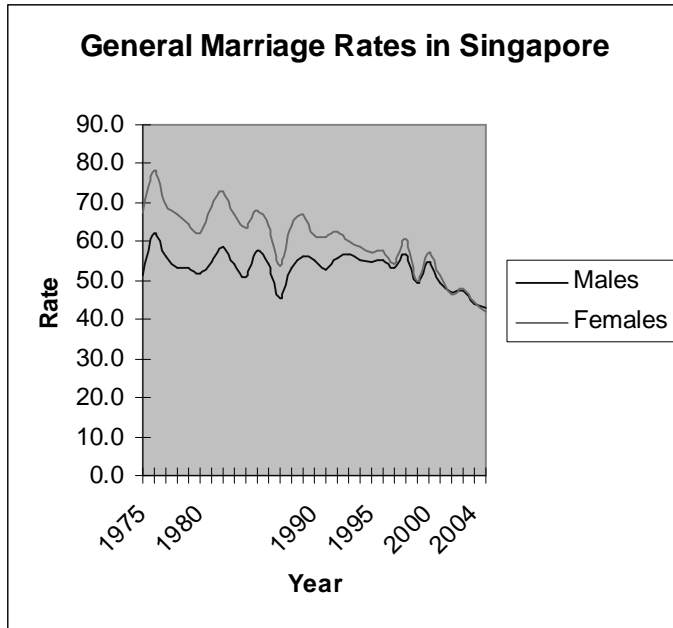
Abstract

This research project aims to identify whether parental attitudes have a statistically significant influence on children's own attitudes. Specifically, the set of attitudes related to family formation is selected to be the main focus of the project because of the recent importance of such issues as declining fertility rates and marriage rates, and increasing divorce rates in the context of Singapore. Four family formation-related attitudes are examined in the paper namely attitudes toward pre-marital sex, cohabitation, marriage, and divorce. Different specifications of Ordered Probit models are utilized to test the significance of intergenerational transmission of family formation attitudes. The data used in this study is from a survey conducted in July-August 2003 under the Humanities and Social Sciences Research Programme. A total of 2800 surveys were distributed to students from various secondary schools and junior colleges across Singapore. Using a latent variable interpretation, the results suggest that with the exception of attitudes toward marriage and divorce, the father has greater influence on the child's attitude even after controlling closeness to either parent and parents' and child's characteristics. Closeness to the mother explains most of the variation in child's attitude towards marriage. For divorce, the mother's attitude against divorce has greater effect than the father's.

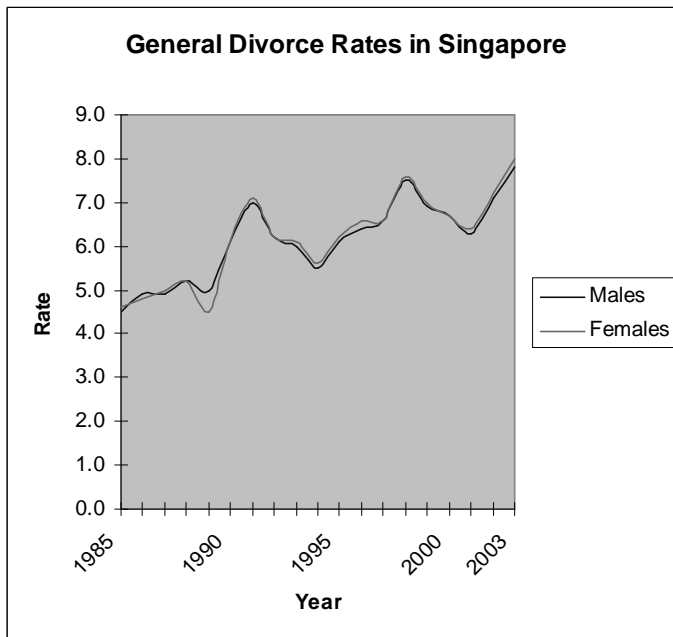
1 Introduction

Consistent even with the earliest formulation of demographic transition theory (Thompson, 1929), most industrialized and developed countries are currently exhibiting low fertility rates which consequently lead to a troubling decline in population. This is fueled by decrease in marriage rates, increase in the average marrying age, and increase in divorce rates. Also observed with these changes is an increase in female labor force participation rates.

