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Acculturation, Education, and Gender Roles: Evidence from Canada^{*}

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Abstract. This paper studies the influence of cultural norms on economic outcomes. We combine detailed information on second-generation female immigrants with historical data from their ancestral source country to see how the cultural endowment received from their fathers affects current decisions. Our results reveal the critical role of education in mediating the influence of culture on work and fertility decisions. We uncover an education gradient for cultural assimilation: lower-educated women exhibit a strong influence of cultural variables while higher-educated women show no influence at all. We gather and present evidence on several potential mechanisms for the education gradient.

Keywords: Culture, Gender, Immigration, Assimilation, Labor Supply, Fertility, Human Capital, *JEL No.* J16, J22, J61

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1 Introduction

Immigration has shaped the population of North America since the first newcomers arrived over 400 years ago. In 2014, there were over 42 million foreign-born residents in the United States. At 13.2 percent, their share of the total population has now returned to a level not seen since the late 1800's and early 1900's. For Canada, the corresponding figure in 2011 is 6.8 million immigrants, who represented 20.6 percent of the total population, the highest proportion among the G8 countries. Canada has accepted over 200,000 immigrants (0.6 to 0.9 percent of the population) in twenty-three of the last twenty-five years; and together, first and second generation immigrants to Canada make up almost 40 percent of the population. The source regions for immigrants have shifted from the largely European origins prior to the 1970s to predominantly Latin American (U.S.) or Asian (Canada and U.S.) origins today.¹ The resulting change in the composition of the population from areas with different cultures and traditions has sparked vigorous debate in both countries about issues of culture and assimilation, and how to weight the effects immigrants have on changing cultural values, communities and economic circumstances.

The two graphs in Figure 1 help to illustrate the issue for Canada. The graphs plot the fertility and labor market participation of all Canadian women versus a counterfactual line for immigrant women in Canada, had they made the same choices as the (average) woman in their home country.² We see that the differences in both fertility choices and labor market participation are quite large, and have grown over time; largely as a result of the shift in source country composition. This points to a growing cultural gap between natives and newly arriving (unassimilated) immigrants in Canada.³

Recently, economists have started to pay increasing attention to 'culture', which can broadly be defined as a body of shared knowledge, beliefs, and practice. Research has emerged that asks whether culture plays an important role in explaining differences in economic outcomes, and seeks to better understand the relationship between cultural attitudes and observed behaviour, both em-

¹In 1970, 70.4 percent of the foreign born came from Europe or North America; by 2010, 78.1 percent were from Asia and Latin America and the Caribbean Region. Sources for Canadian data: Citizenship and Immigration Canada (2015) and Statistics Canada (2013). Sources for American data: Gibson and Lennon (1999) and Pew Research Center (2016).

²The data come from the International Labor Organization and the United Nations Demographic Yearbook. For the period 1997-2001, the data are only available for a few selected countries. Details are available from the authors upon request.

³Indeed, in a recent survey of the Environics Institute (2015), over 65% of Canadians expressed concern that immigrants were not adopting Canadian values. At the same time, the majority of respondents did not think that there was too much immigration into Canada. For details, see The Environics Institute (2015).

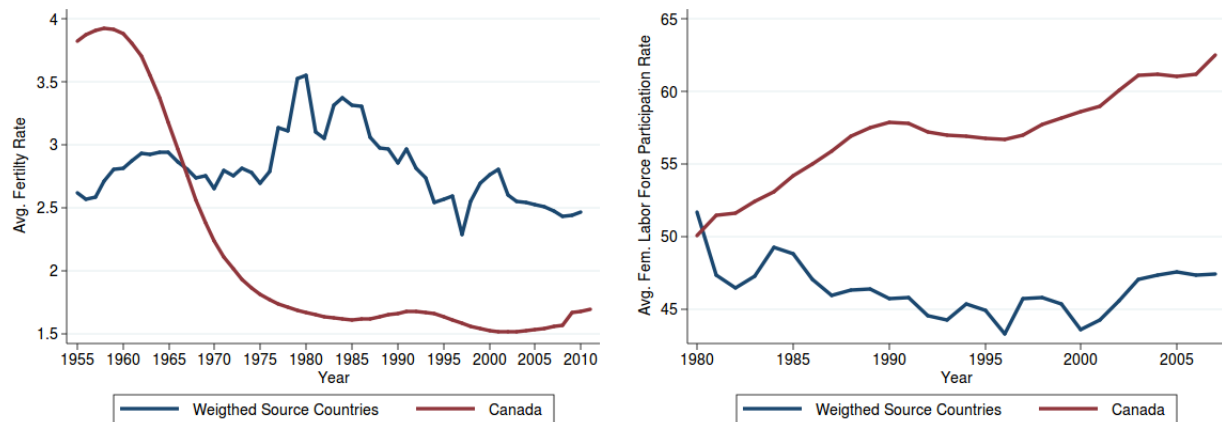


Figure 1: Fertility and FLP rates in Canada versus Immigrant Source Countries

pirically and theoretically.⁴ The empirical strand of this literature has produced strong evidence in a variety of contexts that culture actually matters, from historical case studies [Greif (1994)] and laboratory experiments [Henrich et al. (2001)] to work relating variation in the economic outcomes of individuals to differences in their attitudes. The main challenge has been how to separate differences in beliefs and preferences from differences in environments (such as institutions) or individual endowments (such as ability). Most of this latter literature therefore studies the intergenerational transmission of values and the persistence of behavioral patterns among immigrants, making use of the fact that culture is far more portable than the institutional and economic environment when people migrate.⁵ Since this approach also focuses only on inherited dimensions of culture rather than voluntarily accumulated dimensions, it also mitigates the problem of reverse causality, namely that economic outcomes may change the accumulation of social capital, indirectly affecting cultural norms and beliefs.

A primary focus of this research is how the traditional attitudes toward gender in immigrants' source countries are reflected in observed variation in their behavior in the host country. Gender roles are particularly salient for rates of female labor force participation, marriage and divorce, and fertility.⁶ Antecol (2000) and Blau et al. (2011, 2013) find that first-generation or second-

⁴See Fernández (2010) for an overview.

⁵Notable exceptions are Fernández et al. (2004) and Alesina and Fuchs-Schündeln (2007) who make use of natural experiments (World War II, and German separation, respectively).

⁶Fortin (2009) provides evidence that gender role attitudes provide an essential explanation for the evolution of female labor force participation over the latter part of the twentieth century. For a survey of work on other outcomes (such as savings rates, family structure, preferences for redistribution, etc.) see Guiso et al. (2006).

generation women from source countries with relatively high levels of female labor supply work more in the United States. The number of children born to immigrant women also tends to mirror their countries of origin [Blau (1992), Fernandez and Fogli (2009), Blau et al. (2011)].⁷ These findings lend some credence to concerns that the persistence of cultural attitudes in the immigrant population may have substantial lasting effects on labor supply and fertility behaviour.

But what are the driving forces behind cultural assimilation on the one hand, and intergenerational persistence of norms and values on the other hand? What are the mechanisms and channels? Here, the evidence from econometric studies to date is still relatively sparse.⁸ Clearly, foreign-born parents pass on not just their own characteristics and behavioural traits but also their cultural norms and beliefs to their children. Moreover, second-generation immigrants are exposed to their parents' cultures through other members of the diaspora, e.g. through endogamy or geographic clustering. Being heavily exposed to their cultures of origin, these children will be more likely to conform to the cultural practices of their parents in their own choices regarding education, marriage, and labor force participation.⁹ At the same time, it seems plausible that the extent of exposure to Western culture accelerates the speed of acculturation, moderating the influence of family members and their culture of origin.

In this paper, we use rich data on second-generation immigrants to provide new evidence on the cultural transmission of attitudes in a woman's country of ancestry affects labor supply and fertility decisions today in Canada. We extend the literature by looking into the mechanisms and channels of assimilation with a particular focus on how assimilation varies by education. Furthermore, we present evidence that explores different hypotheses on how education might affect assimilation and the cultural transmission of values.

We study second-generation immigrants to avoid a set of issues related to first-generation immigrants; a common choice in this literature. For example, first-generation immigrants may be differentially affected by immigration shocks pertaining to language difficulties, lack of employment opportunities, or loss of their social network. Second, there may be selection (positive or negative) in the composition of the foreign-born population as individuals or families who resolve

⁷Almond et al. (2013) study second-generation Asian immigrants to Canada, and show that son preference (sex birth ratios) can be partly explained through countries of origin.

⁸See Bisin and Verdier (2000, 2001) for a theoretical model on how cultural transmission occurs, and Bisin and Verdier (2010) for a comprehensive review of the theoretical and empirical work on the subject.

⁹See Angrist (2002) who finds that, largely due to endogamy being common among second-generation immigrants, high male-female sex ratios in immigrant flows are positively correlated with the marriage rates of second-generation women and negatively correlated with their labor force participation rates.

to leave their home country in pursuit of a better life may be fundamentally different from their counterparts who stay behind. The advantage of examining second-generation women is thus that, having been born in Canada, they likely face similar economic and institutional conditions to other Canadians, while still holding potentially different cultural values, which are transmitted through their foreign-born parents. The disadvantage, of course, is that these second-generation individuals have already had time to assimilate, which will presumably diminish the measured effect of culture on their economic choices. We also restrict the sample to married women, for whom norms relating to gender are expected to be more salient.

The cultural proxy we use is the corresponding outcome variable (female labor force participation and total fertility rates) in the woman's source country of ancestry recorded at a time where her parents likely still resided in the original source country of ancestry. Naturally, this outcome variable at the aggregate level will depend on the distribution of preferences and beliefs within each country, and will generally vary across countries, reflecting variation in culture. A correlation of this variable to outcomes of second-generation Canadian women can thus, after controlling for their individual socio-economic attributes, indicate that their cultural background matters for their decisions today.

