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ABSTRACT

The Intergenerational Transmission of Gender Role Attitudes and its Implications for Female Labor Force Participation*

Using a sample of mother-child pairs from the National Longitudinal Survey of Youth 1979 (NLSY79) and the Young Adults of the NLSY79 we explore the relationship between a woman's attitudes towards the role of females in the labor market and the attitudes of her children. We also examine whether this intergenerational cultural link has implications for the labor market behavior of the females in the NLSY79. We find that a woman's attitudes have a statistically significant effect on her children's views towards working women. Furthermore we find that this cultural transmission influences female labor market decisions. Our results imply that a woman's view regarding the role of females in the labor market and family not only affects the labor market force participation decision of her daughter, but also has an equally strong association with the labor force participation of the wife of her son. These results indicate that the transmission of gender role attitudes contributes to the persistence of economic status across generations.

JEL Classification: J12, J62, D1, Z1

Keywords: intergenerational cultural transmission, gender role attitudes, female labor force participation

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1 Introduction

Culture, measured in various forms, has been successfully employed in empirical investigations to enrich our understanding of economic behavior ranging from trade patterns across countries (Guiso, Sapienza and Zingales 2005) to individual consumption and saving decisions (Carroll, Rhee and Rhee 1994, 1998). In addition to explaining contemporaneous variation in economic data, culture is also seen as the underlying cause for the correlation in economic behavior across generations. For example, while the parent-child similarity in economic status had typically been attributed to the role of the family financial background (see, for example, Mulligan 1997; Solon 1999), Charles and Hurst (2003) have recently argued that it partially reflects the similarity of the preferences of parents and those of their children. This intergenerational transmission of preferences has also been proposed by Bisin and Verdier (2000) and Bisin, Topa and Verdier (2004) as an explanation of the persistence of ethnic and religious minorities in contemporaneous societies.

The role of culture, and its implication for economic behavior across generations, has until recently been relatively unexplored in empirical labor economics. Important exceptions are the papers by Fernández, Fogli and Olivetti (2004), Fernández (2007), Fernández and Fogli (2007) and Fogli and Veldkamp (2007) which explore the relationships between the labor market behavior of females across adjacent generations. Two remarkable findings are reported in these papers. First, a woman's work behavior is correlated with the work behavior of women in her country of ancestry. Second, a woman's labor market behavior is not only positively correlated with that of her daughter, through this first channel, but also with that of her son's wife. By assigning the direction of causality from the older to younger generations these pa-

pers suggest that the role of women in the labor market, and by implication that in the family, is passed from generation to generation. This is an important result as it has implications for many aspects of the economic and demographic situation of the current members of a family and its descendants.

An interesting question raised by this empirical evidence is through what mechanisms do these relationships arise? Fernández, Fogli and Olivetti (2004) and Fernández and Fogli (2007) propose that it reflects the transmission of cultural attitudes across generations regarding the role of women in the family and the work place. However, while the evidence from those papers is strongly suggestive of such a mechanism it is difficult to test directly without measurements on the attitudes and labor force participation of women and their children.

Vella (1994) provides some cross sectional evidence on the relationship between attitudes towards working women and the labor market involvement of Australian youth. That paper suggests culture, as captured by the individual's background characteristics such as her/his parents' labor market behavior, family size and religious affiliation, influences attitudes which, in turn, partially determine the educational attainment and labor supply of young females. Other studies have found similar results for other countries (Fortin 2005, Farré 2006). Combining these results with the finding of Thornton, Alwin and Camburn (1983) that a mother's attitude towards women working is associated with her children's attitudes provides further support for the conclusions drawn by Fernández, Fogli and Olivetti (2004) and Fernández and Fogli (2007). In this paper we further, and more directly, pursue this conjecture by simultaneously addressing the formation of attitudes, their transmission across generations and their impact on labor market participation. More explicitly, we first

construct an index of attitudes towards gender roles for a cohort of women living in the United States in 2004. By constructing the corresponding index for the children of these women we examine if there is any generational transfer of attitudes. We then investigate whether gender role attitudes, and in particular their component related to the mother's labor market behavior, are able to explain the subsequent labor market participation decision of the female respondents and that of the partners of the male respondents.

Our empirical investigation first employs observations on females from the National Longitudinal Survey of Youth 1979 (NLSY79) merged with that of their children in the Children and Young Adults of the National Longitudinal Survey of Youth 1979 (CYNLSY79). We examine the relationship between the attitudes expressed in 2004 by female respondents aged between 39 and 47 years with those of their children expressed in the late 1990's and early 2000's when the children are aged 15 to 22 years. As the respondents in the CYNLSY79 are too young to investigate the long term effects of attitudes, we return to the NLSY79 to examine the role of these attitudes reported in 1979 on the individual's labor market behavior in 2004.

The next section describes the data and presents our measure of attitudes. Section 3 analyzes the intergenerational transmission of gender role attitudes and Section 4 examines whether this transfer of attitudes across generations has implications for labor market behavior. Section 5 provide some concluding comments.

2 Measuring Attitudes Towards Gender Roles

The NLSY79 survey is a nationally representative sample of 12,686 individuals aged 14-22 years when surveyed in 1979. These individuals were interviewed annually

through 1994 and are currently interviewed on a biennial basis. The NLSY79 consists of three subsamples and we focus on the core random sample of 6,111 respondents designed to be representative of the non-institutionalized civilian segment of young people living in the United States in 1979 and born between 1957 and 1965.

The NSLY79 survey provides measures of labor market activity and household features which characterize the individual's home environment when young. It also elicits the individual's opinion towards a woman's roles in homemaking and in the labor market. More explicitly, in 1979, 1982, 1987 and 2004, respondents are asked whether they strongly agree, agree, disagree or strongly disagree with the statements shown in Table 1.

While the statements ask about different aspects of family and work life of women they generally imply that an unequal burden of homemaking activities should lie with the female and/or that a female's activities in the labor market are of secondary importance to: (a) her role as a homemaker; and (b) her husband's role in the labor market. Although Q3 and Q6 are more ambiguous, even these appear to seek the respondent's reaction to the view that a male should devote his effort to market employment and a female should devote hers to homework. However, while they are relatively subtle we employ the responses to all of the questions rather than arbitrarily eliminating any of them.[1]

Table 1 also displays the percentage of individuals who report valid answers in both 1979 and 2004 which "strongly disagree" or "disagree" with statements 1, 2, 4, 5 and 7, or "strongly agree" or "agree" with statements 3 and 6. We report the

[1]Given that the implications of questions 3 and 6 are less obvious than the other questions we reproduced all the empirical results that follow while excluding the responses to these questions. The empirical results were robust to the exclusion of these responses. For this reason we prefer to retain them.

responses in both periods to investigate the intragenerational change in attitudes and because we use the 2004 attitudes to explore the intergenerational transfer of attitudes while the 1979 values are employed to investigate their impact on labor force participation.

Table 1 reveals substantial variation in opinions towards working women both across gender and time noting that for convenience we now employ the term "traditional" to reflect the view that females should specialize in home production and males in market production. In the 1979 data males give more traditional responses than females and the difference varies by question. This conclusion is similar to Thornton et al (1983) noting they examine a different sample and a different group of questions. Perhaps the most "definitive" statement here, in terms of defining a female's role, is Q1. While 69 percent of males disagree with Q1 the corresponding figure for females is 84 percent. Thus in 1979 a large fraction of males, and a non trivial fraction of females, held the opinion that women were not as welcome in the labor market as men. The responses to the other questions reflect that a significant number of the respondents, both males and females, think that the household's members suffer when women are involved in market employment.

With the exception of Q3 the average response to each statement in 2004 is less traditional than in 1979. This indicates that as individuals age they become more supportive of a role for women in market employment. This is also consistent with Thornton et al (1983). This may reflect their own experiences or indicate the earlier traditional influences may have weakened. It may also reflect a general trend which is unrelated to individual specific experiences but captures increasing societal acceptance of females in the labor market. However, despite this trend there remains a

significant number of respondents which view a female's role in the labor market as unequal to that of a male's.

While the time pattern of the answers suggests an increasingly supportive view of a woman's participation in the labor market the responses to Q3 capture a different trend. Namely, they suggest a growing acceptance that women who choose to stay at home are as "satisfied" as those who engage in market employment. Q3 appears to capture a different aspect of a woman's role in the family and this is supported by its relatively weaker level of correlation with the other responses.

To examine the relationship between gender role attitudes across generations one could use the responses to each of the individual statements separately. However, the responses are highly correlated as they appear to capture the same latent "response". An alternative is to follow Thornton et al (1983) and Vella (1994) and construct an index of attitudes. Accordingly, we first assign the following values to the answers of each question; 1 if "strongly agrees", 2 if "agrees", 3 if "disagrees", and 4 if "strongly disagrees". By summing these values we obtain an index ranging from 7 to 28, where a score of 7 denotes an extremely traditional attitude while 28 represents an extremely non traditional attitude. Note that we reverse the ordering of the allocation of points for Q3 and Q6 to retain the traditional nature of the agree and strongly agree responses.

As discussed in Vella (1994) this approach has some disadvantages. Summing the responses assigns an equal weight to each question and allocates somewhat arbitrary values to the responses. However, any approach which attempts to capture the information from these different responses in a single variable is likely to have some shortcoming. We feel our approach is attractive as it captures the variation in the

discrete responses in a continuous index. Moreover, as we are interested in its correlation over time, and its relationship with other variables, the manner or units, in which it is measured is relatively unimportant. Nevertheless, given the restrictions imposed in this approach we examined the implications of employing alternative aggregations.

