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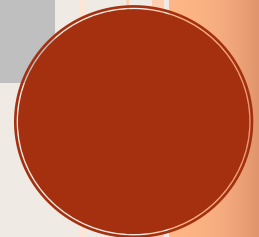
Canadian Labour Economics Forum

*WORKING PAPER SERIES*

**Immigrant Gaps in Parental Time  
Investments into Children's Human  
Capital Activities**

Ana Ferrer (University of Waterloo)  
Allison Mascella (University of Waterloo)

CLEF WP #48



# Immigrant gaps in parental time investments into children's human capital activities

by

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**Abstract.** Current and future well-being and economic prosperity of children depend in large part on the nuances of decisions made by parents with respect to familial resources, an important part of which regard the time spent in the company of children. We estimate differences in the time that immigrant and Canadian-born parents allocate to child-care activities relative to other activities using the time diaries from the General Social Survey. We find that mothers born abroad spend more time at work and less time in leisure but there is no significant difference in time devoted to household production or child service between them and Canadian-born mothers. Despite not finding differences by immigration status in the total care-time parents provide for their children, we do find significant differences - by immigrant status - in time specifically devoted to human capital investment activities with children: African, Asian, European and South-Central American mothers spend up to 30 more minutes daily in these activities than the Canadian born. We further assess the patterns of time use of second-generation young adults and find that they spend more time on education and homework compared to third generation or higher young adults. This supports a plausible effect of the time invested in children's human capital generating activities by immigrant parents on their Canadian-born children.

## **Introduction**

Parental time-use decisions are one of the strongest influences in cognitive and non-cognitive skill formation of children, maybe more so than schooling. The quality of the environment provided by parents can strongly predict children's productivity as adults and, ultimately, contributes to socioeconomic success. Many factors influence time-use decisions of families, and cultural background - to the extent that it affects ideas about the right way to raise a child, or parents' role in this process - is one of them. If immigrant parents allocate time to their children differently than the native born do, these differences may have long term effects in human capital accumulation and social and economic integration of their children in the host country. We use the General Social Survey (GSS) to assess the inclination of immigrant parents to allocate their time differently across time-use categories - work, household production, leisure, and child service - and to invest more (less) time in education activities with their children than Canadian-born families. Our results show that immigrant parents spend more time in human capital building activities with their kids. We further offer descriptive evidence that this seems to matter for the children of immigrants, who - as young adults - tend to spend more time in educational activities than their Canadian counterparts.

The link between parental inputs and child outcomes is well established in the literature. From the perspective of child development, it is generally agreed that parental inputs might be more important than schooling in children's cognitive and non-cognitive skill formation (Cunha et al, 2006) and that these strongly predict children's productivity as an adult (Knudsen et al. 2006; Fiorini and Keane, 2014). Specifically, the importance of parental aspirations (Astone and McLanahan, 1991), mother's work patterns (Zick et al, 2001), mother's involvement (Heckman et al, 2013) and father's involvement (Patnaik, 2019 and Wray 2020) as inputs has been explored and found significant. In this regard, our focus on parental time-use across activities and on time spent in education at home as well as young adults time-use, contributes to our understanding of human-capital building inputs.

Further studies find that the strength of this link differs across immigrant source country groups and over time, specifically suggesting that immigrant parents may invest

differently when it comes to their children's educational inputs (Ribar, 2013).<sup>1</sup> In the standard model of human capital accumulation, educational activities take place until the marginal cost of education equals its benefits Dustmann and Glitz (2011). Theoretically, gaps in investments and outcomes between immigrant and native-born populations that can be traced back to differences in cultural background are likely if immigrant parents have different costs and benefits from these investments than the native born.<sup>2</sup> It is plausible that immigrant parents have strong dynastic motives behind their moving decisions and are more inclined to invest in their children than non-immigrants. Having the opportunities of their children in mind, immigrant parents may be more willing to provide extra time to help their children navigate and excel in the new unfamiliar schooling and community system. On the other hand, immigrants incur large initial settlement costs when settling in a new country – learning the language, establishing networks, job searching - which typically constraints the time that can be devoted to activities with children. Empirical studies in time-use can expose differences in the patterns of time spent along socioeconomic and parental characteristics and provide context for differences in outcomes of immigrant-native-born families.

This paper investigates the time-use of foreign-born parents and their Canadian-born young adult children to learn whether their cultural background, as captured by source country region, and their integration into the host society affects time-use allocation decisions. We use the relevant cycles of the Canadian GSS with a time-use focus (1986, 1992, 1998, 2005, 2010 and 2015). These cycles report not only socioeconomic and demographic characteristics of the family environment, but also an exhaustive list of respondents' daily activities and the minutes spent on each activity over one 24-hour period. We estimate the role of region of origin and years since migration in parental allocation of time across different categories of time-use (paid work, leisure, household production and child services) and in the amount of time parents spent on educational activities with their children. We follow up with an examination of the time patterns of young adults to identify

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<sup>1</sup> See also Borjas, 1992; Sayer et al, 2004; Corak, 2009; Altintas, 2016

<sup>2</sup> For instance, patient and risk-prone individuals are more likely to become immigrants as across-borders migration entails high initial up-front (sunk) costs in a highly risky environment with expected benefits materializing over a rather long time-lag (Goldbach and Schluter, 2018).

differences (by parental immigrant status) in time allocation across activities (paid work, leisure, household production and education) and time devoted specifically to homework activities. These estimates are broadly interpreted as evidence of the association between cultural preference of parents and generation of human or social capital of children.

The trade-off between time spent in the labour force and time spent on leisure activities is one aspect of time-use commonly addressed by labour economic models. Over the last decades, new opportunities for women to specialize in both critical aspects of family functioning (paid work and household production) and the need of fathers to be involved in child rearing, have changed the optimal allocation of time within families. Therefore, understanding the time allocation decisions of households, particularly women, requires the separation of time spent in the labour market from time spent on leisure *and* from time spent on household services. Moreover, while work in the market provides income for family needs, care for children and preparation and functioning of daily life also constitute a large time investment that contributes to the well being of the family. Further, it is generally deemed that there is no substitute for care given to young children akin to that provided by the parents – not necessarily the case for household production activities - which justifies the consideration of child-care as a separate time-use. We are specifically interested in *child service* since care given to children, particularly by the mother, can impact children's current and future outcomes as adults. Distinguishing the effect of time spent with children from other household production services is essential to understand the impact of policies that influence the allocation of time. Pooling together all household production will fail to highlight the importance of high, long-term impact activities such as reading to or playing with children. Models of utility maximization in household economics and the derivation of time-use demand equations have consequently evolved from a simple labour-leisure trade-off to include household production (Becker 1965, Cigno 1991, Fernández and Fogli 2009) and more recently, child services (Kalenkoski et al (2005) Kimmel and Connelly, 2007; Busetta et al. 2019) as separate time-use categories.

