SEX PREFERENCES IN BRAZIL

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INTRODUCTION

Around the world, preferences for having a child of a certain sex or children in a particular composition have always existed due economic, religious, social and psychological reasons. But because fertility rates were high, achieving the desired composition was certain, keeping sex ratios at birth in normal levels, around 1.05 (Arnold, 1997; Gupta e Bhat, 1997, Park and Cho 1995). In Latin America, the subject has not been studied in depth because it is believed to be irrelevant. In Brazil, any form of disclosed child neglect or violence based on sex would be condemned. Abortion is legally restricted to a few situations, such as rape or risk of death for the mother, otherwise, it brings penal sanctions for women and health care providers.

Although sex selection might not exist in Latin America, sex preferences, which is the underlying sociological explanation for sex selection, remains unnoticed by the literature. Sex preferences, is however, next to unwanted pregnancies, one of the factors responsible for keeping fertility rates closer to replacement level. This is because in the absence of prenatal or postnatal practices, women who are unsatisfied with their composition can either change their minds about what is ideal or progress to future births. So, sex preferences act on children composition by increasing one's fertility in order to achieve the desired sex composition.

To my knowledge, throughout more than 20 years, only three articles touched on this topic with a demographic focus, although only the first listed was in fact focusing on sex preferences (Arnold 1992; Souza, Rios Neto and Queiroz 2011; Carvalho 2014). Based on parity progression rates and in-depth interviews, they suggest that there is a national predilection for a mixed-sex composition in Brazil. As a matter of fact, the preference for the dyad boy-girl or girl-boy is so typical that Brazilian demographers might have ignored the importance of that for fertility believing that only a radical preference for a certain sex deserves to be taken into consideration. It is important to keep in mind that even if for a balanced composition, the strength of this preference may substantially increase fertility, which in a context of low fertility, is what may prevent fertility rates from falling even more. Therefore, this is a phenomenon that deserves to be further explored, particularly if put in a sociological perspective by stratifying the analyses by social groups.

Most cross sectional studies use parity progression rates to analyze sex preferences. While these studies have the greatest advantage of observing the impact of preferences on fertility, the DHS is a unique

opportunity to understand sex preferences because the survey includes questions about size and composition of women's ideal family. It is important to characterize the women with different preferences to understand how social structure has been shaping sex preferences and fertility ideals. It is also important to understand who the women who are pursuing their compositional goals in spite of the low fertility targets are.

In the present paper, I will first formulate hypothesis for the Brazilian reality. To avoid ex post rationalization, I will focus on women who have never had children but who intend to do so. Comparative analysis will explore differences between social groups (wealth, education, race, region, urban/rural, religion, church attendance, marital status and work status).

Empirical evidences and hypothesis

In Brazil, preferences for a mixed composition were visible when a study by Arnold (1992) was published with Demographic and Health Survey (DHS) data from 1986. He found that the percentage of currently married, non-pregnant women aged 15-49 in 1986 who wanted another child was larger for the women whose children were of the same sex. While 23% of women who had a boy-girl wanted more children, 31% of the women who had either a girl-girl or boy-boy wanted more children. Data shows how in the case of having two sons, parents have more chances of trying out for a girl (Arnold, 1997). No other work has replied Arnold's study for the more recent Brazilian DHS.

Souza, Rios-Neto and Queiroz (2011) found mixed-preference using national household survey data (PNAD, Pesquisa Nacional por Amostra de Domicílios) from 1990 and 2000. While 47% of mothers with a mixed gender of two children would have a third birth, for those with either two girls or two boys, the percentage having a third birth would go up to 51%. Although they have this finding with more recent data, the focus of their research was not on sex preference, so no further exploration and explanation were provided. Given that preferences are embedded in social context, I hypothesize that, in general, as in Europe and in the United States, Brazilian preference will be largely for mixed composition, but different social groups will present different sex preferences.

In a qualitative study of Carvalho (2014) gender preferences appeared in the voices of married upper class couples as one of the factors that made them revise their reproductive goals and consider having one extra children to compose their households. It also worked on the opposite way, by making

couples report a new composition as ideal as they got used to the joys and challenges of having their non-preferred composition. This also suggest how the conjunctures of life lead the fertility desires to be malleable, as the Theory of Conjunctural Action suggests (Johnson-Hanks et al., 2011).

In average, she also found that while females tend to prefer daughters, men tend to prefer sons, which is in accordance with the literature. Although there clearly is a lot of material to be explored, this variable was not fully explored in Carvalho's work given the focus of her research.

Apart from these three studies, gender preferences has not been on the research agenda in Brazil at the national level. Since fertility rates were generally higher than desired family size in 1986, I assume the majority of women were achieving their compositional goals by simply having a lot of children since (in 1986, TFR was of 3.2, DSF was 2.79). In 2006, TFR fell below desired family size (1.87 vs. 2.1), women may still have their desired composition but due to lower fertility intentions, they cannot or are afraid of enacting their preferences. So, I expect that with the decline in fertility rates, women will be more realistic about possibilities of accomplishing a certain desired sex composition. This will reflect on fewer women in 2006 compared to 1996 demonstrating any preference at all, or more women declaring to be indifferent to their offspring composition.

The first factor that will interfere with a women's preference is marital status. Teichman, Rabinovitz and Rabinovitz (1992) finds that women, in general, prefer daughters for company and complicity, but when men's preferences are considered, sons are preferred. For instance, Bongaarts (2013) observed that the desired sex ratio for single females is 105, while for married women is 123, as they are partially influenced by their husbands. Pollard and Morgan (2002) suggest that couples desires at least one of each based on the fact that each sex will have a different "trait, strength, leisure activities and interests (p. 602). For both man and woman, there might be a desire to watch the child grow and interact with that child in those particular activities that are gender driven. Because men and women generally desire more their own sex, especially for a first child (Jacobsen, Moller and Engholm, 1999), it could be the disagreement between the couple that could lead to higher birth orders because they will continue childbearing in order to achieve a mixed composition and satisfy both (Marleau and Maheu, 1998).

Based on the above discussion, I expect single women and virgins will show a greater preference for females. Married, on the other hand, will prefer a mixed composition.

Place of residence may also be the source of different sex preferences because rural and urban areas present different social divisions of labor based on gender over time. While rural men were expected

to perform more arduous tasks, associated with the agricultural sector, rural women were expected to raise children and complement the income with "lighter" tasks such as handcraft (Paulilo, 1987). Thus, although sons have higher productivity, daughters are necessary for the household, which might have made families opt for bigger families with mixed compositions. In urban areas, both children usually have the same social function which are substitutable.

Due to the masculinization of the agricultural work, as has been described by Abramovay and Camarano (1998), modernization and urbanization changed the possibilities presented to the children and they started to emigrate to the cities. Especially for the daughters, who had lower remuneration compared to man for the same rural work (Paulilo, 1987). While in agricultural and manual labor physical strength was an asset, most current jobs do not require this feature, but others such as patience and dexterity, in which females are not in disadvantages when compared to males (Blau and Kahn, 2000). Thus, in more recent decades, urban areas witnessed an increase in labor market participation of females, while for men it was at most stable (Juhn and Potter, 2006; Wajman and Rios-Neto, 2000). This indicates that the labor market has been progressively turned into a female locus, with a relative increase in female´s participation as workers and head of households. Moreover, with the increase of the service sector, with occupations well suited to women, females gained access to many better paid types of occupations (Juhn and Potter, 2006). I thus expect that in rural areas, the preferences for mixed sex will be greater when compared to urban areas.