Our investigation of the impact of source-country characteristics on second-generation immigrants' economic outcomes provides a test for whether, and to what extent, assimilation has been taking place in Canada. Broadly speaking, we find only weak evidence of an overall effect of cultural heritage on second-generation immigrant women's labor supply and fertility choices. However, we find strong evidence of a substantial gradient by the level of educational achievement. Previous research has included the level of education as an explanatory variable or discussed possible concerns of omitted variable bias due to unobserved human capital transmission. Our work in this paper, to the best of our knowledge, is the first to specifically study how schooling affects the speed and scale of acculturation.¹⁰

Our results indicate a smooth and steady decline in the estimated effect of culture on women's outcomes as educational attainment increases, moving from a high-school dropout to a woman who has completed university. Indeed, for women with a university degree, our results indicate that the (precisely measured) effect of culture is approximately nil, whereas it is four to eight times as high for high-school drop outs than for a women with an average (some post-secondary)

¹⁰See below for a review of the literature.

education. Our findings of this *education gradient in cultural assimilation* hold for both outcome variables we consider, namely women’s labor market participation and the number of children, and is robust across different specifications. We go further by searching for evidence on potential channels through which education could affect cultural transmission—including peer effects and human capital effects. We find little evidence that lower-educated women have greater cultural attachment through peers, neighborhoods, or spouses. We also fail to find strong evidence that the education gradient in cultural assimilation reflects the cultural gap in gender attitudes between the source country and Canada. Overall, our results not only uncover a novel interaction between educational achievement and cultural transmission and persistence which is interesting in itself, but our results also provide useful information for policy debates on immigration which are topical in many Western countries.

Relationship to the Literature

This paper contributes to several strands of the literature on culture, assimilation, and economic outcomes. First, as mentioned above, there exists by now a fairly substantial literature in economics demonstrating the fact that “culture matters.”¹¹ In particular, our analysis builds on a number of contributions studying the relationship between the impact of cultural factors on important economic decisions such as savings rates, labor supply, and fertility. A seminal paper in this body of work is Carroll et al. (1994), who examine saving rates among Canadian first-generation immigrants but find no significant effect of ancestry on observed behavior. Subsequent studies that focused primarily on labor market participation or fertility of immigrant women in the United States did consistently find evidence in support of a linkage between cultural heritage and contemporary choices. Using data from the 1990 census, Antecol (2000) for instance documents that source-country female labor supply can explain the work hours of first generation immigrant women. Similarly, studies investigating the labor supply and fertility behavior of daughters to foreign-born fathers have found that both female labor force participation and fertility rates in the parents’ country of origin [Fernandez and Fogli (2009)] and the participation and fertility patterns of U.S. first-generation immigrants from those source countries [Blau et al. (2013)] had significant explanatory power.

We borrow the empirical approach from this literature, making use of variation in second-generation immigrant behavior to isolate the effects of cultural heritage on economic choices. Our analysis

¹¹See Fernandez (2007) for a review of the larger literature.

complements previous findings in that we employ data from Canada, a country with a comparable approach to immigration as the U.S. but a different composition of immigrant source countries. Our basic specification is identical to that of Fernandez et al. (2006) and Fernandez and Fogli (2009), and thus allows for direct comparison of the patterns found in Canada to those in the United States. We also go beyond previous studies with our investigation into the role of educational achievement in the extent to which culture matters. Not only do we provide evidence of an education gradient in cultural assimilation, but we also investigate several reasons why education might matter. To our knowledge, our results provide the first quantitative evidence of an important and highly stable relationship between an individual's level of education and his or her degree of acculturation.

In this regard, our paper is closely related to Blau et al. (2011) who use U.S. Census data from 1980 – 2000 to compare the labor market behavior of different cohorts of first-generation immigrants. While their main objective is to relate the gap between immigrant labor supply and native labor supply to the time elapsed since the immigrant arrived in the U.S., they also look at how those assimilation paths differ by the level of schooling. Their finding suggests that for both men and women, the immigrant-native gap in work hours at arrival is greater, the higher the level of education, and over time closes more quickly for those that are more highly educated [see also Adserà and Ferrer (2014) for similar evidence from Canada]. Newly-arrived immigrants without a high-school diploma, for instance, will work less than their native counterparts; but for new immigrants with a university college degree, this shortfall is significantly higher. Over time, however, those with a university degree will catch up more quickly to the natives than those without a degree. This observation is consistent with the results in our model, namely that better-educated individuals assimilate more quickly. However, the analysis in Blau et al. (2011) does not allow them to distinguish between cultural assimilation on the one hand, and patterns that one would expect to emerge as part of a normal adjustment to a new labor market on the other hand. The fact that the immigrant-native gap in labor supply is decreasing in years since arrival may simply be indicative of the fact that it takes time for newly arrived immigrants to find regular full-time work. Moreover, as the authors themselves note, highly-educated individuals are likely to face a more specialized labor market, and they may therefore suffer longer initial spells of unemployment or may have to invest in additional training (such as accreditation) to locate suitable jobs. These factors, rather than an effect of education on cultural assimilation, could explain the higher-educated immigrants' lower relative work hours upon arrival and the steeper slope of adjustment thereafter in their work; while our results focus directly on cultural assimilation.

Unlike Blau et al. (2011), we use a cross section of individuals who are second-generation immigrants and therefore not subject to these kinds of adjustment processes. Consequently, our finding of an education gradient must be interpreted as a genuine effect of schooling on the cultural assimilation paths of immigrants: the higher their level of education, the less of their contemporary behavior can be explained by the characteristics of their parent’s country of origin. Our results shed light on a question that so far has not been empirically studied in the literature, namely the relative importance of family versus other institutions (such as schooling) as cultural transmission vehicles. Indeed, economic research into channels and the strength of the transmission of preferences and beliefs is still in its infancy.¹²

Lastly, by linking the magnitude of culturally-transmitted gender roles to levels of schooling, our paper also contributes to a body of work in sociology and psychology on acculturation, education, and gender roles.¹³ Relying largely on qualitative studies or survey data, the general lesson of these studies is that second-generation immigrant women have more liberal views of gender norms than their parents and that at least some acculturation occurs regardless of educational attainment [Dasgupta (1998), Phinney and Flores (2002)]. In the context of Spain, Calvo-Salguero et al. (2008) provide evidence that gender-role attitudes tend to become more similar with greater educational attainment. But the causality can also be reversed: some cultures have less favourable attitudes towards educational achievement than others [Denessen et al. (2001), Fuligni and Witkow (2004)], and cultural differences in family background may be responsible for different levels of schooling across ethnic groups [Chiswick (1988)]. There seems to be no consensus, however, on whether and to what extent the experience of post-secondary education is a causal factor in undermining cross-generational cultural transmission of gender roles. The problem here is that higher education is correlated with less traditional attitudes, but education also directly affects labor supply. A positive association of labor force participation rates, schooling, and liberal gender roles may therefore be observed even in the absence of an indirect effect of schooling on gender stereotyping.

¹²There is a growing empirical literature on preference transmission through learning from experience, or from being exposed to novel behavioral patterns. Fernández et al. (2004), for example, provide evidence that in states with higher mobilization rates during WWII, more women worked after the war and that this effect carried over to the next generation through the working women’s sons, i.e. whether or not a man’s mother worked while he was growing up is correlated with whether or not his wife works, after controlling for socioeconomic observables. Jensen and Oster (2009) find that when cable TV was introduced in rural parts of India, women in exposed villages were less likely to express son preference, fertility fell, and autonomy increased. Fogli and Veldkamp (2011) build a theoretical model of localized women-to-women learning, and show that the model performs well matching the dynamic and geographic evolution of female labor force participation in the 20th century.

¹³Suárez-Orozco and Qin (2006) and Zhou (1997) provide general reviews.

2 Data and Empirical Strategy

Our basic data source is the restricted individual files of the 2001 Canadian Census, but we also use the 2002 Ethnic Diversity Survey to dig deeper into the behavior of second-generation immigrants. The alignment of the Ethnic Diversity Survey with the 2001 census is one of our motivations to focus on that particular year.¹⁴ The confidential Census files include comprehensive information on key variables such as the immigration history of the individual and her parents, labor market outcomes, occupation, educational attainment, and family structure for each individual. For each woman we compile relevant information regarding other members of the household, including spouse and the number of children, and we also obtain a measure of fertility based on the number of children in the household and the spouse's immigration and labor market characteristics. Our labor supply analysis centers on usual weekly hours worked. Our measure of fertility is based on the number of children under 18 living with their parents. We focus on females with mothers aged 30 to 40 who are in two-parent families (whether married or common-law), and restrict the sample to those that have been born in Canada, but have at least one foreign-born parent. Women in this age range should have completed their education but are far from retirement, and the number of children still living in the household is most likely to coincide with their actual number of ever-born children.

We then supplement each individual observation with information on the country of ancestry of her father and mother. To this end, we employ cross-country data for female labor force participation and fertility, which we obtained from the International Labor Organization (ILO) and the United Nations demographic yearbook, respectively. Female labor force participation (FLFP) is defined as the rate of the economically active population for women over 10 years of age. We use the total fertility rate (TFR) as a measure of fertility. Expressed as the number of children per woman, TFR is the average number of children a hypothetical cohort of women of age of 15 to 49 would have had at the end of their reproductive life, had they been subject during their whole lives to the fertility rates of a given cross-sectional period (here 1950). In our main specification, we look at cultural proxies from the year 1950, ten to twenty years prior to the birth years of our second-generation women. We chose 1950 since this is the earliest date for which data for a reasonably large number of countries of origin are available.