Building on previous work regarding the importance of considering a more detailed taxonomy of time-use, we consider that cultural factors affect the time-use allocation decisions of mothers and fathers. International evidence from the USA, United Kingdom,

France, Italy, and Sweden show that parental time-use vary by characteristics of the parent, household, country and culture (Kimmel and Connelly 2007, Kalenkoski et al. 2005, Hallberg and Klevmarken 2003, Pailhé et al. 2019, Busetta et al. 2019, Blau et al. 2020). For example, Pailhé et al. 2019 find that mothers and fathers in Italy experience a more pronounced gender gap in household work and a larger loss in free time by the presence of children than parents in France. The authors point to normative determinants such as notions of being “good parents” and to the public view that pre-school children suffer if their mother works, which have a stronger hold in Italy than in France. In Canada, empirical research on intergenerational education transmission between parents and their children also suggests important cultural differences (Aydemir, Chen and Corak, 2009; Chen and Hou, 2019) on the “right” way to raise a child. Qualitative evidence in Toronto describes South Asian parents as exerting authoritative influence and pressure for high family status and prestige and New York children of Chinese immigrants grow-up in a social enclave where post-secondary completion is the norm and working in a professional occupation is a minimum level of achievement (Somerville and Robinson 2016). Dynastic motives and aspirations held by newcomers for their children in terms of future outcomes as adults could then be captured by the time-use patterns of parents devoting more (or less) time to work or to their children. These heterogeneous effects suggest that countries with large immigrant populations, such as Canada, may in turn show important differences in households’ responses to policies aimed at the well-being of families. If households have a cultural preference to spend more time with children or household production, this time must come from leisure or market work and could have an impact on the economic and social integration of the immigrant family.

As mentioned above, allocation of time-use into paid work, home production, leisure, and child service of parents is one mechanism through which transmission onto children’s human and social capital occurs. The literature further documents parent’s behaviour and beliefs as impacting the present and future choices of children regarding their own time-use patterns. Cordoso et al. (2005) estimates intergenerational transmission of preferences in time spent reading, studying, socializing, and watching TV in Italy, Germany and France and finds a widespread influence of parent’s time on their teenaged children’s time use in these categories and the result is especially strong from mother-to-child and Farre and Vella (2013)

finds the attitudes and beliefs surrounding gender roles and female labour force participation of mothers is correlated with that of her sons and daughters. Further, since the production of cognitive and non-cognitive skills in children depends both, on their own time-use patterns (Harding, 1997, Hofferth and Sandberg 2001) and characteristics of the family, the diversity of activities engaged in by the children of parents born abroad and from specific source regions can explain education outcomes as adults. Here, we show evidence of this connection by looking into the way young students devote time to educational activities.

To estimate the effect of area of origin on the allocation of time of immigrant and Canadian-born parents (young adults) across different categories of time-use we use Seemingly Unrelated Regression Model (SUR). We further look specifically into time spent with children (in homework activities) considering both the participation and intensity of time-use decisions using Cragg's two-tier alternative to tobit for corner solution models (Burke, 2009). Our results indicate that compared to mothers born in Canada, mothers born abroad spend 23 minutes less in daily leisure time and 40 minutes less in paid work, but there is not a significant difference in household production or time spent with children. Although no difference by area of origin is apparent in the total care-time parents provide for their children, conditional on participation, there are significant differences in terms of time specifically devoted to human capital investment activities by immigrant parents, with African, Asian, European and South-Central American mothers spending up to 30 more minutes daily in these activities than their Canadian-born counterparts. Second generation young adults, on the other hand, spend approximately 20 minutes less on paid work and 20 minutes more on education activities. Further, conditional on participation in homework, second generation young adults spend approximately 33 and 20 more minutes if they have a mother born in Africa or Asia respectively

The next section describes the data and modelling choices made and provides a statistical overview of immigrant and Canadian-born parents' time use. The third section presents and discusses the results, and the final section concludes.



## Empirical Methodology

Our empirical methodology is based on the standard neoclassical model of utility maximization over leisure, goods consumption and child services, where total time can be allocated into four separated categories (paid work, household production, leisure, and time spent on child services). Parents forgo paid work, which increases goods consumption, in exchange for leisure - which enters the utility function directly - or time spent on child services and time spent on household production – which increases child services. Standard maximization techniques results in time-demand function for the fourth time allocations and a standard demand function for good (Gronau, 1977 and Kimmel and Connelly, 2007). We are concerned here with estimating the time use equations

### *Time-use Demand Equations*

The parent is the unit of analysis with parents choosing optimal time-use allocations among the four main categories of parental time-use described above: paid-work, household production, leisure, and child services and estimate the marginal effects of characteristics of the parent and household. The resulting system of time-use equations can be characterized as follows:

$$t_j = \beta_{oj} + \boldsymbol{\beta}_j^T \mathbf{X} + \varepsilon_j \quad \text{for } j = pw, hh, l, cs \quad (1)$$

with dependent variable  $t_j$  as the total time allocated to the activity  $j$  for  $j = pw$  (paid work),  $hh$  (household production),  $l$  (leisure) and  $cs$  (child service). The coefficient,  $\beta_{oj}$  is the intercept and  $\boldsymbol{\beta}_j^T$  is the vector of marginal effects for each explanatory variable in matrix,  $\mathbf{X}$ .

In time-use data, there is typically clustering around zero minutes spent in an activity. In this case, the dependent variable can be censored from below and modelled as a latent dependent variable. A censoring mechanism that translates latent time-use variables into observed time-use variables captures this discontinuity. That is,

$$t_j = \begin{cases} t_j^* & \text{if } t_j^* > 0 \\ 0 & \text{if } t_j^* \leq 0 \end{cases} \quad (2)$$

with latent variable,  $t_j^*$ , which is equal to observed variable,  $t_j$ , when positive and zero otherwise. The estimation method of equation (1) depends on the assumption of the process that generates equation (2).

Observed zeros in time-use data can be generated by a mismatch between the respondent's schedule and the day of the week the survey was recorded. Alternatively, clustering at zero can be the optimal response of non-participation at zero minutes chosen by the respondent as the result of their utility maximization problem. When the respondent's personal schedule of weekly activities and the respondent's diary day are a mismatch, the result is a "false zero" in the data set. For example, if a respondent's work schedule is Monday-Friday and their time-diary was recorded on a weekend, the respondent reports zero minutes as paid work. Due to the window length of one 24-hour time diary in GSS time-use cycles, respondents who participate in the activity but not on the diary day cannot be considered as non-participants, so the data is not censored. In this case, there is measurement error and Ordinary Least Squares (OLS) regression is the optimal estimation method, relative to a Tobit regression model, because it produces unbiased estimates.