The case of Singapore is not an exception. From having a total fertility rate (TFR) of 4.66 per resident female in 1965, present TFR has declined to 1.24 which is below the replacement rate. Together with the decline in TFR is a noticeable decline in marriage rates and increase in divorce rates (as can be seen from the graphs below). For the period 1980 to 2004, average age at first marriage for males increased from 27.9 to 30.5, while for females, it increased from 24.7 to 27.3. Female labour force participation rates have also gone up from 29.6% in 1975 to 54.2% in 2004.



Source: Various issues of Yearbook of Statistics, Singapore; rate = per 1000 unmarried males/females



Source: Various issues of Yearbook of Statistics, Singapore; rate = per 1000 married males/females

As Quah (1998) notes, this issue is important for the city-state due to its reliance on human capital as the main resource and engine of growth. This is

the reason why discussions related to marriage, divorce and fertility have come to the forefront of research.¹

Every dimension that possibly affects family formation behavior needs to be understood in order to properly and effectively address the problem of declining fertility. One specific aspect is primarily concerned with attitudes toward family formation.

The importance of family formation attitudes in influencing behavior is well documented in both theoretical and empirical literatures. Attitudes are considered central components in most theoretical models of childbearing behavior (Lesthaeghe and Wilson, 1986; Lesthaeghe, 1998; Preston, 1986 among others). Empirical evidence that attitudes are key proximate determinants of childbearing-related behavior that includes cohabitation, marriage and divorce can be found in Axinn and Thornton (1992, 1993) and Barber and Axinn (1998a,1998b) among many other articles. More recently, Barber (2001) and Barber and Axinn (2005)² provide the linkage between attitudes and behavior in terms of childbearing behavior. In both articles, theoretical explanations and empirical evidence are reviewed and presented to support the idea that attitudes are important predictors and determinants of childbearing behavior. An important result from these two

¹Recent conferences on these issues include the Marriage, Divorce and Fertility conference sponsored by the Department of Economics (National University of Singapore) and Asia Research Institute's "(Un)Tying the Knot" among others.

²The book where this article can be found contains an interesting chapter on the relation of values and attitudes on the changing fertility behavior in developed countries. See Booth and Crouter (2005).

studies is that supporting attitudes for a certain behavior indeed have a statistically significant positive relation with the likelihood of actual behavior while attitudes for competing alternatives have an opposite effect. Barber (2001) and Barber and Axinn (2005) also study the effects of outsiders' (particularly parents and partners) attitudes and preferences on one's own behavior.

Since attitudes are reliable predictors of actual behavior, it is interesting to study how attitudes are actually formed. One dimension of attitude formation is intergenerational transmission from parents to children as studied for example in Axinn and Thornton (1996) whereby the authors provide evidence that mothers' attitudes on pre-marital sex, cohabitation, family size, marriage and divorce have a statistically significant effect on the child's corresponding attitudes. In the present paper, we examine whether there is empirical evidence of intergenerational transmission of family formation attitudes in the Singapore context. If such evidence is observed, then further investigation of direct and indirect socialization patterns should be the next step for further research. Furthermore, in light of increasing female labor force participation (and hence decrease in the time spent at home for mothers), we wish to determine whether there is statistically significant difference between the mother and the father's influence on the child's attitudes.

This research project takes advantage of a novel data set collected under the supervision of the second author. The data set includes data on attitudes of students and their parents in relation to pre-marital sex, cohabitation, marriage

and divorce. An Ordered Probit model is utilized to estimate possible intergenerational transmission of these attitudes. Using a latent variable interpretation, there is statistical evidence of intergenerational transmission of family formation attitudes in Singapore³ even after controlling for closeness to either parent and other characteristics of the child and the parent. More interesting is the observation that a marginal decrease in the latent attitude measure of the father with respect to pre-marital sex and cohabitation contributes a larger marginal decrease in the child's as compared to the mother. The extent of transmission of attitudes in relation to marriage and divorce is the same for either parent. It is also interesting to note that closeness to mother explains most of the variation in the child's attitude towards marriage. Furthermore, children who are closer to their mothers tend to have a more encouraging family formation attitude, all other things held constant. Though not statistically strong in terms of significance, the mother's attitude against divorce has a greater effect than the father's.