There are some regional historical specificities that might also matter. Until the 60's the regime of land distribution among children in the macro-region of the South was called *Minorato*. It was a patriarchal schema that consisted of the last son inheriting the parental property with the responsibility of taking care of the parents at old age (Mello et al, 2003). The remaining sons were expected to acquire agriculture skills and to live in other land bought by the family.

Religion affiliation may also matter (Marleau and Maheu, 1998; Pollard and Morgan, 2002). Patriarchal and conservative religious institutions such as Catholicism and Pentecostalism (Gallagher, 1996) provide couples with schemas of higher family sizes and lower contraceptive prevalence. They also provide them with structural functionalist views on family in which husbands and wives have a complementary role within the ideology of the separate spheres (while men are the breadwinner, women are expected to do the domestic labor, take care of the kids, take care of their social networks and of their husbands). Although women are subordinate to men, their roles are harmonizing and equally important. This could be associated with a desire to have a balance composition or even indifference, if one is to

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comply with God's plans. Thus, I hypothesize that women affiliated with Catholicism and Pentecostalism will show relative greater preference for balance when compared to people without religious affiliation.

Other important factor that might impact on sex preferences is race. In the case of Brazil, black males aged 15 to 24 present very high homicide rates directly caused by their involvement in drug trafficking, criminality, gang violence, police violence and racial profiling (Waiselfisz, 2013). For instance, their annual mortality rate (145.8 per one hundred thousand) is astronomically bigger than that of white women as a whole (2.3) and surpasses the mortality rate of many countries under warfare (Waiselfisz, 2013). So there is a number of missing boys in the Brazilian society that cannot be ignored, especially among the poor and black. Part of the underlying cause of the problem is the lower socio-economic levels and negative ideological and cultural representation of black and poor individuals.

On top of poor males being more involved in violence, women in general and among the disadvantaged stratus are faring better than men in regards to education completion and university graduation (Wajnman and Rios-Neto, 2000; Whinter and Golgher, 2010). That means having a daughter, more than having a son, might be more advantageous in an economy that is dominated by the service sector. Daughters will be then more effectively able to help support the household, in particular, among the poor.

Thus, I also hypothesize that Black women and women of low socio-economic status will have a preference for girls.

Moreover, preferences in general might be more salient for poor women, because from all the possibilities that a middle class women have in life, such as career, marriage, children, and personal goals, having kids is many times the only thing a poor woman can have control over (Berquó, Garcia, Lima, 2012).

The last factor to be tested will be education. Hank and Kohler (2003) find that more educated women tend to prefer girls because they have access to other sources of income, so they do not need to rely on their sons or husbands for economic support, which could increase their bargain power. The same reasoning could be behind women who work and thus have their own money. However, more educated women might have fewer preferences whatsoever because education tends to increase egalitarian views over life so their daughters and sons will be highly educated and live in an environment of much more gender equity than their low educated counterparts (Lameirao, 2011), which is not automatically true for all women who work. Finally, achieving a balanced mix composition might disturb the high educated

women's economic productivity, making her wish *fewer* children instead of *certain* children and making them be more concerned about the *quality* of their children than the *quantity*. As a result, I expect more educated people and to have less gender preferences, but women who work to have more daughter preference.

DATA, LIMITATIONS AND POST-RATIONALIZATION

Data come from 1996 Brazilian DHS and the 2006 PNDS. These databases are nationally representative, cross-sectional and they focused on women in reproductive age (15-49) and their birth history. Sample sizes were of 12612 women in 1996 and 15575 in 2006. Sample procedure for the DHS and PNDS followed specifications of the *equal probability of selection method* (EPSEM) and the *probability proportion to size* (PPS).

These types of health surveys are ideal to perform analysis of sex preference because the reproductive intentions data allow to evaluate ideal family size and composition. Giving that they are not longitudinal and sample sizes are not large, a couple of limitations need to be addressed before proceeding with the analysis.

The first limitation is the fact that women's first tendency is to say they want what they already have. *Ex-post rationalization*, which is captured on retrospective surveys, attenuates the effects of sex preferences because women review their preference after giving birth (Wood & Bean, 1977, p. 130). Research indicates that when parents fail to achieve the desired sex balance by the time they reach the number of children intended, they tend to revise their family goals upward (Wood and Bean, 1977). I will avoid this limitation by only using information about desired sex composition for women without any children ever born. I will also only use information from those who wish at least one child. In Tables 1, 2, and 3 one can see how the data is heavily influenced by post ex-rationalization. When compared to the desires of women who did not have any child born alive yet but who wishes a certain parity, women who already had that parity tended to say they prefer what they already have. The differences are all statistically different at the level of 5%.

--- **Table 1 goes about here** ---

As can be seen in table 1, in 2006, almost 60% of women who had a boy said they wanted a boy (71.3% in 1996). In 1996, among women without children, the percentage who desires a single boy is only of 21.1% (29.5% in 1996).

In the case of girls, 72.8% of women who had a single girl said that was their desired composition in 2006 (73.4% in 1996). Among the women without children, this percentage is much lower, of only 34.8% in 2006 and 41.40% in 1996 as can be seen in Table 1.

Even for indifference (one, neutral), post rationalization kicks in. Table 1 shows how among the women without children who only want one child, 43.6% in 2006 and 29% in 1996 said they were indifferent. When it comes to women who started childbearing, the percentage who said they were neutral about the sex of the baby declines to 31.72 (had boy) and 20.4 (had a girl) in 2006 and 12.7% (had a boy) and 14.7% (had a girl) in 1996.

When it comes to women who have two children and those who wish to have two but do not have any yet, the rationalization continues.

-- Table 2 goes about here --

Note in Table 2 how 2.24% (2006) and 2.55% (1996) of the women who did not have any children say they prefer two girls, when it comes to the women who really had two girls, 49.1% (2006) and 47.8% (1996) say they really wanted this preference. While only 1.54% (2006) and 2.23% (1996)of women who do not have any children but wish to have two children say that they wanted two boys, those who really had two boys said that 37.8% (2006) and 52.4% (1996) wanted that composition. As for balance composition, 83.3% in 2006 and 91.01% who had this composition said this is what they wanted. That is even higher than the amount of balance wished by women who did not have children but wished to have a boy and a girl (70.9% in 2006 and 79.8% in 1996).

-- Table 3 goes about here --

Lastly, Table 3 shows the distribution for a parity of three. The same trends can be observed. If we were to take the desired composition of women without children as a reference of intention, preferences for three boys or three girls would barely exist (less than 2.3% in all cases and years. But in 2006, 40% and 44% of the ones who had two boys and two girls, respectively, said that was their desired fertility.

In sum, it is very risky to trust the information about the ideal composition of women who have already started childbearing. It is impossible to know, however, if this will suggest that women who are unsatisfied (i.e.: wants a boy and had a girl) will be more likely to continue childbearing. If I had longitudinal data, this conundrum could be possible to be unteased[1]. Thus, in this Chapter, I will only analyze intentions of women who haven't started.

Another potential limitation is that a better indication of sex preferences would be real behavior (less influenced by normative response bias), which should be explored using parity progression rates by sex of previous children for women who had begun childbearing or future birth intention given the sex of the existing children. This is the objective of another paper.

A third limitation is the timing of covariates. For example, women's marital status may vary throughout her reproductive life. Unfortunately, I cannot avoid this problem totally, but this should not be a concern for women who never had any children since her reproductive intention – her ideal family size and composition – is being captured at the same time as her marital status: the time of the interview.

