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

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Abstract

Using a sample of mother-child pairs from the NLSY79 we study the economics of cultural transmission regarding women's roles. We find that a mother's attitudes towards working women have a statistically significant effect on those of her children. Furthermore we find a strong association between the attitudes of sons in their youth and their wives' labor supply as adults. For daughters the association between their own attitudes and adult work outcomes is weaker and seems to operate through the educational channel. Our findings indicate that cultural transmission contributes to the heterogeneity in the labor supply of women within the same generation.

Keywords: intergenerational cultural transmission, gender role attitudes, female labor supply

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Culture, measured in various forms, has been employed in empirical investigations to explain economic behavior ranging from countries' trade patterns (Guiso et al. 2009) to individual consumption and saving decisions (Carroll et al. 1994, 1998). Culture is also seen as contributing to 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 (e.g. Kerckhoff et al. 1985; Solon, 1992, 1999; Mulligan, 1997, 1999; Black et al. 2005 and Long and Ferrie, 2005), others have argued that it partially reflects the similarity in parents' and their children's preferences and beliefs (e.g. Heckman and Rubinstein, 2001; Bowles and Gintis, 2002; Charles and Hurst, 2003; Loehlin, 2005; Osborne, 2005; and Heckman et al. 2006). The intergenerational transmission of norms, values and beliefs has also been proposed as an explanation of the persistence of ethnic and religious minorities in contemporaneous societies (Bisin and Verdier, 2000 and Bisin et al. 2004) and the functioning of economic institutions and regimes (Doepke and Zilibotti, 2005; Guiso et al. 2006, 2008 and Tabellini, 2008a, 2008b).

The role of culture in the similarity of labor market activity across generations is a relatively unexplored aspect of labor economics although Fernández et al. (2004), Fernández (2007, 2008) and Fernández and Fogli (2009) are recent exceptions. These papers focus on two important empirical findings. First, a woman's work behavior is correlated with that of women in her country of ancestry. Second, a woman's labor market behavior is positively correlated with that of her son's wife. A related study by Alesina and Giuliano (2010) also show that the labor supply of second generation female immigrants in the US is influenced by the strength of family ties (i.e. the degree of reliance on the family as an economic unit) in the sending country. The

authors interpret these findings as evidence that cultural attitudes regarding the role of women in the family and the work place are transmitted across generations and have an important economic impact on subsequent generations.

We directly examine this conjecture by analyzing the intergenerational correlation in gender role attitudes and the relationship between these attitudes and female labor supply. Note that while previous studies draw their conclusions from indirect measures of culture (i.e. the work behavior of previous generations), our measure is based on individuals' opinion towards gender roles. We find that a mother's view towards the role of women in the labor market and the family are strongly correlated with that of her sons and daughters. We also find that sons who reported more "traditional" views, which we explicitly define below, in their youth are more likely to marry women with a lower degree of labor market attachment. For daughters there is some effect from gender role attitudes on their labor supply although the primary effect operates through the acquisition of education. Our results complement the recent literature on the effects of cultural traits on socio-economic outcomes.¹

Previous studies (e.g. Vella, 1994 and Fortin, 2005, 2009) have documented that an individual's background characteristics affect her attitude towards the role of women in the labor market and that these attitudes partially determine her contemporaneous level of labor supply.² Moreover, Thornton et al. (1983) find that a mother's attitude towards women working is correlated with her children's attitude. While combining these findings appears to establish an empirical effect for a social norm regarding the role of women it does not represent an empirical test of the intergenerational transfer of cultural traits and its implications for the work behavior of women. One paper which does provide such a test is Fernández (2007) where attitudes in the women's

country of ancestry in 1990 are shown to have an important effect on the labor supply of second-generation American women in 1970. She exploits the portability of culture relative to markets and institutions and quantifies its contribution to differences in the labor market outcomes of immigrants' descendants.

Below we address the formation of attitudes towards gender roles, their transmission across generations and their impact on female labor market participation. We first construct an index of attitudes towards gender roles for a cohort of women living in the United States in 2006. By constructing the corresponding index for the children of these women we examine the generational transfer of attitudes. We then investigate whether gender role attitudes expressed during a female's youth are able to explain her adult labor market participation decision. We also explore whether the attitudes expressed by a male youth can explain the labor market participation of his spouse during adulthood. Our empirical investigation employs observations on females from the National Longitudinal Survey of Youth 1979 (NLSY79) merged with those of their children in the Children and Young Adults of the National Longitudinal Survey of Youth 1979 (CYNLSY79). To assess the degree of cultural persistence we examine the relationship between the attitudes expressed in 1979 by female respondents in the NLSY79 aged between 15 and 22 years with those of their children in the CYNLSY79 expressed in the late 1990's and early 2000's when they are the same age (i.e. 15 to 22). This relationship can be interpreted as reflecting the component of culture that is transmitted across generations. As the respondents in the CYNLSY79 are too young to investigate the economic long term implications of attitudes, we return to the NLSY79 to examine the role of youth attitudes reported in 1979 on the labor market behavior of the respondents in 2006, when they are 42 to 49 years of

age.

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 cultural transmission has implications for the labor market behavior of females. Section 5 provides some concluding comments.

I. MEASURING ATTITUDES TOWARDS GENDER ROLES

The NLSY79 survey is a nationally representative sample of 12,686 individuals living in the United States and aged 15-22 years when surveyed in 1979. These individuals were interviewed annually through 1994 and are currently interviewed on a biennial basis. Apart from the main cross-sectional sample representative of the population, the NLSY79 contains an over-sample representative of blacks and Hispanics, an over-sample of economically disadvantaged whites, and a sample of members of the military. In our analysis we exclude the over-sample of whites and the sample of the military (i.e. 2923 observations). To be included in our empirical analysis individuals should report valid measures of labor market attachment in 2006, thus individuals not interviewed in this year are not considered (i.e. 2280 observations). Finally, we also exclude 375 respondents with missing information on gender role attitudes in 1979.^{3,4}

The NLSY79 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. 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.

"Table 1 here"

The statements ask about different aspects of family and work life of women and 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. Statement 5 (Q5) is somewhat ambiguous but also seeks the respondent's reaction to the view that a male should devote his effort to market employment while a female should devote hers to homework.

To investigate the long-run persistence of differences in gender role attitudes and its effect on economic performance, we focus on the attitude value in 1979. Attitudes reported later in life are likely to incorporate individual experiences and make the identification and causal interpretation of cultural transmission more difficult.⁵ Table 1 displays the percentage of individuals who "strongly disagree" or "disagree" with statements 1, 2, 3, 4 and 6, or "strongly agree" or "agree" with statement 5. The table reveals substantial variation in opinions towards working women both within and between genders noting that we employ, for convenience, the term "traditional" to reflect the view that females should specialize in home production and males in market production. In the data males give the more traditional responses although the difference varies by question. This conclusion is similar to Thornton et al. (1983) noting that 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 the first: *"A woman's place is in the home, not in the office or shop"*. While 68 percent of males disagree with it the corresponding figure for females is 84 percent. Thus in 1979 a large fraction of females and a non-trivial one of men held the opinion that women

were as welcome in the labor market as men. The rest of answers also reflect that individuals in the late seventies, women in particular, exhibited fairly non-traditional views towards working women. To conduct our empirical analysis we 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 6 to 24, where a score of 6 denotes an extremely traditional attitude while 24 represents an extremely non-traditional attitude. We reverse the ordering of the allocation of points for question 5 to retain the traditional nature of the "agree" and "strongly agree" responses.

The resulting aggregate index summarizes an individual's views towards the role of women in society. The responses to the six questions on gender roles in the survey are too highly correlated to be simultaneously included as independent regressors in the empirical analysis.⁶ An alternative would be to investigate the effect of each question from separate regressions. However, as each individual question refers to a very specific role we prefer to conduct the analysis using the attitudes index as it better captures an individual's general view towards gender roles.