The descriptive statistics for the constructed index are reported in the bottom line of Table 1 and its histograms by gender and year are presented in Figures 1A and 1B. The general patterns of these indices are similar to those of the individual questions. However, some additional points are worth noting. First, since an individual who responded "strongly disagree" to all statements would be allocated a score of 7, the average female score, 20.43 in 1979 and 21.06 in 2004, and the average male score, 19.07 and 20.42 respectively, do not indicate that the "average" individual strongly supports gender equality in the labor market. This is illustrated in Figures 1A and 1B which show the masses of the indices are spread over a range of values and are not located at the higher (less traditional) values. Second, as each question is assigned scores of 1 to 4 a standard deviation of over 3, as it is for both males and females in 1979, suggests there is substantial variation. This is also illustrated in Figures 1A and 1B. Moreover, there is equal variation in both the female and male responses. Finally, although the views are more supportive of female participation in 2004 than they are in 1979, the change is small.

3 The Intergenerational Transmission of Attitudes

To investigate the intergenerational transmission of gender role attitudes we examine the link between a female's attitudes and those of her children. We merge the data for the female respondents of the NLSY79 who subsequently had children with that of

their children collected in the Children and Young Adults of the National Longitudinal Survey. A survey of all children born to NLSY79 female respondents began in 1986 and since 1995 children aged 15 years and older have biennially completed an interview modeled on the NLSY79 questionnaire. In 1994, 1996, 1998 and 2002, children were asked the same questions regarding a woman's roles that their mothers were asked in 1979 and 2004.[2]

Our sample comprises children who were between 15 and 22 years old in 2002 when they reported their attitudes towards gender roles. When this information is not available in 2002 or children are older than 22 years in 2002, we use the information on attitudes from a previous year. Table 2 shows the age distribution and the year in which the children's attitudes are measured. The observations generally correspond to the years 1998 and 2002 and individuals are, on average, younger than their mothers were in 1979.

The children's attitudes are presented in Table 3. The comparison between Tables 1 and 3 indicates that both young males and females in the years from 1994 to 2002 have views which are more supportive of a female role in the labor market than their respective counterparts in 1979. In fact, their answers are more similar to those reported in 2004. This suggests that the slight trend towards greater equality in gender roles occurs not only within but also across cohorts. Overall, however, the descriptive statistics of the attitudes index for this sample are similar to that of the earlier cohort when young. The male score is 20.39 (compared to 19.07 for 1979) and the female score is 22.20 (compared to 20.43 for 1979) and the standard deviation

[2]Some females from the 1979 sample have multiple children which appear in the children's survey. The distribution of children per mother in the sample is the following: 1 child (12%); 2 children (39%); 3 (30%); 4 (12%); 5 (5%); 6 and greater (2%).

of the indices are still approximately 3 for both males and females although it has reduced in comparison to the 1979 responses. The histograms for these responses, shown in Figure 1C, reinforce the similarity of the distribution of attitudes across the two generations.

We now examine the link between the mother's index value and that of her children noting that a similar exercise, which we discuss below, is conducted in Thornton et al (1983). First recall, however, that we employ the mother's value recorded in 2004, when the sample is aged from 39 to 47 years, while the value of the child's index is recorded in the late 1990's or early 2000's. Regressing the child's index on that of her/his mother, a gender dummy and an intercept produces a coefficient on the index of .208 with a standard error of .026.[3] This provides preliminary evidence of an intergenerational link in attitudes towards gender roles.

Rather than use the mother's index value in 2004 we could employ the value from the 1979 survey. The argument behind such a choice would be that the 1979 value best captured what was transferred to the individual from her own mother and would not be contaminated by her own labor market experiences and motherhood. However, one might expect these events to affect an individual's attitudes and as her child is being interviewed following these experiences the 2004 value may be more appropriate. It is also possible that there are some general "trends" in attitudes due to societal pressures regarding the role of women and this may also decrease the relevance of the individual's 1979 attitudes. In fact, these latter two points are supported by Tables 1 and 3. For these reasons we employ the 2004 value. Note, however, when we estimate the regression described in the previous paragraph, but

[3]Estimating the relationship separately for sons and daughters produced almost identical estimates for the slope coefficients.

replace the 2004 attitude value for the mother with her value in 1979, we obtain a coefficient on the index of .139 with a standard error of .036. Thus while there is a reduction in the magnitude of the coefficient and its statistical significance, the estimates support the existence of a transfer in attitudes from mother to child.

While one might expect a positive correlation in the attitudes of a woman and those of her children, it is possible that this may not reflect cultural transmission but captures the economic and family situation in which the child was raised. Accordingly in Table 4 we report the estimates of this relationship while including a set of relevant control variables. The results for various specifications, including and excluding mother's attitudes, are reported when the models are estimated for all individuals and separately by gender.

Column 1 contains the estimates from regressing the child's index on that of her/his mother and a number of background variables characterizing the child's household when she/he was young. These include dummy variables for the child's gender and religious background, the number and gender composition of siblings, an indicator for first born child, the mother's age when the child was born, the parents' education level, the parents' work behavior and regional variables. A number of interesting results arise. First, and most importantly, is the statistically significant contribution of the mother's attitudes. The positive coefficient indicates that women with more (less) traditional views have children who have more (less) traditional views. As the coefficient is .171 and the mean of mother's index is approximately 20 the contribution for the average individual is around 3.4. An one standard deviation in the mother's attitude value (3.38) leads to an increase of .58 in the child's index noting, from Figure 1B, that a change of this magnitude in the mother's index value is not

extraordinary. This column indicates that the only other variables, with statistically significant coefficients, with larger absolute effects than that generated by an one standard deviation change in maternal attitudes, were those associated with gender, which captures the difference discussed above, and some of the religious categories.[4] It appears that a dominant determinant of an individual's attitudes towards women is the attitude of her/his mother.

It is useful to highlight the other variables which have a statistically significant effect on an individual's attitude. The education level of both parents are statistically significant and positive. This may result from the higher labor market participation rates of well educated parents, which develops positive views towards labor market involvement in their children, or from a greater disposition of well educated parents to transmit less traditional views towards gender roles.

The composition of an individual's household during youth also influences her/his attitudes. The negative coefficient for siblings implies that individuals living in larger families have more traditional views. Mothers in these families are likely to bear a larger burden of household work and spend fewer hours engaged in market activities. This may affect the children's views of gender roles.

We do not include the individual's educational attainment or work experience as possible explantors due to a possible endogeneity problem. In fact, as the respondents are young the vast majority (80.64%) are still enrolled at school or college. Of the 295 respondent not enrolled, 4.45% completed some years of post-secondary education, 50% completed grade 12, and the rest completed less than 12 years of education. While almost 50% of the sample reports having done some work for pay during the

[4]The changes in the child's attitudes index for a standard deviation increase in siblings, mother's years of education, and mother's age when child was born are -.46, .34 and -.36 respectively.

year in which attitudes are reported, most of the sample are still actively participating in educational activities.

Columns 2 and 3 report the results when the model is estimated separately by gender. Surprisingly the impact of mother's attitudes does not vary by gender. The coefficient in the sons' specification (.184) is almost identical to that for daughters' (.165) and a formal test does not reject their equality. The remaining coefficients are also similar across gender with the exception of the variables capturing the presence of an adult male in the household when the respondent was 14 years old, and the level of education of that adult male, which have stronger effects on the son's attitudes. The first effect indicates that sons raised in single parent households with a female head have more positive views towards working women. The second effect reinforces the role of education in forming positive attitudes regarding the role of women in the work place.

The remaining columns report the estimates when the mother's index is excluded. While there are some minor differences to the first three columns the coefficients are similar. The coefficients on the religious variables have some response to the inclusion of the mother's index reflecting, not surprisingly, that mother's attitudes are correlated with her religious background. Another coefficient of note is that for the variable denoting that the individual's mother worked when the individual was young. This is also somewhat sensitive to the inclusion of the index variable and reflects the correlation between a mother's attitudes and her labor market behavior. We exploit this below in identifying potential instruments.

The results indicate that the mother's attitude, expressed in 2004 when she was aged between 39 and 47 years, has statistically significant implications for the contem-

poraneous views expressed by children when they are in their teens or early twenties. Moreover, the relationship is positive indicating that similar views are passed from one generation to the next. This result seems striking even in the absence of controlling for the family's background characteristics so the fact it remains when such factors are accounted for makes it even more notable. Table 4 provides quite compelling evidence that culture towards gender roles is transmitted from generation to generation.

Our conclusions are consistent with those of Thornton et al (1983) who estimate similar models but construct indices based on a different group of questions for a different and smaller sample. The indices constructed there focus more on the role of women in the family and household and less on employment issues. Nevertheless, they find that a mother's contemporaneous view of gender roles in 1980 has a statistically significant and positive impact on that of her 18 year old child. They also conclude that other family characteristics, such as the education level of the parents, affect these attitudes. Therefore, despite the differences in the construction of the respective indices our results support their conclusion regarding the presence of "intergenerational persistence" in gender role attitudes.