On the other hand, zero minutes observed in time-use demand functions can be a "true zero" of non-participation as the result of the utility maximization problem. In this case,  $t_j^*$  is completely observed and is the result of a corner solution of zero minutes spent. This is the case if a respondent's optimal choice is not to perform any form of household production and so reports zero minutes spent in this activity (Foster and Kalenkoski 2013, Stewart 2013). Respondents in the GSS reporting zero minutes in an activity as the result of their optimal choice are considered non-participants, so the process that generated the time-use category is equation (2). In the case of censored data, the probability density function (pdf) is defined to account for the mass of observations at zero minutes spent with nonzero observations thereafter and the optimal estimation method is by Maximum Likelihood Estimation (MLE). The pdf of the Tobit model is a hybrid of the cumulative distribution function and pdf from the normal distribution. For the observed latent dependent variable,  $t_j$ , and given  $\mathbf{x}_i$ , the cdf is written as;

$$f(t_j; \beta_j, \sigma | x) = \left\{ 1 - \Phi \left( \frac{x^T \beta_j}{\sigma} \right) \right\}^{1(t_j = 0)} \left\{ \left( \frac{1}{\sigma} \right) \phi \left[ \frac{(t_j - x^T \beta_j)}{\sigma} \right] \right\}^{1(t_j > 0)} \quad (3)$$

where  $\Phi$  is the standard normal cdf and  $\phi$  is the standard normal pdf. Indicator function,  $1[.]$ , is equal to 1 if the condition in brackets is true and zero otherwise thereby calculating the portion of the cdf when the optimal time-use is zero minutes. The log-likelihood function of the Tobit model maximizes;

$$l(\beta_j, \sigma) = \sum_{i=1}^n \log[f(t_{ji}; \beta_j, \sigma | x_i)] \quad \text{for } j = pw, hh, l, cs \quad (4)$$

to obtain estimates of the parameters in equation (1) for time-use equation  $j$  (Foster and Kalenkoski 2013, Stewart 2013).<sup>3</sup>

The literature adopts different views on whether to classify observed zeros as “false zero” or “true zero” and the subsequent choice of estimation by OLS regression or Tobit model. Kimmel and Connelly (2007) specify all four equations – paid work, household production, leisure and child service with a Tobit model as do Kalenkoski et al. 2005 in estimating time use in child care and market work. However, more recent research has adopted the “true zero” and “false zero” method as outlined in Foster and Kalenkoski 2013 and Stewart 2013. For example, Pailhé et al. 2019 believes observed zeros are a mismatch in all four equations so uses linear estimates and Busetta et al. 2019 identifies only paid work of women as a censored variable. We consider the definition of the activity and the gender of the respondent performing the activity and the amount of zero minutes reported in time-use variables to classify observed zeros. We assume that for mothers, reporting zero paid work corresponds to a “true zero”, and reporting zero household production, leisure or child service is the result of a mismatch. Therefore, we use a Tobit model for mother’s time in paid work and OLS in the rest of the equations in the system. For fathers, we specify the equations

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<sup>3</sup> If OLS regression is used in a situation of “true zeros” then the  $\beta$  estimates are inconsistent since the true conditional expectation is nonlinear in  $x$ ,  $\beta$  and  $\sigma$ .

for household production and child services as Tobit models and the equations for paid work and leisure as OLS regression.<sup>4</sup>

Another consideration in estimating the system of equations (1) is correlation of the error terms across equations. To account for this correlation in the error terms, we estimate the system in equation (1) using a Seemingly Unrelated Regression (SUR) model which we specify as a mixed process with a combination of OLS regression and Tobit models. Since the Tobit model is built on the classical linear regression model with normally distributed error terms, the Tobit and Classical Linear Regression model can be combined into a multiequation system with the error terms sharing a multivariate normal distribution and estimated by MLE (Roodman 2011). We report the coefficient of the estimated coefficients when the equation is an OLS process and the average marginal effect on the observed outcome,  $E[t|\mathbf{x}]$ , when using a Tobit model.

#### *The General Social Survey (GSS)*

This paper uses the six time-use cycles in the General Social Survey (GSS) (years 1986, 1992, 1998, 2005, 2010 and 2015). Time-use cycles of GSS collect personal and household characteristics as well as a time diary of a respondent's activities and minutes spent on each activity over one 24-hour period. Time diaries are collected across days of the week and months of the year from one respondent per household aged 15 years or older. We restrict the sample to respondents who are parents under the age of 65 years, living in a household with at least one child aged 14 years or younger and who are employed or homemakers.<sup>5</sup> Since these are highly gendered activities, it is likely that there exist systematic differences in time-choices by gender due to the differing time constraints faced by mothers and fathers. We run the parental use of time models separately for mothers and for fathers to eliminate this confounding effect. The final sample totals 17,753 parents (10,372 mothers and 7,381 fathers).

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<sup>4</sup> Alternatively, we run a model where estimates for fathers use a linear model for child services (instead of Tobit). These results are discussed in section 5.

<sup>5</sup> Categories for self-reported main activity of the respondent in GSS time-use cycles are paid work, looking for work, student, homemaker, retired and other.

We aggregate activities into five categories pertinent to parental time allocation - paid work, household production, leisure, child service and other, which includes time-use activities that are too heterogeneous to aggregate and so are not informative to estimate separately. Sorting the activities collected by the survey into the four major activity categories requires delineation based on economic intuition and, to aid in comparison with previous results, consistency with that common in the literature.<sup>6</sup>

There is no clear consensus in the literature regarding how to measure time spent at work. Kalenkoski et al (2005) describes paid work as time spent at a job while in Busetta et al. (2019) paid work includes time spent searching for a job. Since we only consider parents who are employed or homemakers, we define paid work as time spent at the respondent's job - and so include travel during work as in Kalenkoski et al (2005) but not time searching for a job (see also Kimmel and Connelly, 2007).<sup>7</sup> To be consistent with previous literature, we do not include commute time to and from work to home. Activities included here are paid work and overtime work at the main job and other job(s), travel during work, waiting/delays at work and meals/breaks during work hours. We define household production as the time used to generate services that have a close substitute in the market. Activities included in household production time include meal preparation, indoor/outdoor cleaning, laundry, shopping, pet care, professional appointments/services and care for household adults aged 15 years and older with the assumption that all have available substitutes that can be bought in the market.<sup>8</sup>

In measuring leisure time, we consider *active leisure* as in Kimmel and Connelly (2007) and therefore do not include personal care for the respondent (administered by the respondent to themselves), night's sleep and naps, and meals at home into the definition of leisure. Activities included in this category are, meals at restaurants, relaxing thinking or smoking, volunteer work, attending entertainment, playing recreational sports, watching tv,

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<sup>6</sup> Specific classification of activity codes available upon request.

<sup>7</sup> Examples of activities provided by GSS for travel during work include, a contractor driving between job sites, travelling to a conference, and delivering forms to hospital offices.

<sup>8</sup> Caregiving provided by the parent to their teenaged children (aged 15 years or older) is included in household production.

listening to music, reading, talking to household members in person and other time spent on media and communication. However, estimates of the differences in *active leisure time* spent by parents born abroad might be misleading if there are cultural differences in the understanding of leisure as an active versus passive activity. For instance, time spent away from work and chores may be preferred to be spent eating meals at home or sleeping rather than watching television or going out for meals thereby, a portion of leisure time is not counted due to cultural differences in time-use choices. To check if the definition of leisure affects the estimates of time spent in different activities, we consider a broader definition of leisure (*passive leisure*) that adds those activities - eating meals at home, personal care and naps and nights' sleep – to the definition of leisure. Furthermore, the additional leisure activities considered in *passive leisure* adhere to the separation from household production suggested by Gronau (1977) as there are no available substitutes for sleep and personal care and to some extent, meals at home.