¹⁴The coverage of the Census is universal and mandatory, with 20 percent of private occupied households selected for the detailed 'long form' and 80 percent for the more cursory 'short form'. All long-form respondents are included in the master file, which is available for some Census years through special arrangement at Research Data Centres. We have also checked our results in the 2006 Census and found them very similar for labor supply, although less so for fertility.

This data choice provides the opportunity to contrast and build on the Fernandez and Fogli (2009) results (hereafter referred to as F&F). Their analysis used the 1970 U.S. Census because the country of birth of the father was available only in that year. They also used cultural data from 1950. However, the women in their 1970 sample were already 10 to 20 years old and their families were in the United States when the 1950 cultural ancestry variables were recorded. This means that their cultural proxy will embody any cultural change that occurred subsequent to the father’s immigration; while the father was in the U.S. In contrast, looking at 2001 we can use cultural data more reflective of the cultural milieu in which the women’s fathers grew up before immigrating. The women in our sample were born between 1961 and 1971, so the use of 1950 is much more likely to capture the cultural state of the country as the women’s fathers knew it.

While our sample of source countries is largely limited by data availability for 1950, we also exclude countries that became centrally-planned economies around World War II. As F&F note, the parents immigrating from those countries must have done so before 1940, which disconnects them from the transformation these countries went through during and in the aftermath of the war. To maintain comparability with the F&F results, we also excluded Russia as well as those countries for which F&F did not have enough observations in their sample.¹⁵ In the remaining sample of 25 countries, we have 17 European countries, 3 countries in the Americas (Cuba, Mexico, and the U.S.), 3 countries in Asia (China, Japan, and the Philippines), and the rest in the Middle East (Syria and Lebanon). The distribution of the observations by country of father’s origin is reported in Table 1. As can be seen, much of our sample comes from Europe. However, there is still substantial variation in both of our source-country 1950 variables. For example, the Netherlands has a female LFP rate of 18.7 percent and a TFR of 3.1 while Germany has 34.2 for the LFP and just 2.2 for TFR.

We now present descriptive information on our main 2001 census sample. We report the means (along with standard deviations for continuous variables) for our variables in several different samples in Table 2. The number of observations listed at the bottom of the table uses the sample weights to report the population-level equivalent that is represented by our sample.¹⁶ Our main sample is composed of two-parent families with a Canadian-born female between the ages of 30 and 40 who has a foreign-born father. This sample is in the first column of Table 2. The next four

¹⁵Rerunning the regressions with those countries included does not change our results.

¹⁶The long-form Census is a twenty percent sample of the Canadian population, so on average the population-level counts are about five times the actual number of observations in our dataset. We present the population-level counts to conform to Statistics Canada rules on reporting of means in the Census.

columns break this sample into four mutually exclusive and exhaustive categories based on the female’s education: high school incomplete, high school diploma, some post-secondary education (PSE), and university degree or higher. The final two columns present samples we do not use in our analysis, but are both useful benchmarks. The second-last column imposes that both the woman’s parents be Canadian-born—this can be thought of as a ‘very native’ benchmark. The final column looks at families with the same criteria as the main sample, but with foreign-born women instead of Canadian-born women.

The first two rows of Table 2 display the main dependent variables we use in our analysis, weekly hours of work and number of children. Women in our main sample work 25.2 hours on average and have 1.7 kids. Hours of work shows an increase across the education groups in the next columns of the table, while number of children decreases with education. The work and fertility of the second-generation women in our main sample is very comparable to both the first-generation immigrants and the ‘very native’ benchmark sample. The next two variables are the ‘culture’ variables that are at the core of our analysis. We report both the female labor force participation rate and the total fertility rate in the country of origin for the women’s father in 1950. The average FLFP in these countries in 1950 was 24.5 percent, and the average number of children as measured by the TFR was 2.7. There is little systematic pattern in these variables across education attainment groups. The next rows in the table show the age and education of the women and of her partner. Immigrants are substantially more likely to have a university degree and correspondingly less likely to have high school or less education, compared to the ‘very native’ benchmark. First-generation immigrants show slightly better education attainment than the second-generation women in our main sample. The partners of the women show a similar education pattern. The next set of variables in the table reports further immigration-related information about the family, including the place of birth of the parents, the partner, and the language and ethnic group of the family. Immigrants are more likely to speak a foreign-language, but less likely to have a partner of the same ethnic group than the ‘very native’ sample in the second-last column.

To close this section, we provide a simple presentation of our empirical strategy which previews our results. We reduce our data to the level of the 25 countries in our sample as categorized by the place of birth of each woman’s father, and take the means of our key variables: hours of work and number of children.¹⁷ We then plot these variables against the 1950 values for female labor

¹⁷There are fewer than 25 datapoints per education group on each graph because Statistics Canada data release guidelines required us to suppress some countries with small counts for the education-group cells.

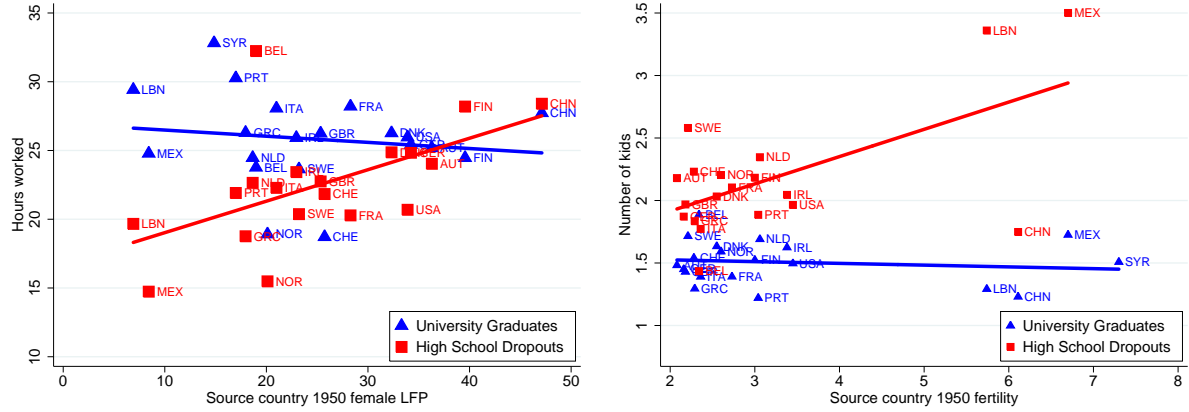


Figure 2: Work and Fertility, 2001 Canada vs. 1950 Source Country

force participation and total fertility rate. We do this separately for those without a high school diploma and those with a university degree or more, in order to highlight what will be a main theme of our results—the differences by education.

The results are plotted in Figure 2, with triangles for the high education group and squares for the low education group. We also plot a simple regression line for each education group in each graph. For work, there is a clear positive relationship between the 1950 source country LFP and hours worked by women in 2001 for the lower-educated women. For the university graduates, however, the relationship is less clear. In the second panel, the same holds for fertility—a positive relationship can be seen for the low-education group but not for the high-education group. There are several outliers for fertility: China, Lebanon and Mexico being three. Even without these outlier observations included, the simple fit line has a positive slope for the low-education group.¹⁸ These scatter plots are not definitive, but provide a preliminary indication of the shape of our results and preview the pivotal role played by education in our findings below.

3 Results

In this section we present our main results. We begin with our baseline specification, which updates and extends the existing research framework to the case of Canada. We present our baseline results for both labor supply and fertility, along with checks for connections to the existing literature and

¹⁸For fertility, the estimated slope for the low-education group is 0.27(0.06) using the number of country observations as weights. Without the three fertility outliers, this slope becomes 0.21(0.10).

robustness. In the second part of this section, we present our novel education gradient results, along with a similar set of robustness checks. Later, we take up the inquiry into the channels and mechanisms for the education gradient in Section 4.

3.1 Baseline Findings

In our baseline specification, we estimate a reduced-form model of the following form:

$$y_{ijl} = \beta_0 + \beta_1 Y_j + \beta_1' \mathbf{X}_i + \gamma_l + u_{ijl} \quad (1)$$

where for each woman i residing in a census metropolitan area l whose father was born in country j , y_{ijl} is the individual outcome of interest (weekly work hours or number of children, respectively), Y_j is the corresponding aggregate outcome in country j in the year 1950, X_i is a vector of individual characteristics that varies with the specification and is discussed below, γ_l is a set of indicator variables for the census metropolitan area, and u_{ijl} is an error term. Since the main explanatory variable of interest varies by country of origin, all the standard errors we report are corrected for clustering at the country-of-origin level.

Our basic results on the cultural influences on labor supply and fertility, respectively, are presented in two separate tables below. For ease of comparison with the findings for U.S. data of F&F, we chose a set of controls identical to theirs. Consider first Table 3 where the outcome is weekly hours worked by individual i and the cultural proxy is FLFP in 1950 in the father’s country of birth. All regressions control for location (census metropolitan area) and age and its square.

