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Personal Values and Work Hours

Final Project

QMSS 4015

Laura Uguccioni

# Introduction

The aim of this study is to investigate the relationship between values and number of work hours. This study is largely exploratory and it is meant to inform further research on the mechanisms through which values, choices, and outcomes influence each other.

In this study, I investigate the association between number of work hours, the dependent variable, and two sets of values: one related to hard work, and the other related to gender roles within the family. The variables representing these values are the main independent variables.

I use the term ‘value’ rather than ‘belief’ because the first denotes ideas that are important to people. Instead, beliefs are concepts that people hold as true. Throughout this study, I take a neutral position on the worth of the values; I simply aim to understand their association to work hours.

The topic is of interest to me for several reasons. Firstly, it gives insight into the association between outcomes and values. While I’m more interested in value formation and justification of outcomes and choices, the association gives an initial understanding of some of the trends present in the relationship. Further, work hours are relevant to my life, as I’m considering post-QMSS career/academic paths.

# Description of Dataset and Variables

## Dataset

I used the General Social Survey, 2006, (GSS 2006) as the dataset for this study.

## Dependent variable

The dependent variable is work hours. I constructed this variable by using the ‘hrs1’ and replacing the NAs with 0 when the respondent reported not working in the ‘wrkstat’ survey question. This new ‘hours of work’ variable, therefore, ranges from 0 to 89.

## Independent variables (including controls)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Variable Name | Original Name | Description | Recodes | Values |
| Value hard work in a child | workhard | Answer to the question: If you had to choose, which thing on this list would you pick as the most important for a child to learn to prepare him or her for life? (To work hard) | Reordered: Higher number indicates greater importance | 1 to 4 |
| Man achiever is preferred | fefam | Level of agreement with: “It is much better for everyone involved if the man is the achiever outside the home and the woman takes care of the home and family” | Reordered: higher number, greater agreement | 1 to 4 |
| Child suffering if mother works | fepresch | Level of agreement with: “A preschool child is likely to suffer if his or her mother works” | Reordered: higher number, greater agreement | 1 to 4 |
| Working mother not as warm | fechld | Level of agreement: “A working mother can establish just as warm and secure a relationship with her children as a mother who does not work” | None: higher number greater agreement with lack of warmth. | 1 to 4 |
| Continue working | richwork | Answer to the question: “If you were to get enough money to live as comfortably as you would like for the rest of your life, would you continue to work or would you stop working?” | Changed to:  yes = 1  no = 0 | Binary |
| Female | sex | Sex of the respondent. | Changed to:  Female = 1  Male = 0 | Binary |
| Number of children | childs | Number of children. | None | 0 to 13 |
| Household income | income06 | Household income | None | 1 to 25 |
| Age | age | Age | None | 18 to 89 |
| Education | educ | Respondent’s education | None | 0 to 20 |

## Descriptive Statistics

The descriptive statistics for the dependent and independent variables are provided below.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Descriptive Statistics** | | | | | |
|  | | | | | |
| Statistic | N | Mean | St. Dev. | Min | Max |
|  | | | | | |
| Work hours | 4,393 | 26.23 | 23.28 | 0 | 89 |
| Value hard work in a child | 995 | 3.59 | 0.98 | 1 | 5 |
| Man achiever is preferred | 1,968 | 2.27 | 0.85 | 1 | 4 |
| Child suffering if mother works | 1,968 | 2.38 | 0.79 | 1 | 4 |
| Working mother not as warm | 1,972 | 2.15 | 0.85 | 1 | 4 |
| Continue working | 1,299 | 0.69 | 0.46 | 0 | 1 |
| Female | 4,510 | 0.56 | 0.50 | 0 | 1 |
| Number of children | 4,497 | 1.90 | 1.68 | 0 | 8 |
| Household income | 3,873 | 16.59 | 5.54 | 1 | 25 |
| Age | 4,492 | 47.14 | 16.89 | 18 | 89 |
| Education | 4,499 | 13.29 | 3.23 | 0 | 20 |

# Initial Models

The initial model is a multivariate regression. Because none of the respondents in the dataset answered all the 5 survey questions under consideration in this study, I run the regression in separate parts.