Another confounding aspects are caused by age and birth cohort effects: due to the declining desired family size and declining fertility rates throughout time, older women and women in 1996 usually had more children than the younger ones and women in 2006. Besides, a childless 45 year old women in 1996 is probably not childless for the same reasons as a 45 year old in 2006. Neither is a low educated women who is childless at age 40, childless for the same reasons as a 40 year old college educated. That is, context matters and due to this fact, I perform the analyses separately by year, by desired parity and with controls by age.

Moreover, as much as I would like to guarantee that ideals of children compositions are stable or that fertility intentions are real, I recognize they are a dynamic sequential decision making process that should be modelled as such to really capture the effect of conjunctures. Unfortunately, DHS is not a longitudinal data to test the significance of living conditions, personal goals, and the interactions that might happen before conception, or even during pregnancy and after birth, as suggested by Stein, Willen and Pavetic (2014).

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[1] I could look back and see if those who wanted a certain sex and had the opposite were more likely to proceed using retrospective data, but this analysis would still contain a lot of post-rationalization. Future work should investigate this further.

VARIABLES, METHODS AND RESULTS

In order to investigate ideal sex preferences, a variable hereby called Desired Family Composition (DFC) was formulated using the women's answer to two different questions. The first question asked women about her ideal family size: "if you could choose the exact number of children to have throughout your whole life, what number would it be?"(*translations are mine*). Women who answer "up to God" were excluded and since they are a small part of the sample, they will not significantly affect the results. I also dropped the women who did not want any child but might have reported an ideal composition by mistake of the interviewer.

The second question asked women about ideal sex composition for their offspring: "How many of the desired number of children, asked in the previous question would you like to be male, how many would you like to be female and for how many you do you not care about the sex?"(*translations are mine*). The answers for both questions were grouped so as to form combinations of ideal number and sex of desired children. Over 20 combinations were found for each DHS year, as Box 1 shows.

For those who wanted one child, there are three options, hereby coded as one boy ("b"), one girl ("g") or one and the sex does not matter ("x"). For those who wanted two children, there are six possibilities: bb (two boys), bg (a boy and a girl), gg (two girls), xx (two and the sex doesn't matter), xb (one boy and other whose sex doesn't matter), xg (one girl and one whose sex doesn't matter). In 2006, higher parities were less cited than in 1996, and the variety of compositions were also smaller.

Box 1: Desired family compositions (DFC) that were found in the DHS 1996 and 2006, all women, Brazil.

Sex composition	Family size				
	1	**2**	**3**	**4**	**Other**
	b	bg	bgg	bggg	Bbggg
	g	bb	bbg	bbgg	Bbbgg
	x	gg	bbb	bbbg	Bgggg
		xx	ggg	bbbb	bbgggg
		gx	xxx	gggg	Bbbbg
		bx	ggx	xxxx	bgxxxx
			gxx	bgxx	bbbggg
			bbx	gxxx	bbbbgg

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	bxx	bgxx	bbbbggg
	bgx		bbbbgggg

Note: b - boy, g - girl, x – indifferent

Three analytical strategies were employed to investigate sex preferences at the intention level, for women who have not had children but intend to do so. In the following section, I will specify the analysis, the methods and I will present the results for each of them separately.

For every analyses, I selected explanatory variables that are used as a controls and also to address the proposed hypotheses. These are mostly women's socio-demographic characteristics available at the DHS survey. The selected covariates utilized are as follows (reference categories are underlined): Marital status (Married or in Union=1, Separated or Divorced=2, Single and Never married=3); virginity status (no=0, yes=1); place of residence (0=urban, rural=1), macro-region (North=1, Northeast=2, Southeast=3, South,=4, Center-West=5), religious affiliation (Catholic=1, Protestant=2, Other=3, No-Religion=4), church attendance (no=1, yes=1), race (White=1, Black=2, Brown=3), wealth index (5 levels 0 to 4, being 4 the highest)[2], achieved education (5 levels, ranging 0 to 4, being 4 the highest),labor market participation (no=0, yes=1). Because the influence of this variables might change from year to year, I ran each regression separately by DHS year. Some covariates, like wealth index and education, were treated as continuous in the regressions.

Descriptive analysis

Descriptive analyzes of DFC show the relative distribution of the most preferred compositions according to selected covariates by year. A complete distribution can be found in Appendix 2: Chapter 2 where it can be seen that that the most preferred sex composition in Brazil is the dyad boy-girl for almost every social category (47.39 in 1996 and 40.89% in 2006). But the percentage of women who report this preference has declined in almost every social group. The second most preferred composition continue to be of 2 children indifferent to sex, which grew from 9.1 to 14.3% in ten years and is the second most prevalent in most social categories. One can also see that the third, fourth and fifth most preferred compositions in 2006 are to have one indifferent to sex, one daughter, or not have children at

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[2] Explanations about the Wealth Index can be provided upon request.

all: preferences for zero children slightly increased from 6 to 7.3%. In Appendix 2: Chapter 2, one can also see that it is also much more common to find compositions of four children in 1996, as well as more diversity in compositions.

In Table 4, the two most preferred compositions of each socio-demographic group, are analyzed separately: balance and indifference. With a few exceptions, the proportion of women who mention balance - bg (one boy, one girl) as preferred composition has declined between 1996 to 2006, while the proportion of women who are indifferent to their composition - xx (indifference) has been increasing.

--------------------------------------- **Table 4 goes about here** ---------------------------------------

I then performed χ^2 tests to check whether these differences in proportions are significantly different from one year to another. The p values can be found in the last column of Table 4. For example, Catholics in 1996 prefer to have a balance 48% of the times in 1996, but that changes to 40% in 2006. They are also indifferent for 9% of the population in 1996 changing to 15% in 2006, and those differences are statistically significant with a p<0.000. On the other hand, for people without religious affiliation, those percentages are not statistically different: while 43% want to have a balance in 1996 and 9% are indifferent, 39% wants to have a balance in 1996 and 6% are indifferent in 2006 – which are not statistically different (p<0.561).

Desired Sex Ratios

Secondly, sex ratios of the Desired Family Composition were calculated for each socio-demographic group for each separate year and also for each separate groups: women without children and women with children. For each social group, the total number of desired sons were divided by the total numbers of desired daughters using the "collapse" command on Stata. Women who reported "indifferent" were not counted, unless they provided a number for a certain sex, for example, by saying that she desires three children, being 1 female and 2 indifferent. In this case, she would contribute with 1 female for the whole, and nothing else. The sex ratios reported can be seen in Table 5[3].

---------------------------------------**Table 5 goes about here** ---------------------------------------

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[3] Although sex ratios are usually reported by 100 females, the numbers on Table 5 are still ratios. This is the number of sons for each one female.

The assumption for table 5 is that in the absence of preferences, most values had to be equal to 1 (same number of sons and daughters) or 1.05 (naturally occurring sex ratios). The second assumption is that in the absences of preferences, values would have to be the same across socio-demographic groups and across time.

Two things can be noticed with table 5.

First, analyzing the two groups of women portrayed in the Table (women without children and women with children), the ratios show how in Brazil, in general, a slightly but pervasive, daughter preference is consistently more prevalent than son preference. Notice how most ratios are below 0, sometimes reaching values as low as 0.89. I performed χ^2 tests of the same groups over time (for example, comparing the ratio for Black women without children in 1996 with the ratio of Black women without children in 2006) and the tests did not point that the proportions are different from one year to another. For example, the ratio for women without children who go to work in 1996 is 0.99 and that is not statistically different from the ratio of women without children who go to work in 2006: 0.95. Likewise, the ratio for women with children who go to work in 1996 is 0.98 and that is not statistically different from the ratio of women with children who go to work in 2006: 0.99. So, whatever has happened to the DFC in the 10 years period, it has not affected the desired sex ratios which have not changed significantly from one year to another for any of the variables (p values not shown).