4 Gender Role Attitudes and The Labor Market

The evidence in the previous section suggests attitudes towards gender roles transcend generations. It is now valuable to explore whether this link manifests itself in the labor market participation of the children during their adulthood. We first examine some economic outcomes of interest and their relationship with attitudes towards gender roles. Although we examine the cultural transmission mechanism by merging data

for respondents from the NLSY79 with that of their children in the CYNLSY79, individuals in the latter sample are too young to investigate the economic long run effects of their attitudes. Thus we return our focus to the original NLSY79 sample. We examine the relationship between these attitudes collected in 1979, when the respondents in the NLSY79 were aged 14 to 22 years, and the economic decisions of these individuals in 2004.[5]

Tables 5A and 5B cross tabulate the individual's attitude value in 1979 with some socio-economic variables for the individual in 2004. The tables also contain information regarding the individual's mother which was also collected in 1979. Table 5A reports the data on individuals who are married in 2004 while Table 5B reports the corresponding data for those who are unmarried in 2004. We restrict our attention to individuals living with their mothers at age 14 years, who were not married in 1979, and who reported valid information on their own labor market and educational behavior and that of their spouses in 2004.[6]

The upper panel of Table 5A, which contains the data for female respondents, has several interesting features. There is no apparent relationship between the age of the respondent, or her partner's age, and attitudes noting there is little scope for variation in the respondent's age. The woman's educational level in 2004 is generally positively correlated with her attitude level in 1979 despite a small fall for the group with an attitude value equal to 20. A positive relationship also exists, in general, between a woman's attitude value and the education level of her partner in 2004. This reflects positive assortative mating. The education level of the respondent's mother as

[5] The NLSY79 does not contain information on the mother's gender role attitudes.

[6] The NLSY79 contains some characteristics of the respondent's partner but does not include information on her/his attitudes or family background.

reported in 1979 is also positively correlated with the attitude value although this is driven primarily by the two extreme values of the index. A comparison of the number of children for the woman in 2004 and that of her mother in 1979 reveals a large reduction in the number of children for these two generations of females. Nevertheless, there appears to be a positive relationship between the traditional attitudes of a woman and; a) the number of her own children; and b) the number of her mother's children. The table also reports the proportion of the respondents and their partners which are employed in 2004 and the proportion of respondents' mothers working when the respondent was aged 14 years. There is a clear and negative relationship between the respondent's traditional attitudes, expressed in 1979, and her probability of working in 2004. Moreover, the magnitude of the change in the probability of working is large as we move from the lowest (.71) to the highest (.78) categories. The respondents' partners' employment rate shows a similar trend but given the relatively high participation rates of males the change from the lowest to the highest group is less dramatic. Finally, there is a positive striking relationship between the respondent's index and the labor force participation of her mother. Recall that the responses for both columns are for periods close in time and this probably strengthens the relationship. The large increase in the participation rates of females during the last several decades is largely responsible for the differences in the columns headed workR and workMR.

Now consider the lower panel of Table 5A which corresponds to the male respondents. There seems to be some association between the age of the respondents and their index value. Older males are less traditional noting the lack of variation in the respondents' ages restricts the magnitude of any such relationship. There is generally

a positive relationship between not only a male's attitudes and his level of education but also between his attitudes and his partner's level of education. While the relationship is not monotonic for partners, the table indicates that for both respondents and their partners the average level of education increases by two years as one goes from the lowest attitude group to the highest. The mother's education level shows a similar pattern to that of the partners of their sons. For males there appears to be no relationship between attitudes and their number of children. This is in contrast to the number of their own siblings which is decreasing with the level of attitudes. The participation rate of sons in 2004 is invariant to their attitude expressed in 1979. More interesting, however, is the labor market behavior of the respondents' mothers and wives across the different categories of males' attitudes. For mothers there is a drastic increase in employment rates as we move from the lowest attitude group to the highest. This pattern is very similar to that for the mothers of the female respondents reported in the upper panel. An equally remarkable and similar pattern appears in the employment rate of the son's partners. The wives of men with a value of the index in the upper tail of the attitudes distribution in 1979 (i.e. above the 80^{th} percentile) have an employment probability 12 percentage points higher in 2004 than wives whose husband's attitudes index is at the bottom 20 percent of the 1979 attitudes distribution. For the mothers of these males the corresponding difference is 26 percentage points, noting that the magnitude of the differences are not directly comparable due to the large increase in the female participation rate across the two generations.

Table 5B reports the corresponding data for individuals who are not married in 2004. As we focus below on the impact of cultural transmission on females' work

behavior we use the observations for females from Table 5B in the empirical work that follows but not those for males. However, an examination of Tables 5A and 5B indicates that the relationships that exist in the married sample between attitudes and socio economic characteristics also hold for the non married sample when relevant. Note that for this group there is a positive relationship between traditional attitudes and the probability of having a child.

While we do not draw any inferences regarding causal relationships from these tables a number of features are interesting. Most notably, the correlation between the attitudes of the female respondents and their work decision, and that existing between the attitudes of male respondents and the work decisions of their spouses, are suggestive of a relationship between culture and female labor force participation.

To further investigate this relationship we estimate models explaining the work decisions of female respondents and those of the male respondent's partners. The models take the form

$$Work04_i = \alpha_0 + \alpha_1 Att79_i + \alpha_2 X_i + \varepsilon_i \tag{1}$$

where $Work04_i$ is an indicator that the individual is employed in 2004, $Att79_i$ is the individual attitudes index constructed with the 1979 responses and X_i is a vector of potential explanatory variables related to the individual's background.[7] Depending on the empirical question we explore we employ different explanatory variables in X_i. First we investigate our ability to explain an individual's probability of working in 2004 using the 1979 data. Alternatively we explore whether the 1979 characteristics

[7] The variable $Work04_i$ takes the value 1 if the individual responded to be employed in the week of the survey.

have any statistical relevance for the 2004 employment decision after we include all the 2004 factors. We interpret a statistically significant role for the 1979 attitudes in either specification as support for the presence of an economic effect from cultural transmission.

We first examine if the characteristics of the individuals in 1979 have a subsequent impact on their employment decision. Table 6 reports the results for females noting that all female respondents are used irrespective of their marital status. Tables 6 to 9 have the following format. The column headed OLS contains the results from a linear probability model while PROBIT denotes the estimates from probit MLE. The second (2SLS) and fourth (CML) columns represent the same specifications but account for the potential endogeneity of attitudes. 2SLS employs instrumental variables and CML, which denotes the conditional maximum likelihood procedure of Rivers and Vuong (1988), accounts for the endogeneity through the inclusion of the reduced form residual as a control function in (1). The OLS and 2SLS estimates are less reliant on distributional assumptions and the adjustment for endogeneity only requires the orthogonality of the instruments to the work equation error ε. This robustness is associated with a potential efficiency loss and thus we also report the probit estimates. The consistency of these estimates, and the adjustment for endogeneity employed in the CML, are reliant on the normality assumption for both ε and the reduced form equation error.

The first column of Table 6 indicates that the female's background in 1979 is unable to explain if she will be employed 25 years later. The only statistically significant coefficients are associated with race and indicate that white and blacks each show a higher propensity to be employed than the control group which comprises

the remaining races. The attitudes variable is statistically insignificant. The probit estimates in column 3 give the same substantive conclusion as the OLS estimates.

The statistical insignificance of the attitudes variable may reflect its endogeneity. This is not due to an argument based on simultaneity, which is implausible since attitudes are measured in 1979 and the work variable is observed in 2004, but through two other mechanisms. First, unobserved characteristics which influence attitudes might be positively correlated with the work decision. This would suggest that the coefficient on the control function which measures this correlation is positive. Alternatively, the endogeneity may arise from the measurement of attitudes. That is, the construction of the index employs some responses which are not directly related to labor force participation although they are related to gender roles. If a component of the attitude is irrelevant for the work decision this will downward bias its coefficient, similar to measurement error, and produce a negative coefficient on the control function in the CML estimates. The t-test for whether the coefficient of the control function, denoted λ in the tables, is equal to zero is a test of exogeneity.

To account for the endogeneity of attitudes we require instruments and we employ the dummy variable indicating whether the mother worked when the respondent was aged 14 years, her highest level of completed education and the number of children in the family in 1979. This choice is motivated by the local average treatment effect (LATE) interpretation of Imbens and Angrist (1994). That is, we exploit the variation in the attitudes index which is attributable to the market behavior of the mother. We interpret the instrumental variable estimate as the change in the work decision due to the change in attitudes resulting from the labor market behavior of the respondent's mother. The reduced form estimates are in Table 10 noting that the four sets of

estimates reported there correspond to the two equations for each of the two samples we consider. The reduced forms contain all of the variables in the work equation plus the three instruments.

The results from accounting for the endogeneity of attitudes reveal a statistically significant role for attitudes. The estimated coefficient for attitudes has increased to .054 in column 2 and .151 in the probit specification. The regression based form of the Hausman test rejects the exogeneity of attitudes to the work decision and indicates that the adjusted results are the preferred.[8] The 2SLS coefficient indicates that an one standard deviation increase in the index now leads to a 15 percentage points increase in the probability of working. This suggests there is a substantial effect from mother's behavior operating through the individual's attitude towards the role of women noting that the percentage of women working in this sample is .75. CML provides the same results in terms of the presence and magnitude of the attitudes' effect and the test of the exogeneity of attitudes.

The estimate on the control function in the CML estimation is negative. This indicates that some component of the attitudes variable is not relevant for the work decision and this is reducing the attitudes' coefficient in the unadjusted OLS and probit estimates. By using the work related characteristics of the mother as instruments we are exploiting the variation in attitudes due to the "work related behavior" of the mother and this captures the effect in which we are interested.

A feature of Table 6 is that with the exception of the attitudes and race variables there are no other statistically significant explanators. This reflects the difficulty

[8]This form of the Hausman test is a t-test on the coefficient of the reduced form residuals when they are included in the main equation. The coefficient for the residuals in this specification is -.050 with a standard error of .020.

in predicting the work behavior in 2004 using time varying variables measured 25 years earlier but highlights the importance of attitudes reported at an early age. In Table 7 we extend this specification by adding variables which reflect the individual's environment in 2004. The corresponding reduced form is presented in Table 10.