The first part includes the covariates related with hard work, and second part the covariates related to family-gender values. The third part combines all covariates, except for ‘continue to work’ because this variable – when combined with any of the variables from part 2 – causes all observations to be dropped. Table 1 below summarizes the results.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 1: Initial Models** | | | |
|  | | | |
|  | *Dependent variable:* | | |
|  |  | | |
|  | Hours of work (including 0) | | |
|  | (1) | (2) | (3) |
|  | | | |
| Continue working | 0.516 |  |  |
|  | (2.121) |  |  |
|  |  |  |  |
| Value hard work in a child | 1.979\* |  | 0.494 |
|  | (1.008) |  | (1.078) |
|  |  |  |  |
| Man achiever is preferred |  | -4.794\*\*\* | -5.215\*\*\* |
|  |  | (0.721) | (1.446) |
|  |  |  |  |
| Child suffering if mother works |  | 1.418\* | 1.027 |
|  |  | (0.832) | (1.736) |
|  |  |  |  |
| Working mother not as warm |  | -0.846 | 1.111 |
|  |  | (0.750) | (1.449) |
|  |  |  |  |
| Constant | 31.383\*\*\* | 34.906\*\*\* | 31.387\*\*\* |
|  | (4.054) | (1.911) | (5.671) |
|  |  |  |  |
|  | | | |
| Observations | 330 | 1,883 | 465 |
| R2 | 0.012 | 0.029 | 0.031 |
| Adjusted R2 | 0.006 | 0.027 | 0.022 |
| Residual Std. Error | 17.441 (df = 327) | 23.128 (df = 1879) | 22.892 (df = 460) |
| F Statistic | 1.961 (df = 2; 327) | 18.385\*\*\* (df = 3; 1879) | 3.632\*\*\* (df = 4; 460) |
|  | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | |

The results indicate the following:

* In the first model, 1 increase in the level of ‘value hard work in a child’ is associated on average with a 1.979 hours increase in work hours, ceteris paribus. The coefficient is statistically significant at the 10% level in this model. However, in the third model, this relationship appears to be mediated by the other variables.
* The ‘child suffering if mother works’ variable is statistically significant only in the second model and is fully mediated in the third model. In the second model, a 1 level increase in the variable level is associated on average with 1.418 hours increase in work hours, ceteris paribus.
* In the third model, a 1 level increase in ‘man achiever is preferred’ is associated on average with a 5.215 hours decrease in work hours, ceteris paribus. This association is significant at conventional levels.
* ‘Continue working’ and ‘working mother not as warm’ are not statistically significant.

These results are surprising. I did not expect two seemingly unrelated values (‘value hard work in a child’ and ‘child suffering if mother works’) to mediate each other in the third model. It is also surprising that the belief that men should be the achievers outside of the home is so strongly related with a decrease in the number of hours worked (in total, complete disagreement to complement agreement corresponds to more than 20 hours of reduced work!). This effect is likely to be different for men and women and, in this model lacking interactions, the result is likely driven by women who work fewer or zero hours because of the belief.

Although the above model is able to detect statistically significant results, it is subject to limitations that make the results not convincing. First off, the variables related to family-gender values are likely serially correlated. Further, the results may be driven by factors outside of the model that may be correlated with the values considered, such as: income, sex, education, number of children, and age. Moreover, the family-gender values may affect women’s working hours differently from men’s. Some of the variables, such as age, may also have a non-linear relationship to hours worked. Finally, the above models are unable to distinguish between the relative importance of each variable in affecting the number of hours worked. In the following sections, I make adjustments to the model to address each of these issues.

## Creating a scale

To address serial correlation, I construct a scale using the three family-gender related values by taking an average of the three. I name the new variable “family roles for women.” The raw alpha score for the three variables is .71, indicating that the variables reflect similar underlying ideas and that therefore are suitable for a scale.

I also examine whether the hard-work related values are suitable for a scale, but I find a raw alpha score of .01, indicating that the variables are not well suited. Given that ‘continue to work’ is not well suited for a scale, is not statistically significant, and causes all observations to be dropped when combined with the other variables in the model, I drop this variable from the final and intermediary models.