Looking at the coefficient on the cultural proxy in column (1) which contains only the age and metropolitan area controls, we see that it is positive and significant at the 5 percent level, indicating that women whose parents were born in countries where women participated less in the work force work less themselves, on average. The magnitude of our estimate is quite similar to F&F, who obtain a coefficient of 0.047 in a similar specification. This correlation, however, may be driven by factors other than culture. For instance, the parents’ human capital may systematically vary by country of origin with FLFP rates, and since educational attainment tends to be transmitted across generations, may indirectly affect their daughters’ incentives to work. To avoid these types of biases generated by a correlation between unobserved parental characteristics by country of ancestry and individual characteristics affecting labor supply, the regressions in column (2) and (3) add further individual controls; specifically the woman’s level of education (dummy variables for high school, some post-secondary education, and at least a university degree) and husband

characteristics (age, education, and income), respectively. The latter is important since the degree of assortative matching may systematically differ with parental characteristics. One should note, however, that doing so ignores the indirect effect of culture on work incentives through cultural differences in the desired level of schooling or the desired marriage market outcomes. Column (2) shows that through the inclusion of a women’s level of education, the measured direct effect of culture is reduced in magnitude and loses its statistical significance, indicating that some of the observed co-variation between culture and outcomes was indeed through human capital transmission. Controlling additionally for husband characteristics, on the other hand, increases the measured cultural influence again, as seen in column (3). This suggests that assortative matching in education was partly responsible for the result in column (2): women with ancestry from countries with higher FLFP tend to be educated more and tend to be married to men with higher education and higher income. The husband’s higher income will decrease the incentives for his wife to work, leading to a downward bias in the estimated strength of cultural influence. In what follows, we will take the specification in column (3) as our main specification.

In the full specification in the last column of Table 3, an increase in the level of FLFP in 1950 by one standard deviation (across countries) is associated with an increase of 0.57 hours worked per week and the effect is statistically significant at the 5 percent level. For the average women in the sample, weekly hours worked would increase by 2.3 hours or roughly 10 percent if her father comes from Turkey (where FLFP in 1950 was over 50%) rather than Lebanon (where it was below 7%). The point estimate of 0.048 is again very similar to the corresponding estimate of 0.045 in F&F. Finally, column (4) adds the second cultural proxy (TFR in this case) to capture the possibility that the two proxies have independent effects through reflecting different aspects of culture. For example, although both variables relate to gender norms and women’s role in society, the TFR may also reflect the desired family size, which in turn affects women’s decision to work. Yet, it appears that TFR in 1950 does not help explain female labor supply.¹⁹

In Table 4, we repeat the exercise for fertility. The outcome here is the number of children under 18 living in the household and the cultural proxy is the 1950 TFR in the father’s country of birth. Again, all regressions control for location (census metropolitan area) and age and its square.

We see that the measured effect is smaller and remains insignificant throughout, except when

¹⁹We also ran some regressions of labor supply that control for the presence of a child under the age of five living in the household, as this may affect the tendency to work but does not fully capture the impact of culture on family size. The cultural proxy drops in magnitude to 0.03 and becomes insignificant at the 5 percent level.

we include FLFP in 1950 as a second cultural proxy. For similar specifications, F&F obtain statistically significant estimates for TFR in the range of 0.194 to 0.250. In the last column, the measured effect of the FLFP in 1950 is negative, providing evidence that cultural norms in support of working women reduces the desired family size of the Canadian women in the sample. The fact that controlling for FLFP in the country of ancestry increases the measured cultural influence of TFR is somewhat surprising, although the two measures are not as negatively correlated as one would think.²⁰

Our dataset allows us to check the sensitivity of the results to several data-driven assumptions in the F&F analysis. We are able to relax some of the constraints under which they operated and also study whether our results are sensitive to the specification used. Specifically, since the Canadian Census also provides information on the country of birth of an individual’s mother as well as the parents of the spouse, we can investigate whether the extent of cultural influence of other members of a women’s close family, such as her mother or partner, is stronger or weaker than that of her father. To see whether the time span between measured cultural heritage and observed individual outcome matters, we also consider a specification where we use country of origin characteristics (FLFP and TFR) from 1980. With our 2001 data, the gap between observed outcome and measure of cultural influence is then just over 20 years, and thus similar to the gap that F&F used in their analysis. As the authors note, one could argue that employing later dates for cultural proxy variables is sensible since the transmitted values of a women’s parents and other members of their social network are best reflected in the behavior of their counterparts who continue to live in the country of origin. The results of the corresponding regressions are presented in Table 5. The first three columns for each outcome (hours worked or number of children) is related to the cultural background of different family members. To avoid obvious selection issues, we confine the sample of spouses to Canadian born men or women, and measure the cultural background of the spouse through his (or her) father’s country of ancestry. The last column for each dependent variable (columns (4) and (8) respectively) show the results for the cultural proxy (FLFP and TFR, respectively) measured in 1980 as opposed to 1950.

On the one hand, the results are not very encouraging for the cultural transmission hypothesis. Neither the mother’s culture nor the partner’s (father’s) culture seem to matter for either labor supply or fertility choices of the women in our sample. Both results come somewhat unexpected. A significant fraction of the women in our sample have parents who are both foreign born and come

²⁰The raw correlation coefficient between those two variables is only -0.01 in our sample of 25 countries.

from the same source country, implying that some of the variation in the data used to identify the coefficient is the same for our father’s cultural proxy and mother’s cultural proxy regressions. Similarly, we have a number of marriages in our second generation that are endogamous, i.e., to members of the same ethnic group.²¹ The choice of a later decade for measuring the cultural influence also does appear to render the cultural influence weaker. In some sense, the findings suggest that the specification of F&F, which was primarily dictated by data availability in the 1970 census, does not hold robustly to other circumstances. Our data do not strongly support cultural transmission in Canada across generations using the original specification, and our sensitivity analysis seems to lend further support to this conclusion.

In summary, while we find some effect of cultural beliefs on work and fertility outcomes in these basic specifications, the magnitude of the effect is fairly small and for fertility not consistently significant. Overall, therefore, the evidence is not nearly as compelling as in F&F. This stands in contrast to most of the literature mentioned in the Introduction, which—based on U.S. data—finds a strong and persistent effect of culture on economic outcomes. However, in the next section we uncover new evidence that refines and restates the case for a fundamental influence of cultural heritage on work and fertility: the effect of education. When the education composition of the sample is considered, and when we allow for differing impact by education, the results are much more supportive of a case for the cultural transmission of values.

3.2 The Education Gradient in Cultural Assimilation

It is somewhat surprising that, to date, the economics literature on cultural influence on the one hand, and assimilation on the other hand, has not produced a more comprehensive analysis of the role of education. While many contributions include the level of education as an explanatory variable, and discuss possible concerns of omitted variable bias due to unobserved human capital transmission, to the best of our knowledge this paper is the first to specifically study how schooling affects the speed and scale of acculturation. There is a multitude of channels through which levels of schooling can affect how parents’ culture is reflected in their daughters’ economic choices, ranging from the role of education in fostering skills and attitudes that accelerate assimilation to peer

²¹We ran the same regressions with the partner’s mother’s country of origin characteristics with similar results. This finding also contrasts with Fernández et al. (2004) who present evidence that women are more likely to work if they are married to a man who grew up with a working mother. We would have expected a strong influence of the partner’s culture based on their findings, although the channel here is arguably more indirect, and thus directly comparable.

group effects. We address these possible channels in the next section. But first in this subsection we present the basic evidence on the education gradient to establish evidence that education plays an important role in the transmission of cultural values.

Of course, education is a choice made by women and so may reflect underlying preferences and unobservable characteristics that also influence labor supply and fertility choices. That is, education may be endogenous to labor supply and fertility because of correlations with unobservables. Ideally, random assignment of education or an instrumental variables strategy to compare women across exogenously-assigned levels of education is necessary to provide strong causal inferences. However, we view the establishment of robust associations of education with cultural assimilation as a crucial step forward in shedding some light on the mechanisms of acculturation. We hope that further research will firm up the causal nature of this association. Moreover, we do provide in the next section some evidence suggesting unobserved human capital factors may not be correlated with our cultural proxy variables and education interactions.

Table 6 below reports on a series of regressions in which we re-run the basic specification from Tables 3 and 4 but interact the woman’s level of educational attainment with the cultural proxy under consideration, thereby allowing the magnitude of cultural transmission from parent to daughter to vary with the latter’s education. As before, the outcome variables are weekly hours worked and the number of children in 2001, and the cultural proxies are FLFP and TFR in the father’s country of origin in 1950, respectively. All regressions have CMA fixed effects, include age and age square, and spousal controls (husband age, age square, education, and income). To facilitate comparison with our earlier findings, we replicate the baseline coefficients in the first columns for each outcome variable for our preferred specification. The regression including the interaction terms with education is shown beside the base specification.

Two observations stand out. First, the magnitudes of the main effects of the cultural proxies (which represent the impact on the lowest level of education achievement—high school dropouts) are large; 0.207 for hours worked and 0.237 for fertility. Compared to the base case in the first and third columns, the cultural influence of the country of ancestry is four times higher for high school dropouts than it is for the average woman in the case of labor supply, and about eight times higher in the case of fertility. The size of the effect is economically significant: one standard deviation decrease in the country of origin’s FLFP, for instance, is associated with two hours less work per week for the average women without a high school degree, as compared to 0.5 hours less

per week for the population-wide average. Second, and perhaps most notably, we see a smooth and steady decline in the estimated effect of culture on women's outcomes as increase educational attainment and move from a high-school dropout to a women who has completed university. This can be seen in the interaction coefficients. For example, the hours worked result starts at 0.207 for dropouts, but is 0.112 lower for those with a high school diploma; 0.165 lower for those with some post-secondary; 0.204 lower for those with a university degree or more. Indeed, for women with a university degree, our results indicate *no cultural transmission across generations at all, precisely measured*. The same basic pattern holds for the number of children in the last column of the table, with the 0.237 main effect being cancelled out for those with a university degree with an interaction coefficient of -0.261.