The next section describes the data and methodology used in the paper followed by a section discussing the main results. The final section concludes by presenting limitations of the study and avenues for further research.

³As discussed later on, the sample might not be nationally representative since the sample mostly consists of students (and one of their parents) studying in top secondary schools and junior colleges in Singapore.

2 Data and Methodology

The data used in this study is from a survey conducted by junior college and secondary students (supervised by one of the authors) in the period July-August 2003 under the Humanities and Social Sciences Research Programme (HSSRP). HSSRP is a research project co-organized by the Faculty of Arts and Social Sciences of the National University of Singapore and the Gifted Education Branch of the Ministry of Education to promote research in the social sciences among secondary and junior college students. The survey was initially intended to analyze intergenerational transmission of religious human capital in Singapore (Tan and Lee, 2004; Chew and Daud, 2004; Chien, 2004; Kiu and Lee, 2004; Song and Wong, 2004) and most questions were designed primarily for that purpose. A total of 2800 surveys were distributed to students and their parents from various secondary schools and junior colleges across Singapore. The parents were not directly surveyed but instead, the surveyed student gave the questionnaire to one of his or her parents. Out of the 2800 surveys given out, a total of 491 observations reflecting matched parent-child pairs (both the child and the parent answered the questionnaire) are available. Furthermore, observations with missing answers to the items we are primarily concerned with were disregarded. This decreased the sample size to around 380 observations.

It can be argued that the data might not be nationally representative since most of the surveys were given to students coming from relatively top schools

under the HSSRP. Nonetheless since past government policies related to encouraging family formation were often targeted to those who tend to have better educational prospects (Quah, 1998; Saw, 2005), the analysis of this paper remains to be relevant.⁴

The main attitudinal measures used in the analysis of this paper are based on ranked responses to statements with regard to acceptance of pre-marital sex, acceptance of cohabitation, belief that marriage enhances happiness and finally, belief that married couples should not divorce. Specifically, the students were asked whether they *1-Strongly Disagree, 2- Disagree, 3-Neutral, 4-Agree, and 5-Strongly Agree* to the following statements: (i.) *I believe that pre-marital sex is acceptable;* (ii.) *I believe that cohabitation before marriage is acceptable;* (iii.) *Getting married will enhance my happiness;* and finally (iv.) *Once married, husband and wife should not divorce.* Parents were asked the same set of questions with the exception of (ii.) whereby the parents responded to the question: *Getting married has enhanced my happiness.*

The median age at the time of the survey for the students in our main sample ($N = 382$) is 16 years old while for parents, the median age is 47. The median age at marriage⁵ for parent respondents is 26 with a median years of schooling of 12.5 years. The sample contains a larger proportion of females for both students (75.65%) and parent respondents (60.47%). This should be taken into account

⁴Nevertheless, this is one limitation of the current study.

⁵No information was given whether the age stated here refers to first marriages.

in the analysis.

Table 1: Correlation matrix for parents' attitudes

	Pre-marital sex	Cohabitation	Marriage	Divorce
Pre-marital sex	1.00	0.85	-0.15	-0.26
Cohabitation	0.85	1.00	-0.17	-0.26
Marriage	-0.15	-0.17	1.00	0.45
Divorce	-0.26	-0.26	0.45	1.00

Table 2: Correlation matrix for students' attitudes

	Pre-marital sex	Cohabitation	Marriage	Divorce
Pre-marital sex	1.00	0.72	-0.02	-0.34
Cohabitation	0.72	1.00	-0.00	-0.31
Marriage	-0.02	-0.00	1.00	0.31
Divorce	-0.34	-0.31	0.31	1.00