In defining child service, one should consider the urgency and unexpectedness of parental time-use and the amount of time spent minding children as a secondary activity. For instance, including the respondent's night sleep as well as the child's sleeping time while the respondent is tending to another activity, could be considered as child service rather than home production or leisure. This is because parents must be alert and on call for their children during their night's sleep (Folbre et.al 2005) and an infant's sleep is unpredictable and intermittent (Connelly and Kimmel 2010 pp.1). However, GSS time-use cycles do not record a respondent's social contact during the activity of their night's sleep or naps and do not record a time diary for children in the household or minding a child as a secondary activity, so these types of parental duties are not included in the definition of child services. Main activities included in this category are baby care, helping/teaching reprimanding, reading/talking with child, play with children, medical/emotional care of children, and travel to/from care activities for household children.

The average value of the household's time-use categories is shown in Table 1. Fathers spend most time on work followed by leisure, household production and child service and mothers spend less time in paid work and leisure and more time in household production and child service than fathers. We find significant differences when comparing average time-use

of mothers and fathers by place of birth for each time-use cycle, (See Appendix Table A1, for mothers A2 for fathers). There is a clear upward trend in average time spent in child services performed by parents of both genders and birthplace consistent with the trend in child service found in the literature (Aguiar and Hurst, 2007; Wei, 2020; Blau and Winkler 2018). The average time spent in household production performed by fathers is increasing, whereas time spent in leisure time and paid work fluctuates. As documented in the literature, we also find evidence that mothers' paid work has increased over time and average time spent in leisure and household production decreased (Blau and Winkler, 2018). We also find evidence of differences in paid work between Canadian-born and immigrant mothers, in the initial years of the sample as documented in the immigration literature (Adserà and Ferrer 2014) using Canadian census data. The paid working hours of fathers born abroad is higher than that of fathers born in Canada - except for 1992 – but not significantly different. In general, average time spent in household production for mothers is not significantly different by birthplace status, but the leisure time of Canadian-born mothers (fathers) is significantly higher than that of mothers (fathers) born abroad. The most notable difference in child service by origin status is the trending upward across time-use cycles, particularly for fathers.

In addition to time-use diaries, the GSS collects information on household and human capital characteristics which are useful determinants for parental time-use allocation. Table 2 shows summary statistics for the main variables in the estimation equations. To control for cross sectional variation, we include the sociodemographic characteristics of the household: the number of children in the household, a categorical variable for age of the youngest child (between 0-4, 5-9, or 10-14 years old), an indicator for the presence of a partner in the household and for the presence of multiple generations in the household, as well as a set of year, province and Census Metropolitan Area (CMA) controls to account for regional and temporal differences across households. To control for characteristics of the parent, we include the respondent's gender, age, and level of education. Finally, we include an indicator for respondents being surveyed on a weekend, since families may have different time-use patterns on weekdays vs weekends. For instance, since children's regular school schedule is Monday to Friday, it can be expected that parent's time spent with children surveyed on weekends will be higher than if surveyed during the week. Furthermore, we could observe

systemic patterns of time-use behaviour that are due to other constraints. If immigrant mothers tend to work more on weekends (due to increased participation in the retail service sector) than the Canadian born and we observe a large difference in mother's leisure time between these groups, this variation could be explained by the subsample of mothers interviewed on weekends, where mostly immigrant mothers are working weekends.

To capture the impact of broad cultural differences in time spent with children, we include an indicator for first generation immigrants (or *born abroad*), which we further disaggregate by birthplace region of origin (Africa, Asia, Europe, English speaking countries – UK Ireland, North America and Australia - South Central America and Other). We also include an indicator for second generation (individuals born in Canada to a foreign-born mother or father). To capture the fact that cultural factors may intensify or attenuate with time spent in the host country, we include *years since migration* and its square in our estimating time equations.<sup>9</sup>

## Results

Table 3 shows the results from estimating a SUR model for paid work, household production, leisure, and child service in equation (1) for mothers and fathers separately. For equations estimated by OLS regression, we report the estimated coefficients and for equations estimated with Tobit models, we report the marginal effect.

The covariates behave in a predictable manner, being a lone parent increases paid work and reduces household production time of mothers but has the opposite effect for lone fathers, more children increase time in household production and child service for mothers (but not for fathers) and the age of the youngest child significantly reduces time in paid work and leisure for both. Highly educated mothers spend more time in paid work and less time in household production and leisure, whereas mothers with less than a high school diploma spend less time in paid work and more time in household production and leisure, but there is no difference in child services. The effect of education on fathers is to increase time spent with children. This education gradient contradicts economic theory on the demand for normal

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<sup>9</sup> We also include an indicator variable for those respondents with a valid entry for born abroad, but who do not state the years since migration.



goods. Since highly educated parents incur a higher opportunity cost when spending time with their children, they should spend less time in child service relative to the time spent by lower-educated parents. This finding suggests that child services could be considered ‘luxury’ goods, and higher-educated, higher-income parents purchase market substitutes for other household tasks to spend extra time for children services (Blau and Winkler 2018).

Adjusting for the covariates, immigrant mothers spend significantly less time at paid work (up to 40 minutes less per day) and at leisure (23 minutes less) than Canadian-born mothers. They also devote more time to household production and child services. Further, integration into Canadian society increases time at paid work – a fact well documented in the immigration literature (Adserà and Ferrer, 2016) – at the expense of further reducing leisure time. Gender differences in time allocation that are likely driven by culture are apparent in the time immigrant fathers spend at paid work, which is similar to that of Canadian-born parents, and the fact that the former devote less time to household production or child services (9 and 6 minutes less per day). It is also the case that fathers do not seem to adjust their time allocation as they themselves adjust to Canadian society.<sup>10</sup>

We disaggregate the immigrant indicator into birthplace region of origin to examine differences along this dimension (Table 4). Non-English speaking immigrants spend less time in leisure (up to 31 minutes less per day in the case of European mothers and 35 less minutes in the case of Asian fathers) and Asian mothers spend significantly less time in paid work (52 minutes less) compared to native-born mothers.<sup>11</sup>

Household income is also a key element in understanding parental allocation of time. Although an examination of the causal effect of income on time allocation is beyond the scope of this work, we include an indicator for household income being below the Statistics Canada’s Low Income Cut-Off (LICO) to test the robustness of the results to household

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<sup>10</sup> Results are similar if we use OLS to estimate fathers’ allocation to child service

<sup>11</sup> We check the robustness of this results to an alternative definition of leisure that considers passive leisure. Results hold for South-Central American mothers and Asian fathers, albeit weakly identified.

income heterogeneity.<sup>12</sup> We show in Table 5 that mothers with household income below LICO work 66 minutes less and spend 27, 38 and 9 more minutes in household production, leisure and child service respectively. Immigrant mothers with household income below the LICO spend 36 minutes more in household production than Canadian parents similarly living under the poverty line.