The descriptive statistics for the constructed index are also reported in Table 1 in the row "Attitudes Index (four point scale)" and its histograms by gender are presented in Figure 1A in the appendix. The general patterns of these indices are similar to those of the individual questions. However, some additional features are worth noting. First, since an individual who responded "strongly disagree" to all statements would be allocated a score of 24, the average female score, 17.68, and that of males, 16.08, do not indicate that the "average" individual strongly supports

gender equality in the labor market. This is illustrated in Figure 1A in the appendix which shows that 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 almost 3, as it is for both males and females, suggests an important degree of variability. This is also illustrated in the Figure.

Vella (1994) discusses how the index based on this four point scale has some disadvantages. For example, summing the responses assigns an equal weight to each question allocates somewhat arbitrary values to the responses. Thus, while our approach is attractive in that it captures the variation in discrete responses in a continuous measure we examine the implications of employing alternative aggregations. We first employ a measure that quantifies the responses as agreement (strongly agree or agree) or disagreement (strongly disagree or disagree). Each respondent is then scored on the basis of the percentage of traditional statements with which she/he disagrees. Secondly, we employ factor analysis to construct an aggregate measure of gender role attitudes as a weighted average of the six individual responses. Our preferred measure is the four point scale index of attitudes as it exploits more of the available information and is easier to interpret than the aggregate factor. Accordingly, we use this measure below, but reproduce the more important empirical results using the alternative measures.

II. THE INTERGENERATIONAL TRANSMISSION OF ATTITUDES

To investigate the intergenerational transmission of gender role attitudes 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 the 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.⁷ In 1994, 1996, 1998 and 2002, children were asked the same questions regarding a woman's roles that their mothers answered in 1979.⁸

"Table 2 here"

Our sample comprises children aged 15 to 22 years old in 1994 when they reported their attitudes. When this information is not available in 1994, we use the information on attitudes from the closest subsequent year in which it is available. Table 2 shows the age distribution and the year in which the children's attitudes are measured. The observations generally correspond to the years 1994, 1996 and 1998 and individuals are, on average, younger than their mothers were in 1979.⁹ 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 more supportive of a female role in the labor market than their respective counterparts in 1979.¹⁰ Despite this shift towards less traditional attitudes, there are some persistent patterns in the views of both cohorts. First, males are more traditional than their female counterparts. The male score is 16.08 compared to 17.68 for females in the older cohort, while these figures are, respectively, 17.52 and 19.50 in the younger cohort.¹¹ Second, when looking at each question separately we observe that the lowest level of disagreement always corresponds to question 4. Accordingly in 1979 only a 48% of men and a 62% of women in the older cohort disagreed or strongly disagreed with the view that "*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". The percentage of disagreement with that statement among the younger cohort in the late 1990's and early 2000's is 66% for men and 81% for females. Third, the standard deviation of the attitudes index in the younger cohort is slightly less than 3 points, suggesting a significant degree of variability also among the younger cohort.

"Table 3 here"

Figure 1A and 1B in the appendix plot the attitudes distribution for the older and the younger cohort. A comparison of these figures clearly reflects the shift towards less traditional attitudes and the substantial degree of heterogeneity in the views of both men and women in the two groups.

To formally investigate the relationship in the views of these two cohorts we first regress the child's index on that of her/his mother's, a gender dummy and an intercept. This produces a coefficient on the mother's attitudes index of 0.113 with a standard error of 0.016. Table A2 in the appendix also analyzes the intergenerational correlation for each individual question in the index. The table reveals a substantial degree of similarity between mother's and children's answers to each question. In particular, the child's probability of disagreement with a traditional statement increases by 3 to 7 percentage points if the mother also "disagrees" or "strongly disagrees" with such statement. This preliminary approach suggests a strong and statistically significant correlation between the views of the two cohorts.

A major concern with the statistically significant role of mother's attitudes is that it may reflect the effect of omitted economic and family features of the environment in which the child was raised. To investigate this possibility column 1 in Table 4 presents the estimates of a model for the child's attitudes that controls for a number

of variables characterizing the child's household during her/his youth. These include dummy variables for the child's race and religious affiliation, the number and gender composition of siblings, an indicator for first born child, indicators for whether the child completed high school and/or ever attended college, the mother's age when the child was born, an indicator for whether the mother was born overseas, her marital status and the presence of a partner at home when the child was age 14, the parents' education level and work behavior, as well as geographical and regional indicators. The results have some interesting features. First, while the magnitude of the coefficient on the mother's attitudes is substantially reduced it remains highly significant. Its positive sign indicates that women with more (less) traditional views have children who have more (less) traditional views. As the coefficient is 0.058 and the mean of the mother's index approximately 17 the contribution for the average individual is around 1 point. Also, an one standard deviation increase in the mother's attitude value (3.13 points) leads to an increase of 0.2 points in the child's index.¹² Since the attitudes index takes values between 6 and 24, the index of children born to the most traditional individual in the sample is only 1 point lower than the index of those born to the least traditional, holding all other regressors constant. Despite the small size of this effect, the associated standard error clearly indicates that maternal views are crucial to that of her child.

"Table 4 here"

The results in Table 4 indicate that other variables are also relevant for the formation of gender role attitudes. In particular having a mother that actively participates in the labor market during the respondent's youth has an additional positive effect on an individual's egalitarian view of gender roles as it increases the attitudes index

by 0.7 points. Note that the difference in the attitudes index of children with and without a working mother is similar to that of children born to the most and the least traditional individual in the sample. A mother's attitudes and her work behavior are likely to be highly correlated, thus it is not surprising that the inclusion of the latter variable in estimation reduces the coefficient on the first.¹³ The effect of having a working mother on her child's attitudes is also consistent with the learning and beliefs formation theory in Fernández (2008) and Fogli and Veldkamp (2011), where individuals update their beliefs about the payoffs of working by observing the economic outcomes of women in previous generations.

Other variables with a positive and statistically significant coefficient are having a foreign mother and the education of both parents. The positive coefficient on the foreign born indicator suggests that the immigrants in our sample have more positive views towards working women than the native born. The favorable effect of parental education may result from the higher labor market participation rates of well educated parents, which develop positive views towards labor market involvement in their children, or from a greater disposition of well educated parents to transmit less traditional views. In contrast, the marital status of the mother and the number of siblings have a negative effect on attitudes. This implies that individuals living in larger families have more traditional views. Mothers in these families might bear a larger burden of household chores and spend fewer hours engaged in market activities. From the table we also observe that children born to older mothers have less positive views towards working women. Finally and consistent with the descriptive evidence in the previous section we find that sons have more traditional views than daughters.

Some authors argue that religion plays an important role for individuals' economic

behavior and provide a cultural interpretation to this effect.¹⁴ Among the set of religious dummies included in the empirical model only the Presbyterian and Other religion indicators are statistically significant. More important, the estimated coefficient on maternal attitudes is unaffected by the inclusion of the child's religious affiliation.

It might also be argued that the statistical significance of the mother's attitudes index simply reflected the transmission of human capital. To rule out this possibility the empirical model includes indicators for high school degree and college attendance. Both variables have a large and statistically significant effect on the child's attitudes index, reflecting the important positive relationship between education and non-traditional views. However, the coefficient on maternal attitudes remains unaffected when the human capital variables are excluded from estimation.

Columns 2 and 3 report the results when the model in column 1 is estimated separately by gender. The attitudes coefficient is larger for sons, however a formal test does not reject the equality of this coefficient across genders (see column 4). Among the remaining coefficients there are some interesting differences. For example, the level of education of the father is only statistically significant for sons while the number of siblings has only a significant negative impact on daughters. The first effect suggests the presence of role models that are stronger among parents and children of the same sex. The second could indicate that girls raised in larger families are more likely to contribute to domestic tasks and, therefore, show more traditional views.