From tables (1) and (2), we can observe a high positive correlation between parents' attitudes toward acceptance of pre-marital sex and cohabitation; a similar conclusion can be said with regard to the students' attitudes on pre-marital sex and cohabitation. A negative attitude towards divorce is moderately correlated with the belief that marriage enhances happiness, with the direction being positive. This is true for both respondents. For parents, pre-marital sex and cohabitation attitudes are moderately negatively correlated with the belief that marriage enhances happiness and that married couples should not divorce, with the correlation more negative with respect to the latter (no divorce). However for students, attitudes related to acceptance of pre-marital sex and cohabitation are only weakly negatively related with the belief that marriage enhances happiness (where the correlation between cohabitation and happiness from marriage is almost nil). It is worth noting however, that the phrasing of the question on

cohabitation might be biased against the idea of cohabitation as a competing alternative to marriage. This may be the reason for the lack of a strong negative correlation between tolerance of cohabitation and the belief that marriage enhances happiness. Nonetheless, the attitudinal measure for cohabitation remains relevant since as Becker (1991) has noted, delays in marriage (which can be a likely consequence of cohabitation) can still have negative effects on future family formation and fertility. Finally, pre-marital sex and cohabitation attitudes have moderately negative correlation with attitudes against divorce. Hence what is clear here is that a more open attitude towards pre-marital sex and cohabitation is related to a more open acceptance of divorce.

Since the data on attitudes consist of rankings based on agreement to a specific question, an ordered response model is apt to estimate intergenerational transmission of attitudes. Specifically, an Ordered Probit model⁶ (see Wooldridge, 2002 and Greene, 2003 among others) is employed. In case that the model is misspecified, the probit maximum likelihood estimator corresponds to a quasi-maximum likelihood estimator. White's (1982) robust estimator for the asymptotic covariance matrix is utilized.

⁶The Probit model is based on the assumption that error terms have a standard normal distribution. An alternative model is the Logit model where error terms are assumed to have a standard logistic distribution. Though results are not presented here, analyses using an Ordered Logit model yield the same conclusion.

The associated latent variable model for each attitude is given by

$$y^* = \mathbf{x}\beta + \mathbf{z}\alpha + e, \quad e \mid \mathbf{x} \sim N(0, 1)$$

where \mathbf{x} is a vector composed of the main independent variables of interest (responding parent's relevant attitude and its interaction with the parent's gender) and \mathbf{z} is a vector of control variables. Note here that y^* represents an unobserved measure of the child's specific attitude. Our primary interest is to see the relation between the child's attitude and the parent's. Furthermore, we wish to check whether the parent's gender influences transmission of the specific attitude. In order to have a reasonable estimate of the intergenerational transmission of attitudes, variables that might affect the child's attitude need to be controlled for in order to avoid any omitted variable bias problem. We take the following variables as control variables: child's gender, child's age, child's belief, reported closeness to mother, reported closeness to father, parent's age, parent's age at marriage, parent's number of years of schooling, and parent's monthly income. Of particular interest is the reason for controlling reported closeness to either parent. Controlling this variable enables us to determine and extract the effect of the parent's attitude, *per se*, removing any possible influences of closeness to parents which have been observed to be a predictor of attitudes (see Risch *et al*, 2004 whereby the authors observe that closeness to fathers have a negative relationship with tolerance of divorce). This can be seen as a way of controlling any

direct socialization and social control (independent) effects primarily related to the attitude. Nonetheless, coefficient estimates on the closeness to parent variable remains to be of interest and thus would be included in the discussion.