Second, notice how some exception also exist across the two groups of women without any apparent tendency: Region South, Protestants and High School graduates present a slighter son preference in several moments that can also be interpreted as a search for balance when compared to their counterparts (other regions, other religious groups and other levels of education). In order to tests the significance of these ratios within groups, I performed χ^2 tests of the in-group differences, which can be seen in the column named "p value of in-group differences" on Table 5.

The results show that none of the ratios are statistically different within group (for example, by education level) when looking at the women without children in both years. But when it comes to women who have started childbearing, important in-group differences are found in the year 2006: look in Table 5 how rural areas compared to urban have more son preference (desired sex ratio for urban area in 2006 is 1.03 compared to 0.96 of urban). Differences are also found for Education Level, where a

clear difference between High school graduates (whose desired sex ratio is 1.07) compared to college educated (ratio is of 0.83) emerges. Apparently, education increases son preference, but at the college level, the sign reverses: daughters are preferred.

Multinomial Logit Regressions

Thirdly, in order to investigate the specific hypothesis of this Chapter, further analysis was performed. Using multinomial logistic regression models and Logit regressions, I investigated what would explain the different preferences by social groups controlling for important covariates and by parity. In order to do that, I built, for all women without children and for each desired family size, a variable that represents the combinations of ideal composition. These categories, when grouped, became the dependent variables in the models.

The multinomial variables created using sex preferences are:

- *Balance* - preference for balance
- *Indifferent* - no gender preference
- *Daughter preference* - preference for girls
- *Son preference* - preference for boys

The sample distributions into these four categories can be seen in Tables 6 for 1996 and 7 for 2006. Notice how I classify the sample into different desired family sizes, because I have reasons to believe that a women who wishes to have only one child is different from one who wishes three children even if their sex preference is the same, and that difference is not necessarily correlated with her sex preferences. Also, because the objective for this analysis is to study sex preference and not ideal family size.

---------------------------------------Table 6 goes about here -----------------------------------

In Tables 6 and 7, women who want only one child as desired family size do not possess the category "balance" for her desired composition, so the dependent variable at the multinomial logit only has three options: indifferent, boy or girl. The categories x, g, b have 4%, 5.7%, and 4.1% of the sample in 1996 and 7.7%, 6.2%, and 3.7% in 2006, respectively.

Also, notice in Tables 6 and 7 how bgg and bbg were considered a preference for balance, instead of a preference for male and female as some could argue. For family size of 3 children, also notice how the categories for pure daughter and son preference (ggg, gxx, bbb, bxx) have very small sample sizes (24 cases in 1996 and 19 in 2006). So, instead of running a Multinomial Logit, for parity three, I will ignore daughter and son preference and run a Logit Regression[4].

-------------------------------------Table 7 goes about here -------------------------------------

Also notice in both Tables 6 and 7 how "other sizes" represent a multitude of profiles, making it difficult to discern whether there is a preference for mixed or a more indifferent person. Thus, no analysis was conducted separately for women who wish more than 3 children.

It is also important to notice that although pure daughter or son preference (gg, ggg, bb, bbb) is only a small part of the sample, compositions that contains more girls than boys, but are still mixed, such as ggb, are a big part of the sample. So, they could be helping keep the sex ratios low on Table 5 (because it is contributing with more girls at the denominator of the sex ratio) at the same time that it increases the preference for balance at the multinomial logits because this is where they were classified in Tables 6 and 7.

On Tables 8 through 11, I use multivariate analysis to observe how ideal sex preferences behave in the presence of multiple selected covariates. Multivariate models also allow to capture variance that cannot be captured with univariate regression (Hosmer & Lemeshow, 2000). In order to control the fact that older women were under a high fertility schedule most of their reproductive lives, and due to the fact that poor and low educated women without children might be a selected group, age was kept as a control.

The models can be seen in Table 8 (all desired family sizes), Table 9 (women who want to have one child), Table 10 (women who want two children) and Table 11 (women who want three children). The results are described in relative risks (RRR), which are a comparison between the response category and its reference category. Stata releases the risks, but it is calculated by dividing the cumulative incidence in exposed group by the cumulative incidence in the unexposed group. The reference category is *Indifference,* unless otherwise specified at the additional columns to the right.

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[4] I have run the analysis using multiple options of categories and references and the results do not alter significantly. So, for this chapter, the most parsimonious model was chosen.

Below, I will analyze the findings in light of my hypothesis. I will first discuss Table 8, which is the Multinomial Logit of all desired family sizes, and then I will discuss the results for the subsequently subsamples in Table 9 (one child), Table 10 (two children), and Table 11 (three children, logit regression).

-------------------------------------Table 8 goes about here -------------------------------------

-------------------------------------Table 9 goes about here -------------------------------------

-------------------------------------Table 10 goes about here -------------------------------------

-------------------------------------Table 11 goes about here -------------------------------------

Marital Status

Analysis of Table 8 show how, in general, married women seem to have higher risks of being indifferent because, consistently, other marital status such as singles and divorced show increased risks of preferring balance or any gender over indifference. Take, for example, single women in 1996. They have higher risks (3.18 and 2.7 times more risks) than married women of preferring daughters and sons compared to indifference, respectively. They also have a 68% higher risk of preferring balance over indifference compared to married. The same thing happens for divorced/separated women, who had in 1996 more than twice the rate of married women of preferring balance over indifference, and 3.72 and 4.85 times the risks of preferring daughters and sons. In 2006, singles continued to prefer more balance over indifference compared to married and the gender preference continue to be salient for divorced/separated.

For women who only want one child, as can be seen on Table 9, marital status becomes less important. Singles have higher risks (2.15 times the risks of married) of preferring a girl over indifference when compared to married.

In Table 10, for women who wish two children, the coefficients for marital status mimic those of Table 8 going in the same direction. For women who want even bigger family's sizes, however, the relationship reverses as can be seen in Table 11 for women who want 3 children: now, singles and divorced/separated have fewer odds of wishing a balance compared to married women. When I consider a bgg a girl preference and bbg a boy preference instead of balance, the single's preference for daughters becomes evident (not shown).

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Age

Women's age consistently contributes to an increase in indifference. That means younger women, in general, have more preferences. Notice in Table 8 that with each additional year of age, the relative rate for balance compared to indifference would be expected to decrease by a factor of 0.91 in 2006 and 0.97 in 1996 given the other variables in the model are held constant. More generally, if a women increases her age, they are expected to fall into Indifference instead of Balance.

Same tendency is found for women who wants only child (Table 9), Two children (Table 10), but not for three children (Table 11).

Virginity

Analyzing all family sizes in Table 8, virginity used to be associated with more indifference in 1996 (the relative risks for virgins relative to non-virgins would be expected to decrease by a factor of 0.48 and 0.60 of preferring daughters or sons over indifference). For women who only want one child, the same trend is observed on Table 9. But in 2006, virgins start to demonstrate more daughter preference. In the same table, the coefficient shifts to 1.6 the risks of non-virgins of being in the daughter preference category when compared to son's preference. And in Table 8, the coefficient changes to 1.53 in 2006.

Place of residence

In 1996, coefficients for place of residence are non-significant, which means both rural and urban areas behave the same way in relation to sex preferences when controlled by other covariates.