Although our finding is certainly novel, it is not necessarily surprising. As mentioned above, numerous sociological and psychological studies have argued that differentials in education are associated with different paths of socialization and differential retention of cultural norms and beliefs, both theoretically and in survey data.²² To our knowledge, however, our study is the first to provide quantitative evidence to support these arguments. Moreover, the effect is strikingly smooth across educational achievements. While women who did not finish high school are strongly influenced by culture, cultural beliefs become less and less important as they climb the educational ladder, until the effect of culture that is nil for university educated women, precisely measured. This, may also help to explain the difference in conclusions between US studies such as F&F, and the present Canadian study. In the F&F sample, 28 percent of the women have not earned a high school diploma or equivalent, and another 53 percent have not gone beyond high school. In our data, in contrast, only 7.7 percent of the women have not completed high school and 14.4 percent stopped at high school. So, our Canadian 2001 sample is much more highly-educated than the 1970 U.S. sample, meaning that our results for the lower-educated segments of our sample should be compared to F&F. In that comparison, our results are much closer to F&F.

We now check on the robustness of our results in several ways. We repeat the analysis of Table 5 by checking how the results change when we use alternative measures of culture. In Table 7 we present the results of specifications using the country of origin of the women's father (our baseline), the women's mother, the father of the partner, and the 1980 value for the culture variables for the country of the women's father. We repeat this for weekly hours worked and for the number

²²The equalizing force of education (and income) has also been recognized as important for the question of whether morality varies by culture. Haidt et al. (1993), for example, find that cultural differences in moral judgement across social classes within each country were larger than differences across nations.

of children. In the second column we see that the results for the women’s mother now align fairly closely to those for the women’s father in the first column. This is also true for the number of children. Using the cultural variables for the country of origin of the father of the women’s partner, we find no significant effects even with the education interaction. Finally, using the 1980 values in the place of the 1950 values, we find very similar effects for fertility but small and insignificant effects for hours worked. In additional robustness checks not shown here, we find that the results are qualitatively unaffected when we include or exclude more countries, add a second cultural proxy, add a dummy for the presence of a child under the age of 5, or restrict the sample to those with a Canadian-born partner.²³

Summing up, the results in this section point to a strong relationship between educational achievement and the extent to which cultural variables matter for economic decisions. For our main specification with the father’s country of ancestry as our cultural indicator, we find an *education gradient in cultural assimilation*; that is, a smooth and steady decline in the estimated effect of culture on women’s outcomes as their level of education increases from a high-school dropout to a women who has completed university. We also consistently find that whenever culture matters for women without a high school diploma, comparable women who successfully finished university will show no such dependency. For this high education group, our results strongly suggest that the (precisely measured) effect of culture is approximately nil. As mentioned at the outset of the subsection, our evidence can only be interpreted as causal with strong assumptions about unobservable characteristics of women that might influence both education attainment and fertility/labor supply. However, we view the establishment of the existence of an education gradient in cultural assimilation to be an important step in understanding the impact of culture. In that light, the question that naturally arises now is why education matters for education; through what mechanism. In the following section, we explore this issue in some detail and present some additional findings to help shed light on some of the underlying forces at work.

4 Culture, Education, and Human Capital

Our work in the previous section established an education gradient in cultural assimilation, showing that the influence of legacy economic variables on second-generation immigrant women depend strongly on the women’s level of education. In this section we explore several explanations for this

²³More details available from the authors upon request.

relationship in the context of a discussion of the interplay of culture, education, and human capital. We begin with an examination of possible unobserved human capital that may differ across ethnic groups and be correlated with the source-country culture variables we employ. Following that, we discuss and provide evidence on the possibility that education affects the speed of assimilation through peer effects—longer time in school might mean relatively more time spent with others outside one’s own ethnic group. Finally, we describe and investigate ways that education might directly change human capital and cultural attitudes, which could underly the education gradient in cultural assimilation.

Our investigations below are not exhaustive. Another potential explanation lies in the signalling value of credentials. For example, Oreopoulos (2011) looks for evidence that immigrants to Canada have a greater chance of an interview call-back if they have Canadian education or work experience. While Canadian work experience leads to a large increase in call-back rates, Canadian education gives no boost to call-back rates relative to foreign education. Moreover, he also provides evidence that the increase in call-back rates for having a Canadian masters degree is not different for immigrants and the native-born.

4.1 Omitted Human Capital

In the presence of systematic differences in unobserved human capital across ethnic groups, we may observe a spurious correlation between a women’s ancestry and the outcomes we consider. This unobserved human capital may be embodied either in the women themselves (through systematic differentials in her parents’ education that are not captured in a woman’s formal education), or in her same-ethnicity social network, which may affect women of different backgrounds through external effects in the spirit of Borjas (1995).

Since the Canadian Census contains no information about either the education of an individual’s parents or the quality of her social network, one straightforward strategy is to test for omitted variable bias is by looking at the earnings of the women in our sample. If the cultural variables we use in our analysis are correlated with unobservable human capital that matters for the labor market, we should see those factors reflected in earnings.²⁴ In other words, if ancestry is systematically correlated with unobserved human capital differences, then ancestry should also help

²⁴See F&F for a similar reasoning. Using auxiliary datasets, the authors also run a series of regressions where they add parental levels of education and other measures capturing systematic differences in the quality of education across different countries of origin as controls in their main specification, and show that the effect of the cultural proxy on outcomes remains robust.

explain variation in wages, conditioning on formal education and other observed characteristics. In Table 8, we report the results of standard Mincer regressions, using the log of hourly wages as our dependent variable. Following F&F, we in addition to education control for potential experience (measured by a women’s age minus number of years of education minus six), and potential experience squared. As before, all regressions have CMA fixed effects and the spousal controls are age, age square, education, and income.²⁵

The results show the expected strong direct effect of education attainment on earnings, with university degree holders in the first column showing a 0.817 log point advantage over high school dropouts in earnings. However, the coefficients on the cultural proxy (here the source-country female labor force participation) are insignificant or small. The coefficient on the cultural proxy in column (2) is precisely measured, but the effect is close to zero (even a 10 percentage point boost in a source country’s FLFP only increases wage by 3 percent) and becomes statistically indistinguishable from zero once we add the education interactions. That is, if there is an effect, it is small and does not vary with educational achievement. We take this finding as an indication that our main result on the educational gradient of education is not driven by unobserved systematic differences in human capital across different cultural backgrounds. While not definitive for interpreting the associations we measure as causal, this finding does provide some measure of confidence that unobserved human capital differences across source-country backgrounds are not driving our education gradient results.

4.2 Education and Peer Influences

If we think of cultural transmission as a mechanism that involves socialization via imitation and learning from peers, cultural transmission will be different for women who did not finish high school as compared to women who have successfully completed university. It is easy to imagine, for example, that a college or university environment will provide more exposure to Canadian culture and diminish the influence of their source-country culture. Also, higher education in itself may convey a message of ‘openness’ to other cultures and increased ‘adaptability’. Overall, therefore, it is easy envision that interactions with one’s own ethnic group become more sparse, and one’s own ethnic background becomes consciously less important, the higher one’s educational achievement. We investigate these possibilities using three different analyses to look for education gradients in peer

²⁵In all specifications with spousal controls, only spousal income shows up as significant, and the effect is very small.

effects and exposure to one’s own ethnic group. The three analyses are: direct peer interactions, home culture (spouse’s ethnicity and language), and neighborhood ethnic concentrations.

We draw on data from Canada’s 2002 Ethnic Diversity Survey (EDS) to examine peer interactions and exposure directly. The survey collects a national representative sample of over 42,000 non-Aboriginal Canadian residents aged 15 years or over, using the 2001 Census as the frame for the data-gathering; but over-sampling ethnic or visible minority groups. The EDS was designed to provide information to better understand how Canadians of different ethnic backgrounds interpret and report their ethnicity and how people’s ethnic backgrounds affect their participation in the social, economic and cultural life in Canada. To replicate our primary selection from the main analysis, we restrict observations to married or common-law Canadian born women who are 30-40 years old and whose father immigrated to Canada from one of the countries in our sample. The resulting sample is very small compared to the Census; around 560 observations. To increase the sample we also try relaxing our age limits to include women aged 25-50. This extended sample has about 1160 observations.

To form a dependent variable, we construct an index from six responses in the EDS about the degree of contact and socialization with members of their ethnic group in their family and friends.²⁶ We then standardize the index by dividing by the standard deviation.²⁷ We also create a binary dependent variable to indicate the index takes a value greater than or equal to three.

The results of our EDS index regressions are in Table 9. The specification is the same as we used for our hours and fertility regressions, using the same set of control variables. The estimates reveal a strong and positive relationship between the index and education attainment; with strong and significant impacts for those with some post-secondary education and university graduates. That is, women with more education report significantly *more* ties with family and groups of their own ancestry than less-educated women. This is true for all specifications, including those where allow for an extended sample with a bigger age range to increase the number of observations. This evidence does not support the contention that higher-educated women have lesser ties or exposure to people from their own ethnic group—if anything the opposite appears to be true.

²⁶The index is the sum of six binary variables based on the following measures: has family in original place of birth; foreign-born spouse; frequent contact with family in original place of birth; half or more of friends have same ethnic ancestry; customs and traditions rated important or very important; participates in at least one ethnic group or organization.

²⁷We standardize using the mean and standard deviation of the whole sample of married women, so the mean and standard deviation reported in the table are different than 0 and 1.