I run several multiple regressions using the new scale. Table 2 below summarizes the results. In particular, the results indicate the following:

* ‘Family roles for women’ and ‘value hard work in a child’ are both statistically significant when considered separately, but partially mediate each other when combined. This result, also noted above, requires further investigation.
* In the complete model, only ‘family roles for women’ is statistically significant at conventional levels. In particular, an additional level in the variable is associated on average with a 3.228 hours decrease in work, ceteris paribus.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 2: Use of a scale to improve initial models** | | | |
|  | | | |
|  | *Dependent variable:* | | |
|  |  | | |
|  | Hours of work (including 0) | | |
|  | (1) | (2) | (3) |
|  | | | |
| Family roles for women | -4.343\*\*\* |  | -3.228\*\* |
|  | (0.807) |  | (1.621) |
|  |  |  |  |
| Value hard work in a child |  | 1.263\* | 0.856 |
|  |  | (0.761) | (1.074) |
|  |  |  |  |
| Constant | 35.417\*\*\* | 21.540\*\*\* | 30.316\*\*\* |
|  | (1.905) | (2.828) | (5.686) |
|  |  |  |  |
|  | | | |
| Observations | 1,901 | 972 | 470 |
| R2 | 0.015 | 0.003 | 0.011 |
| Adjusted R2 | 0.015 | 0.002 | 0.006 |
| Residual Std. Error | 23.301 (df = 1899) | 23.221 (df = 970) | 23.132 (df = 467) |
| F Statistic | 28.959\*\*\* (df = 1; 1899) | 2.753\* (df = 1; 970) | 2.510\* (df = 2; 467) |
|  | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | |

## Control variables

To address the issue of omitted variable bias, I add potential confounders to the model. In particular I add: sex, number of children, education, household income, and age.

The results are presented in Table 3 below. The first model in the table shows the earlier modified model. The second and third models illustrate the addition of controls.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 3: Use of controls to improve the model** | | | |
|  | | | |
|  | *Dependent variable:* | | |
|  |  | | |
|  | Hours of work (including 0) | | |
|  | (1) | (2) | (3) |
|  | | | |
| Family roles for women | -3.228\*\* | -3.595\*\* | -1.810 |
|  | (1.621) | (1.687) | (1.575) |
|  |  |  |  |
| Value hard work in a child | 0.856 | -0.153 | -0.351 |
|  | (1.074) | (1.033) | (0.956) |
|  |  |  |  |
| Female |  | -8.894\*\*\* | -9.041\*\*\* |
|  |  | (2.120) | (1.963) |
|  |  |  |  |
| Number of children |  | -1.738\*\*\* | 0.304 |
|  |  | (0.619) | (0.623) |
|  |  |  |  |
| Education |  | -0.493 | -0.260 |
|  |  | (0.352) | (0.327) |
|  |  |  |  |
| Household income |  | 1.172\*\*\* | 1.249\*\*\* |
|  |  | (0.188) | (0.174) |
|  |  |  |  |
| Age |  |  | -0.506\*\*\* |
|  |  |  | (0.061) |
|  |  |  |  |
| Constant | 30.316\*\*\* | 31.215\*\*\* | 42.874\*\*\* |
|  | (5.686) | (8.224) | (7.739) |
|  |  |  |  |
|  | | | |
| Observations | 470 | 405 | 404 |
| R2 | 0.011 | 0.176 | 0.298 |
| Adjusted R2 | 0.006 | 0.164 | 0.285 |
| Residual Std. Error | 23.132 (df = 467) | 20.755 (df = 398) | 19.198 (df = 396) |
| F Statistic | 2.510\* (df = 2; 467) | 14.163\*\*\* (df = 6; 398) | 23.998\*\*\* (df = 7; 396) |
|  | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | |

In the second model, it appears that having children is negatively associated with working more hours. However, after controlling for age, this effect disappears. Age also mediates ‘family roles for women’, which is no longer a statistically significant indicator of work hours.