In interpreting the previous results it is important to highlight that the analysis is conducted on a selected sample of children and young adults born to relatively young mothers (i.e. mothers who had given birth by age 30). It may be that young mothers

have less (more) traditional attitudes, and thus their children inherit less (more) traditional views. By including the age of the mother at birth we obtain a consistent estimate of the intergenerational transmission parameter, under the assumption that it is constant along the “age at birth” distribution. Though this last assumption seems reasonable, it cannot be tested using the current CYNLSY79 survey (i.e. the battery of questions regarding gender role attitudes should be asked in future waves). Therefore our results have to be interpreted bearing in mind that they correspond to a sample of relatively young mothers, who may transfer their views more or less intensively than the "average" mother.

A final concern is the presence of attrition in the NLSY79 and the CYNLSY79. Aughinbaugh (2004) finds that attrition among the children is nonrandom with respect to the mother’s marital status, grandfather’s completed schooling, and family income. Thus the omission of these children from the analysis may impact the estimates of family characteristics on child outcomes. However, given that the attrition rate is low, the effects of their omission are small.¹⁵

III. GENDER ROLE ATTITUDES AND THE LABOR MARKET

Most of the empirical studies on the labor market implications of culture employ the work behavior of previous generations as proxies for cultural transmission (see for example Fernández et al. 2004, Fernández, 2007 and Fernández and Fogli, 2009). In this paper we measure an individual’s cultural heritage from the views towards working women expressed during his/her youth. While the work behavior of the mother is strongly correlated with these views it may also capture other labor market aspects that are unrelated to work-family roles, such as financial constraints or network

effects. Our empirical approach below addresses this concern.

To investigate the effect of the cultural heritage on the labor market behavior during adulthood we return to the original NLSY79 sample as the children in the CYNLSY79 are too young to evaluate the economic long run effects of cultural transmission. We examine the relationship between gender role attitudes collected in 1979, when the respondents are aged 15-22 years, and their economic decisions in 2006.

Table 5 tabulates the individuals' 1979 attitudes index with some of their socioeconomic variables in 2006. The table contains information for our two samples of study: i) married and unmarried female respondents and; ii) married male respondents.¹⁶ The upper panel of Table 5 summarizes the data for the female respondents. The woman's educational level in 2006 is positively correlated with her 1979 attitude. A similar relationship exists between a woman's attitude value and her spouse's education level in 2006. The table also reveals a large reduction in the fertility levels as the attitude value increases. There is a negative relationship between the respondent's traditional attitudes in 1979 and her probability of working in 2006. Moreover, the magnitude of the change in the probability is large as we move from the lowest (.71) to the highest (.81) categories. The respondents' spouse's 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.

"Table 5 here"

The lower panel of the table corresponds to the male respondents. For both respondents and their partners the average level of education increases by two years as the attitude value goes from the lowest group to the highest. For males there appears to be a weaker relationship between attitudes and their number of children.

The participation rate of males in 2006 is almost invariant to their attitude expressed in 1979. For their spouses there is a drastic increase in employment rates as we move from the lowest attitude group to the highest. The wives of men with a value of the index in the upper tail of the attitudes distribution in 1979 (i.e. above the 90th percentile) have an employment probability 11 percentage points higher in 2006 than wives whose husband’s attitudes index is at the bottom 20 percent of the 1979 attitudes distribution.

While a number of features in Table 5 are interesting, the most notable is the correlation between the female respondent’s attitudes in 1979 and her 2006 work decision. Equally interesting is the correlation between the attitudes of male respondents and the work decisions of their spouses. To further investigate these relationships we estimate the following model:

$$Work06_i = \alpha_0 + \alpha_1 Att79_i + \alpha_2 X_i + \varepsilon_i \quad (1)$$

where $Work06_i$ is alternately an indicator that the individual i , or in the case of males the spouse of individual i , is employed in 2006, $Att79_i$ is the individual’s 1979 attitudes index and X_i is a vector of potential explanatory variables. We change the components in X_i depending on the question we are asking. First we investigate whether the respondent 1979 socioeconomic conditions, $(X79_i)$, can explain an individual’s, or his wife’s, probability of working in 2006. Alternatively we explore whether the 1979 characteristics have any statistical relevance for the 2006 employment decision after we include a set of factors capturing the individual’s family and economic environment in 2006, $(X06_i)$.

We choose the measure of attitudes in 1979 as our main explanatory variable for

a number of reasons. First, given that the respondents are very young in 1979 it is likely that these attitudes reflect more what has been instilled in them by their parents rather than any first hand experience with the labor market. Subsequent measures of attitudes might not have this feature. In this way the measure at a younger age is more likely to capture the component due to intergenerational transfer.¹⁷ Second, as we discuss below, the issue of endogeneity of attitudes needs to be addressed. Clearly regressing 2006 labor market activity on contemporaneous attitudes (i.e. 2004) would have an obvious simultaneity problem. We feel that we avoid this problem by using the attitudes from 1979 when the subsequent labor market experiences and home making decisions have not yet become relevant. Finally, inasmuch that attitudes are likely to have an individual specific time invariant component it is interesting to see whether the attitudes expressed prior to any labor market activity are subsequently found to be related to actual labor market behavior.

Table 6 reports our first set of results for the female respondents recalling that we consider all females in the sample irrespective of their marital status. We first examine if the individuals' characteristics in 1979 have any impact on their 2006 employment decision. The first column shows the OLS estimates while the second corresponds to the PROBIT estimation. In estimating equation (1) the vector of the 1979 characteristics, X_{79i} , includes the years of education of the respondent's mother and father, the number of siblings, an indicator for the presence of the father in the house at the age of 14 years and his employment situation, indicator variables describing the geographical environment at age 14, an indicator variable for whether the respondent was not born in the US, race indicators and a variable capturing the type of school attended. Unfortunately, the NLSY79 does not contain reliable

measures of parental income or wealth although the included educational and family composition variables should capture the relevant economic considerations. Previous studies have examined the effect of religion on individual economic decisions (see, for example, Algan and Cahuc, 2006 and Guiso et al. 2003) and we include a set of religion dummy variables for the denomination in which the respondent was raised.¹⁸ The dependent variable takes value 1 if the female respondent is employed during the week of the survey in 2006.¹⁹

"Table 6 here"

Column 1 of Table 6 indicates that few of the female's background characteristics in 1979 have a role in explaining if she will be working 27 years later. Other than race, only the father's years of education and the mother's work behavior when the respondent aged 14 have a statistically significant role. While the effect of parental education is negative and very small, that of the mother's work is positive and larger in size. The estimated coefficient suggests that having a working mother increases the chances of labor market participation as an adult by 3 percentage points.

We next turn to the effect of attitudes. The results in Table 6 indicate that the 1979 index has a small but highly significant effect on the employment probability in 2006. An one standard deviation increase in the index (i.e. 3 points) increases the chances of working in 2006 by about 2.5 percentage points.²⁰ This effect is similar to that of having a working mother. While the mother's work behavior and the gender role attitudes are likely to be correlated, excluding one of them from the regression does not affect the estimated effect on the other. This suggests that the mother's work indicator may not only capture some component of cultural transmission, but also reflect different factors which are relevant for women's labor supply.