#### *Time spent with children in education activities*

Our previous analysis shows that the main differences in time allocation between immigrant and Canadian-born parents regard leisure and paid work (mothers only). Immigrant mothers seem to spend more time with their children, but the differences though large in the case of English-speaking immigrants and South-Central American mothers, are not significant. Fathers from South-Central America do however spend time in child services.

Do these differences in time allocation translate into specific investments in child's human capital? We try to answer this question by restricting the child service time use category to educational activities in the home with children and look at immigrant native born differences in the amount of time dedicated to activities with children.

We use a Cragg's two-tier model (Cragg, 1971) to estimate the effect of immigrant status on the amount of time parents spend in education activities with their children. The procedure integrates a Probit model, to determine the decision to participate in the activity (*participation tier*), and a truncated normal model to estimate the intensity of participation conditional on participation (*intensity tier*).<sup>13</sup>

Table 6 shows results for education time use category for mothers (columns 1-2) and fathers (Columns 5-6). Results in the column labelled participation show the likelihood of investing time in education/total time and those in the columns labelled intensity show the

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<sup>12</sup> We keep respondents with a valid response for household income and identify whether the respondent lives in a household with income below LICO for their city size and sample size drops to 9,032 mothers and 7,830 fathers.

<sup>13</sup> Note that the vectors of covariates in each process do not have to be identical. However, in the results presented below, we use the same covariates in both tiers. The model assumes that unobservable factors affecting participation decisions are uncorrelated with the unobservable factors affecting intensity decisions.

effect of the covariate on the amount of minutes devoted to education/total time, conditioned on the parent investing a positive amount of education/total time.

While most immigrant parents are more likely to participate in children's educational activities than the Canadian born, the result is not significant. Conditional on participation, all non-English speaking mothers spend more time in these activities, around 26 (African), 19 (Asian), 22 (European) and 30 (South American) more minutes daily. The more interesting results is that non-English speaking immigrant *fathers* do as well, with African fathers spending 27 more minutes in these activities than Canadian-born fathers. We compare this result with the effect of immigrant background on the total amount of time spent in childcare activities of any kind, to see whether this is activity specific or it is a reflection of a more equal role in household production among immigrants. Columns 3-4 (7-8 for fathers) show that – for the most part – immigrant parents have higher probability of participation in total child-care relative to their Canadian-born counterparts (although not significantly so). Immigrant mothers also spend more time in total childcare than Canadian-born mothers and in general also do immigrant fathers but to a lesser extent, with the exception of South-Central American fathers (35 minutes less daily). This suggests that Canadian immigrant fathers have a strong preference to involve themselves specifically in the education of their children, although not necessarily in all child-care activities.

### *Young Adults*

As discussed above, the real interest in this analysis of differences in time allocation between immigrants and native-born parents lies on whether they result in differences in the children's upbringing. The GSS allows us to consider potential effects in human capital measures of child activity. For instance, we can estimate differences in time devoted to educational activities by young people by parental immigrant status. As before, we consider first, whether the children of immigrants devote more time to educational activities relative to other time use categories, and whether, conditional on participating, they devote more time to these.

We estimate a SUR model for the minutes young adults aged 15-25 years old spend on paid work, household production, leisure, and education activities, like that estimated above, and present the results in Table 7 (Model I). Second-generation young adults spend

significantly less time in paid work (20 minutes) and more time on education activities (19 minutes) compared to young adults with Canadian born parents. We disaggregate parent's immigrant status by its region of origin and find that parental influences regarding time spent in education are particularly stronger for the children of African, Asian and European parents (Table A1.2).

Model (II) in Table 7 introduces an interaction with gender to examine the influence of cultural views about gender roles that could be passed along by immigrant parents.<sup>14</sup> We find some evidence of traditional gender roles among young adults, with second generation women spending less time working than the young women of Canadian-born parents (19 minutes less). Second generation young men spend less time working, in household production and leisure and more time on education than their counterparts with Canadian-born parents, but not significantly so. These results are suggestive of differential behaviour towards human capital investment and paid work for both young men and women of immigrant descent (Baker and Milligan, 2016).

We further examine whether the children of immigrants, who report being a student as their main activity, spend more time in *Homework activities* (time spent on education activities outside the classroom like being tutored, participating in group study or studying for exams).<sup>15</sup> We select young adults (aged 15 to 25) that state their major activity as going to school resulting in a sample of 3,389 students. Besides the variables of interest stating the birth region of mothers (fathers), we include gender, age, work minutes on the diary day, weekend time-use interview, lives in a CMA and survey year controls. We also include a binary variable indicating if the student has parent(s) present in the household to control for parental proximity influence on students' study behaviors.

Students with African mothers (fathers) spend significantly more time on homework - 33 (35) more minutes per day - conditional on participating, but they do not engage in homework activities more often than their Canadian-born counterparts. On the other hand,

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<sup>14</sup> Estimating the model for young adults separately by gender is not possible as the sample size is too small.

<sup>15</sup> See Appendix 2 for the time codes used to define *Homework activities*

students with mothers (not fathers) born in Asia, conditional on participating, spend 20 more minutes on their homework than students with Canadian parents.<sup>16</sup>

Overall, results for the parent and student samples provide context to the general sense that immigrants are more “education-inclined” and that this is transmitted to their children. Further, the effect seems to work through the tendency to spend more time on activities with an educational focus and this seems correlated with the child behavior when they are later in school as young adults.

## **Conclusion**

Parental time-use decisions are one of the strongest influences in cognitive and non-cognitive skill formation of their children and are very likely influenced by cultural background and social norms. Dynastic motives or settlement costs can promote or interfere with parents engaging in human capital generating activities for their children and time-use data is a way to expose immigrant and Canadian-born differences in these activities. We estimate models of time allocation into four categories of parental time-use (paid work, household production, leisure, and child service) and into education activities with children. to find significance differences by immigrant source country region. We find mothers born abroad spend less time on paid work, leisure and that mothers from non-English speaking regions spend more time with their children specifically engaged in education activities in the home. We offer suggestive evidence that priorities in education in immigrant homes as well as efforts in the skill formation of children may have an effect on the time use allocation of the children of immigrants, which we investigate next. The time-use allocation of second-generation young adults seems consistent with their immigrant parents’ investments – sacrificing paid work for more time spent on education and in particular, on homework activities (young adult students with mothers born in Africa or Asia).

This suggests that countries with large immigrant populations, such as Canada, may show important heterogeneous effects in terms of time-use allocation that will affect

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<sup>16</sup> We run a similar regression using total time devoted to educational activities by young adults who report being students and find no significant differences in the likelihood to participate in these or in the amount of time devoted to it for any immigrant group.

households' responses to policies aimed at the well-being of families. Policies that affect the incentives to participate in these activities, such as day care policies or family allowances, or subsidies to access higher education, have the potential to disproportionately affect the immigrant population, which is more represented at the bottom of the income distribution.