The following additional results emerge from the third model:

* Being a female (versus a male) is associated on average with a 9.041 hours decline in work hours, ceteris paribus. This association is statistically significant at conventional levels.
* A 1-level increase in the income category is associated on average with a 1.249 increase in work hours. This association is statistically significant at conventional levels. It is worth noting that this result is expected since more hours of work are likely to yield a higher income.

## Interactions

To address the issue that some variables may affect certain groups differently, I add interactions. In particular, I add the interaction between a female the main independent variables. Table 4 presents the results from the new regression and compares them to the earlier modified regression model.

|  |  |  |
| --- | --- | --- |
| **Table 4: Use of interactions to improve the model** | | |
|  | | |
|  | *Dependent variable:* | |
|  |  | |
|  | Hours of work (including 0) | |
|  | (1) | (2) |
|  | | |
| Family roles for women | -1.207 | 3.718 |
|  | (1.531) | (2.277) |
|  |  |  |
| Value hard work in a child | -0.099 | 3.191\*\* |
|  | (0.961) | (1.341) |
|  |  |  |
| Female | -8.468\*\*\* | 34.148\*\*\* |
|  | (1.960) | (10.184) |
|  |  |  |
| Household income | 1.213\*\*\* | 1.265\*\*\* |
|  | (0.165) | (0.163) |
|  |  |  |
| Family roles for women \* Female |  | -8.585\*\*\* |
|  |  | (2.991) |
|  |  |  |
| Value hard work in a child \* Female |  | -6.453\*\*\* |
|  |  | (1.888) |
|  |  |  |
| Age | -0.492\*\*\* | -0.483\*\*\* |
|  | (0.057) | (0.056) |
|  |  |  |
| Constant | 37.497\*\*\* | 12.895 |
|  | (6.273) | (8.442) |
|  |  |  |
|  | | |
| Observations | 405 | 405 |
| R2 | 0.291 | 0.322 |
| Adjusted R2 | 0.282 | 0.310 |
| Residual Std. Error | 19.364 (df = 399) | 18.979 (df = 397) |
| F Statistic | 32.720\*\*\* (df = 5; 399) | 26.947\*\*\* (df = 7; 397) |
|  | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | |

The interactions result in multiple sign changes in statistically significant factors influencing hours worked. These changes indicate that the relationship between these variables and work hours is different for men and women.

A selection of results are interpreted below:

* For a male, a one-level increase in ‘value hard work in a child’ is associated on average with a 3.191 increase in the number of hours worked, ceteris paribus. This association is statistically significant at conventional levels.
* For a female, a one-level increase in ‘value hard work in a child’ is associated on average with a 6.453 decrease in the number of hours worked, ceteris paribus. This association is statistically significant at conventional levels.
* A female with ‘family roles for women’ = 0 and with ‘value hard work in a child’ = 0 works on average 34.148 hours more compared to a man of similar characteristics, ceteris paribus. This association is statistically significant at conventional levels. It is worth noting that this relationship appears to be extreme. Further investigation in required.
* For a male, ‘family roles for women’ is not statistically significant.
* For a female, a one-level increase in ‘family roles for women’ is associated on average with 6.453 hours decline work hours, ceteris paribus. This association is statistically significant at conventional levels.

I also consider the interactions between number of children and income. I reason that having more children could have opposing effects on hours of work: on one hand, one needs to work more to earn enough to support a greater number of children, on the other, one needs more time at home to take care of the children. However, the interaction does not show any improvements to the model.

## Non-linear relationships

To address the potential non-linear relationship between the covariates and the independent variable, I consider various modifications of the model, such as: including the main independent variables as factors and adding square term of the primary independent variable. However, these modifications do not lead to model improvements, judging by the AIC scores and the effect on the coefficients.