Though statistically very significant, the small size of the coefficient on the attitudes variable may reflect an endogeneity problem. This is not due to simultaneity, since attitudes are measured in 1979 and the work variable is observed in 2006, but might reflect two other possible mechanisms. First, unobserved characteristics which influence attitudes might be correlated with the work decision. This would produce an upward bias in the estimated coefficient. While we cannot rule out this possibility it does seem somewhat unlikely given the timing of the respective decisions. Alternatively, endogeneity may arise from the measurement of attitudes. That is, the construction of the index partially employs responses to statements which are not directly related to labor force participation and this may generate a downward bias in the coefficient. Given the nature of the endogeneity and the difficulty of identifying credible instruments in our data, we prefer to interpret our estimates as lower bounds on the effect of attitudes on women’s labor supply rather than attempting to account for potential endogeneity in an unsatisfactory manner.²¹

Table 7 extends the previous specification by adding variables which reflect the individual’s environment in 2006. Columns 1 (OLS) and 3 (PROBIT) reveal that the 2006 variables are more important than the 1979 characteristics. Of particular relevance are a woman’s marital status, the socioeconomic characteristics of her husband (i.e. age and income) and the presence of children. The level of educational achievement is also an important determinant of a woman’s labor participation. Note that once all these controls are included in the regression the 1979 attitudes index is no longer significant. This result is not surprising as marital, fertility and in particular educational choices are likely to be influenced by an individual’s attitudes (see Vella, 1994 and Fortin, 2005). To investigate this possibility we exclude different sets of

variables from the specification in Column (1) and (3). Only the exclusion of education from the regression renders the attitudes index statistically significant again. The evidence in Table 6 and 7 suggests that while attitudes are likely to play a role in a woman's work decision, the effect is not direct and it seems to operate through educational or other lifetime decisions.²²

"Table 7 here"

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 now examine whether this relationship reflects men's preferences towards working women. To conduct this analysis we reproduce 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. The employment decision for the wife refers to 2005 and it is constructed from a question about the number of weeks worked. The indicator for the wife's work decision takes value 1 if she worked a positive number of weeks in 2005.

The first set of results for the spouses of the male respondents is reported in Table 8. None of the variables describing the socioeconomic background of the husband are statistically significant. However, there is a statistically significant relationship between the husband's 1979 attitudes and his wife's work decision. The estimation results indicate that an one standard deviation increase in the husband's attitudes

index (i.e. 3 points) increases the wife's working probability by 5 percentage points both in the OLS and PROBIT models.²³

"Table 8 here"

Table 9 augments the specification with variables capturing the family and economic environment of the couple in 2006. Several of them, such as the wife's education level, her age, the presence of children as well as the income level of the husband, influence the wife's employment decision. However, there remains statistically significant evidence of a role for the husband's attitudes. Note that in this case the point estimate is similar to that using only the 1979 explanatory variables, and that the magnitude almost doubles that of the female respondents.²⁴

"Table 9 here"

Our results clearly suggest that attitudes towards gender roles are passed from generation to generation and that cultural transmission has implications for the labor market behavior of younger generations. The evidence here indicates that the estimated effect of a husband's attitudes on his wife work decision is larger than that of a woman on her own labor market choice. This result reflects the fact that a woman's attitudes affect her labor supply indirectly through other lifetime choices such as education and fertility. In contrast, the effect of a husband's attitudes on his fertility or educational choices is much smaller.²⁵ This evidence indicates that men's inherited attitudes have an economically and statistically significant effect on the choice of women they marry to.

This latter result is consistent with the work by Fernández et al. (2004) who show that a working mother in law makes it easier for a woman to work. They provide two

possible explanations for this finding. First, it may be that a husband with a working mother is more willing to share the household burden and contribute to domestic tasks. It may also happen that the effect of having a working mother operates by changing the preferences of sons and this affects the marriage market.

To further investigate the contribution of these two mechanisms to our results we estimate the model in Table 9 using as a dependent variable the husband's labor supply. The results in Table A8 in the appendix indicate that a husband's attitudes do not affect his own labor supply, suggesting that less traditional men do not substitute hours of market work by home production. Hence we conclude that the preference channel is more likely to be responsible for the strong statistical correlation between a husband's views and his wife labor supply.

From the previous results we cannot establish a causal relationship between men's preferences and the labor supply of women, as the effect may operate through sorting in the marriage market. However, even in the latter case our findings have important implications for the labor market prospects of women. The shift towards less traditional views among the younger cohort, may lead these women to increase their involvement in labor market activities as a result, for example, of social pressure or to increase their marriage probability.

IV. CONCLUSIONS

This paper investigates the presence of intergenerational transmission of gender role attitudes. We find evidence of a statistically significant relationship between a mother's and her children's inherited views regarding the role of females in the family and the labor market. We also find that a male's attitudes toward the role of women

in the labor market are strongly correlated with the work behavior of his wife despite the fact that the attitudes are asked 27 years earlier. Finally, for females the effect of attitudes on their own labor supply seems to operate mainly through the educational channel.

Collectively our results suggest that the progressive shift towards less traditional views among younger cohorts is likely to positively affect women's labor market opportunities for future generations. Our findings are also consistent with the recent literature that highlights the importance of men's attitudes for women's social and economic advances (Doepke and Tertilt, 2009 and Fernández, 2011). Accordingly the strong correlation that we uncover between men's attitudes and the labor supply of women suggests that policies aimed at increasing labor market participation that exclusively target women can fail to fully achieve their intended goals. Efforts should also be addressed to change men's views towards working women.

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NOTES:

1. See Bisin and Verdier (2010) for a recent survey of the economics of intergenerational cultural transmission.

2. A main concern in interpreting the last finding is the simultaneity between an individual's attitudes and her work behavior. In contrast, as we will discuss later on, we measure attitudes during an individual's youth and thus subsequent labor market experiences and home making decisions have not yet become relevant. Therefore, our results can be given a causal interpretation.

3. The descriptive statistics for the observations that satisfy our sample selection criteria are reported in Table A1 in the appendix.

4. Individuals who do not report their attitudes represent less than a 5% of our final sample, hence the effect of excluding them from the analysis should be small even if information on attitudes is not missing at random.

5. This issue will be further discussed in Section 4.

6. See the high value of the Cronbach's Alpha statistic reported in Table 1.

7. Children born to male respondents in the NLSY79 are not interviewed.

8. 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 (13%); 2 children (25%); 3 (14%); 4 (6%); 5 (2%); 6 or more (2%). 37% of women in our sample are childless.

9. There are 4,071 respondents in the CYNLSY79 that satisfy our selection criteria (i.e. age 15 to 22 when interviewed in 1994-2002). Among them 2,870 respond to the battery of questions regarding gender roles. The subsample with valid information on attitudes is not significantly different from the whole sample in terms of observable

characteristics.

10. The NLSY79 collects information on gender role attitudes for the older cohort in 1979, 1982, 1987 and 2004. In this study we focus on the attitudes reported in 1979 as this value for the mother captures best what was transferred to her from her own mother, and it allows us to measure the component of culture that is transmitted across generations. In Farré and Vella (2007) we also explore the relationship in the contemporaneous attitudes of mothers and children, using the 2004 attitudes for the mother. Though the correlation in contemporaneous views is stronger, endogeneity issues prevent us to derive clear conclusions from that analysis.

11. A t-test rejects the null hypothesis of equality of means between genders and across cohorts at conventional levels of significance. The t-statistic is 22 for the comparison of means across genders in the younger cohort and 12 in the older. It is 5 for the comparison of women's views across cohorts and 4 for men.

12. Our results are unaffected when factor analysis or the percentage of "non-traditional" answers are employed to measure attitudes.

13. The coefficient on the mother's attitudes index is 0.07 when the work behavior of the mother is excluded from the model.

14. See Lehrer (2008) for a review of recent literature.

15. The attrition rate ranges from 3 percent to 4 percent in the early years of the survey and from 12 to 17 percent in the recent biennial survey years.

16. We consider the marital status in 2006. The NLSY79 contains some characteristics of the respondent's partner but does not include information on her/his attitudes or family background.

17. We also conduct the empirical analysis on the subsample of individuals aged

15 to 18 in 1979, whose attitudes are even less likely to be contaminated by education and employment histories. The results, available upon request, do not suggest any implications for our empirical investigation.

18. The religion dummies included are Roman Catholic, Protestant, Baptist, Episcopalian, Lutheran, Methodist, Presbyterian, Jewish and other religions. The excluded category in the empirical analysis is non-religious affiliation.

19. We also conduct the analysis for alternative labor supply indicators (see the discussion in footnote 21).

20. When attitudes in 1979 are replaced by those reported in 2004 the estimated effect is 3 times larger. However, given the potential simultaneity between a woman's contemporaneous attitudes and her labor supply, the effect cannot be interpreted as causal.