Columns 1 and 3 of Table 7 reveal that the variables characterizing the environment in 2004 are more important than the 1979 characteristics. Of particular relevance is the individual's education level and the family characteristics such as partner's age and income and the presence of young children. There is no apparent role for the attitudes variable although the endogeneity argument outlined above is also relevant here. Using the same instruments as Table 6 we re-estimate the model and report the estimates in columns (2) and (4). Although the coefficients are significant at slightly lower levels of statistical significance the similarity of the estimates with the Table 6 estimates is remarkable. While the estimates in the relevant columns in Table 6 are .054 and .151 they are now .048 and .140. This is despite the inclusion of variables, such as education and children, which might incorporate the attitudes effect. The 2SLS and CML estimates, and their associated tests reported in the tables, reject the exogeneity of attitudes indicating that the adjusted results are preferred. The evidence strongly suggests that the attitudes component determined by the individual's mother's working behavior is strongly affecting her work decision. Moreover the effect is non trivial in economic terms.

We now focus on the behavior of the male respondents. Fernández et al (2004) argue that "men marry their mothers" and empirically establish this relationship by regressing the labor force participation decision of the son's wife on a dummy indicating that his mother worked. We provide a mechanism for this relationship by

reproducing Tables 6 and 7 with the respondent's wife's employment decision as the dependent variable. Thus our sample comprises only married male respondents. We first regress the wife's employment decision against the son's attitude variable and the same series of variables used in Table 6 which characterize the son's environment in 1979. Note that the employment decision for the wife refers to 2003 although it is asked of the husband in 2004.[9] This has no important implications for our investigation. The first set of results is reported in Table 8.

There are very few 1979 variables which explain the wife's market work decision. However, even for the specification in which attitudes are treated as exogenous there is a statistically significant relationship between the husband's attitudes and his wife's work decision. Controlling for the endogeneity increases the point estimate of the attitudes coefficient. Its magnitude in the wife's equation, .058 for IV and .191 for CML, is very similar in magnitude to those for female respondents. Moreover, as with the female respondents, the tests of exogeneity reject that attitudes are exogenous and the estimates for the control function coefficient are negative.

Table 9 augments the specification with variables capturing the husband's environment in 2004. A number of these, such as the wife's education level, her age, the income level of the husband and his work decision, influence the wife's employment decision. However, there remains statistically significant evidence of a role for the husband's attitudes. While accounting for the endogeneity reduces the statistical significance of this effect, the point estimate is similar to that using only the 1979 explanatory variables and also to that for the female respondents. Note, however, in this specification the exogeneity of attitudes is rejected at lower levels of significance.

[9] The dependent variable takes the value 1 if the individual responded yes to the question: "Was your wife/partner employed in 2003?".

This probably reflects the endogeneity of many of the other explanatory variables in this specification.

Prior to giving our final interpretation of the estimates some econometric issues need to be addressed. The models which account for the endogeneity employed exclusion restrictions. Accordingly we need to verify that the instruments are informative and the exclusion restrictions used to identify the model are valid.

An examination of Table 10 indicates that for each of the specifications the instruments appear informative. For the female respondent's attitude specifications the dummy variable denoting the mother worked and the mother's level of education are statistically significant and each has a relatively large effect. For females the number of siblings is only statistically significant in the specification with the 1979 control variables. For the male respondents only the dummy variable indicating his mother worked is statistically significant in both specifications. Also note that the magnitude of the effect is nearly double that observed for the female equations. Of the other instruments the siblings variable is not significant in either specification and the mother's education variable is only statistically significant in the specification using the 1979 variables. Given this evidence we reproduced the empirical work using the dummy variable for mother worked as the only instrument. The results for the main equation are substantively the same as those reported here. It appears that the important variation in the data is captured by the mother worked variable.

For each of the models estimated by 2SLS we report the value of the Sargan test of the validity of the over identifying restrictions to ensure that the instruments are not incorrectly excluded from the work equation. In each case it fails to reject the hypothesis that the instruments employed can be correctly excluded from the work

equations. This indicates that the impact of mother working on the work decision of the daughters and daughters in law operates indirectly through its impact on the respondent's attitudes and not through the individual "copying" the behavior of the mother or economic considerations. We highlight that we include the corresponding variables for the father in both equations in order to capture these possible economic considerations although they also appear to have no impact on the work decision.

Our evidence clearly suggest that cultural attitudes regarding the role of women in the labor market are passed from generation to generation and that the transmission of these attitudes has implications for the labor market behavior of younger generations. Our empirical evidence indicates that increasing an individual's attitude in 1979 by one standard deviation has the following effects. For females the probability of employment in 2004 increases by approximately 15 percentage points. For males, a similar increase in their attitudes in 1979 leads to an increase of approximately the same magnitude in the probability that their partner is employed. This effect is approximately in the middle of the range of estimates given by Fernández et al (2004) for their estimate of the impact of the mother in law working on the working probability of a woman although we note that the effects are not directly comparable.

Given the presence of these effects it is important to consider how they might operate. For female respondents it seems reasonable to conclude that these views have a direct effect on the probability of that they working. However, for male respondents it is less obvious. While we establish a causal link between male's attitudes and the behavior of his wife it is not clear how this mechanism operates. That is, is the male finding a partner and then exerting pressure to make her more or less likely to work or is he choosing a partner on the basis of his preferences which include that

for a working wife? While this question remains beyond the scope of this paper the evidence is quite clear. That is, the attitudes towards working women appear to be inherited by both males and females from the previous generation and these attitudes appear to have important effects on the labor force behavior of the females of their own generation.

5 Conclusions

This paper investigates the contribution of common cultural traits to the labor market participation decisions across generations. We do so by constructing an index of an individual's attitudes towards gender roles and examining if these attitudes are passed from a woman to her children. A number of our empirical results are striking. First, we find evidence of a strong relationship between the responses of a woman regarding the role of females in the family and the labor market and those of her children. Moreover, this strong relationship holds even when we condition on measures of the individual's economic and cultural background. Second, we find that after accounting for the endogeneity of a woman's attitudes towards her role in the labor market, these attitudes are able to partially explain that woman's market work decision despite the fact that the attitudes are asked 25 years earlier. More strikingly, we find that the same relationship holds regarding a male's attitudes towards working women and the employment decision of his wife. We interpret this evidence as clearly, and strongly, supporting the conjecture that cultural attitudes towards working women are passed from generation to generation and that this cultural transmission has important implications for the economic behavior of the younger cohorts.

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Table 1: Distribution of Gender Role Attitudes for Males and Females in the NLSY79 (1979-2004)*

	1979		2004	
	Males	Females	Males	Females
Q1: A woman's place is in the home, not in the office or shop.	0.69	0.84	0.89	0.92
Q2: A woman who carries out her full family responsibilities does not have time for outside employment.	0.66	0.77	0.81	0.85
Q3: A working wife feels more useful than one who does not have a job.	0.70	0.60	0.58	0.39
Q4: The employment of wives leads to more juvenile delinquency.	0.70	0.76	0.71	0.72
Q5: It is better for everyone concerned if the man is the achiever outside the home and the woman takes care of the home and the family.	0.51	0.63	0.74	0.76
Q6: Men should share the work around the house with women, such as doing dishes, cleaning and so forth.	0.78	0.84	0.96	0.96
Q7: Women are much happier if they stay at home and take care of their children.	0.65	0.74	0.67	0.72
Index	19.07 (3.17)	20.43 (3.34)	20.42 (2.88)	21.06 (3.06)
Obs	1732	2046	1732	2046

*The Table displays the percentage of individuals who reported that they "strongly disagree" or "disagree" with statements 1,2,4,5 and 7, or "strongly agree" or "agree" with statement 3 and 6.

Figure 1.A: Males and Females in the NLSY79 (Attitudes measured in 1979)

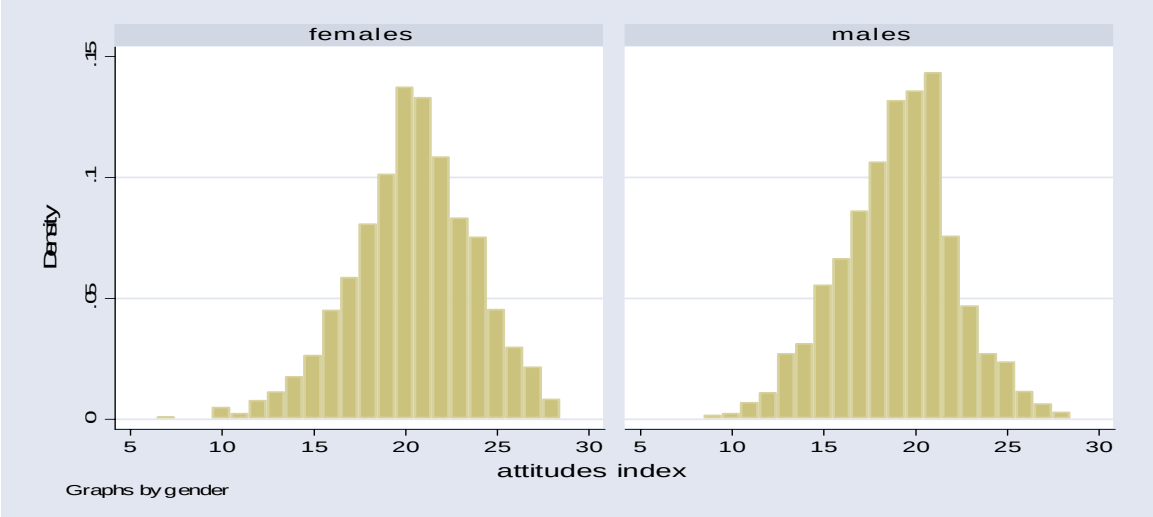

Figure 1.B: Males and Females in the NLSY79 (Attitudes measured in 2004)