I then consider whether the controls, in particular income and age, have a non-linear relationship to the hours worked. I find that modifications of both variables improve the model; however, only age affects the coefficients of the primary independent variables. Table 5 below compares the new model with the age modification to the earlier improved model.

|  |  |  |
| --- | --- | --- |
| **Table 5: Modifications to the variables to improve the model** | | |
|  | | |
|  | *Dependent variable:* | |
|  |  | |
|  | Hours of work (including 0) | |
|  | (1) | (2) |
|  | | |
| Family roles for women | 3.718 | 4.171\* |
|  | (2.277) | (2.269) |
|  |  |  |
| Female | 34.148\*\*\* | 32.616\*\*\* |
|  | (10.184) | (10.107) |
|  |  |  |
| Value hard work in a child | 3.191\*\* | 3.164\*\* |
|  | (1.341) | (1.330) |
|  |  |  |
| Age | -0.483\*\*\* |  |
|  | (0.056) |  |
|  |  |  |
| Age from 36 to 53 |  | -2.531 |
|  |  | (2.377) |
|  |  |  |
| Age from 54 to 71 |  | -10.917\*\*\* |
|  |  | (2.728) |
|  |  |  |
| Age from 72 to 89 |  | -28.352\*\*\* |
|  |  | (3.287) |
|  |  |  |
| Household income | 1.265\*\*\* | 1.087\*\*\* |
|  | (0.163) | (0.169) |
|  |  |  |
| Family roles for women \* Female | -8.585\*\*\* | -8.789\*\*\* |
|  | (2.991) | (2.979) |
|  |  |  |
| Value hard work in a child \* Female | -6.453\*\*\* | -5.912\*\*\* |
|  | (1.888) | (1.877) |
|  |  |  |
| Constant | 12.895 | -1.027 |
|  | (8.442) | (8.129) |
|  |  |  |
|  | | |
| Observations | 405 | 405 |
| R2 | 0.322 | 0.337 |
| Adjusted R2 | 0.310 | 0.322 |
| Residual Std. Error | 18.979 (df = 397) | 18.817 (df = 395) |
| F Statistic | 26.947\*\*\* (df = 7; 397) | 22.306\*\*\* (df = 9; 395) |
|  | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | |

As a result of the new modifications, ‘family roles for women’ is now a statistically significant predictor of the number of hours worked[[1]](#footnote-1). I keep this modification because the adjustment improves the fit of the model and because it makes theoretically sense to think that age would have a non-linear relationship to number of hours worked.

I use the second model in Table 5 as the final model. Before discussing this final model, I turn to some additional considerations.

## Additional Considerations

In this section I consider:

* The choice of the variables as controls
* The effect of the covariates on spouse’s work hours
* The effect on the original ‘hrs1’ variable for hours, which only captures the hours of people who work, instead of the modified variable, which assigns a value of 0 to people who do not work.
* Whether the unusual mediating effect discussed earlier still holds after the modifications.

These considerations are meant to check the theoretical soundness of the model and do not affect the main model.

### Choice of variables

I consider whether the model should use individual income instead of household income. However, after making the substitution in the model, I find that the resulting model to have a higher AIC score and lower adjusted R-square, so I keep the initially variable. Also, conceptually, household income is more likely to enter work-time considerations as families are likely divide responsibilities based on their needs.

### Changes to the dependent variable

The dependent variable, work hours, is a modification of the ‘hrs1’ from GSS 2006. As explained earlier, I added a value of 0 to replace NAs in the case where respondents indicated not working in the ‘wrkstat’ question.

In this section, I consider the changes resulting from using the original ‘hrs1’ variable instead of the constructed variable that includes 0 hours or work. I also consider the effect of the model on spouse’s work hours to check if the results are consistent.

Table 6 below reports the effects of the model on the constructed work-hours-variable, the original work-hours-variable (hrs1), and the spouse’s work hours (constructed spouse’s work hours and sphrs1).