In 2006, however, in both Table 8 and Table 9, inhabitants of rural areas have lower risks of having a gender preference whatsoever when compared to indifference and urban areas. Take, for example, Table 8: for rural relative to urban, the relative risks for daughter and son preference would be expected to decrease by half (0.57 for daughter and 0.50 for sons) compared to the risks of urban areas given the other variables in the model are held constant.

When analyzed together with the Desired Sex Ratios of the Table 5, this means that the sex ratio above 1 that is reported for rural women is probably associated with being indifferent, not with a balance.

Geographic Region

One of the greatest surprises of this Chapter is the great importance of geographic region for the findings. Although only the South region was contemplated in the hypothesis, regions North and Northeast consistently appear as having a gender preference when compared to the Southeast, a fact that deserves further exploration in future papers.

In Table 8, North and Northeast tend to have more preference for balance than having a preference for indifference when compared to the Southeast Region. The chance of the North and Northeast being in the Balance category is 60% and 70% higher than the chances of the Southeast being in that category in 2006. In 1996, the coefficients are even stronger: the risks of the North reach 3.65 times the risks of the Southeast and the Northeast has 1.68 times more risk. Both regions also have higher risks of preference for girls over indifference, especially in 1996. In that year, changing the reference category to *sons* (as can be seen in the last column of Table 8), also reinforced the Northeast strong preference for daughters: they have 47% higher risks of preferring daughters over sons than the Southeast. The region Center-West also shifts from a behavior of being more indifferent (lower chances of having a gender preference whatsoever in 1996) to having a preference for Balance in 2006.

For women who wants to have one child on Table 9, the coefficients follow the same trend as the Table 8, but the Center West, in 1996, appear to have more daughter preference relative to son preference (4.28) compared to the Southeast. This preference loses strength in 2006. In 1996, northeast have 71% more risks than the Southeast of choosing girls compared to boys.

For women who want to have two children, as can be seen in Table 10, the only novelty is the South's and Center-West's strong son's preference. Notice how women in those two states have only 28% and 19%, respectively, the risks of women in the Southeast of preferring daughters over sons in 1996. Those coefficients are not consistent over time, but seem more associated with the patterns in Table 8, than for other desired family sizes.

These regional preferences can be related to the patterns found in the sex ratio table (Table 5) for 2006. For all women, the South have much higher sex ratio (more balance or male preference) than the Southeast. The Northeast have much lower sex ratio (more daughter preference) than the Center-West.

Religion and frequency of religious service

Religion is much less influential in sex preferences than I previously thought. Because no clear statistically significant tendency is observed, the coefficients won't be commented on in detail.

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When it comes to church attendance, however, there is more indication that attendance increases indifference (Table 8, 9 and 10). For family sizes of one child, however, as can be seen on Table 9, when compared to people who don't go to church, church goers have 65% more risk than non-church goers of preferring one girl over one boy in 1996.

Race

When looking at all desired family sizes (Tables 8, 9, 10 and 11) Blacks compared to Whites, in 2006, demonstrate a strong preference for balance or for each of the sexes individually when compared to indifference. That means whites are more indifferent, in general.

Take Table 8, for example. Blacks not only have 30% higher risks than White in being in the Balance category (other than indifference), but they also have 71% and 82% higher risks than whites of being in the category Daughter or Sons.

It seems that for the cases of Black women, gender preferences are extremely salient for their reproductive goals, especially toward balance.

Income, Education and Work

Wealth level, education achievement and work did not seem to matter as much as I previously thought. But in the rare occasions when it was significant, it was in the direction of increasing indifference, which was expected.

In Table 8, for each additional year of education, the relative risk for daughter or son preference compared to indifference, respectively, would be expected to decrease by a factor of 0.82 and 0.88 in 2006 and 0.84 and 0.87 in 1996. Wealth level behaves the same way, but with much less significance. Only for women who want three children, wealth slightly increases odds of preferring balance over indifference (as can be seen on Table 11).

Also as expected, in 2006, women who work have more daughter preference when considered all family sizes in Table 8 (36% higher risks of preferring daughter over sons compared to women who don't work).

DISCUSSION

Several conclusions can be drawn from the empirical results above. The first is that the dominant Brazilian preferences are for a balanced composition, which is in accordance with the findings from Souza, Rios-Neto and Queiroz (2011).

The second conclusion is that fewer women in 2006 than in 1996 demonstrates a clear gender preference or even a balance preference, with increasing preference toward indifference, in accordance with the findings from Pollard and Morgan (2002). This finding suggests that in Brazil, women has been increasingly more likely to base their fertility preferences on size other than quality of their offspring, possibly driven by the decline of fertility. Brazilian women are aware that sticking to a favorite composition might mean they will end up with more children than they planned.

The decline in the search for balance might also mean that in Brazilian society, gender divisions might be getting less rigid and daughters and sons have the same value and fulfill their mothers' expectations the same way. As Pollard and Morgan (2002) state, when benefits of each gender are different, people might have different motivations to have one or another because sons and daughters are not substitutable.

Another sign that women are more likely to value size over quality is the fact that a large number (and bigger in 2006 compared to 1996) makes changes to their reported desired family composition based on the children they already have. The findings that Brazilian women's reports of intentions might be contaminated by their current parity and composition is one of the most important of this paper and raises awareness for the necessity of considering post-rationalization in every work on fertility intentions. This finding is in accordance with what Carvalho (2014) found, that Brazilian couples might change their minds about what is ideal after they start childbearing. In her qualitative study, she could not see the dimension of this factor, but with my analysis, one can have an idea of the amount of post-rationalization. Likewise, the same analysis also alerts us to the fact that women who are unhappy with the composition of their offspring might not even be considered in the analysis above: it is possible that those have moved toward their fertility goals by continuing childbearing in order to achieve them.

I also need to mention that future work should shed light on other factors that might play a role in intentions that were not analyzed in this paper due to data availability, such as partner's preference, siblings relationship, low self-esteem, parenting style, etc. Future work should also investigate whether not having a desired composition influences decisions regarding contraceptive use, sterilization, and remarriage in case of divorce.

As for the specific hypothesis testing the influence of schemas on fertility intentions and compositions, several hypothesis were confirmed, but also rejected:

Being single being separated or divorced are consistently associated with a daughter preference or with balance. Married, on the other hand, contrarily to what I expected, seem to be more indifferent regarding the sex than looking for a balance. The virginity hypothesis is also partially held. Virgins seem to be more indifferent in 1996, but changes to a daughter preference in the recent years.

The hypothesis related to the geographic region is confirmed. The South has consistently more son preference than the Southeast while the North and especially the Northeast, have daughter preference. Future work should investigate the reasons for this consistent daughter preference in the North and Northeast regions. Reasons could be related to higher levels of female migration to urban areas in the decades prior to both DHS years possibly caused by the expansion of the demand for domestic labor. This mass migration altered in sex ratio in both urban and rural areas and was responsible for a process named "masculinization of the rural area" in Brazil (Camarano, 1997). So, a preference for daughters could be associated with a women's empowerment in this new environment or her attempt to respond to the societal forces that drove them away from the rural areas. It could also be related to the fact that in those areas where the major proportion of work available consists of strenuous manual work, young women have better educational outcomes than their male counterparts. Although the interaction between geographic region, place of residency and education level has not been explored here, this certainly deserves future study.

Nevertheless, women who live in rural areas are more indifferent when compared to urban, who prefer balance, which is not consistent with the hypothesis. However, when looking at the desired sex ratios, urban areas have lower ratios (more daughter preference) while rural areas have a sex ratio of around 1. The difference seem small but is statistically significant. It is also possible that these social group do not see a difference between a balance and an indifference.