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**Table 1: Average time-use by gender – All Parents (SE).**

<i>(minutes/day)</i>	<b>All Parents</b>	<b>Mothers</b>	<b>Fathers</b>
<b>Paid Work</b>	275.62 (2.59)	193.50 (2.97)	367.97 (4.00)
<b>HH Production</b>	165.20 (1.46)	211.97 (1.90)	112.59 (2.02)
<b>Leisure</b>	242.71 (1.67)	241.56 (2.13)	243.99 (2.63)
<b>Child Service</b>	81.53 (1.11)	106.98 (1.68)	52.92 (1.27)
<b>Leisure(2)</b>	815.27 (2.19)	829.60 (2.70)	799.17 (3.50)
Observations	17,753	10,372	7,381

**Table 2. Summary Statistics - All Parents (SE).**

<b>Parents</b>		<b>Household</b>		<b>Immigrants</b>	
<b>Male</b>	0.47 (0.005)	<b># of children</b>	2.00 (0.01)	<b>Born Abroad</b>	0.23 (0.004)
<b>Age</b>	37.31 (0.07)	<b>Age youngest</b>	6.05 (0.04)	Africa	0.05 (0.002)
<b>Education</b>		0-4 yrs (%)	0.44 (0.005)	Asia	0.09 (0.002)
Less HS	0.15 (0.003)	5-9 yrs (%)	0.28 (0.004)	Europe	0.03 (0.002)
HS	0.29 (0.004)	10-14 yrs (%)	0.27 (0.004)	SCA	0.02 (0.001)
College	0.29 (0.004)	<b>Multi-generation</b>	0.04 (0.002)	UKNA	0.03 (0.002)
Bachelor	0.20 (0.004)	<b>Lone-parent</b>	0.094 (0.002)	Other	0.005 (0.0006)
Graduate	0.07 (0.002)	<b>Weekend interview</b>	0.28 (0.004)	<b>Years Since Migration</b>	16.22 (0.24)
<b>Main activity</b>		<b>CMA</b>	0.60 (0.004)	<b>Not Stated ysm</b>	0.12 (.002)
Employed	0.75 (0.004)			<b>Second generation</b>	0.15 (0.003)
Homemaker	0.25 (0.004)				
Observations			17,753		

**Table 3: Immigrant difference in time-use allocation by gender - SUR model (SE)**

<i>minutes/day</i>	<b>Mothers</b>				<b>Fathers</b>			
	<b>Paid Work</b>	<b>HH Prod</b>	<b>Leisure</b>	<b>Child Service</b>	<b>Paid Work</b>	<b>HH Prod</b>	<b>Leisure</b>	<b>Child Service</b>
	Tobit	Reg	Reg	Reg	Reg	Tobit	Reg	Tobit
<b>Born abroad</b>	-40.24* (15.63)	14.17 (10.86)	-23.34* (10.61)	9.21 (12.27)	-8.93 (20.77)	-8.92 (9.06)	-19.70 (13.16)	-5.89 (5.82)
<b>YSM</b>	4.15* (1.61)	0.83 (1.32)	-3.54** (1.31)	-1.71 (1.28)	1.27 (2.12)	-0.37 (0.79)	-0.32 (1.55)	-0.40 (0.64)
<b>Observations</b>	10,372				7,381			

$p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

\*Covariates: ysm<sup>2</sup>, not stated ysm, second generation immigrant, age, education, lone parent, multiple generations in the household, youngest child in the household is less than four years old, number of children in the household, weekend interview, CMA, province, and year.

**Table 4: Immigrant difference in time-use allocation by gender and region of origin - SUR model (SE)**

<i>minutes/day</i>	Mothers				Fathers			
	Paid Work	HH Prod	Leisure	Child Service	Paid Work	HH Prod	Leisure	Child Service
	Tobit	Reg	Reg	Reg	Reg	Tobit	Reg	Tobit
<b>Africa</b>	-16.70 (19.43)	1.86 (11.95)	-28.80* (12.86)	5.88 (12.44)	-8.30 (25.34)	-21.29* (9.89)	-17.59 (16.23)	4.04 (7.51)
<b>Asia</b>	-52.15** (17.49)	19.43 (14.03)	-20.62 (12.58)	7.71 (15.77)	0.51 (24.14)	-14.05 (9.83)	-34.73* (15.66)	-7.95 (7.22)
<b>Europe</b>	-30.85 (20.90)	23.16 (15.51)	-30.53* (13.64)	5.41 (12.96)	-13.52 (27.15)	0.86 (13.04)	-7.21 (18.28)	-6.39 (7.36)
<b>SCA</b>	-31.69 (22.66)	6.45 (16.61)	-26.25 (16.19)	10.67 (15.41)	11.75 (29.50)	8.11 (15.98)	-23.65 (21.26)	-29.81*** (5.74)
<b>English Speaking</b>	-76.09*** (17.62)	29.58* (15.07)	6.50 (14.95)	18.81 (14.90)	-67.91** (26.11)	11.88 (13.58)	12.23 (18.97)	11.49 (8.60)
<b>Other</b>	-61.02 (39.01)	-16.02 (33.42)	-94.24** (35.33)	27.86 (19.50)	20.37 (50.97)	-24.45 (26.67)	-34.29 (24.95)	-4.75 (11.35)
<b>YSM</b>	3.952* (1.617)	0.903 (1.336)	-3.272* (1.328)	-1.600 (1.285)	0.979 (2.132)	-0.267 (0.782)	-0.050 (1.560)	-0.400 (0.652)
<b>Observations</b>	10,732				7,831			

$p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

\*Covariates: ysm<sup>2</sup>, not stated ysm, second generation immigrant, age, education, lone parent, multiple generations in the household, youngest child in the household is less than four years old, number of children in the household, weekend interview, CMA, province, and year.

**Table 5: Immigrant difference in time-use allocation by gender and low income - SUR model (SE)**

<i>minutes/day</i>	Mothers				Fathers			
	Paid Work	HH Prod	Leisure	Child Service	Paid Work	HH Prod	Leisure	Child Service
	Tobit	Reg	Reg	Reg	Reg	Tobit	Reg	Tobit
<b>Born abroad</b>	-19.15 (18.12)	-5.464 (13.44)	-8.924 (13.30)	-7.266 (10.50)	-7.926 (22.37)	-3.973 (10.36)	-16.01 (14.58)	-2.136 (6.795)
<b>Below Low-Income</b>	-66.06*** (7.422)	27.35*** (6.155)	38.46*** (7.027)	9.225* (4.373)	-38.64* (15.61)	-0.492 (6.095)	15.93 (10.64)	1.812 (3.621)
<b>Below Low-Income * Born abroad</b>		36.16** (12.12)	18.74 (10.67)	15.55 (8.688)	25.74 (28.16)		-24.06 (17.68)	
<b>YSM</b>	3.048 (1.798)	2.366 (1.506)	-4.942*** (1.498)	-0.792 (1.061)	1.509 (2.308)	-0.918 (0.872)	-0.0759 (1.688)	-1.022 (0.712)
<b>Observations</b>	8,607				6,311			

$p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

\*Covariates: ysm<sup>2</sup>, not stated ysm, second generation immigrant, age, education, lone parent, multiple generations in the household, youngest child in the household is less than four years old, number of children in the household, weekend interview, CMA, province, and year.