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Table 6: Modifications to the hours variable** | | | | |
|  | | | | |
|  | *Dependent variable:* | | | |
|  |  | | | |
|  | work hours | hrs1 | spouse's work hours | sphrs1 |
|  | (1) | (2) | (3) | (4) |
|  | | | | |
| Family roles for women | 3.718 | -0.043 | -6.718\*\* | -1.270 |
|  | (2.277) | (1.828) | (3.188) | (3.102) |
|  |  |  |  |  |
| Female | 34.148\*\*\* | 1.628 | 13.797 | -0.722 |
|  | (10.184) | (9.075) | (16.117) | (13.815) |
|  |  |  |  |  |
| Value hard work in a child | 3.191\*\* | 0.602 | -0.010 | -2.544 |
|  | (1.341) | (1.104) | (1.932) | (1.740) |
|  |  |  |  |  |
| Age | -0.483\*\*\* | -0.019 | -0.420\*\*\* | 0.090 |
|  | (0.056) | (0.067) | (0.102) | (0.119) |
|  |  |  |  |  |
| Household income | 1.265\*\*\* | 0.604\*\*\* | 1.285\*\*\* | 0.749\*\* |
|  | (0.163) | (0.162) | (0.319) | (0.312) |
|  |  |  |  |  |
| Family roles for women \* Female | -8.585\*\*\* | -2.845 | 4.350 | 2.063 |
|  | (2.991) | (2.533) | (4.634) | (4.312) |
|  |  |  |  |  |
| Value hard work in a child \* Female | -6.453\*\*\* | -0.140 | -3.998 | 2.561 |
|  | (1.888) | (1.700) | (2.967) | (2.532) |
|  |  |  |  |  |
| Constant | 12.895 | 32.568\*\*\* | 33.763\*\*\* | 28.364\*\* |
|  | (8.442) | (7.260) | (12.840) | (11.756) |
|  |  |  |  |  |
|  | | | | |
| Observations | 405 | 256 | 200 | 123 |
| R2 | 0.322 | 0.114 | 0.259 | 0.216 |
| Adjusted R2 | 0.310 | 0.089 | 0.232 | 0.168 |
| Residual Std. Error | 18.979 (df = 397) | 12.541 (df = 248) | 20.683 (df = 192) | 13.859 (df = 115) |
| F Statistic | 26.947\*\*\* (df = 7; 397) | 4.570\*\*\* (df = 7; 248) | 9.604\*\*\* (df = 7; 192) | 4.525\*\*\* (df = 7; 115) |
|  | | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | | |

The coefficient and statistical significance of ‘family roles for women’ is consistent across gender for both the respondent’s and the spouse’s models. The first model indicates that ‘family roles for women’ is only statistically significant (and negatively associated to work hours) when the respondent is a female. The third model – investigating spouse’s work hours – indicates that the negative and statistically significant association takes place between ‘family roles for women’ and spouse’s work hours if the respondent is a male (and therefore the impacted spouse is likely to be a woman). In other words, both models indicate that the ‘family roles for women’ results in fewer work hours for women and no significant impact on the work hours of men (regardless of which spouse holds the values). This result might be due to spouses usually agreeing over this value and/or influencing each other’s beliefs and choices.

Unlike ‘family roles for women’, the variable ‘value hard work in a child’ looses its statistical significance when spouse’s work hours is used as the dependent variable. One reason for this loss of significance is that spouses do not share this value. Another reason might be that the variable does not serve as a good proxy of appreciation for hard work. In fact, the survey question asked respondent to rank multiple values – so that a high rank only indicates an appreciation for hard work relative to other values (all values might be important or unimportant to a respondent).

In regards to the different versions of the number of the respondent’s number for hours, most of the statistically significant effects disappear when ‘hrs1’ is used instead of the modified variable. This effect might be due to the covariates influencing whether a person works but not the number of work hours once a person is working. It is also worth noting that using the original ‘hrs1’ variables as opposed to the constructed variable, which replaces some of the NAs with 0, causes almost half of the observations to be dropped and therefore, the loss of statistical significance might also be due to a smaller sample.