We now turn back to the Census to look at further indicators of the potential peer influence of education. Using the Census, we can observe two aspects of the home environment of the women in our sample to see whether the home environment directly correlates with education. If women with higher education are less likely to have a spouse born in Canada or speak their source-country language, this could explain our education gradient in cultural assimilation.²⁸ Table 10 presents these results in the first two columns. The estimated coefficients on education are almost all statistically insignificant. There is no evidence of an education gradient; high and low educated women are equally likely to be married to a partner born in Canada. The same is true for speaking a foreign language in the home.²⁹

The final piece of the peer-effect analysis is to look at the ethnic composition of the neighborhood in which the woman lives. If there is an education gradient with locational decisions, this could change the quantity of interactions with people from her source country ethnic group. We create three dependent variables to capture ethnic concentration at the Census subdivision level. Census subdivisions correspond to municipalities in many provinces, so this conception of neighborhood is broad. The first is an indicator whether the woman lives in a neighborhood with a higher-than-average share of her own source-country ethnic group. The second is a continuous variable measuring the share of people from her own source-country in her neighborhood. The last is the share of people from her broader source-country region, using fourteen global regions. The results are in Table 10 in the last three columns. These regressions include our standard set of control variables, but also ethnic group fixed effects, so the coefficients on the dummies for educational achievement should be interpreted relative to high school dropouts of the same ethnic group, controlling for the overall national prevalence of that group. For our ‘above average’ and ‘narrow ethnic’ dependent variables, there is no difference between high school dropouts, high school graduates, and those with some post-secondary education. However, there is a small negative association for those with university degrees. That is, our second-generation women with university degrees are slightly less likely to live in areas with high concentrations of people from their own source country. This finding does open the door to a small peer effect, but the pattern is relatively weak compared to the strong and incremental pattern of our education gradient for cultural assimilation.

²⁸Angrist (2002) finds evidence for strong preferences for within-group marriage among U.S. second generation immigrants in the first half of the twentieth century.

²⁹We cut observations from French-speaking countries like Belgium and France and English-speaking countries like the U.S. and U.K. from this sample, since immigrants from those countries are not speaking foreign languages.

Taken together, the above results using either the EDS or the Census do not present strong evidence in favor of peer exposure effects. We conclude that an explanation for the educational gradient of acculturation based on higher-educated women becoming more acculturated due to lower frequency of interaction with other ethnicities does not fit the data very well. For direct ethnic social interactions, our EDS results show *more* frequent interactions with same-ethnic people for higher-educated women, while in the Census there is little or no relationship of education with family or neighborhood ethnic concentration variables.

4.3 Human Capital and Gender Attitudes

We now turn to examine ways education in itself could affect assimilation through the acquisition of human capital—conceived here broadly to include fostering both skills and attitudes that affect choices on labor supply and fertility. This could happen in one of two ways. First, new skills will expand the skill set (such as computer programming or effective writing) of a young woman. Additional skills diminish the *relative* importance for her labor market and life choices of the attitudes she may have learned from her parents and ethnic community. Second, education may change the way one views the world; fostering open-mindedness as a value in itself. Being exposed to new ideas may cause young women to re-examine cultural norms and expectations they picked up from their parents. In so far as education transmits novel values and beliefs upon the individual that are different from those of his or her culture, formal education can accelerate the speed of assimilation. Indeed, governments and other institutions have made deliberate use of this method of acculturation in the past, as exemplified in the the history of Indian boarding schools in the U.S., and the residential school system imposed on aboriginal people in Canada. In this second ‘life view’ channel, additional education *displaces* the cultural endowment received by a woman from her parents.

Gender attitudes present a particular manifestation of the ‘life view’ channel for human capital-driven acculturation. Higher education attainment is associated with weaker gender stereotypes and a general liberalization of attitudes, both across countries and individuals, and over time.³⁰ Rather than learning from experience, the sociological literature on the subject emphasizes the effect of education in exposing individuals to the ideas of feminism (“enlightenment”), thereby providing alternative interpretations of women’s roles in the society [Davis and Robinson (1991)]. In what comes below, we attempt to test for the importance of gender attitudes as one element

³⁰See, e.g. Bolzendahl and Myers (2004) and the references therein.

of this ‘life view’ channel. This is not an exhaustive test of the ‘life view’ channel; nor do we present evidence about the ‘skill’ channel described above. In this way, we view our exercise here as exploratory about the role of human capital rather than definitive.

Our data do not allow us to test directly whether the education the women in our sample received prompted them to abandon their source-country culture in favor of Canadian values. However, to the extent that the gap between these source-country values and their Canadian equivalent varies in size, we can still look for signs supporting this process of acculturation based on the following thought experiment. Assume education directly transmits Canadian values. If those values clash more with the values the individual received from the source country, we would expect the cultural gradient of assimilation in those countries be more pronounced. Expressed differently: if some source countries share very *similar* values to those in Canada, we should *not* expect the assimilation process for immigrants from these countries to vary considerably with their education since the displacement of their source-country values for Canadian values is not large.

We approach a test for this idea by categorizing the countries of origin in our sample into two groups. Noting that both labor supply and fertility decisions have strong gender-role components, we use data from the World Value Survey (WVS) to identify countries as either ‘progressive’ or ‘traditional’, using the average responses by Canadians in the World Value Survey as a benchmark. That is, we categorize as ‘traditional’ each source country in our data that exhibits more traditional gender role attitudes than Canada. We focus on two questions from the WVS. The first question is from the first wave of WVS (1981–1984) and asks respondents to agree or disagree with the following statement: “If a woman wants to have a child as a single parent but she doesn’t want to have a stable relationship with a man, do you approve or disapprove?” (Indecisive answers were permitted.) In this first wave, this was the only question relating to gender roles. The second question is from the next wave of the WVS and asks respondents to agree or disagree with the statement “Marriage is an out-dated institution.”³¹ To illustrate the data, Figure 3 shows how countries’ responses in the WVS regarding the latter question place them relative to Canada, and how they relate to the main cultural proxies we consider. The countries we code as ‘traditional’ lie in the graph to the left of the Canada response.

Using this categorization, we rerun our main education gradient specification, allowing the education gradient of assimilation to vary depending on whether the source country is more tradi-

³¹For detailed information, see <http://www.worldvaluessurvey.org/wvs.jsp>.

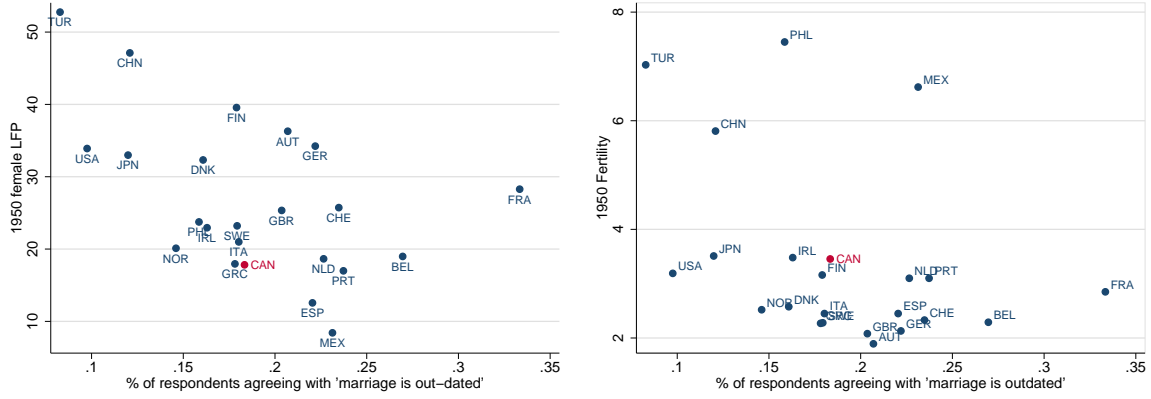


Figure 3: Source Country Culture Proxy and Cultural Values (WVS, 1990)

tional than Canada or not. The regressions thus include an additional interaction term where the culture \times education variables are further interacted with a dummy for being traditional. The results are presented in Table 11. The extra impact of education on assimilation can be ascertained by examining the coefficients on the interaction between ‘traditional’ and the culture-education variables in the bottom four rows of the table.

In the first column of the table, the -0.125 coefficient on the *traditionalXculture* interaction indicates that the impact of the source-country FLFP rate is smaller for our traditional set of countries (categorized by the ‘single mothers’ WVS question) than the 0.317 coefficient for the countries that are more progressive than Canada. Moreover, the next three rows show positive coefficients, which indicates that the education gradient is actually *less* steep for the traditional countries. The point estimates for the categorization using the ‘housewife’ question in the third column are similar in sign, but lose statistical significance. The same basic message comes through for the results on the number of children in the 2nd and 4th column as well—a smaller overall impact of the cultural variable in the more traditional countries, with little change to the education gradient. This evidence goes some way in suggesting that these women assimilate (in relative terms) more quickly, although with less evidence of a differential education gradient.³² These results therefore do not lend support to the ‘life view’ channel described above which suggested that the education gradient in cultural assimilation might be explained by the gap between the

³²In absolute terms, more traditional source countries tend to be farther away from Canadian conditions (see Figure 3), and thus actual assimilation may have been as far progressed as for the other group. Also note that women in the more traditional source country group work more, not less, than their progressive counterparts. As noted before, this is true for the source countries in 1950 as well: countries such as the US, China, Turkey, Denmark, the Philippines, and Norway had more traditional gender roles than Canada but female labor force participation.

gender attitudes in source countries versus the attitudes prevalent in Canada.

4.4 Summary

In this section we examined different potential mechanisms that might underly the education gradient in cultural assimilation. By looking at earnings regressions, we found little evidence for unobserved human capital that might be correlated with our source-country culture variables. We also found little evidence to support the notion that higher education leads to speedier assimilation because of decreased exposure to the source-country culture through extended peer interactions with other Canadians while attending higher education. Finally, we do not find evidence that women from cultures more traditional than Canada show a different education-assimilation profile, which casts doubt on the idea that education causes Canadian attitudes about women, family, and work to displace source-country attitudes.