**Table 6: Immigrant difference in time spent with children by gender (SE)\*.**

	Mothers				Fathers			
	Education activities		Total Child care		Education activities		Total Child care	
	Part.	Intensity	Part.	Intensity	Part.	Intensity	Part.	Intensity
<b>Africa</b>	0.004 (0.08)	25.69** (8.78)	0.006 (0.04)	10.41 (13.19)	0.06 (0.04)	27.13* (12.06)	0.05 (0.04)	7.25 (11.48)
<b>Asia</b>	0.03 (0.04)	18.85* (8.30)	0.03 (0.04)	18.77 (19.01)	0.01 (0.04)	11.54 (10.55)	0.01 (0.04)	8.62 (14.84)
<b>Europe</b>	0.04 (0.05)	21.80* (10.30)	0.04 (0.05)	9.38 (15.34)	0.044 (0.05)	19.07 (13.58)	0.04 (0.05)	4.63 (14.81)
<b>SCA</b>	0.04 (0.05)	29.47* (11.66)	0.04 (0.05)	23.39 (17.88)	-0.025 (0.04)	3.63 (16.43)	-0.03 (0.04)	-34.77*** (10.25)
<b>English speaking</b>	0.07 (0.05)	10.74 (9.27)	0.07 (0.05)	23.47 (17.39)	0.02 (0.04)	2.62 (10.36)	0.01 (0.04)	-9.58 (13.00)
<b>Other</b>	0.11 (0.07)	19.83 (18.31)	0.11 (0.07)	38.84 (23.59)	0.08 (0.08)	14.15 (18.01)	0.08 (0.08)	-12.42 (13.28)
<b>YSM</b>	-0.006 (0.003)	-1.17* (0.51)	-0.006 (0.003)	-1.77 (1.33)	-0.002 (0.003)	-0.06 (0.59)	-0.002 (0.003)	-0.90 (0.10)
<b>Observations</b>	9,851	3,193	9,851	7,835	6,917	1,102	6,917	3,830

$p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

\*Covariates: ysm<sup>2</sup>, not stated ysm, , age, education, lone parent, multiple generations in the household, youngest child in the household is less than four years old, number of children in the household, weekend interview, CMA, province, and year.

**Table 7. Second generation immigrant difference in time allocation - SUR Model (SE)**

	<b>Young Adults</b>			
	<b>Paid work</b>	<b>HH Prod</b>	<b>Leisure</b>	<b>Education</b>
	Reg	Reg	Reg	Reg
<b>Model (I)</b>				
<b>Second Generation</b>	-20.26** (7.51)	-1.51 (3.29)	-5.78 (6.97)	18.66** (6.43)
<b>Model (II)</b>				
<b>Male</b>	26.49*** (6.332)	-33.68*** (2.847)	61.35*** (5.728)	-15.52** (5.295)
<b>Second Generation</b>	-18.79 (9.635)	2.232 (5.145)	-2.797 (8.694)	13.14 (8.699)
<b>Male*Second Generation</b>	-2.868 (13.76)	-7.286 (6.079)	-5.805 (12.86)	10.74 (11.96)
<b>Observations</b>	11,158			

$p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Sample: Young adults aged 15-25 years old.

\*Covariates: immigrant, age, gender, presence of parent(s) in the household, weekend interview, CMA, province, and year.



**Table 8. Second generation immigrant difference in time spent on homework (SE).**

	<b>Young Adults</b>			
	<b>Students Homework</b>		<b>Students Homework</b>	
	Participation	Intensity	Participation	Intensity
<b><i>Mother's birthplace:</i></b>			<b><i>Father's birthplace:</i></b>	
<b>Africa</b>	-0.0445 (0.0541)	33.21* (16.26)	<b>Africa</b>	-0.02 (0.05)      35.49** (13.75)
<b>Asia</b>	0.0207 (0.0311)	20.66* (8.173)	<b>Asia</b>	0.01 (0.03)      12.17 (7.51)
<b>Europe</b>	0.00800 (0.0452)	8.397 (9.085)	<b>Europe</b>	-0.02 (0.04)      2.58 (7.23)
<b>SCA</b>	-0.0766 (0.0618)	1.086 (13.39)	<b>SCA</b>	0.03 (0.06)      -6.53 (13.91)
<b>English speaking</b>	-0.0545 (0.0434)	0.255 (8.673)	<b>English speaking</b>	-0.02 (0.04)      -6.10 (8.21)
<b>Other</b>	-0.0574 (0.0731)	-6.174 (11.09)	<b>Other</b>	-0.04 (0.06)      -4.93 (9.78)
<b>Observations</b>	<b>3,389</b>	<b>3,389</b>	<b>3,389</b>	<b>3,389</b>

$p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Sample: Young adults aged 15-25 years old.

\*Covariates: immigrant, age, gender, presence of a parent(s) in the household, work hours, weekend interview, CMA, province, and year.

## Appendix A1

**Table A1.1. Parent's average time allocation (by immigration status and gender)**

	1986		1992		1998		2005		2010		2015	
<b>Paid Work</b>	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers	Mothers	Fathers
Canada	158.59	398.18	147.42	356.37	191.93	359.32	201.91	391.81	191.79	348.88	214.35	343.24
Abroad	193.33	416.35	192.32	336.93	196.93	396.48	202.53	397.9	181.23	353.08	205.14	365.44
Difference	***		***									
<b>Leisure</b>												
Canada	270.09	257.98	266.97	261.82	265.51	266.94	247.07	240.94	243.27	259.01	210.35	207.8
Abroad	225.13	239.58	187.31	220.38	228.92	247.2	222.3	242.28	220.8	237.73	180.46	181.3
Difference	***		***	***	***		***		***	***	***	***
<b>HH Prod.</b>												
Canada	233.02	97.29	219.67	103.62	217.26	120.84	204.54	111.12	204.13	120.68	190.24	135.07
Abroad	234.66	77.04	205.39	78.94	231.06	107.74	210.16	90.23	213.36	133.13	212.48	118.38
Difference		***		***				***			***	***
<b>Child Service</b>												
Canada	94.71	40.16	113.88	46.32	117.69	60.65	129.12	61.8	145.93	78.66	114.68	64.63
Abroad	92.98	34.08	94.9	49.28	114.3	69.53	128.5	63.86	170.25	59.87	103.79	53.64
Difference			***						***	***		