Contrarily to what I expected, Blacks do not have very high rejection of males. But the opposite: this social group tend to have very strong preferences for both genders – or balance. That means that although the literature gives reasons to believe black boys are rejected by society, they are not being rejected inside of their own household. Future work should try to explore how gender roles in Brazil might vary by race how rigid this gender system is since according to Pollard and Morgan (2002), the more rigid a gender system, the more important the achievement of specific gender compositions.

I did not find that the patriarchal religious affiliations are an important predictor of child preference, but future studies should look into religious traditions that were not considered in this paper, such as the ones with African heritage that respect matriarchal authority.

Last but not least, as predicted, education level and wealth increases indifference while work increases daughter preference. It seems that for the lower class and lower educated, preferences are in fact more salient.

TABLES

Table 1: Actual composition by ideal composition for women who only want one child, 2006 and 1996

Ideal composition	1996			2006		
	Boy	Girl	No children	Boy	Girl	No children
Boy	152	26	171	247	27	176
	71.36	11.93	29.53	59.81	6.8	21.15
Girl	34	160	240	35	289	290
	15.96	73.39	41.45	8.47	72.8	34.86
One neutral	27	32	168	131	81	363
	12.68	14.68	29.01	31.72	20.4	43.63
Total	213	218	579	413	397	829
	100	100	100	100	100	100

Note 1: For 2006, Pearson chi2(2) = 387.3934 (p<0.000) for women with children. Ignoring neutral, Pearson chi2(1) = 375.0451 (P = 0.000). Adding boys to girls and comparing with neutral, results in Pearson chi2(1) = 13.4147 (p = 0.000). For 1996, Pearson chi2(2) = 171.4149 (p<0.000) for women with children. Ignoring neutral, Pearson chi2(1) = 171.0261 (P= 0.000). Putting them together to compare with neutral, comes out non significant Pearson chi2(1) = 0.3658 (P= 0.545). Comparing no children between years, Pearson p<0.000.

Note 2: Percentages shown below sample size.

Table 2: Actual composition by ideal composition for women who want two children, 2006 and 1996.

Ideal composition	1996				2006			
	Two boys	Boy & Girl	Two girls	no children	Two boys	Boy & Girl	Two girls	no children
Boy & Girl	161	597	94	2,001	201	995	129	1,927
	52.44	91.01	34.31	79.82	37.78	83.33	27.8	70.87
Two boys	102	5	3	56	213	6	3	42
	33.22	0.76	1.09	2.23	40.04	0.5	0.65	1.54
Two girls	3	6	131	64	3	9	228	61
	0.98	0.91	47.81	2.55	0.56	0.75	49.14	2.24
Two neutral	41	48	46	385	115	184	104	672
	13.36	7.32	16.79	15.36	21.62	15.41	22.41	24.71
Total	307	656	274	2,506	532	1,194	464	2,702
	100	100	100	100	100	100	100	100

Note 1: In 2006, Pearson chi2(6) = 1600 (p<0.000) for women with children. In 1996, Pearson chi2(6) = 810.3734 (p<0.000) for women with children, (p<0.000).
Comparing no children between years, Pearson p<0.000.

Note 2: Percentages shown below sample size.

Table 3: Actual composition by ideal composition for women who want three children, 2006 and 1996.

	Actual composition									
	1996					2006				
Ideal composition	three boys	Two boys, one girl	One boy, two girls	Three girls	no children	three boys	Two boys, one girl	One boy, two girls	Three girls	no children
One boy, two girls	4	31	192	31	223	7	20	234	31	174
	3.81	10.44	72.18	37.35	37.99	5.38	5.05	66.48	28.44	31.18
Two boys, one girl	39	211	14	1	187	41	251	14	4	125
	37.14	71.04	5.26	1.2	31.86	31.54	63.38	3.98	3.67	22.4
three boys	47	3	5	0	13	52	6	1	0	0
	44.76	1.01	1.88	0	2.21	40	1.52	0.28	0	0
Three girls	3	4	4	37	9	2	5	1	48	8
	2.86	1.35	1.5	44.58	1.53	1.54	1.26	0.28	44.04	1.43
Three neutral	12	48	51	14	146	28	114	102	26	229
	11.43	16.16	19.17	16.87	24.87	21.54	28.79	28.98	23.85	41.04
Total	105	297	266	83	578	130	396	352	109	411
	100	100	100	100	100	100	100	100	100	100

Note 1: In 2006, Pearson chi2(12) = 1100 (p<0.000) for women with children. In 1996, Pearson chi2(12) = 841.8934 (P<0.000). Women without children who wanted to have 3 children also said that they wanted one girl, two neutral (0.17%), one boy, two neutral (0.17%) and one boy, one girl, one neutral (1.19%). Comparing no children between years, Pearson p<0.000.

Note 2: Percentages shown below sample size.

Table 4: Decline is the proportion of women who report bg (balance) as ideal composition and increase in the proportion who report xx (indifference) as ideal, all women without children, 1996 and 2006 (CONTINUE)

		Women without children				p values for X^2
		n		%		bg vs. xx
		1996	2006	1996	2006	
Total	bg	2,001	1,927	47	41	0.000
	xx	385	672	9	14	
	Others	1,836	2,114	43	45	
	Total	4,222	4,713	100	100	
White	bg	773	734	47	39	0.000
	xx	175	336	11	18	
	Others	696	802	42	43	
	Total	1,644	1,872	100	100	
Black	bg	1,220	1,037	48	42	0.000
	xx	210	284	8	11	
	Others	1,134	1,169	44	47	
	Total	2,564	2,490	100	100	
Wealth (0)	bg	154	91	45	37	0.000
	xx	18	32	5	13	
	Others	168	120	49	49	
	Total	340	243	100	100	
Wealth (1)	bg	441	230	51	45	0.001
	xx	52	54	6	11	
	Others	378	229	43	45	
	Total	871	513	100	100	
Wealth (2)	bg	580	448	46	41	0.000
	xx	115	174	9	16	
	Others	558	464	45	43	
	Total	1,253	1,086	100	100	
Wealth (3)	bg	386	679	46	41	0.048
	xx	100	230	12	14	
	Others	347	767	42	46	
	Total	833	1,676	100	100	
Wealth (4)	bg	428	479	47	40	0.000
	xx	98	182	11	15	
	Others	376	534	42	45	
	Total	902	1,195	100	100	
Urban	bg	1,707	1,453	48	40	0.000
	xx	333	484	9	13	
	Others	1,509	1,670	43	46	
	Total	3,549	3,607	100	100	
Rural	bg	294	474	44	43	0.000
	xx	52	188	8	17	
	Others	327	444	49	40	
	Total	673	1,106	100	100	
Catholic	bg	1,560	1,454	48	40	0.000
	xx	306	535	9	15	
	Others	1,405	1,627	43	45	
	Total	3,271	3,616	100	100	
Protestant	bg	293	375	49	44	0.002
	xx	44	103	7	12	
	Others	255	365	43	43	
	Total	592	843	100	100	
Non-religious	bg	98	43	43	39	0.561
	xx	21	7	9	6	
	Others	111	59	48	54	
	Total	230	109	100	100	
North	bg	247	311	54	43	0.000
	xx	12	89	3	12	
	Others	201	315	44	44	
	Total	460	715	100	100	
Northeast	bg	815	443	49	42	0.000
	xx	123	114	7	11	
	Others	742	496	44	47	
	Total	1,680	1,053	100	100	
Southeast	bg	548	375	45	36	0.000
	xx	129	179	11	17	
	Others	533	498	44	47	
	Total	1,210	1,052	100	100	
South	bg	216	381	45	39	0.002
	xx	60	181	13	19	
	Others	201	413	42	42	
	Total	477	975	100	100	
Center-West	bg	175	417	44	45	0.116
	xx	61	109	15	12	
	Others	159	392	40	43	
	Total	395	918	100	100	

Table 4: Decline is the proportion of women who report bg (balance) as ideal composition and increase in the proportion who report xx (indifference) as ideal, all women without children, 1996 and 2006 (FINAL).