21. We explore different outcome variables for equation (1): an indicator for whether the female respondent worked at all in the past year (i.e. 2005), the number of weeks worked and her hours per week (see Table A3 and A4 in the appendix). While attitudes have a statistically significant effect on the two first indicators of labor market participation (column 1 and 2), they are statistically insignificant for the number of hours worked (column 3). Since attitudes affect labor market participation, the estimated effect at the intensive margin should be interpreted with caution as it may suffer from sample selection bias.

22. To investigate this possibility we re-estimate the model in Table 7 using as a dependent variable other individual decisions. Table A5 in the appendix displays the results for the highest level of education achieved by the female respondent (column 1), her marital status in 2006 (column 2) and the total number of children (column 3).

The coefficient on attitudes is large and highly significant for education and fertility, reinforcing the argument that attitudes affect a woman's work decision indirectly through other lifetime choices.

23. We have also re-estimated the model using as a dependent variable for equation (1) the number of weeks worked by the wife in 2005 and her hours per week (see Table A6 and A7 in the appendix). The results in these tables indicate that while attitudes are also statistically significant for the number of weeks worked, they do not affect the number of hours. As for the case of female respondents the estimated effect at the intensive margin may suffer from sample selection bias.

24. We have re-estimated the models in Table 8 and 9 using as a main explanatory variables the weighted average obtained from factor analysis and the percentage of "non-traditional" answers. Our results are unaffected by the use of these alternative measures.

25. The estimated coefficient on attitudes for the number of children is 0.007 with a standard error of 0.013, and that for the highest level of education completed is 0.075 with a standard error of 0.022.

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"Table A1 to Table A8 here"

"Figure 1A and Figure 1B here"

Table 1: Distribution of gender role attitudes for males and females in the NLSY79 (1979)

The Table displays the percentage of individuals who “strongly disagree” or “disagree” with statements 1,2,3,4 and 6, or “strongly agree” or “agree” with statement 5.

	Males	Females
Q1: A woman’s place is in the home, not in the office or shop.	0.68	0.84
Q2: A woman who carries out her full family responsibilities does not have time for outside employment.	0.62	0.76
Q3: The employment of wives leads to more juvenile delinquency.	0.69	0.75
Q4: It is better for everyone concerned if the man is the achiever outside the home and the woman takes care of the home and family.	0.48	0.62
Q5: Men should share the work around the house with women, such as doing dishes, cleaning and so forth.	0.77	0.84
Q6: Women are much happier if they stay at home and take care of their children.	0.61	0.71
Attitudes Index (four point scale)	16.05 (2.97)	17.68 (3.10)
Cronbach’s Alpha	0.73	0.75
Observations	3371	3737

Table 2: Age and year at which gender role attitudes are reported by children in the CYNLSY79

Age	Observations	Year	Observations
15	995 (35%)	2002	492 (17%)
16	881 (31%)	1998	795 (28%)
17	296 (10%)	1996	718 (25%)
18	502 (17%)	1994	865 (30%)
19	120 (4%)		
20	47 (2%)		
21	29 (1%)		

Table 3: Distribution of gender role attitudes for children in the NLSY79 (1994-2002), at age 15-22

Q1: A woman's place is in the home, not in the office or shop.	Sons	Daughters
Q2: A woman who carries out her full family responsibilities does not have time for outside employment.	0.82	0.91
Q3: The employment of wives leads to more juvenile delinquency.	0.79	0.89
Q4: 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.	0.83	0.89
Q5: Men should share the work around the house with women, such as doing dishes, cleaning and so forth.	0.66	0.81
Q6: Women are much happier if they stay at home and take care of their children	0.89	0.97
	0.67	0.81
Attitudes Index (four point scale)	17.52	19.50
Cronbach's Alpha	(2.65)	(2.74)
Obs	0.73	0.77
	1430	1440

The Table displays the percentage of individuals who “strongly disagree” or “disagree” with statements 1,2,3,4 and 6, or “strongly agree” or “agree” with statement 5.

Table 4: The effect of mother's gender role attitudes on children's attitudes

Dependent variable	Child's attitudes index at age 15-22			
	Sons & Daughters (1)	Sons (2)	Daughters (3)	Sons & Daughters (4)
Mother's Attitudes in 1979	0.058*** [0.020]	0.075*** [0.025]	0.043 [0.028]	0.047* [0.027]
Gender of R (male = 1)	-1.860*** [0.100]			-2.223*** [0.577]
Male x Mother's Attitudes in 1979				0.021 [0.033]
Mother foreign born	0.398** [0.193]	0.148 [0.271]	0.604** [0.283]	0.395** [0.193]
Mother's years of education	0.124*** [0.031]	0.077* [0.040]	0.167*** [0.045]	0.124*** [0.031]
Mother worked when R was 14	0.707*** [0.129]	0.803*** [0.176]	0.617*** [0.178]	0.708*** [0.129]
Number of siblings of R	-0.170*** [0.050]	-0.096 [0.058]	-0.233*** [0.071]	-0.170*** [0.050]
Mother married when R 14	-0.357* [0.207]	-0.447 [0.295]	-0.231 [0.273]	-0.357* [0.207]
Father's years of education	0.091*** [0.027]	0.130*** [0.032]	0.050 [0.042]	0.091*** [0.027]
Father worked when R was 14	-0.098 [0.287]	-0.433 [0.464]	0.242 [0.331]	-0.100 [0.287]
Mother's age at birth	-0.061** [0.026]	-0.033 [0.036]	-0.088** [0.037]	-0.061** [0.026]
R has a High School Degree	0.434*** [0.124]	0.269* [0.160]	0.666*** [0.200]	0.433*** [0.124]
R attends college	0.536*** [0.122]	0.606*** [0.176]	0.440*** [0.162]	0.538*** [0.122]
R religious affiliation	YES	YES	YES	YES
Constant	17.173*** [1.241]	14.234*** [1.677]	18.131*** [1.804]	17.359*** [1.283]
Observations	2870	1430	1440	2870
R-squared	0.21	0.11	0.12	0.21

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. R stands for child respondent. Additional controls are age and year in which the child reports attitudes, his/her race, an indicator for whether the father was living in the house when R was 14, region of residence at age 14 (North-East, North-Central, West, North), an indicator variable for living in a city at age 14, indicators for the religious affiliation of the child, an indicator for oldest sibling and the gender composition of siblings. The only statistically significant variables are the NC and NE indicator variables (positive effect) and the Presbyterian and Other religious indicator (negative effect). Standard errors are clustered at the household level.

Table 5: Socioeconomic characteristics tabulated by the attitudes index in 1979 (NLSY79)

Female Respondents NLSY79									
Index Range	Attitudes Index in 1979	Years of Education in 2006 (Respondent)	Years of Education in 2006 (Spouse)	Number of Children in 2006	Work in 2006 (Respondent)	Work in 2005 (Spouse)	Married in 2006	Nobs	
<=15 (22%)	13.35*	12.03	12.70	2.35	0.71	0.84	0.48	835	
16-17 (45%)	16.56	13.82	13.30	2.20	0.72	0.85	0.56	841	
18 (59%)	18	13.37	13.83	2.08	0.78	0.90	0.57	542	
19-20 (82%)	19.41	13.73	13.89	1.94	0.78	0.91	0.56	854	
>=21 (100%)	22.05	14.46	14.42	1.76	0.81	0.89	0.58	665	

Male Respondents NLSY79

Index Range	Attitudes Index in 1979	Years of Education in 2006 (Respondent)	Years of Education in 2006 (Spouse)	Number of Children in 2006	Work in 2006 (Respondent)	Work in 2005 (Spouse)	Nobs
<=14 (27%)	12.30	12.28	12.80	2.22	0.90	0.67	516
15-16 (51%)	15.55	13.20	13.49	2.12	0.91	0.68	440
17 (65%)	17	13.53	13.93	2.17	0.93	0.73	263
18-19 (89%)	18.33	14.11	14.26	2.13	0.92	0.73	447
>=20 (100%)	21.12	14.68	14.72	2.11	0.93	0.78	201