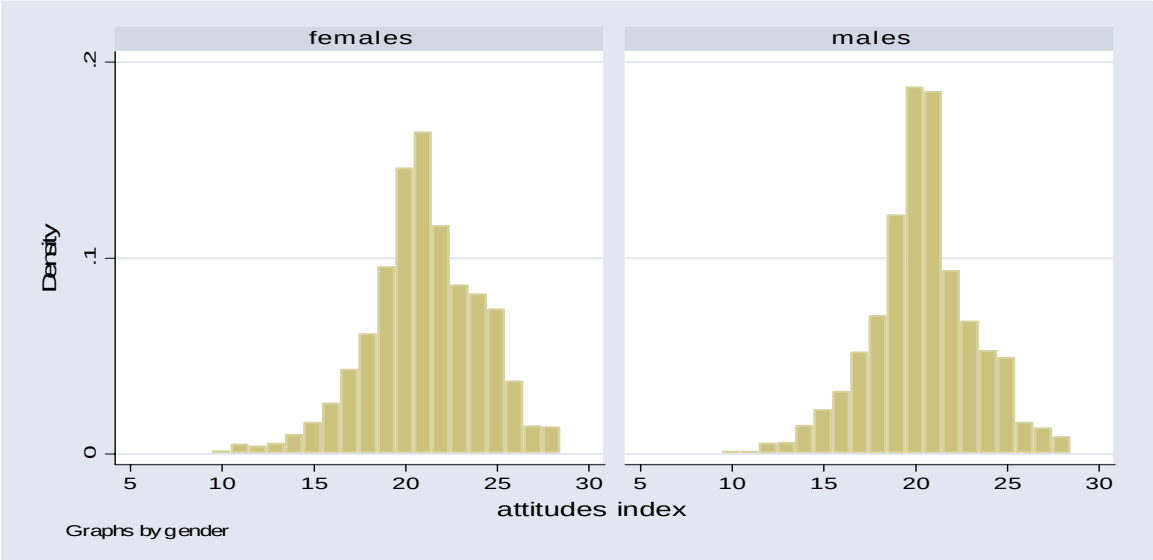

Figure 1.C: Children of the NLSY79 (Attitudes measured in different years from 1994 to 2002)

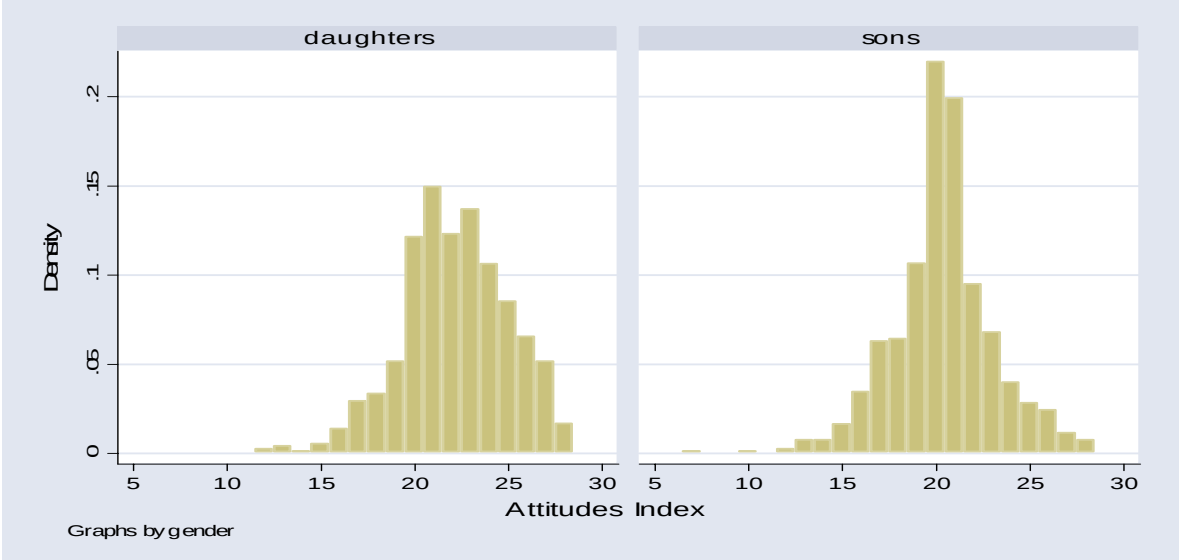

Table 2: Age and year at which children's attitudes are reported

age	Obs	year	Obs
15	226 (18.26%)	2002	355 (28.68%)
16	321 (25.93%)	1998	421 (34.01%)
17	85 (6.87%)	1996	307 (24.80%)
18	233 (18.82%)	1994	155 (12.52%)
19	254 (20.52%)		
20	65 (5.25%)		
21	52 (4.20%)		
22	2 (0.16%)		

Table 3: Distribution of Gender Role Attitudes for Children of the NLSY79 (1994-2002), at age 15-22*

	Sons	Daughters
Q1: A woman's place is in the home, not in the office or shop.	0.83	0.92
Q2: A woman who carries out her full family responsibilities does not have time for outside employment.	0.80	0.91
Q3: A working wife feels more useful than one who does not have a job.	0.66	0.58
Q4: The employment of wives leads to more juvenile delinquency.	0.84	0.90
Q5: It is better for everyone concerned if the man is the achiever outside the home and the woman takes care of the home and the family.	0.71	0.84
Q6: Men should share the work around the house with women, such as doing dishes, cleaning and so forth.	0.93	0.97
Q7: Women are much happier if they stay at home and take care of their children.	0.70	0.82
Index	20.39 (2.72)	22.20 (2.85)
Obs	778	715

*The Table displays the percentage of individuals who reported that they "strongly disagree" or "disagree" with statements 1,2,4,5 and 7, or "strongly agree" or "agree" with statement 3 and 6.

Table 4: The effect of Mother's Gender Role Attitudes on Children's Attitudes†

Dependent variable:	Child's Attitudes Index					
	(1) All	(2) Sons	(3) Daughters	(4) All	(5) Sons	(6) Daughters
attMother	0.171	0.184	0.165			
	(0.028)***	(0.039)***	(0.042)***			
gender	-1.544			-1.580		
	(0.216)***			(0.220)***		
oldsib	-0.260	-0.320	-0.288	-0.300	-0.362	-0.341
	(0.198)	(0.280)	(0.294)	(0.201)	(0.286)	(0.298)
malesib	-0.312	-0.299	-0.240	-0.315	-0.388	-0.262
	(0.352)	(0.508)	(0.542)	(0.358)	(0.518)	(0.550)
sib	-0.320	-0.220	-0.402	-0.337	-0.257	-0.407
	(0.064)***	(0.089)**	(0.098)***	(0.065)***	(0.091)***	(0.100)***
agemborn	-0.132	-0.114	-0.161	-0.141	-0.122	-0.171
	(0.047)***	(0.064)*	(0.070)**	(0.047)***	(0.065)*	(0.071)**
jws	-0.797		-1.037	-0.596		-0.701
	(1.910)		(2.037)	(1.944)		(2.065)
bapt	-0.674	-0.796	-0.746	-0.868	-1.039	-0.883
	(0.280)**	(0.390)**	(0.415)*	(0.283)***	(0.395)***	(0.420)**
lut	0.080	0.360	-0.377	-0.171	-0.089	-0.449
	(0.413)	(0.569)	(0.620)	(0.418)	(0.572)	(0.629)
met	0.082	0.176	-0.219	-0.032	-0.098	-0.222
	(0.430)	(0.616)	(0.622)	(0.438)	(0.627)	(0.631)
pres	-0.500	-0.247	-1.049	-0.530	-0.405	-0.967
	(0.696)	(0.862)	(1.184)	(0.709)	(0.879)	(1.201)
epis	-0.854	-0.891	-1.038	-0.935	-0.226	-1.110
	(1.112)	(2.600)	(1.310)	(1.132)	(2.652)	(1.330)
mor	-1.001	-0.246	-1.750	-1.368	-0.735	-1.980
	(0.866)	(1.196)	(1.282)	(0.879)	(1.217)	(1.300)
prot	-0.633	-0.557	-0.886	-0.908	-0.961	-1.044
	(0.282)**	(0.396)	(0.418)**	(0.283)***	(0.394)**	(0.422)**
other	-0.278	-0.170	-0.579	-0.512	-0.548	-0.673
	(0.343)	(0.433)	(0.581)	(0.347)	(0.435)	(0.589)
rc	-0.388	-0.242	-0.566	-0.520	-0.479	-0.596
	(0.276)	(0.382)	(0.419)	(0.280)*	(0.387)	(0.425)
imgm	-0.206	0.087	-0.497	-0.359	-0.030	-0.653
	(0.480)	(0.692)	(0.687)	(0.488)	(0.706)	(0.696)
Meduc	0.170	0.132	0.200	0.199	0.152	0.236
	(0.047)***	(0.064)**	(0.071)***	(0.048)***	(0.065)**	(0.071)***
Mwork	0.383	0.497	0.358	0.538	0.678	0.491
	(0.191)**	(0.266)*	(0.283)	(0.192)***	(0.269)**	(0.285)*
malep14	-0.787	-1.617	-0.122	-0.729	-1.454	-0.103
	(0.645)	(0.890)*	(1.010)	(0.657)	(0.908)	(1.025)
malep14work	0.046	-0.103	0.332	-0.036	-0.310	0.326
	(0.434)	(0.638)	(0.617)	(0.442)	(0.651)	(0.626)
malep14educ	0.088	0.115	0.065	0.089	0.118	0.062
	(0.042)**	(0.054)**	(0.070)	(0.043)**	(0.055)**	(0.071)
Constant	18.054	15.265	20.107	21.539	19.072	23.463
	(1.882)***	(2.532)***	(2.962)***	(1.824)***	(2.448)***	(2.875)***
Observations	1014	509	505	1014	509	505
R-squared	0.22	0.15	0.17	0.19	0.12	0.15

†See Table 11 for variable definition. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. Additional controls included are age and year in which the child reports attitudes, child's race and an indicator variables for the region of the child's residence at age 14 (North East, North Central, West, North) as well as an indicator variable for living in a city at age 14. The only variable of this list which had a statistically significant coefficient at conventional testing levels is the "age at which attitudes are reported". In column (2) this had a coefficient of 0.188 and a standard error of 0.092. The omitted religious category is nonrel.