		Women without children				p values for X^2
		n		%		bg/xx over time
		1996	2006	1996	2006	
Cohabitation	bg	86	262	51	42	0.005
	xx	12	91	7	15	
	Others	69	264	41	43	
	Total	167	617	100	100	
Married	bg	153	204	37	40	0.451
	xx	69	106	17	21	
	Others	195	201	47	39	
	Total	417	511	100	100	
Separated/Divorced	bg	41	67	40	36	0.173
	xx	5	17	5	9	
	Others	57	104	55	55	
	Total	103	188	100	100	
Single	bg	1,721	1,393	49	41	0.000
	xx	299	458	8	13	
	Others	1,515	1,545	43	45	
	Total	3,535	3,396	100	100	
Don't go to church	bg	381	297	46	38	0.000
	xx	66	103	8	13	
	Others	382	385	46	49	
	Total	829	785	100	100	
Goes to church	bg	1,521	1,630	48	41	0.000
	xx	298	569	9	14	
	Others	1,343	1,729	42	44	
	Total	3,162	3,928	100	100	
Virgin (no)	bg	684	1,220	44	41	0.000
	xx	154	442	10	15	
	Others	726	1,285	46	44	
	Total	1,564	2,947	100	100	
Virgin (yes)	bg	1,317	707	50	40	0.000
	xx	231	230	9	13	
	Others	1,110	829	42	47	
	Total	2,658	1,766	100	100	
Work (no)	bg	1,091	1,098	50	42	0.000
	xx	185	359	8	14	
	Others	922	1,175	42	45	
	Total	2,198	2,632	100	100	
Work (yes)	bg	910	829	45	40	0.000
	xx	200	313	10	15	
	Others	914	939	45	45	
	Total	2,024	2,081	100	100	

Note: The P values for the Pearson correlations have the purpose of showing how the decrease in balance and the increase in indifference are statistically important, with a few exceptions.

Table 5: Total Desired Sex Ratios, Brazil, 1996 and 2006, women without children and women with children.

	Women without children				Women with children			
	1996		**2006**		**1996**		**2006**	
	DSR		**DSR**		**DSR**		**DSR**	
TOTAL	**0.98**	p value of in-group differences	**0.94**	p value of in-group differences	**0.98**	p value of in-group differences	**0.98**	p value of in-group differences
Race								
White	0.99		0.95		0.99		0.99	
Blacks and Brown	0.98		0.94		0.98		0.96	
Religion								
Catholic	0.98		0.94		0.98		0.98	
Protestant	1.01		0.96		0.99		1.03	
Non Religious	0.97		0.96		1.01		0.91	
Urbanicity								
Urban	0.98		0.94		0.98		0.96	0.019
Rural	0.99		0.95		1.00		1.03	
Region								
North	0.97		0.99		0.97		0.96	
Northeast	0.97		0.89		0.96		0.93	(3 vs 4) 0.052
Southeast	0.99		0.96		0.98		0.96	(1 vs 4) 0.036
South	1.05		0.94		1.00		1.06	(2 vs 4) 0.006
Center-West	1.00		0.95		1.02		1.02	(2 vs 5) 0.034
Education Level								
None	0.99		0.89		0.99		0.95	(1 vs 4) 0.016
Elementary	0.97		0.93		0.98		0.99	(2 vs 4) 0.064
Some high school or middle	1.01		0.94		0.97		0.97	(3 vs 4) 0.037
High School Graduates	1.00		0.97		0.99		1.07	(2 vs 5) 0.089
College	0.94		0.94		0.95		0.89	(4 vs 5) 0.005
Wealth Index (percentile)								
0	0.98		0.85		0.98		1.01	
1	0.98		0.93		0.99		0.94	
2	1.00		0.98		0.96		0.99	
3	0.97		0.93		1.01		0.98	
4	0.98		0.96		0.97		1.01	
Church attendance								
No	0.96		0.91		0.98		0.94	
Yes	0.99		0.95		0.98		0.99	
Virginity Status								
No	0.98		0.96					
Yes	0.99		0.93					
Work Status								
No	0.98		0.96		1.00		0.99	
Yes	0.99		0.92		0.97		0.98	
Marital Status								
Married	0.99		0.94		0.98		0.99	
Separated/Divorced	0.96		0.90		0.98		0.93	
Single	0.99		0.95		0.97		1.01	
Age								
15-19	0.97		0.95		0.96		0.97	
20-29	1.00		0.94		0.97		0.97	
30-39	0.96		0.99		0.97		1.00	
40-49	1.00		0.85		1.00		0.97	

Note: I performed Pearson Chi2 tests. Pairwise comparisons of categories within social-groups (i.e. White, Black) that are significant are shown in parenthesis, followed by their p value. I also compared if the proportions in 2006 are statiscally different than in 1996. None of the tests were significant, which means that the proportion of daughter and sons (the desired sex ratio) doesn't change from one year to another (not shown).

Table 6: Desired composition sample distributions by desired parity, 1996, women without children (n=3935)

Desired family size

Categories in the multinomial logits	One child			Two children			Three children			More than three children		
		n	%		n	%		n	%		n	%
Balance				bg	2,001	47.39	bgg	223	5.28	**Same amount and some indifferent**	1	0.02
							bbg	187	4.43	bgxx	1	0.02
							bgx	7	0.17	bbgg	151	3.58
										same amount, no indifferent	23	0.54
Indifference	x	168	3.98	xx	385	9.12	xxx	146	3.46	xxxx	16	0.38
										Indifferent more than others	14	0.33
Daughter	g	240	5.68	gg	64	1.52	ggg	9	0.21	**women more than men or indifferent**	23	0.54
							gxx	1	0.02	bggg	7	0.17
										gggg	2	0.05
										gxxx	1	0.02
Son	b	171	4.05	bb	56	1.33	bbb	13	0.31	**men more than women and indifferent**	15	0.36
				bx	1	0.02	bxx	1	0.02	bbbg	2	0.05
										bbbb	6	0.14
Total		579			2,507			587			262	

Note: 251 (5.95%) does not want children, 22 (0.52%) doesn't know and 14 (0.33) had non-numeric responses.

Table 7: Desired composition sample distributions by desired parity, 2006, women without children (n=4263)

Desired family size

Categories in the multinomial logits	One child	n	%	Two children	n	%	Three children	n	%	More than three children	n	%
Balance				bg	1,927	40.89	bgg	179	4	**Same amount and some indifferent**	1	0.02
							bbg	127	3	bgxx	1	0.02
							bgx	7	0	bbgg	75	1.59
										same amount, no indifferent	6	0.13
Indifference	x	365	7.7	xx	672	14.26	xxx	229	5	xxxx	31	0.66
										Indifferent more than others	14	0.3
Daughter	g	290	6.2	gg	61	1.29	ggg	8	0	women more than men or indifferent	16	0.34
				gx	1	0.02	gxx	2	0	bggg	1	0.02
Son	b	176	3.7	bb	42	0.89	bbb	7	0	men more than women and indifferent	14	0.3
				bx	2	0.04	bxx	2	0	bbbg	7	0.15
Total		831			2,705			561			166	

Note: 342 (7.26%) does not want children and 100 (2.12%) doesn't know.