**Table A1.2 Second generation immigrant difference in time allocation by parent region of origin - SUR model (SE)**

		Young Adults							
		Paid Work	HH Prod	Leisure	Education	Paid Work	HH Prod	Leisure	Education
		Reg	Reg	Reg	Reg	Reg	Reg	Reg	Reg
<b><i>Mother's birthplace:</i></b>					<b><i>Father's birthplace:</i></b>				
<b>Africa</b>	-13.78 (20.67)	0.28 (9.52)	-66.56*** (18.32)	31.05 (20.86)	<b>Africa</b>	-10.92 (19.51)	2.09 (9.89)	-65.59*** (18.43)	41.65* (20.66)
<b>Asia</b>	-41.00*** (11.20)	-3.94 (4.91)	-15.34 (10.93)	54.22*** (11.08)	<b>Asia</b>	-30.87** (10.99)	-7.40 (4.51)	-21.11* (10.56)	48.26*** (10.50)
<b>Europe</b>	-26.42* (12.64)	0.24 (6.09)	-24.82* (11.42)	27.60* (11.47)	<b>Europe</b>	-16.69 (12.04)	-1.07 (5.45)	-15.64 (11.29)	23.66* (10.64)
<b>SCA</b>	-23.43 (19.52)	-0.70 (8.57)	4.12 (17.96)	14.37 (17.50)	<b>SCA</b>	-34.38 (17.83)	-1.22 (7.97)	-0.43 (16.75)	16.82 (17.85)
<b>English speaking</b>	-20.14 (16.33)	2.36 (6.06)	39.34* (15.48)	-14.61 (12.38)	<b>English speaking</b>	-14.62 (15.17)	-0.03 (5.86)	9.44 (14.65)	0.77 (12.20)
<b>Other</b>	17.24 (21.10)	15.67 (9.68)	-31.38 (17.17)	-20.38 (13.16)	<b>Other</b>	25.54 (19.08)	9.10 (8.46)	-13.17 (15.71)	-22.73 (11.98)
<b>Observations</b>	11,158				11,158				

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$

Sample of Young Adults aged 15-25 years old.

\*Covariates: immigrant, age, gender, presence of parent(s) in the household, weekend interview, CMA, province, and year.

## Appendix 2

**Table A2.1. GSS time-use activity codes for time categories**

<b>Paid Work</b>	<b>Activity code</b>	<b>Leisure</b>	<b>Activity Code</b>
	<i>1986-2010</i>		<i>1986-2010</i>
Work for Pay	010	Unpaid babysitting	280
Work for pay at main job	011	Meals at restaurant	440
Work for pay at other job(s)	012	Relax, think, rest, smoke	470
Overtime work	020	Leisure and special interest classes	560
Travel during work	030	Professional, union, general meetings	600
Waiting/delays at work during work hours	040	Political, civic activity, voting, jury duty, donating blood	610
Meals/snacks at work	050	Child, youth, family org., scout leader, school volunteer	620
Idle time before/after work	060	Religious meetings, choir practice, church socials	630
Coffee/other breaks at work	070	Religious services/prayer/Bible readings	645
Other work activity	080	Meals/snacks/coffee at religious services	642
	<i>2015</i>	Fraternal organizations	650
Paid work	08	Volunteer work, helping	665
Other income generating activities	10	Other organizational, voluntary, and religious activity	680
Paid training	11	Attend sports event	700
Break for lunch	12	Pop music, fair, concerts,	710
Selling goods or services	40	Movies/ theatre/cinema	720
<b>HH Production</b>	<b>Activity code</b>	Classical music concerts, opera, ballet, theatre	730
	<i>1986-2010</i>	Museums and art galleries	740
Meal Preparation	100	Visit/entertain friends/relatives	750
Food (or meal) cleanup	110	Socializing at bars/clubs	765
Indoor cleaning	120	Other social gatherings	780
Outdoor clean (garbage, snow)	130	Sports, physical exercise, coaching (golf, yoga, hockey)	80
Laundry, ironing, folding	140	Hunt, fish, camp	81
Mending	150	Walk, hike	82
Home repairs, maintenance	160	Hobbies	83
Gardening, pet care	170	Domestic home crafts	84

Other housework	180	Music, theatre, dance	85
Personal care of HH adults	271	Games, cards, arcade	86
Medical/emotional care of HH adults	272	Pleasure drives, sightseeing	87
Help and other care – HH adults	282	Other leisure activity	88
Travel personal care HH adults	292	Listening to the radio	900
Everyday Shopping	300	Television, rented movies	910
Shopping for durable HH goods	310	Listen to CD's, tapes, records	920
Government and Financial services	330	Reading books, magazines	930
Adult medical and dental	340	Reading newspaper	940
Other professional services (lawyer, veterinarian)	350	Talking, conversation with HH member only (face-to-face)	950
Repair Services (auto, dry clean)	360	Letters and mail	960
Waiting for purchases or services	370	Other media communication	980
Other shopping and services	380		2015
Adult medical care	415	Self-development or leisure courses	16
Help and Personal Care to Adults	420	Helping relatives, friends, neighbors, acquaintances	36
	2015	Socialize/communicate in person	41
Health professional visit, consultation	03	Socialize/communicate using technology	42
Self-administered medical care	04	Organizational activities	43
Meal or snack preparation	05	Volunteer work	44
Preserving foods	17	Religious activities	45
Indoor house cleaning	18	Civic participation	46
Garbage, recycling, unpacking goods	19	Exercising	47
Laundry, ironing, sewing, shoe care	20	Organized recreational sports	48
Repair, painting, renovation	21	Competitive sports (indoor or outdoor)	49
Organize, plan, pay bills	22	Outdoor sports (non-competitive)	50
Packing/unpacking groceries, luggage, boxes	23	Outdoor activities	51
Outdoor maintenance	24	Coach or administer sports	52
Planting/maintaining garden or house plants	25	Attending cinema, exhibitions, library, concerts, theatre	53

Pet care	26	Attending sporting events	54
Care of household child (15-17) personal care	29	Visiting museums, art galleries, heritage sites, zoos	55
Care of household child (15-17) accompanying	30	Arts and hobbies	56
Care of household adult personal care	31	Leisure activities	57
Care of household adult accompanying	32	Reading (Online or paper version)	58
Shopping or buying goods	37	Writing	59
Shopping for services	38	Watching television or videos	60
Research goods and services	39	Listening to music or radio	61
<b>Child Services</b>	<b>Activity Code</b>	Use of technology	62
	<i>1986-2015</i>	<b>Total Care</b>	<b>Activity Code</b>
			<i>1986-2010</i>
Baby/child care (0 - 4 years old)	200	Baby/child care (0-4 yrs. old)	200
Childcare	210	Childcare	210
Helping/teaching/reprimanding	220	Helping/teaching/reprimanding	220
Read/talk/converse with child	230	Read/talk/converse	230
Play with children	240	Play with children	240
Medical/emotional of HH child	250	Medical/emotional of HH child	250
Unpaid babysitting of HH child	260	Other Childcare	280
Other Childcare	280	Help and other care – HH child	281
Help and other care – HH child	281	Travel child care activities	291
	<i>2015</i>		
Personal care child <15 yrs. old	27	<b>Education (Young adults)</b>	<b>Activity Code</b>
Accompanying child <15. old	28		<i>1986-2010</i>
<b>Education Activity (Parents)</b>	<b>Activity Code</b>	Full-time classes	500
	<i>1986-2010</i>	Other Classes – part-time	510
Helping/Teaching/Reprimanding	220	Homework	530
Read/talk/converse	230		<i>2015</i>
Help and other care – HH child	281	Schooling on site	13
		Schooling online	14
		Homework or studying	15
		<b>Homework (Students)</b>	<b>Activity Code</b>
			<i>1986-2010</i>
		Homework	530