Table 5A: Socio-Economic Characteristics Tabulated by Attitudes
(married in 2004)

Females

Attitudes Index distribution	att79R	ageR	ageP	educR	educP	MeducR	childR	MchildR	workR	workP	MworkR	Obs
<=17 (13%)	15.37*	42.57	44.72	13.34	13.41	10.99	2.04	3.60	0.71	0.91	0.39	164
18-19 (32%)	18.57	43.11	44.15	13.78	13.97	11.57	2.23	3.34	0.74	0.93	0.51	233
20 (47%)	20	43.08	45.10	13.63	13.53	11.46	2.01	3.20	0.74	0.92	0.52	178
21 (61%)	21	42.83	44.31	14.26	14.34	12.16	1.95	3.20	0.75	0.96	0.57	172
22-23 (80%)	22.45	43.02	44.73	14.26	14.12	11.84	2.04	3.06	0.76	0.95	0.59	251
>=24 (100 %)	25.18	43.14	44.55	15.01	14.71	12.62	1.71	2.76	0.78	0.96	0.66	236

Males

Attitudes Index distribution	att79R	ageR	ageP	educR	educP	MeducR	childR	MchildR	workR	workP	MworkR	Obs
<=16 (20 %)	14.57	42.77	40.86	12.61	12.92	10.97	2	3.40	0.89	0.69	0.38	243
17-18 (39 %)	17.58	42.93	40.20	13.53	13.60	11.39	2.02	3.36	0.92	0.72	0.48	233
19 (52 %)	19	43.25	40.60	13.62	13.62	11.61	2.04	3.36	0.91	0.73	0.45	156
20 (65 %)	20	43.25	40.85	14.11	14.55	12.37	2	3.03	0.95	0.80	0.62	159
21 (80 %)	21	43.35	41.22	14.30	14.16	12.46	2.12	2.88	0.95	0.77	0.63	184
>= 22 (100 %)	23.36	43.52	40.98	14.69	14.74	12.66	2	2.67	0.93	0.81	0.64	244

*Each cell reports the mean value of the variable of interest at the corresponding attitudes range.

Variable Definition

att79R: Attitudes index of the respondent constructed from the responses in 1979
ageR: age of the respondent in 2004
ageP: age of the respondent's partner in 2004
educR: years of education of the respondent as reported in 2004
educP: years of education of the respondent's partner as reported in 2004
MeducR: years of education of the respondent's mother as reported in 1979
childR: number of children of the respondent as reported in 2004
MchildR: number of siblings (including the respondent) as reported in 1979 (respondent's mother fertility rate)
workR: employment rate of the respondents in 2004
workP: employment rate of the respondents' partners in 2003
MworkR: employment rate of the respondents' mothers when the respondents were age 14

Table 5B: Socio-Economic Characteristics Tabulated by Attitudes
(Not married in 2004)

Females

Attitudes Index distribution	att79R	ageR	educR	MeducR	pchildR	MchildR	workR	MworkR	Obs
<=17 (13%)	15.57*	42.84	12.24	10.30	0.83	3.78	0.70	0.40	219
18-19 (33%)	18.53	42.79	12.55	10.83	0.88	3.71	0.65	0.42	205
20 (47%)	20	43.10	12.88	11.18	0.83	3.81	0.71	0.54	174
21 (61%)	21	43.18	13.26	11.68	0.82	3.33	0.72	0.55	175
22-23 (81%)	22.42	43.13	13.66	11.80	0.81	3.15	0.76	0.53	258
>=24 (100 %)	25.10	43.49	14.17	12.33	0.78	3.06	0.81	0.60	240

Males

Attitudes Index distribution	att79R	ageR	educR	MeducR	pchildR	MchildR	workR	MworkR	Obs
<=16 (20 %)	14.56	42.89	12.12	10.73	0.81	3.68	0.82	0.43	279
17-18 (39 %)	17.55	42.88	12.49	11.27	0.79	3.57	0.70	0.48	269
19 (52 %)	19	43.11	12.67	11.34	0.72	3.26	0.76	0.50	174
20 (67 %)	20	43.31	12.96	11.94	0.77	3.19	0.80	0.53	212
21 (82 %)	21	43.42	13.28	12.00	0.74	3.13	0.83	0.58	212
>= 22 (100 %)	23.26	43.33	13.77	12.11	0.72	3.04	0.87	0.61	242

pchildR: percentage of respondents with children in 2004

Table 6: The effect of Gender Role Attitudes on Female Work Decision

Dependent variable:	work decision in 2004			
	(1)	(2)	(3)	(4)
	(OLS)	(2SLS)	(PROBIT)	(CML)
att79	0.005	0.054	0.017	0.151
	(0.003)	(0.021)**	(0.010)	(0.048)***
age	0.257	0.167	0.802	0.483
	(0.202)	(0.218)	(0.641)	(0.630)
age2	-0.003	-0.002	-0.009	-0.006
	(0.002)	(0.003)	(0.007)	(0.007)
white	0.150	0.126	0.429	0.323
	(0.064)**	(0.069)*	(0.193)**	(0.193)*
black	0.119	0.080	0.341	0.199
	(0.072)*	(0.078)	(0.216)	(0.217)
img	0.068	0.075	0.218	0.214
	(0.063)	(0.067)	(0.205)	(0.196)
city14	-0.035	-0.031	-0.114	-0.093
	(0.026)	(0.027)	(0.083)	(0.080)
south14	-0.035	-0.012	-0.112	-0.034
	(0.025)	(0.028)	(0.079)	(0.082)
Fpresent14	-0.013	-0.006	-0.037	-0.016
	(0.054)	(0.058)	(0.323)	(0.162)
Fwork14	0.040	0.042	0.121	0.119
	(0.047)	(0.050)	(0.147)	(0.141)
Feduc	0.003	-0.002	0.009	-0.007
	(0.003)	(0.004)	(0.009)	(0.011)
public	-0.013	0.007	-0.037	0.018
	(0.044)	(0.048)	(0.143)	(0.139)
rc	0.053	0.032	0.163	0.090
	(0.054)	(0.058)	(0.167)	(0.164)
prot	-0.045	-0.052	-0.132	-0.142
	(0.071)	(0.076)	(0.217)	(0.208)
bapt	0.020	0.020	0.062	0.056
	(0.056)	(0.060)	(0.174)	(0.167)
epis	0.050	-0.035	0.160	-0.099
	(0.100)	(0.110)	(0.311)	(0.312)
lut	0.074	0.044	0.237	0.131
	(0.063)	(0.068)	(0.201)	(0.198)
met	0.088	0.036	0.279	0.102
	(0.060)	(0.067)	(0.189)	(0.195)
pres	0.079	0.044	0.254	0.135
	(0.071)	(0.077)	(0.228)	(0.224)
jws	0.135	0.013	0.494	0.108
	(0.104)	(0.122)	(0.369)	(0.382)
otherr	0.071	0.076	0.224	0.216
	(0.060)	(0.063)	(0.187)	(0.180)
λ				-0.460
				(0.187)**
Constant	-5.152	-4.110	-17.687	-13.27
	(4.376)	(4.666)	(13.905)	(13.49)
Observations	1749	1749	1749	1749
R^2	0.02		0.01	

- See Table 11 for variable definition. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. The omitted religious category is nonrel and the omitted race is other.
- (1): Linear Probability Model. The absolute value of the t-statistic of the regression based form of the Hausman test is 2.5; (2): Two-Stage Least Squares. The Sargan test for the validity of the overidentifying restrictions has the value NR^2=0.1749; the R^2 is obtained from regressing the residuals of the estimated model in column 1 on all the exogenous variables, including the instruments; (3): Probit Model; (4): Conditional MLE procedure (Rivers and Vuong (1988)), standard errors account for the generated residuals included in the second step of the estimation procedure.