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

Table 6: The effect of gender role attitudes on female respondents' work decision

	Working in 2006	
	OLS	PROBIT
	(1)	(2)
Attitudes in 1979	0.008 [0.003]***	0.008 [0.003]***
Age	-0.196 [0.162]	-0.205 [0.164]
Age^2	0.002 [0.002]	0.002 [0.002]
Black	-0.001 [0.022]	-0.001 [0.022]
Other Race (non-white; non-black)	-0.09 [0.037]**	-0.097 [0.043]**
Immigrant	0.028 [0.039]	0.027 [0.037]
Living in a city at age 14	-0.031 [0.020]	-0.033 [0.020]
Living in the South at age 14	-0.013 [0.018]	-0.014 [0.019]
Siblings	-0.002 [0.004]	-0.002 [0.004]
Mother at home when respondent was 14	0.002 [0.088]	0.000 [0.083]
Mother worked when respondent was 14	0.029 [0.016]*	0.028 [0.017]*
Mother's years of education	0.004 [0.003]	0.004 [0.003]
Father at home when respondent was 14	0.058 [0.047]	0.056 [0.049]
Father worked when respondent was 14	0.041 [0.035]	0.043 [0.035]
Father's years of education	-0.005 [0.003]*	-0.005 [0.003]*
Attended Public School	0.049 [0.036]	0.051 [0.039]
Religion	YES	YES
Constant	5.091 [3.681]	
Observations	2753	2753
R-squared	0.02	0.02

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. The religion dummies for Roman Catholic are positive and statistically significant in the 2 specifications. Column (1): OLS estimates; Column (2): Probit estimates (marginal effects reported).

Table 7: The effect of gender role attitudes on female respondents' work decision
(additional controls X06)

	Working in 2006			
	OLS		PROBIT	
	(1)	(2)	(3)	(4)
Attitudes in 1979	0.002 [0.003]	0.005 [0.003]*	0.002 [0.003]	0.006 [0.003]**
Years of education	0.028 [0.004]***		0.030 [0.004]***	
Living in a North-Eastern region in 2006	0.016 [0.031]	0.012 [0.031]	0.017 [0.031]	0.012 [0.031]
Living in a North-Central region in 2006	0.038 [0.028]	0.038 [0.029]	0.040 [0.028]	0.043 [0.028]
Living in a Western region in 2006	-0.032 [0.029]	-0.028 [0.030]	-0.031 [0.032]	-0.028 [0.032]
Living in a city in 2006	0.022 [0.018]	0.027 [0.018]	0.020 [0.019]	0.027 [0.018]
Age (husband)	0.077 [0.021]***	0.077 [0.021]***	0.074 [0.020]***	0.074 [0.020]***
Age^2 (husband)	-0.001 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***
Years of education (husband)	0.001 [0.005]	0.012 [0.005]**	0.002 [0.005]	0.013 [0.005]**
Annual Income (husband)	-0.002 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***	-0.001 [0.000]***
Weekly hours worked (husband)	0 [0.001]	0 [0.001]	0 [0.001]	0 [0.001]
Children younger than 6	-0.134 [0.033]***	-0.113 [0.033]***	-0.145 [0.041]***	-0.115 [0.039]***
Number of children	-0.017 [0.006]***	-0.026 [0.006]***	-0.016 [0.006]***	-0.026 [0.006]***
Married in 2006	-1.71 [0.507]***	-1.808 [0.513]***	-0.977 [0.045]***	-0.984 [0.033]***
Religion respondent was raised	YES	YES	YES	YES
Religion husband was raised	YES	YES	YES	YES
X79	YES	YES	YES	YES
Constant	5.51 [3.586]	6.081 [3.627]*		
Observations	2753	2753	2753	2753
R-squared	0.09	0.07	0.09	0.07

Standard errors in brackets, * 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. Among those variables "Other race", "Living in a city at age 14" and "Father's years of education" have a negative and statistically significant effect at the 10% level, while "Attending a public school" or "husband raised in the Roman Catholic religion" have a positive and statistically significant effect at the 10% level. Column (1) and (2): OLS estimates; Column (3) and (4): Probit estimates (marginal effects reported).

Table 8: The effect of husband's gender role attitudes on wives' work decision

	Wife Working in 2005	
	OLS	PROBIT
	(1)	(2)
Attitudes in 1979 (husband)	0.017 [0.005]**	0.018 [0.005]**
Age (husband)	-0.841 [0.265]**	-0.940 [0.278]**
Age^2 (husband)	0.009 [0.003]**	0.010 [0.003]**
Black (husband)	0 [0.044]	-0.003 [0.046]
Other (non-white; non-black) (husband)	0.043 [0.068]	0.053 [0.066]
Immigrant (husband)	0.09 [0.068]	0.095 [0.059]
Living in a city at age 14 (husband)	-0.025 [0.033]	-0.026 [0.033]
Living in the South at age 14 (husband)	0.016 [0.032]	0.017 [0.032]
Siblings (husband)	0.004 [0.007]	0.004 [0.007]
Mother at home when husband was 14	0.256 [0.171]	0.239 [0.207]
Mother worked when husband was 14	0.046 [0.027]	0.048 [0.028]
Mother's years of education (husband)	0.006 [0.006]	0.007 [0.006]
Father at home when husband was 14	0.036 [0.089]	0.033 [0.098]
Father worked when husband was 14	-0.092 [0.070]	-0.092 [0.064]
Father's years of education (husband)	-0.002 [0.005]	-0.002 [0.005]
Attended public school (husband)	0.039 [0.055]	0.042 [0.060]
Religion (husband)	YES	YES
Constant	18.984 [6.026]**	
Observations	1130	1130
R-squared	0.06	0.05

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. The husband religion dummies for Jewish, Presbyterian and Protestant are negative and statistically significant. Column (1): OLS estimates; Column (2): Probit estimates (marginal effects reported).

Table 9: The effect of husband's gender role attitudes on wives' work decision
(additional controls X06)

	Wife Working in 2005	
	OLS	PROBIT
	(1)	(2)
Attitudes in 1979 (husband)	0.015 [0.005]**	0.017 [0.005]**
Years of education (wife)	0.031 [0.007]**	0.034 [0.007]**
Living in a North-Eastern region in 2006	-0.059 [0.052]	-0.066 [0.059]
Living in a North-Central region in 2006	-0.046 [0.046]	-0.061 [0.051]
Living in a Western region in 2006	-0.056 [0.049]	-0.064 [0.056]
Living in a city in 2006	0.018 [0.029]	0.019 [0.031]
Age (wife)	0.107 [0.026]**	0.104 [0.027]**
Age^2 (wife)	-0.001 [0.000]**	-0.001 [0.000]**
Years of education (husband)	-0.006 [0.006]	-0.006 [0.007]
Annual income (husband)	-0.001 [0.000]**	-0.001 [0.000]**
Weekly hours worked (husband)	0 [0.001]	0 [0.001]
Children younger than 6	-0.087 [0.040]*	-0.090 [0.046]*
Number of children	-0.021 [0.011]	-0.020 [0.011]
Religion wife was raised	YES	YES
Religion husband was raised	YES	YES
X79	YES	YES
Constant	20.264 [5.891]**	
Observations	1130	1130
R-squared	0.13	0.13

Standard errors in brackets, * 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. Among those variables "Age of the husband" and "being raised in the Presbyterian religion" have a negative and statistically significant effect at 10% level. Column (1): OLS estimates; Column (2): Probit estimates (marginal effects reported).