Table 8: Multinomial logistic regression of desired composition, women without children, 1996 and 2006.

	2006				1996			
	Balance (indifference) RRR	Daughter (indifference) RRR	Sons (indifference) RRR	Daughter (sons) RRR	Balance (indifference) RRR	Daughter (indifference) RRR	Sons (indifference) RRR	Daughter (sons) RRR
Region (Southeast)								
North	1.60 ***	0.86	1.08	0.80	3.65 ***	3.23 ***	2.02 *	1.60
Northeast	1.71 ***	1.41 +	1.19	1.18	1.68 ***	1.52 *	1.04	1.47 +
South	1.14	0.88	0.92	0.96	0.88	0.53 *	0.72	0.74
Center-West	1.67 ***	1.00	0.94	1.06	0.76 +	0.50 *	0.42 **	1.21
Religion (Non-Religious)								
Catholic	0.74	0.86	1.24	0.69	1.12	1.87	0.90	2.08
Protestant	1.01	1.44	1.92	0.75	1.45	2.22	1.51	1.46
Race (White)								
Black	1.30 **	1.71 ***	1.82 ***	0.93	0.93	1.20	1.01	1.19
Rural	0.93	0.57 **	0.51 **	1.12	0.83	0.75	0.80	0.94
Years of Education [1]	1.01	0.82 **	0.88 +	0.94	0.94	0.84 *	0.87 +	0.98
Wealth Index [1]	1.00	1.00	1.03	0.97	0.92 +	0.95	0.87 +	1.08
Attends church	1.02	0.52 ***	0.64 *	0.83	1.00	0.82	0.71 +	1.15
Work	0.94	1.17	0.87	1.36 +	1.02	1.00	1.06	0.94
Marital Status								
Separated/Divorced	1.30	2.41 **	2.88 **	0.84	2.62 *	3.72 **	4.85 **	0.77
Single	1.18 +	1.06	1.33	0.80	1.68 **	3.18 ***	2.70 ***	1.18
Age	0.91 ***	1.01	0.97	1.04	0.97 ***	1.00	0.99	1.00
Virgin	0.90	1.28	0.84	1.53	0.88	0.48 ***	0.60 **	0.81
_cons	2.22 *	0.86	0.42	2.05 *	6.07 ***	0.31 +	0.76	0.40

Note: reference category in parenthesis.

Table 9: Multinomial logistic regression of desired composition, women without children who want one child, 1996 and 2006.

	2006			1996		
	One daughter (x) RRR	One son (x) RRR	One Daughter (one son) RRR	One daughter (x) RRR	One son (x) RRR	One Daughter (one son) RRR
Region (Southeast)						
North	0.99	1.27	1.01	3.28 **	2.16 +	1.52
Northeast	1.44	1.17	1.19	2.35 **	1.38 +	1.71
South	0.79	0.93	1.33	0.63	0.48 +	1.30
Center-West	1.00	0.79	1.02	0.90	0.21 *	4.28
Religion (Non-Religious)						
Catholic	1.30	2.00	0.77	1.74	0.85	2.05
Protestant	2.06	2.50	0.53	1.60	1.09	1.46
Race (White)						
Black	1.42 +	1.92 **	1.52	1.56 +	1.12	1.39
Rural	0.57 *	0.46 **	0.96	0.95	0.98	0.97
Years of Education [1]	0.94	1.05	1.01	0.88	0.90	0.97
Wealth Index [1]	0.98	0.96	0.83	1.00	0.93	1.08
Attends church	0.70 +	0.83	0.75	1.28	0.78	1.65
Work	1.22	0.82	1.30	1.12	1.04	1.08
Marital Status						
Separated/Divorced	1.37	1.84	1.07	1.83	3.46	0.53
Single	0.79	0.94	0.75	2.15 *	1.83	1.17
Age	0.87 *	0.83 **	1.01	0.88	0.88	1.00
Virgin	1.60 *	0.89	1.06	0.58 +	0.69	0.84
_cons	2.31	1.27	2.62	0.57	2.29	0.25

Note: reference category in parenthesis. X=one child, indifferent to sex.

Table 10: Multinomial logistic regression of desired composition, women without children who want two children, 1996 and 2006.

	2006				1996			
	Balance (xx) RRR	Two daughters (xx) RRR	Two sons (xx) RRR	Two daughters (Two sons) RRR	Balance (xx) RRR	Two daughters (xx) RRR	Two sons (xx) RRR	Two daughters (Two sons) RRR
Region (Southeast)								
North	1.49 *	1.04	0.62	1.67	4.55 ***	1.28	0.00	10.00
Northeast	1.73 ***	1.40	1.31	1.07	1.48 *	0.99	1.08	0.91
South	1.10	1.43	0.70	2.04	0.95	0.39	1.39	0.28 +
Center-West	1.74 ***	1.41	1.01	1.40	0.67 *	0.26 *	1.34	0.19 *
Religion (Non-Religious)								
Catholic	0.39 *	0.26	0.99	0.00	1.15	0.97	0.84	1.16
Protestant	0.52	0.36	0.99	0.00	1.70	1.51	1.50	1.00
Race (White)								
Black	1.45 ***	1.95 *	1.26	1.55	0.92	1.02	1.24	0.83
Rural	0.90	0.63	0.52	1.22	0.92	0.89	1.26	0.70
Years of Education [1]	0.95	0.88	0.97	0.91	0.86 *	0.90	0.86	1.04
Wealth Index [1]	1.05	0.88	1.28	0.68	0.90 +	0.96	0.87	1.11
Attends church	0.99	0.64	0.56	1.14	0.87	0.46 *	0.60	0.76
Work	0.93	1.57	1.01	1.56	0.93	0.93	1.35	0.68
Marital Status								
Separated/Divorced	1.53	6.23 **	2.87	2.17	3.40 *	11.09 *	6.31	1.76
Single	1.23 +	1.77	1.11	1.60	2.04 ***	6.49 **	6.63 **	0.98
Age	0.95	0.94	0.96	0.97	0.90 *	1.04	1.01	1.03
Virgin	0.90	0.99	0.98	1.01	0.80	0.71	0.69	1.03
_cons	5.37 **	0.55	0.00	10	7.73 ***	0.11	0.05 *	2.14

Note: reference category in parenthesis. xx=two children, indifferent to sex.

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Table 11: Logistic regression of desired composition, women without children who want three children, 1996 and 2006.

Table 11: Logistic regression of desired composition by selected variables, (women without children who want three children), 1996 and 2006. Results in odds ratio.

	2006		1996	
	Balance (Indifference)		Balance (Indifference)	
	OR		OR	
Region (Southeast)				
North	0.57	+	0.28	***
Northeast	0.59	+	0.60	***
South	0.98		1.14	
Center-West	0.65		1.33	+
Religion (Non-Religious)				
Catholic +	1.28		0.88	
Protestant	0.99		0.68	
Race (White)				
Black	0.87		1.07	
			0.36	
Rural +	1.29		1.22	
Years of Education [1] *	1.15		1.08	
Wealth Index [1]	1.14		1.09	*
Attends church	1.09		0.99	
Work	1.03		0.99	
Marital Status				
Separated/Divorced	0.47		0.37	**
Single	0.53	*	0.59	**
Age	1.01	***	1.03	***
Virgin	1.42		1.14	
_cons	0.26		0.17	***

Note: reference category in parenthesis.

For the logit regressions of women who want three children, ggg, gxx, bbb, bxx weren't considered.

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