The explanations for the education gradient explored here have failed to yield a clear indication of the source of the gradient. We still view our work here as a contribution by suggesting productive paths for future research on this topic. In particular, explanations we were not able to test here—such as the ‘skills’ component of human capital—should be examined more carefully. Moreover, refinements of the tests of the channels we do examine here can also yield progress on the important question of how education mediates cultural assimilation.

5 Concluding Remarks

In this paper we examine the impact of culture on the work and fertility decisions of second-generation immigrants to Canada. We take the fertility and female work patterns observed in the immigrant family’s source country in 1950 and relate those historical cultural elements to decisions made by working-age women in Canada in 2001. We initially find weak evidence that these cultural variables matter for hours worked and for the number of children born to second-generation immigrant women in Canada. The weakness of our evidence is at some contrast to the literature. However, once we allow the impact of cultural influences to vary by education, our results align much more closely with the existing literature.

We uncover a novel result: an education gradient in cultural assimilation. Women with low levels of education exhibit work and fertility decisions reflecting a strong and persistent influence of the

historical source-country patterns of work and fertility. In sharp contrast, the decisions of women with university degrees show no influence of source-country cultural variables. Having established this result, we proceed to explore several possible explanations for the source of the education gradient. We present tests for the influence of unobserved human capital, peer effects through more exposure to Canadian culture, and gaps between source-country and Canadian gender attitudes. However, none of these explanations yields confirming evidence.

Questions about cultural assimilation of immigrants to Western countries have risen to a prominent position in public debate. Our finding that higher education speeds cultural assimilation should present a contribution to this debate. However, further research into the sources of the education gradient of cultural assimilation is needed before precise policy recommendations can flow from this finding.

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Table 1: Sample Proportions and Source Country Labor Force and Fertility

Source Country	Sample Proportion	Data from 1950	
		Female LFP	TFR
Italy	0.302	21.0	2.4
United Kingdom	0.208	25.3	2.2
Netherlands	0.135	18.7	3.1
Germany	0.101	34.2	2.2
Greece	0.046	18.0	2.3
United States	0.043	33.9	3.5
Portugal	0.032	17.0	3.0
China, People's Republic of	0.030	47.1	6.1
Ireland, Republic of (EIRE)	0.021	23.0	3.4
Denmark	0.013	32.3	2.6
Austria	0.012	36.3	2.1
France	0.011	28.3	2.7
Belgium	0.009	19.0	2.3
Finland	0.006	39.6	3.0
Lebanon	0.006	6.9	5.7
Switzerland	0.005	25.7	2.3
Mexico	0.004	8.4	6.7
Norway	0.003	20.1	2.6
Spain	0.003	12.6	2.6
Sweden	0.002	23.2	2.2
Philippines	0.002	23.8	7.3
Turkey	0.002	52.8	6.9
Syria	n.a.	14.9	7.3
Cuba	n.a.	12.2	4.2
Japan	n.a.	33.0	3.0

^a **Note:** Sample proportions from the 2001 Canadian Census. Reported is the proportion of the sample coming from each country of birth, categorized by the country of birth of the women's father. "N.a." indicates not available—Syria, Japan, and Cuba are suppressed to respect Statistics Canada's disclosure guidelines. Female LFP is the female labor force participation percentage, taken from the International Labor Organization data. TFR is the total fertility rate, taken from the United Nations demographic yearbook.

Table 2: Descriptive Statistics
Mother Education Subsamples

	Main Sample	Highschool incomplete		Highschool Diploma	some post-secondary	University Degree		Canadian born	
								Both parents	Immigrants
Weekly work hours	25.2 (18.8)	22.5 (19.2)	23.8 (18.8)	25.2 (18.5)	26.6 (19.3)	25.2 (18.9)	23.5 (19.7)		
Number of children under age 18	1.7 (1.1)	2.0 (1.2)	1.9 (1.1)	1.8 (1.1)	1.4 (1.1)	1.8 (1.1)	1.7 (1.2)		
FLP in country of origin 1950	24.5 (7.1)	24.1 (6.8)	23.6 (6.3)	24.3 (6.9)	25.2 (7.8)		25.4 (7.8)		
TFR in country of origin 1950	2.7 (0.9)	2.7 (0.9)	2.6 (0.7)	2.6 (0.8)	2.7 (1.0)		3.8 (1.7)		
Age	35.2 (3.1)	35.7 (3.1)	35.8 (3.1)	35.2 (3.1)	34.8 (3.1)	35.6 (3.1)	35.4 (3.0)		
Highschool incomplete	0.077	1.000	0.000	0.000	0.000	0.143	0.092		
Highschool diploma	0.144	0.000	1.000	0.000	0.000	0.159	0.111		
Some PSE	0.508	0.000	0.000	1.000	0.000	0.497	0.486		
University degree	0.270	0.000	0.000	0.000	1.000	0.201	0.311		
Age of partner	37.6 (5.1)	38.5 (5.8)	38.5 (4.9)	37.6 (5.0)	36.8 (5.0)	38.2 (5.1)	38.4 (6.0)		
Partner highschool incomplete	0.119	0.495	0.155	0.102	0.025	0.180	0.114		
Partner highschool diploma	0.120	0.094	0.287	0.116	0.046	0.140	0.106		
Partner some post-secondary	0.511	0.375	0.476	0.626	0.355	0.496	0.482		
Partner university degree	0.249	0.036	0.083	0.156	0.574	0.184	0.298		
Income of partner	5.5 (6.2)	4.1 (3.2)	4.8 (4.1)	5.2 (5.3)	6.7 (8.5)	4.9 (6.0)	5.6 (8.0)		
Canada born	1.000	1.000	1.000	1.000	1.000	1.000	0.000		
Canada-born father	0.000	0.000	0.000	0.000	0.000	1.000	0.139		
Canada-born mother	0.268	0.333	0.272	0.265	0.252	1.000	0.145		
Canada-born partner	0.828	0.817	0.809	0.835	0.826	0.938	0.944		
Speaks foreign language	0.203	0.194	0.191	0.202	0.212	0.016	0.291		
Above average ethnic share	0.755	0.751	0.775	0.766	0.726	0.720	0.715		
Same-ethnic pctage in neighborhood	0.155 (0.143)	0.175 (0.156)	0.160 (0.143)	0.157 (0.144)	0.143 (0.134)	0.351 (0.248)	0.139 (0.157)		
Sample	150720	11650	21745	76615	40705	833165	73635		

Note: Source is 2001 Canadian census. The mean of each variable is noted; standard deviations are in parentheses for non-binary variables. Sample size is population-level equivalent. PSE is Post-secondary education.

Table 3: Cultural Influence on Labor Supply

dependent variable	Weekly Hours worked in 2001			
	(1)	(2)	(3)	(4)
culture proxy FLFP1950	0.053** (0.020)	0.039* (0.020)	0.047** (0.018)	0.048** (0.020)
high school		0.941** (0.342)	1.554*** (0.373)	1.553*** (0.373)
some PSE		2.564*** (0.461)	3.708*** (0.467)	3.707*** (0.467)
university degree+		3.845*** (0.802)	6.433*** (0.709)	6.434*** (0.708)
2nd culture proxy TFR1950				-0.036 (0.124)
husband controls	no	no	yes	yes
adj R^2	0.008	0.011	0.026	0.026
obs (rounded)	29370	29370	29370	29370

^a **Note:** The main culture proxy of interest is female labor force participation in country of ancestry 1950 (father). The second cultural proxy is fertility rates in country of ancestry 1950 (father). The sample consists of married 2n generation immigrant women 30-40 years old. All regressions have CMA fixed effects and include age and age square. Husband controls are age, age square, education, and income. Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Table 4: Cultural Influence on Fertility

dependent variable	Number of Children in 2001			
	(1)	(2)	(3)	(4)
culture proxy TFR1950	0.022 (0.052)	0.031 (0.045)	0.029 (0.044)	0.051** (0.024)
high school		-0.065 (0.050)	-0.082* (0.046)	-0.084* (0.045)
some PSE		-0.184*** (0.037)	-0.199*** (0.034)	-0.194*** (0.030)
university degree+		-0.443*** (0.050)	-0.447*** (0.052)	-0.435*** (0.047)
2nd cultural proxy FLFP1950				-0.012*** (0.004)
spousal controls	no	no	yes	yes
adj R^2	0.09	0.106	0.123	0.128
obs (rounded)	29370	29370	29370	29370

^a **Note:** The main culture proxy of interest is the fertility rate in country of ancestry 1950 (father). The second cultural proxy is female labor force participation in country of ancestry 1950 (father). The sample consists of married second-generation immigrant women 30-40 years old. All regressions have CMA fixed effects and include age and age square. Husband controls are age, age square, education dummies, and income. Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Table 5: Cultural transmission (Baseline Sensitivity Analysis)

dependent variable	Weekly Hours worked in 2001			Number of Children in 2001		
	(father)	(mother)	(partner's father)	(father)	(mother)	(partner's father)
Culture proxy	0.047** (0.018)	0.024 (0.028)	0.005 (0.016)	0.029 (0.044)	0.038 (0.040)	0.013 (0.027)
high school	1.554*** (0.373)	1.203*** (0.368)	1.535*** (0.344)	-0.082* (0.046)	-0.045 (0.047)	-0.083** (0.041)
some PSE	3.708*** (0.467)	3.576*** (0.500)	3.894*** (0.451)	-0.199*** (0.034)	-0.184*** (0.043)	-0.197*** (0.031)
university degree+	6.433*** (0.709)	6.749*** (0.496)	6.696*** (0.594)	-0.447*** (0.052)	-0.427*** (0.055)	-0.440*** (0.046)
adj R^2	0.026	0.027	0.025	0.123	0.124	0.117
obs (rounded)	29370	28070	35590	29370	28070	35590