Table A1: Descriptive Statistics (cont'd)

The effect of gender role attitudes on female respondents' work decision (Table 6 and 7):

Variables	Mean	S.D.	Variables	Mean	S.D.
Working in 2006	0.78		Other Religion	0.09	2.61
Attitudes Index in 1979	17.87	3.01	Years of education	13.45	
Age	45.32	2.08	Living in a city in 2006	0.69	
Black	0.30		Living in a North-Eastern region in 2006	0.15	
Other race (non-white; non-black)	0.05		Living in a North-Central region in 2006	0.25	
Immigrant	0.05		Living in a Western region in 2006	0.19	5.28
Living in a city at age 14	0.80		Age (husband)	46.57	2.63
Living in the South at age 14	0.37		Years of education (husband)	13.82	59.16
Siblings	3.77	2.52	Annual Income (husband)	59.24	16.87
Mother at home when respondent was 14	0.99		Weekly hours worked (husband)	41.03	
Mother worked when respondent was 14	0.54		Children younger than 6	0.07	
Mother's years of education	10.77	3.28	Number of children	2.03	
Father at home when respondent was 14	0.80		Married in 2006	0.51	
Father worked when respondent was 14	0.93		Roman Catholic (husband)	0.37	
Father's years of education	11.07	3.89	Protestant (husband)	0.10	
Attended Public School	0.95		Baptist (husband)	0.22	
Roman Catholic	0.34		Episcopalian (husband)	0.02	
Protestant	0.03		Lutheran (husband)	0.06	
Baptist	0.30		Methodist (husband)	0.07	
Episcopalian	0.01		Presbyterian (husband)	0.03	
Lutheran	0.05		Jewish (husband)	0.02	
Methodist	0.08		Other religion (husband)	0.06	
Presbyterian	0.03		Non-religion (husband)	0.05	
Jewish	0.01		Number of observations	2753	

Table A1: Descriptive Statistics (cont'd)

The effect of husband's gender role attitudes on wives' work decision (Table 8 and 9):

Variables	Mean	S.D.	Variables	Mean	S.D.
Wife Working in 2005	0.72		Jewish (husband)	0.02	
Attitudes index in 1979 (husband)	16.39	2.97	Other Religion (husband)	0.10	
Age (husband)	45.25	2.20	Years of education (husband)	13.87	2.70
Black (husband)	0.17		Living in a city in 2006	0.64	
Other race (non-white; non-black) (husband)	0.05		Living in a North-Eastern region in 2006	0.15	
Immigrant (husband)	0.04		Living in a North-Central region in 2006	0.28	
Living in a city at age 14 (husband)	0.79		Living in a Western region in 2006	0.19	
Living in the South at age 14 (husband)	0.32		Age (wife)	42.60	4.89
Siblings (husband)	3.26	2.22	Years of education (wife)	14.02	2.39
Mother at home when respondent was 14 (husband)	0.99		Annual Income (husband)	70.05	(66.44)
Mother worked when respondent was 14 (husband)	0.56		Weekly hours worked (husband)	41.23	(16.00)
Mother's years of education (husband)	11.43	3.13	Children younger than 6	0.17	
Father at home when respondent was 14 (husband)	0.86		Number of children	2.1	
Father worked when respondent was 14 (husband)	0.82		Roman Catholic (wife)	0.37	
Father's years of education (husband)	10.26	5.41	Protestant (wife)	0.12	
Attended Public School (husband)	0.93		Baptist (wife)	0.22	
Roman Catholic (husband)	0.37		Episcopalian (wife)	0.02	
Protestant (husband)	0.04		Lutheran (wife)	0.07	
Baptist (husband)	0.22		Methodist (wife)	0.07	
Episcopalian (husband)	0.02		Presbyterian (wife)	0.03	
Lutheran (husband)	0.08		Jewish (wife)	0.01	
Methodist (husband)	0.08		Other religion (wife)	0.07	
Presbyterian (husband)	0.03		Number of observations	1130	

Table A2: Linear probability estimates of the mother-child gender role attitudes

Mother's Views (1979) ("Strongly disagrees" or disagrees")	Child's Views (1994-2002) ("Strongly disagrees" or "disagrees")
Q1: A woman's place is in the home, not in the office or the shop	0.069 [0.016]***
Q2: A woman who carries out her full family responsibilities does not have time for outside employment	0.065 [0.015]***
Q3: The employment of wives leads to more juvenile delinquency	0.026 [0.015]*
Q4: 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	0.069 [0.017]***
Q5: Men should share the work around the house with women, such as doing dishes, cleaning and so forth	0.010 [0.012]
Q6: Women are much happier if they stay at home and take care of their children	0.063 [0.017]***

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. The estimates correspond to a linear probability model of the likelihood that a child "strongly disagrees" or "disagrees" with a traditional statement in 1994-2002, given that the mother "strongly disagrees" or "disagrees" with such a statement in 2004.

Table A3: The effect of attitudes on female respondents' work decision

	Working in 2005 (1)	Weeks worked in 2005 (2)	Hours per week worked in 2005 (3)
Attitudes in 1979	0.007 [0.003]***	0.481 [0.165]***	-0.060 [0.094]
Age	-0.161 [0.151]	-9.298 [9.783]	-4.588 [5.569]
Age^2	0.002 [0.002]	0.100 [0.108]	0.048 [0.061]
Black	-0.020 [0.021]	-1.682 [1.354]	2.081 [0.786]***
Other Race	-0.129 [0.035]***	-8.719 [2.283]***	-0.101 [1.361]
Immigrant	0.031 [0.036]	2.071 [2.330]	-0.117 [1.309]
Living in a city at age 14	-0.012 [0.019]	-1.228 [1.221]	-0.441 [0.695]
Living in the South at age 14	-0.016 [0.017]	-0.949 [1.108]	1.133 [0.634]*
Siblings	0.001 [0.003]	-0.076 [0.214]	0.032 [0.123]
Mother at home when respondent was 14	0.021 [0.081]	-0.449 [5.311]	0.654 [3.217]
Mother worked when respondent was 14	0.026 [0.015]*	1.171 [0.993]	0.888 [0.566]
Mother's years of education	0.003 [0.003]	0.152 [0.204]	-0.109 [0.118]
Father at home when respondent was 14	0.037 [0.043]	2.891 [2.828]	0.253 [1.643]
Father worked when respondent was 14	0.057 [0.032]*	2.870 [2.108]	0.861 [1.231]
Father's years of education	-0.005 [0.003]*	-0.231 [0.174]	-0.103 [0.099]
Attended Public School	0.012 [0.033]	1.226 [2.168]	-1.180 [1.241]
Religion	YES	YES	YES
Constant	4.299 [3.426]	238.464 [221.871]	151.815 [126.264]
Observations	2753	2753	2225
R-squared	0.02		0.02

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. Dependent variables are: column (1) an indicator for whether the female respondent worked at all in 2005, column (2) number of weeks worked in 2005, and column (3) number of hours worked per week in 2005. The results in column (1) correspond to a linear probability model and those in column (2) to a tobit model. The results in column (3) correspond to a linear model estimated on the sample of employed female respondents.

Table A4: The effect of attitudes on female respondents' work decision (additional controls X06)

	Working in 2005 (1)	Weeks worked in 2005 (2)	Hours per week worked in 2005 (3)
Attitudes in 1979	0.005 [0.003]**	0.332 [0.162]**	-0.071 [0.093]
Living in a North-East Region in 2006	0.035 [0.029]	3.176 [1.846]*	-3.144 [1.038]***
Living in a North-Central Region in 2006	0.047 [0.027]*	3.887 [1.706]**	-2.683 [0.962]***
Living in a Western region in 2006	-0.009 [0.028]	0.364 [1.779]	-1.417 [1.015]
Living in a city in 2006	0.037 [0.017]**	2.589 [1.081]**	1.057 [0.628]*
Age (husband)	0.056 [0.020]***	3.592 [1.280]***	-0.463 [0.779]
Age^2 (husband)	-0.001 [0.000]***	-0.040 [0.013]***	0.005 [0.008]
Years of education (husband)	0.008 [0.004]*	0.392 [0.285]	0.030 [0.164]
Annual income (husband)	-0.001 [0.000]***	-0.095 [0.013]***	-0.056 [0.009]***
Weekly hours worked (husband)	0.000 [0.001]	-0.024 [0.041]	0.038 [0.024]
Children younger than 6	-0.140 [0.031]***	-8.930 [2.005]***	-3.368 [1.230]***
Number of children	-0.028 [0.006]***	-2.212 [0.359]***	-0.781 [0.215]***
Married in 2006	-1.274 [0.476]***	-76.569 [30.921]**	8.293 [18.635]
Religion respondent was raised Religion husband was raised X79			
Constant	4.862 [3.367]	274.795 [216.520]	166.526 [124.549]
Observations	2753	2753	2225
R-squared	0.08		0.07

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. X79 indicates that all the explanatory variables include in the empirical model in Table A3 are also included here. Dependent variables are: column (1) an indicator for whether the female respondent worked at all in 2005, column (2) number of weeks worked in 2005, and column (3) number of hours worked per week in 2005. The results in column (1) correspond to a linear probability model and those in column (2) to a tobit model. The results in column (3) correspond to a linear model estimated on the sample of employed female respondents.