Since y^* is a latent variable, the researcher only observes an ordered variable y which represents the five degrees of agreement to the specific question. Therefore, we estimate such models of the form

$$\begin{aligned}
 S_PRESEX &= \beta_1 P_PRESEX + \beta_2 (P_PRESEX \times P_GENDER) + \\
 &\alpha_1 S_GENDER + \alpha_2 (P_PRESEX \times S_GENDER) + \\
 &\alpha_3 S_AGE + \alpha_4 S_BELIEF + \alpha_5 P_MARRY + \\
 &\alpha_6 P_YRSCH + \alpha_7 P_INCMTH \\
 &+ \alpha_8 SPF_CLOS + \alpha_9 SPM_CLOS
 \end{aligned}$$

where S_PRESEX = student's answer to the pre-marital sex question (1 to 5), P_PRESEX = parent's answer to the pre-marital sex question (1 to 5), S_GENDER = student's gender, P_GENDER = parents's gender, S_AGE = student's age, S_BELIEF = student's belief or religion, P_MARRY = parent's marrying age, P_YRSCH = parent's number of years of schooling, P_INCMTH = parent's average monthly income, SPF_CLOS = student's reported closeness to father, and finally SPM_CLOS = student's reported closeness to mother. The models for cohabitation, marriage and divorce follow exactly the same structure

as the above model for pre-marital sex. These models are assumed to be of Ordered Probit type. Estimation is via quasi-maximum likelihood with White's (1982) robust covariance matrix. This is implemented using Quantitative Micro Software's EViews version 5.1. Results are discussed in the next section.

3 Results

For all models, estimation of parameters via quasi-maximum likelihood achieved convergence in less than 7 iterations using a quadratic hill climbing algorithm. White's (1982) robust estimator for the asymptotic covariance matrix is utilized in line with issues of misspecification and heteroskedasticity. Note that in interpreting the results, significance, direction and *relative* magnitude of estimated coefficients are the main focus from a latent variable point of view. This is to facilitate the difficulty of interpreting the estimated coefficients in light of the observed ordered dependent variable especially when the coefficients refer to variables that are themselves ordered (Wooldridge, 2002). Table (3) summarizes the results:

The child's gender as a predictor of attitude is only significant for pre-marital sex and cohabitation. Nevertheless the relative magnitude of the coefficient of child's gender with respect to the pre-marital sex and cohabitation models is high compared to the other independent variables. This may mean that an accepting attitude towards pre-marital sex and cohabitation is readily predictable by the

Table 3: Ordered Probit Estimation Results

<i>Child's attitude:</i>	Pre-marital sex	Cohabitation	Marriage	Divorce
<i>P's corresponding attitude</i>	*0.157 (0.092)	**0.197 (0.100)	**0.168 (0.083)	***0.248 (0.083)
<i>P's attitude × P's Gender</i>	**0.160 (0.078)	**0.173 (0.075)	0.010 (0.040)	−0.045 (0.037)
<i>Child's gender</i>	*0.574 (0.323)	*0.599 (0.311)	0.616 (0.494)	0.553 (0.580)
<i>P's attitude × C's Gender</i>	−0.151 (0.156)	−0.132 (0.144)	−0.137 (0.132)	−0.105 (0.142)
<i>Closeness to dad</i>	0.051 (0.089)	0.043 (0.088)	−0.104 (0.089)	−0.112 (0.094)
<i>Closeness to mom</i>	**−0.244 (0.097)	**−0.162 (0.90)	***0.444 (0.090)	***0.426 (0.103)

notes: * p < 0.1, ** p < 0.05, *** p < 0.01; P refers to parent while C refers to child; Standard errors are in parentheses.

child's gender. Sons tend to be more accepting than daughters. The effects of the child's gender on marriage and divorce are not statistically significant. This may be due to the skewed distribution of gender in our sample that possibly increases computed standard errors of the estimated coefficients. Lastly, there are no significant interaction between the parent's attitude and the child's gender. Again, this may be due to the under representation of males in our sample.

Closeness to the father is not statistically significant for all attitudes. This is in contrast to the observation of Risch *et al* (2004) whereby closeness of father-adolescent relationship, regardless of father type, is a significant predictor of negative attitudes towards divorce. Though insignificant, the coefficient on closeness to the father has a negative sign hence implying that being closer to the father tends to be related with a more accepting attitude towards divorce—which again is in contrast with Risch *et al* (2004).