### Mediating effects

Earlier, in the initial model, I noted that gender-family related values and the hard work value seemed to mediate each other. This effect was surprising to me because I expected the two sets of values to be unrelated. I now check whether the effect is still present in the complete model, by comparing the results of removing one variable at the time. Table 7 shows that in the new model, instead of mediating each other, the variables actually amplify each other’ effects. This result makes more theoretical sense because two unrelated values should not mediate each other’s effect.

|  |  |  |  |
| --- | --- | --- | --- |
| **Table 7: Checking mediation effects between primary IVs** | | | |
|  | | | |
|  | *Dependent variable:* | | |
|  |  | | |
|  | Hours of work (including 0) | | |
|  | (1) | (2) | (3) |
|  | | | |
| Family roles for women | 0.642 |  | 4.171\* |
|  | (1.163) |  | (2.269) |
|  |  |  |  |
| Value hard work in a child |  | 1.987\*\* | 3.164\*\* |
|  |  | (0.975) | (1.330) |
|  |  |  |  |
| Female | 0.642 | 1.208 | 32.616\*\*\* |
|  | (3.600) | (5.178) | (10.107) |
|  |  |  |  |
| Age from 36 to 53 | 2.450\*\* | -3.306\*\* | -2.531 |
|  | (1.211) | (1.672) | (2.377) |
|  |  |  |  |
| Age from 54 to 71 | -10.615\*\*\* | -12.289\*\*\* | -10.917\*\*\* |
|  | (1.344) | (1.880) | (2.728) |
|  |  |  |  |
| Age from 72 to 89 | -27.200\*\*\* | -29.355\*\*\* | -28.352\*\*\* |
|  | (1.790) | (2.428) | (3.287) |
|  |  |  |  |
| Household income | 0.991\*\*\* | 1.095\*\*\* | 1.087\*\*\* |
|  | (0.089) | (0.122) | (0.169) |
|  |  |  |  |
| Family roles for women \* Female | -4.732\*\*\* |  | -8.789\*\*\* |
|  | (1.515) |  | (2.979) |
|  |  |  |  |
| Value hard work in a child \* Female |  | -2.583\* | -5.912\*\*\* |
|  |  | (1.381) | (1.877) |
|  |  |  |  |
| Constant | 18.153\*\*\* | 12.991\*\*\* | -1.027 |
|  | (3.327) | (4.328) | (8.129) |
|  |  |  |  |
|  | | | |
| Observations | 1,648 | 845 | 405 |
| R2 | 0.299 | 0.297 | 0.337 |
| Adjusted R2 | 0.296 | 0.291 | 0.322 |
| Residual Std. Error | 19.622 (df = 1640) | 19.442 (df = 837) | 18.817 (df = 395) |
| F Statistic | 99.851\*\*\* (df = 7; 1640) | 50.470\*\*\* (df = 7; 837) | 22.306\*\*\* (df = 9; 395) |
|  | | | |
| *Note:* | \*p<0.1; \*\*p<0.05; \*\*\*p<0.01 | | |

# Final Models

## Functional Form of the Final Model

The final model (second model in Table 5) takes the following functional form:

Family roles for women) + (Value hard work in a child) + (Female) + (Age from 36 to 53) + (Age from 54 to 71) + (Age from 72 to 89) + (Household income) + (Family roles for women \* Female) + (Value hard work in a child \* Female)

I selected this model as the final one because it addresses most of the issues with the initial model by including a scale, controls, interactions, and a mix of linear and non-linear relationship. This model also makes more theoretical sense – as supported by the lack of mediating effects between two unrelated sets of values. It also captures the relationship between sex of the respondent, values, and hours worked.

## Standardized Coefficients

To compare the relative effects of the covariates, I use standardized coefficients.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variable | Family roles for women | Value hard work in child | Female | Age 35 to 53 | Age 54 to 71 | Age 72 to 89 | Household income | Family roles \* Female | Hard work \* Female |
| Standardized Coefficient | 0.1179 | 0.1405 | 0.7112 | -0.0538 | -0.1913 | -0.3979 | 0.2835 | -0.2485 | -0.1289 |

Interpretation of the results:

* A one standard-deviation increase in the level of ‘family roles for women’, given that one is a man, translates into a 0.1179 standard deviation increase in the number of hours worked.
* A one standard-deviation increase in the level of ‘value hard work in a child’, given that one is a man, translates into a 0.1405 standard deviation increase in the number of hours worked.
* A one standard-deviation increase in the household income category translates into a 0.2835 standard deviation increase in the number of hours worked.
* A one standard-deviation increase in the level of ‘family roles for women’, given that one is a woman, translates into a 0.2485 standard deviation decrease in the number of hours worked.
* A one standard-deviation increase in the level of ‘value hard work in a child’, given that one is a woman, translates into a 0.1289 standard deviation decrease in the number of hours worked.