^a **Note:** Culture proxy is female LFP and/or fertility rates in country of ancestry 1950. The sample consists of married second-generation immigrant women 30-40 years old. All regressions have CMA fixed effects and include age and age square. Husband controls are age, age square, education, and income. Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Table 6: The Effect of Education on Cultural Transmission

	Weekly hours worked		Number of Children	
	Base	Interaction	Base	Interaction
Culture proxy	0.047** (0.018)	0.207*** (0.067)	0.029 (0.044)	0.237*** (0.075)
High School	1.554*** (0.373)	4.301** (1.889)	-0.082* (0.046)	0.350** (0.173)
Some PSE	3.708*** (0.467)	7.693*** (2.025)	-0.199*** (0.034)	0.353** (0.148)
University degree+	6.433*** (0.709)	11.409*** (2.448)	-0.447*** (0.052)	0.253 (0.184)
Culture proxy x High School		-0.112* (0.069)		-0.160** (0.069)
Culture proxy x Some PSE		-0.165** (0.076)		-0.207*** (0.059)
Culture proxy x Uni Degree+		-0.204** (0.091)		-0.261*** (0.069)
adj R^2	0.026	0.026	0.123	0.126
obs (rounded)	29370	29370	29370	29370

^a **Note:** Culture proxy is female LFP and/or fertility rates in country of ancestry 1950 (father). The sample consists of married second-generation immigrant women 30-40 years old. All regressions have CMA fixed effects, include age and age square, and spousal controls (husband age, age square, education, and income). Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Table 7: Education and Cultural Transmission (Sensitivity Analysis)

dependent variable	Weekly Hours worked in 2001			Number of Children in 2001		
	(father)	(mother)	(partner's father)	(father)	(mother)	(partner's father)
Culture proxy	0.207*** (0.067)	0.152*** (0.055)	0.052 (0.089)	0.019 (0.045)	0.251*** (0.091)	0.080 (0.096)
high school	4.301** (1.889)	5.229** (2.015)	3.296 (2.578)	1.423 (1.766)	0.392 (0.241)	0.366** (0.147)
some PSE	7.693*** (2.025)	6.472*** (1.360)	4.17* (2.274)	4.702** (1.880)	0.418** (0.207)	0.142 (0.153)
university degree+	11.409*** (2.448)	10.415*** (1.649)	7.853*** (2.250)	7.269*** (2.440)	0.278 (0.233)	-0.106 (0.033)
culture × high school	-0.112 (0.069)	-0.168** (0.083)	-0.093 (0.124)	0.003 (0.041)	-0.160 (0.100)	-0.135* (0.081)
culture × some PSE	-0.165** (0.076)	-0.120** (0.048)	-0.028 (0.112)	-0.019 (0.045)	-0.223** (0.087)	-0.102 (0.088)
culture × uni degree	-0.204** (0.091)	-0.151** (0.065)	-0.064 (0.110)	-0.014 (0.054)	-0.261*** (0.091)	-0.101 (0.090)
adj R^2	0.026	0.027	0.026	0.025	0.127	0.123
obs (rounded)	29,370	28,070	27,280	35,590	28,070	29,190

^a **Note:** Culture proxy is female LFP and/or fertility rates in country of ancestry 1950. The sample consists of married second-generation immigrant women 30-40 years old. All regressions have CMA fixed effects, include age and age square, and spousal controls (husband age, age square, education, and income). Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Table 8: Wages and Culture

dependent variable	Hourly Wages in 2001				
	(1)	(2)	(3)	(4)	(5)
culture proxy FLFP1950		0.003** (0.001)		0.002** (0.001)	0.007 (0.005)
experience	-0.003 (0.013)	-0.003 (0.013)	-0.009 (0.012)	-0.009 (0.012)	-0.008 (0.013)
experience squared	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)	0.001 (0.000)
high school	0.174*** (0.044)	0.173*** (0.044)	0.154*** (0.041)	0.154*** (0.041)	0.228 (0.145)
some PSE	0.398*** (0.046)	0.395*** (0.047)	0.364*** (0.043)	0.362*** (0.043)	0.473*** (0.134)
university degree+	0.817*** (0.044)	0.810*** (0.045)	0.739*** (0.041)	0.735*** (0.041)	0.854*** (0.140)
culture \times high school					-0.003 (0.007)
culture \times some PSE					-0.005 (0.005)
culture \times uni degree					-0.005 (0.006)
spousal controls	no	no	yes	yes	yes
adj R^2	0.0731	0.0733	0.0756	0.076	0.0757
obs (rounded)	24,980	24,980	24,980	24,980	24,980

^a **Note:** Dependent variable is the log of hourly wages. The sample consists of married second-generation immigrant women 30-40 years old. All regressions have CMA fixed effects. The husband controls are age, age square, education, and income. Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Table 9: Education and Cultural Attachment

Sample Dep. Variable	Main Std. Index	Main Index ≥ 3	Extended Std. Index	Extended Index ≥ 3
High school	0.214 (0.170)	0.191 (0.131)	0.046 (0.129)	0.047 (0.061)
Some PSE	0.471*** (0.135)	0.328*** (0.099)	0.311*** (0.105)	0.212*** (0.057)
University degree+	0.615*** (0.137)	0.372*** (0.095)	0.467*** (0.077)	0.264*** (0.056)
Mean	0.262	0.598	0.252	0.591
Std Deviation	(0.806)	(0.491)	(0.791)	(0.492)
adj R^2	0.159	0.147	0.096	0.079
obs (rounded)	560	560	1160	1160

^a **Note:** Data from the 2002 Ethnic Diversity Survey. Married second-generation immigrant women 30-40 years old in the main sample. Extended sample has ages 25-50. All regressions have CMA fixed effect, include age and age square, as well as age, age square, education, and income of husband. Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively.

Table 10: Education and Spousal/Family Culture

dependent variable	Home Culture		Neighborhood Culture		
	Partner Can	Foreign Language	> Avr Ethn	Narrow Ethn	Broad Ethn
High school	-0.014 (0.013)	0.002 (0.020)	0.006 (0.009)	0.000 (0.004)	-0.001 (0.003)
Some PSE	-0.001 (0.009)	0.017 (0.014)	-0.006 (0.009)	-0.003 (0.004)	-0.003 (0.004)
University degree+	-0.011 (0.016)	0.023* (0.012)	-0.034** (0.012)	-0.011** (0.003)	-0.007 (0.003)
Mean	0.828	0.203	0.755	0.155	0.179
Std Deviation	(0.378)	(0.402)	(0.430)	(0.143)	(0.195)
adj R^2	0.044	0.109	0.188	0.495	0.801
obs (rounded)	29,370	20,670	29,370	29,370	29,370

^a **Note:** The dependent variables are defined as follows. Partner Canborn is binary and equals one if the respondent's partner is Canadian born. Foreign Language is binary which equals one if a foreign language other than English or French (the two official languages) is spoken in the home. The > Avr Ethn variable is binary and equals one if the women lives in a neighborhood with above average level of her ethnic group. Narrow Ethn is defined as the share of the same-ethnicity group in the neighborhood where the women resides using exact country of origin match. Broad Ethn is the same measure but defining ethnicity more broadly by grouping ethnicities into 14 regions in the world. Sample is from the 2001 census, selecting married second-generation immigrant women 30-40 years old. All regressions have CMA fixed effect, include age and age square, as well as age, age square, education, and income of husband. The neighborhood regressions also include an ethnic group fixed effect. Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively

Table 11: Progressive vs Traditional Source Countries and Acculturation

VWS Question dependent variable	Single Mothers		Housewife	
	hours	children	hours	children
culture proxy	0.317*** (0.062)	0.254*** (0.036)	0.230*** (0.051)	0.316*** (0.025)
culture \times high school	-0.234*** (0.074)	-0.151** (0.056)	-0.128* (0.064)	-0.142** (0.070)
culture \times some PSE	-0.246*** (0.067)	-0.159*** (0.054)	-0.194*** (0.065)	-0.154*** (0.060)
culture \times uni degree+	-0.335*** (0.079)	-0.199*** (0.060)	-0.268*** (0.064)	-0.210*** (0.063)
traditional	1.344* (0.738)	0.118 (0.126)	-0.171 (1.231)	0.395*** (0.123)
traditional \times culture	-0.125** (0.047)	-0.155*** (0.049)	-0.051 (0.056)	-0.222*** (0.040)
traditional \times culture \times high school	0.114*** (0.033)	-0.008 (0.048)	0.019 (0.030)	0.006 (0.035)
traditional \times culture \times some PSE	0.080* (0.040)	0.043 (0.040)	0.063** (0.026)	0.034 (0.025)
traditional \times culture \times uni degree+	0.130** (0.059)	0.059 (0.041)	0.108*** (0.030)	0.064** (0.027)
adj R^2	0.026	0.133	0.027	0.133
obs (rounded)	29370	29370	29370	29370

^a **Note:** The dependent variable is either Hours Worked in 2001 or Number of Children in 2001 and the cultural proxy is either FLFP and LFP in 1950, respectively. Sample is married second-generation immigrant women 30-40 years old. All regressions have CMA fixed effect, include age and age square, as well as age, age square, education, and income of husband. Source countries are coded as traditional (traditional =1) if the women's father's home country was more traditional than Canada on the respective question of the WVS. Standard errors clustered at country of ancestry. Superscripts ***, ** and * indicate significance at 1%, 5% and 10%, respectively