Table 7: The effect of Gender Role Attitudes on Female Work Decision (additional controls X04)

Dependent variable:	work decision in 2004			
	(1)	(2)	(3)	(4)
	(OLS)	(2SLS)	(PROBIT)	(CML)
att79	0.002	0.048	0.009	0.139
	(0.003)	(0.026)*	(0.011)	(0.067)**
educ	0.023	0.015	0.083	0.051
	(0.005)***	(0.007)**	(0.017)***	(0.026)**
NE	0.040	0.039	0.149	0.135
	(0.040)	(0.043)	(0.140)	(0.135)
NC	0.082	0.099	0.314	0.336
	(0.037)**	(0.040)**	(0.128)**	(0.123)***
W	-0.049	-0.054	-0.147	-0.149
	(0.039)	(0.042)	(0.133)	(0.128)
city04	0.005	0.004	0.013	0.008
	(0.023)	(0.025)	(0.080)	(0.077)
ageP	0.068	0.054	0.215	0.157
	(0.025)***	(0.028)*	(0.083)**	(0.089)*
age2P	-0.001	-0.001	-0.002	-0.002
	(0.000)**	(0.000)*	(0.001)**	(0.001)*
educP	-0.002	-0.002	-0.007	-0.007
	(0.006)	(0.006)	(0.021)	(0.020)
incomeP	-0.002	-0.002	-0.006	-0.005
	(0.000)***	(0.000)***	(0.001)***	(0.001)***
hoursP	-0.001	-0.001	-0.002	-0.002
	(0.001)	(0.001)	(0.003)	(0.003)
child6	-0.074	-0.080	-0.234	-0.233
	(0.033)**	(0.035)**	(0.111)**	(0.107)**
child	-0.026	-0.016	-0.085	-0.050
	(0.008)***	(0.010)	(0.027)***	(0.034)
married04	-1.461	-1.198	-4.625	-3.477
	(0.592)**	(0.642)*	(1.936)**	(2.027)*
X79	YES	YES	YES	YES
ReligionR	YES	YES	YES	YES
ReligionP	YES	YES	YES	YES
λ				-0.428
				(0.246)*
Constant	-3.412	-2.768	-14.003	-11.02
	(4.248)	(4.502)	(14.527)	(14.100)
Observations	1749	1749	1749	1749
R^2	0.11		0.01	

- See Table 11 for variable definition. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.
- X79 indicates that all the explanatory variables included in the empirical model in Table 6 are also included here. ReligionR refers to dummies capturing the religion in which the respondent was raised, while ReligionP refers to dummies capturing the religion in which the partner was raised.
- (1): Linear Probability Model. The absolute value of the t-statistic of the Hausman test is 1.889; (2): Two-Stage Least Squares. The Sargan test for the validity of the overidentifying restrictions has the value NR^2=0.5247; (3): Probit Model; (4): Conditional MLE procedure (Rivers and Vuong (1988)), standard errors account for the generated residuals included in the second step of the estimation procedure.

Table 8: The effect of Husband's Gender Role Attitudes on Wives' Work Decision

Dependent variable:	wife's work decision in 2003			
	(1)	(2)	(3)	(4)
	(OLS)	(2SLS)	(PROBIT)	(CML)
att79H	0.012	0.058	0.042	0.191
	(0.004)***	(0.027)**	(0.015)***	(0.063)***
ageH	-0.479	-0.392	-1.704	-1.232
	(0.262)*	(0.281)	(0.901)*	(0.900)
age2H	0.006	0.004	0.020	0.014
	(0.003)*	(0.003)	(0.010)*	(0.010)
whiteH	0.055	0.078	0.173	0.231
	(0.069)	(0.074)	(0.223)	(0.211)
blackH	0.126	0.118	0.450	0.370
	(0.089)	(0.094)	(0.305)	(0.293)
imgH	-0.012	0.026	-0.005	0.127
	(0.090)	(0.097)	(0.300)	(0.289)
city14H	-0.014	-0.021	-0.055	-0.072
	(0.033)	(0.035)	(0.110)	(0.104)
south14H	-0.043	-0.026	-0.148	-0.077
	(0.034)	(0.038)	(0.114)	(0.115)
Fpresent14H	0.061	0.141	0.257	0.491
	(0.088)	(0.104)	(0.323)	(0.316)
Fwork14H	-0.095	-0.119	-0.373	-0.414
	(0.076)	(0.082)	(0.284)	(0.267)
FeducH	0.002	-0.007	0.008	-0.022
	(0.004)	(0.007)	(0.014)	(0.018)
publicH	0.055	0.052	0.174	0.145
	(0.056)	(0.059)	(0.182)	(0.175)
rcH	0.017	-0.013	0.049	-0.055
	(0.067)	(0.073)	(0.225)	(0.218)
protH	-0.066	-0.057	-0.223	-0.171
	(0.088)	(0.093)	(0.285)	(0.273)
baptH	0.055	0.048	0.197	0.156
	(0.072)	(0.076)	(0.242)	(0.231)
episH	-0.143	-0.249	-0.458	-0.761
	(0.106)	(0.127)*	(0.338)	(0.338)**
lutH	-0.021	-0.050	-0.090	-0.177
	(0.074)	(0.080)	(0.248)	(0.237)
metH	-0.008	-0.029	-0.045	-0.101
	(0.078)	(0.083)	(0.259)	(0.247)
preH	-0.103	-0.153	-0.338	-0.468
	(0.093)	(0.102)	(0.301)	(0.288)
jwsH	-0.213	-0.282	-0.658	-0.811
	(0.122)*	(0.135)**	(0.383)*	(0.369)**
otherrH	-0.018	-0.036	-0.065	-0.123
	(0.075)	(0.080)	(0.249)	(0.237)
λ				-0.502
				(0.251)**
Constant	10.746	8.165	36.264	23.800
	(5.678)*	(6.174)	(19.515)*	(19.808)
Observations	972	972	972	972
R^2	0.03		0.063	

- See Table 11 for variable definition. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. The omitted religion category is nonrelH and the omitted race is otherH.
- (1): Linear Probability Model. The absolute value of the t-statistic of the Hausman test is 1.819; (2): Two-Stage Least Squares. The Sargan test for the validity of the overidentifying restrictions has the value NR^2=0.2916; (3): Probit Model; (4): Conditional MLE procedure (Rivers and Vuong (1988)), standard errors account for the generated residuals included in the second step of the estimation procedure.

Table 9: The effect of Husband's Gender Role Attitudes on Wives' Work Decision (additional controls X04)

Dependent variable:	wife's work decision in 2003			
	(1)	(2)	(3)	(4)
	(OLS)	(2SLS)	(PROBIT)	(CML)
att79H	0.011	0.041	0.045	0.176
	(0.004)**	(0.029)	(0.017)***	(0.087)**
educW	0.025	0.019	0.094	0.060
	(0.007)***	(0.009)**	(0.025)***	(0.037)
NE	0.059	0.080	0.167	0.250
	(0.054)	(0.059)	(0.197)	(0.194)
NC	0.074	0.099	0.240	0.331
	(0.049)**	(0.055)**	(0.176)	(0.175)**
W	0.040	0.050	0.123	0.158
	(0.053)	(0.055)	(0.191)	(0.184)
city04	0.058	0.062	0.228	0.234
	(0.029)**	(0.030)**	(0.105)**	(0.101)**
ageW	0.102	0.087	0.341	0.250
	(0.030)***	(0.034)****	(0.107)***	(0.130)*
age2W	-0.001	-0.001	-0.004	-0.003
	(0.000)***	(0.000)**	(0.001)***	(0.002)*
educH	-0.009	-0.013	-0.037	-0.048
	(0.007)	(0.007)*	(0.025)	(0.024)*
incomeH	-0.002	-0.001	-0.005	-0.004
	(0.000)***	(0.000)***	(0.001)***	(0.001)***
hoursH	0.002	-0.001	0.005	0.004
	(0.001)*	(0.001)	(0.003)*	(0.003)
child6	-0.119	-0.117	-0.415	-0.368
	(0.034)***	(0.035)***	(0.125)***	(0.132)***
child	-0.031	-0.033	-0.102	-0.101
	(0.011)***	(0.011)***	(0.040)**	(0.039)**
X79H	YES	YES	YES	YES
ReligionH	YES	YES	YES	YES
ReligionW	YES	YES	YES	YES
λ				-0.411
				(0.307)
Constant	12.600	10.882	-46.628	35.738
	(5.437)**	(5.807)**	(20.856)**	(22.294)
Observations	972	972	972	972
R^2	0.15		0.10	

- See Table 11 for variable definition. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.
- X79 indicates that all the explanatory variables included in the empirical model in Table 8 are also included here. ReligionH refers to dummies capturing the religion in which the respondent was raised, while ReligionW refers to dummies capturing the religion in which his wife was raised.
- (1): Linear Probability Model. The absolute value of the t-statistic of the Hausman test is 1.076; (2): Two-Stage Least Squares. The Sargan test for the validity of the overidentifying restrictions has the value NR^2=1.6524; (3): Probit Model; (4): Conditional MLE procedure (Rivers and Vuong (1988)), standard errors account for the generated residuals included in the second step of the estimation procedure.

Table 10: Reduced Form Equation for Gender Role Attitudes in 1979

Dependent variable:	Females Att79	Dependent variable:	Husbands Att79
sib	-0.086	sibH	-0.030
	(0.037)**		(0.052)
Mwork	0.551	MworkH	0.900
	(0.153)***		(0.199)***
Meduc	0.163	MeducH	0.110
	(0.037)***		(0.051)**
age	2.006	ageH	-1.865
	(1.456)		(1.864)
age2	-0.023	age2H	0.023
	(0.017)		(0.021)
withe	-0.045	witheH	-0.428
	(0.470)		(0.489)
black	0.361	blackH	0.153
	(0.523)		(0.635)
img	-0.169	imgH	-0.785
	(0.458)		(0.641)
city14	-0.112	city14H	0.139
	(0.185)		(0.232)
south14	-0.389	south14H	-0.310
	(0.181)**		(0.246)
Fpresent14	0.203	Fpresent14H	-1.371
	(0.396)		(0.632)**
Fwork14	-0.180	Fwork14H	0.404
	(0.342)		(0.548)
Feduc	0.036	FeducH	0.136
	(0.025)		(0.035)***
public	-0.269	publicH	0.165
	(0.321)		(0.403)
rc	0.577	rcH	0.886
	(0.391)		(0.482)*
prot	0.151	protH	0.025
	(0.513)		(0.625)
bapt	-0.026	baptH	0.173
	(0.407)		(0.512)
epis	1.635	episH	2.442
	(0.696)**		(0.749)**
lut	0.589	lutH	0.734
	(0.458)		(0.531)
met	1.009	metH	0.435
	(0.432)**		(0.553)
pres	0.662	presH	1.037
	(0.513)		(0.659)
jws	2.260	jwsH	1.729
	(0.748)***		(0.877)**
otherr	-0.049	otherrH	0.425
	(0.432)		(0.533)
Constant	-26.02	Constant	53.582
	(31.58)		(40.446)
Observations	1749	Observations	972
R^2	0.084	R^2	0.133

See Table 11 for variable definition. Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%. The omitted religious category is nonrel, and the omitted race category is other.