While closeness to the father is statistically insignificant, closeness to the mother is highly significant, even when attitudes are controlled for. Being close to the mother tends to be related with a less accepting attitude towards pre-marital sex, cohabitation and divorce and a more positive outlook on marriage. Thus on average, children who are closer to their mothers would tend to have a more encouraging family formation attitude, all other things held constant. It is interesting to note that closeness to mother explains most of the variation in children's attitude towards marriage.

Now we examine whether there is statistically significant intergenerational transmission of attitudes. We are particularly interested whether the parent's gender has an effect on attitude transmission.

For all models, parental attitudes are statistically significant predictors of child's attitudes. Parents who tend to be accepting of pre-marital sex would most likely have children who are also accepting of pre-marital sex. This is significant at the 10% level only. The conclusion here is intuitive since a lax and less conservative family environment, which is influenced primarily by parents' own attitudes, would tend to produce children who have less conservative attitudes, specifically a more accepting attitude towards pre-marital sex.

Similar to pre-marital sex, parents who are more accepting of cohabitation (before marriage) would tend to have children that are more accepting of cohabitation (5% significance level). The same "less conservative environment equals less conservative children" intuition follows through.

Parents who see marriage as welfare-enhancing would tend to have children who share the same attitude (5% significance level). This result must be seen in light of controlling closeness to both parents. Attitudes, *per se*, influence the kind of environment the child is living in and thus even after controlling for any possible direct socialization and social control effects, maintaining an environment that sees marriage as potentially welfare-enhancing (*i.e.* not stressful, does not lead to frequent fights, *etc.*) would instill the same attitude to the child.

Again, similar to pre-marital sex and cohabitation, parents who tend to view divorce as an acceptable exit option would most likely have children who think the same way. In light of the apparent inconsistency with the results of Risch *et al* (2004), it is possible that the attitude of the father, *per se*, influences the child's attitude towards divorce and that closeness to father might just be correlated with an attitude that is less accepting of divorce in their sample.

Turning to the issue of gender influences, differences in intergenerational transmission between fathers and mothers are only significant for pre-marital sex and cohabitation. The results show that attitudes of the father with respect to acceptance of pre-marital sex and cohabitation have a greater influence than the mothers. For marriage and divorce, gender effects are insignificant. Nonetheless it is interesting to note that fathers' attitude towards acceptance of divorce is less influential than the mothers'.

To the extent that pre-marital sex and cohabitation are seen as competing behaviors to marriage and family formation, the results suggest that the father

indeed plays a significant role in fostering an environment for the child that is more conducive to marriage and family formation. Recall from our estimation results that a marginal decrease in the father's attitude towards acceptance of these competing attitudes entails a larger marginal decrease in the child's attitude measured by the unobserved latent variable. Therefore, the father serves as a more effective vehicle in influencing the child's attitude towards these competing behaviors. Note that this effect is independent of how close the child is to either parent.

4 Conclusion

This research project provides statistical evidence of intergenerational transmission of family formation attitudes in Singapore and also shows that there are differences in the level of influence of fathers' and mothers' attitudes. It can be inferred from the results that fathers indeed play an important role in shaping family formation attitudes of their children. It is seen that the father serves as a more effective vehicle in influencing the child's attitude toward behaviors that compete with marriage and family formation and this conclusion is independent of how close the child is to either parent. This implies that policies should not only promote father involvement *per se*, but also "educate" fathers to properly control against these competing attitudes to the extent that these attitudes are seen as detrimental to society.

As with most data analysis, there are limitations on the reliability of the results. This is mainly due to constraints on the data itself. It has been noted that the sample might not be nationally representative hence it is possible that the results may not apply to the whole population. Furthermore, the sample is skewed in terms of the gender of respondents which might cause the analysis to be incomplete in the sense that some of the estimates for the gender related regressors might turn out to be significant if the sample has more male respondents to reduce standard errors.

A good direction for research is to study how these attitudes actually affect behavior in the future. However this entails collecting panel data which is rarely done in Singapore due to lack of financial resources of researchers and other logistical constraints.

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