Female and age categories are dummy variables and, therefore, a one standard deviation increase in these variables does not make. However, standardized coefficients are useful in comparing their relative importance. The factors that have the biggest effect on the hours worked are ranked as follows.

1. Female: 0.71123833 (note that variable is interacted with ‘family roles for women’ and ‘value hard work in a child’; therefore, the coefficient indicates the effect on the average work hours associated with being a female as opposed to a male for a person with ‘value hard work in a child’ = 1 and ‘family roles for women’ = 1.
2. Age 72 to 89: -0.39789039
3. Household income: 0.28353412
4. Family roles for women \* Female: -0.24854574
5. Age 54 to 71: -0.19133938
6. Value hard work in a child: 0.14048113
7. Value hard work in a child \* Female : -0.12893083
8. Family roles for women: 0.11794829
9. Age 35 to 53: -0.05377744

## Discussion and Limitations

The results show that demographic characteristics, such as gender and age, most strongly influence number of work hours. Gender-family related values are also important when interacted with sex. Also the hard work value is important, though surprisingly the effect on hours is opposite for men and women.

While this model is a definite improvement over the initial model, it is still subject to the following limitations:

* The constant has a negative coefficient (though statistically insignificant). Since a person cannot work negative hours, this result does not make sense.
* The coefficient on the ‘female’ dummy takes a very large unrealistic number (being a female is associated with on average 32 extra hours of work). However, because this variable is interacted with the two main independent variables, the coefficient indicates the effect of being a woman, as opposed to a man, for people whose ‘family role for women’ variable in 1 (complete disagreement with the gender-roles related survey questions) and ranked hard work as the last priority for their children.
* The opposite signs on the coefficients of the interaction between ‘value hard work in a child’ and ‘female’ are not intuitive. While this effect might reveal an interesting pattern, it might also be the result of omitted variable bias. For example, it may be that more traditional families tend to rank hard work as a higher priority and also that, in these families, women work hard as housewives rather than in their careers.
* The direction of causality, discussed more in the conclusion, is also not clear from the model.
* The indicators chosen are only proxies for the underlying concept that this study aims to understand.
* The hard work variable is approximated only using one variable. A scale that included multiple variables would have serves as better proxy for hard work.

## Charts of results

Charts of the interactions are presented below. In both charts, I set the age to the 28 to 35 and the annual income category to its mean of 16.59. In the first chart, presenting the relationship between work hours and ‘family roles for women’, I set ‘value hard work in a child’ to its mean of 3.59. In the second chart, presenting the relationship between work hours and ‘value hard work in a child’, I set ‘family roles for women’ to is mean of 2.26.

Macintosh HD:Users:Lali:Desktop:Final Project - Data Analysis:Tables:charts.pdf

# Conclusion

The results support the initial hypothesis that personal values and number of hours worked are associated. Not surprisingly, the value that women’s role is within the household is negatively associated with work hours for women and positively associated with work hours for men. Unexpectedly, the hard work value is also negatively associated with work hours for women and positively associated for men. These relationships are statistically significant at conventional levels.

It is important to recall that associations do not imply causation. The values under consideration might inform work hours-related choices, but might also result from people’s need to justify and validate their choices and action. The mechanism through which values and action are associated is not addressed in this study. However, the study provides insight into the patterns of association. For example, I learned that socio-demographic characteristics (such as age, income, and sex) have the largest impact on number of hours worked.

In a further research project, I aim to investigate the causal mechanism of the values-creating process through an experiment. In particular, I will design a survey on personal values and policy choices. I will then add questions with informational, visual, and emotional content to the surveys of a random selection of respondents, and analyze the responses on the rest of the questions.

1. Because of the interaction with ‘female’, the coefficient on ‘family roles for women’ describes the effects of the variable on hours worked for men. [↑](#footnote-ref-1)