Table A5: The effect of attitudes on female respondents' education, marital and fertility decisions

	Highest level of education completed (1)	Marital status in 2006 (2)	Total number of children (3)
Attitudes in 1979	0.110*** [0.015]	-0.000** [0.000]	-0.039*** [0.009]
Years of education		-0.000 [0.000]	-0.112*** [0.011]
Living in a North-East Region in 2006	-0.148 [0.166]	-0.003*** [0.001]	0.060 [0.100]
Living in a North-Central Region in 2006	-0.021 [0.153]	-0.002** [0.001]	0.376*** [0.092]
Living in a Western region in 2006	0.109 [0.160]	-0.002** [0.001]	0.260*** [0.096]
Living in a city in 2006	0.178* [0.097]	-0.001 [0.001]	-0.010 [0.058]
Age (husband)	-0.032 [0.113]	0.041*** [0.000]	0.175*** [0.068]
Age^2 (husband)	0.000 [0.001]	-0.000*** [0.000]	-0.002*** [0.001]
Years of education (husband)	0.362*** [0.026]	0.001*** [0.000]	0.033** [0.016]
Annual income (husband)	0.001 [0.001]	-0.000** [0.000]	0.002*** [0.001]
Weekly hours worked (husband)	-0.001 [0.004]	-0.000** [0.000]	0.004* [0.002]
Children younger than 6	0.733*** [0.177]	0.005*** [0.001]	
Number of children	-0.334*** [0.032]	-0.001*** [0.000]	
Married in 2006	-3.442 [2.745]		-3.992** [1.640]
Religion respondent was raised Religion husband was raised X79			
Constant	20.051 [19.412]	0.458*** [0.136]	9.422 [11.649]
Observations	2753	2753	2753
R-squared	0.32	1.00	0.14

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. X79 indicates that all the explanatory variables include in the empirical model in Table A3 are also included here. Dependent variables are: column (1) highest level of education completed by the female respondent, column (2) an indicator for whether the female respondent is married in 2006, column (3) her number of children in 2006.

Table A6: The effect of husband's attitudes on wives' work decision

	Weeks worked by wife in 2005 (1)	Hours per week worked by wife in 2005 (2)
Attitudes in 1979 (husband)	1.146 [0.337]**	-0.073 [0.142]
Age (husband)	-59.095 [18.876]**	-4.731 [7.917]
Age^2 (husband)	0.656 [0.208]**	0.054 [0.087]
Black (husband)	0.410 [3.129]	2.823 [1.301]*
Other (non-white; non-black) (husband)	4.434 [4.817]	0.166 [2.054]
Immigrant (husband)	5.398 [4.787]	1.122 [2.034]
Living in a city at age 14 (husband)	-2.185 [2.362]	-0.056 [0.995]
Living in the South at age 14 (husband)	2.322 [2.267]	1.493 [0.946]
Siblings (husband)	0.136 [0.469]	-0.063 [0.198]
Mother at home when husband was 14	18.859 [13.141]	-3.946 [6.998]
Mother worked when husband was 14	2.921 [1.971]	1.095 [0.837]
Mother's years of education (husband)	0.486 [0.417]	-0.176 [0.180]
Father at home when husband was 14	2.721 [6.375]	8.165 [2.732]**
Father worked when husband was 14	-5.963 [5.012]	-4.202 [2.136]*
Father's years of education (husband)	-0.300 [0.341]	-0.235 [0.145]
Attended public school (husband)	3.216 [3.949]	0.131 [1.635]
Religion (husband)		
Constant	1,317.494 [429.803]**	141.981 [180.463]
Observations	1114	847
R-squared		0.05

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. Dependent variables are: column (1) number of weeks worked by wife in 2005, and column (2) number of hours worked per week by wife in 2005. The results in column (1) correspond to a tobit model and those in column (2) to a linear model estimated on the sample of employed wives.

Table A7: The effect of husband's attitudes on wives' work decision (additional controls X06)

	Weeks worked by wife in 2005 (1)	Hours per week worked by wife in 2005 (2)
Attitudes in 1979 (husband)	1.142 [0.332]**	0.044 [0.143]
Years of education (wife)	2.070 [0.472]**	0.292 [0.202]
Living in a North-East Region in 2006	-2.091 [3.671]	0.375 [1.621]
Living in a North-Central Region in 2006	0.216 [3.269]	0.411 [1.442]
Living in a Western region in 2006	-1.873 [3.525]	-1.221 [1.557]
Living in a city in 2006	2.465 [2.039]	-0.902 [0.876]
Age (wife)	8.321 [1.967]**	-1.456 [0.964]
Age^2 (wife)	-0.094 [0.023]**	0.016 [0.011]
Years of education (husband)	-0.817 [0.456]	-0.249 [0.193]
Annual income (husband)	-0.112 [0.017]**	-0.034 [0.008]**
Weekly hours worked (husband)	0.026 [0.059]	-0.027 [0.029]
Children younger than 6	-5.843 [2.869]*	-2.510 [1.250]*
Number of children	-1.830 [0.768]*	-1.328 [0.333]**
Religion wife was raised	YES	YES
Religion husband was raised	YES	YES
X79	YES	YES
Constant	1,317.494 [429.803]**	141.981 [180.463]
Observations	1114	847
R-squared		0.05

Standard errors in brackets, * significant at 10%; ** significant at 5%; *** significant at 1%. %. X79 indicates that all the explanatory variables include in the empirical model in Table A5 are also included here. Dependent variables are: column (1) number of weeks worked by wife in 2005, and column (2) number of hours worked per week by wife in 2005. The results in column (1) correspond to a tobit model and those in column (2) to a linear model estimated on the sample of employed wives.

Table A8: The effect of husband's gender role attitudes on his own work decision (additional controls X06)

	Husband Working in 2006	
	OLS	PROBIT
	(1)	(2)
Attitudes in 1979 (husband)	0.002 [0.003]	0.001 [0.001]
Years of education (wife)	0.003 [0.004]	0.002 [0.001]
Living in a North-Eastern region in 2006	0.036 [0.030]	0.008 [0.008]
Living in a North-Central region in 2006	0.054 [0.027]	0.009 [0.008]
Living in a Western region in 2006	0.013 [0.029]	0.003 [0.009]
Living in a city in 2006	0.015 [0.017]	0.004 [0.006]
Age (wife)	-0.009 [0.016]	-0.003 [0.005]
Age^2 (wife)	0 [0.000]	-0.001 [0.000]
Years of education (husband)	0.004 [0.004]	0.000 [0.000]
Annual income (husband)	0.001 [0.000]***	0.001 [0.000]***
Children younger than 6	-0.032 [0.024]	-0.021 [0.014]
Number of children	0.002 [0.006]	0.002 [0.002]
Religion wife was raised	YES	YES
Religion husband was raised	YES	YES
X79	YES	YES
Constant	3.661 [3.478]	
Observations	1130	1130
R-squared	0.11	0.13

Standard errors in brackets, * 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. Among those variables "Living in the South at the age 14" and "Foreign born" have a positive and statistically significant effect at the 5% level. Column (1): OLS estimates; Column (2): Probit estimates (marginal effects reported).

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

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