Table 10 (cont'd): Reduced Form Equation for Gender Role Attitudes in 1979 (additional controls X04)

Dependent variable:	Females att79
sib	-0.053
	(0.038)
Mwork	0.525
	(0.152)***
Meduc	0.121
	(0.038)***
educ	0.158
	(0.035)***
NE	0.012
	(0.299)
NC	-0.385
	(0.274)
W	0.086
	(0.292)
city04	0.034
	(0.172)
ageP	0.280
	(0.188)
age2P	-0.003
	(0.002)
educP	-0.009
	(0.044)
incomeP	-0.001
	(0.002)
hoursP	0.002
	(0.007)
child6	0.142
	(0.246)
child	-0.184
	(0.060)***
married04	-5.137
	(4.378)
X79	YES
ReligionR	YES
ReligionP	YES
Constant	-18.954
	(31.442)
Observations	174
R^2	0.084

Dependent variable:	Husbands att79H
sibH	-0.002
	(0.052)
MworkH	0.897
	(0.198)***
MeducH	0.056
	(0.051)
educW	0.177
	(0.048)***
NE	-0.695
	(0.397)*
NC	-0.794
	(0.355)**
W	-0.349
	(0.388)
city04	-0.109
	(0.209)
ageW	0.550
	(0.217)**
age2W	-0.007
	(0.003)**
educH	0.096
	(0.049)***
incomeH	-0.001
	(0.002)
hoursH	0.005
	(0.006)
child6	-0.133
	(0.251)
Child	0.089
	(0.081)
X79H	YES
ReligionH	YES
ReligionW	YES
Constant	57.654
	(39.791)
Observations	972
R^2	0.19

- Standard errors in parentheses, * significant at 10%; ** significant at 5%; *** significant at 1%.
- X79 indicates that all the explanatory variables in the first set of regressions in Table 10 are also included here. ReligionR and ReligionH refers to dummies capturing the religion in which the respondent was raised, while ReligionW and ReligionP refers to dummies capturing the religion in which his wife or her partner were raised.

Table 11: Variable definition

The Intergenerational Transmission of Gender Role Attitudes (Table 4)

attMother: mother's attitudes index, constructed from the responses to gender role statements in 2004
gender: gender of the respondent, gender=1 if male
oldsib: indicator variable taking value 1 if the respondent is the oldest sibling
malesib: percentage of males among the respondent's siblings
sib: number of siblings
agemborn: mother's age when the respondent was born
imgm: indicator variable taking value 1 if the mother was not born in the US
Meduc: highest level of education completed by the mother
Mwork: indicator variable taking value 1 if the mother worked when the respondent was age 14
malep14: indicator variable taking value 1 if there was an adult male present in the household when the respondent was age 14
malep14educ: highest level of education completed by the adult male who was present in the household when the respondent was age 14
malep14work: indicator variable taking value 1 if the adult male present in the household was working when the respondent was age 14
jws: indicator variable taking value 1 if Jewish is the religion of the respondent when attitudes are reported
bapt: indicator variable taking value 1 if Baptist is the religion of the respondent when attitudes are reported
lut: indicator variable taking value 1 if Lutheran is the religion of the respondent when attitudes are reported
met: indicator variable taking value 1 if Methodist is the religion of the respondent when attitudes are reported
pres: indicator variable taking value 1 if Presbyterian is the religion of the respondent when attitudes are reported
epis: indicator variable taking value 1 if Episcopalian is the religion of the respondent when attitudes are reported
mor: indicator variable taking value 1 if Mormon is the religion of the respondent when attitudes are reported
prot: indicator variable taking value 1 if Protestant is the religion of the child when attitudes are reported
rc: indicator variable taking value 1 if Roman Catholic is the religion of the respondent when attitudes are reported
other: indicator variable taking value 1 if the respondent belongs to another religious denomination when attitudes are reported
nonrel: indicator variable taking value 1 if the respondent declares to be non-religious when attitudes are reported

The Effect of Gender Role Attitudes on the Work Decision (Tables 6, 8 and 10)*

Work04: indicator variable taking value 1 if the respondent is employed during the week of the 2004 survey
att79: respondent's attitudes index, constructed from the responses to gender role statements in 1979
sib: respondent's number of siblings
Mwork: indicator variable taking value 1 if the respondent's mother worked when she/he was age 14
Meduc: highest level of education completed by the respondent's mother
age: age of the respondent in 2004
age2: squared of age
white: indicator variable taking value 1 if the respondent is white
black: indicator variable taking value 1 if the respondent is black
other: indicator variable taking value 1 if the respondent is non-black and non-white
img: indicator variable taking value 1 if the respondent was not born in the US
city14: indicator variable taking value 1 if the respondent lived in a city at age 14
south14: indicator variable taking value 1 if the respondent lived in a region located in the South of the US at age 14
Fpresent14: indicator variable taking value 1 if the respondent's father was living in the house when she/he was age 14
Fwork14: indicator variable taking value 1 if the respondent's father was working when she/he was age 14
Feduc: highest level of education completed by the respondent's father
public: indicator variable taking value 1 if the respondent attended a public school
rc: indicator variable taking value 1 if Roman Catholic is the religion in which the respondent was raised
prot: indicator variable taking value 1 if Protestant is the religion in which the respondent was raised
bapt: indicator variable taking value 1 if Baptist is the religion in which the respondent was raised
epis: indicator variable taking value 1 if Episcopalian is the religion in which the respondent was raised
lut: indicator variable taking value 1 if Lutheran is the religion in which the respondent was raised
met: indicator variable taking value 1 if Methodist the religion in which the respondent was raised
pres: indicator variable taking value 1 if Presbyterian is the religion in which the respondent was raised
jws: indicator variable taking value 1 if Jewish is the religion in which the respondent was raised
otherr: indicator variable taking value 1 if the respondent was raised in another religious denomination
nonrel: indicator variable taking value 1 if the respondent was raised in a nonreligious background
λ: OLS-residuals from regressing the attitudes index on all the exogenous variables in the model (including the instruments)

*An H added at the end of a variable's name indicates that this variable refers to the husband of the respondent (i.e. att79H: husband's attitudes index in 1979), while a W indicates that it refers to the wife (i.e. Work04W: takes value 1 if the wife is employed). Note that the employment decision for the wife refers to whether she was working in 2003 although it is asked of the husband in 2004.

Table 11 (cont'd): Variable definition

The Effect of Gender Role Attitudes on the Work Decision (Tables 7, 9 and 10)

educ: highest level of education completed by the respondent
NE: indicator variable taking value 1 if the respondent lives in a North-Eastern region in 2004
NC: indicator variable taking value 1 if the respondent lives in a North-Central region in 2004
W: indicator variable taking value 1 if the respondent lives in a Western region in 2004
S: indicator variable taking value 1 if the respondent lives in a Southern region in 2004
city04: indicator variable taking value 1 if the respondent lives in a city in 2004
incomeP: total income from wages and salaries received by the respondent's partner in 2003
hoursP: average weekly number of hours worked by the respondent's partner in 2003
child6: indicator variable taking value 1 if the respondent has a child younger than 7 y.o. in 2004
child: respondent's total number of children in 2004
married04: indicator variable taking value 1 if the respondent is married in 2004

*A P added at the end of a variable indicates that it refers to the partner of the respondent (i.e. educP: partner's highest level of education completed).

Table 12: Descriptive Statistics

	Females (1749 Observations)	
	Mean	S.D.
work	0.751	0.432
att79	20.59	3.221
age	43.35	2.175
white	0.851	0.356
black	0.120	0.325
img	0.030	0.170
city14	0.774	0.418
south14	0.322	0.467
sib	3.299	2.189
Fpresent14	0.871	0.336
Fwork14	0.819	0.385
Mwork	0.541	0.498
Meduc	11.58	2.657
Feduc	11.45	3.977
public	0.939	0.240
rc	0.330	0.470
prot	0.042	0.201
bapt	0.228	0.419
epis	0.016	0.126
lut	0.075	0.263
met	0.106	0.308
pres	0.043	0.203
jws	0.013	0.114
other	0.105	0.307
educ	13.65	2.60
NE	0.161	0.367
NC	0.299	0.458
W	0.167	0.373
city04	0.689	0.463
ageP	44.83	5.162
educP	13.98	2.611
incomeP	60.40	59.86
hoursP	42.38	14.38
child6	0.122	0.327
child	1.907	1.359
married04	0.610	0.488

	Wives (972 Observations)	
	Mean	S.D.
workW	0.771	0.421
att79H	19.25	3.159
ageH	43.17	2.165
whiteH	0.892	0.311
blackH	0.066	0.248
imgH	0.025	0.155
city14H	0.753	0.431
south14H	0.282	0.450
sibH	3.039	2.027
Fpresent14H	0.910	0.286
Fwork14H	0.878	0.328
MworkH	0.537	0.499
MeducH	11.96	2.463
FeducH	12.17	3.688
publicH	0.935	0.246
rcH	0.333	0.472
protH	0.048	0.215
baptH	0.178	0.383
episH	0.027	0.161
lutH	0.111	0.314
metH	0.090	0.286
presH	0.040	0.196
jwsH	0.017	0.131
otherH	0.108	0.311
educW	14.01	2.44
NE	0.156	0.363
NC	0.338	0.473
W	0.157	0.364
city04	0.634	0.482
ageW	40.72	4.606
educH	14.09	2.642
incomeH	65.13	59.87
hoursH	43.19	15.99
child6	0.257	0.437
child	2.024	1.269