

Before or after fertility? Antecedents of the low schooling level achieved by a cohort of young mothers in Campinas, Brazil

Humberto Corrêa*

Núcleo de Estudos População (Population Studies Center)
Universidade Estadual de Campinas (State University of Campinas), São Paulo - Brazil

Abstract

Introduction: Worldwide, research on fertility in the second decade of life has shown that young mothers complete fewer years of schooling than their nulliparous age peers and women who postpone their first childbirth until after they are 20 years old. In Brazil, few studies have identified the extent to which these gaps were already present before fertility, and for this reason, it is difficult to assess the real effect of pregnancy and fertility on the schooling of young mothers. **Method:** This study comprises an analysis of the school career performance of a representative sample ($n = 225$) of a cohort of young women living in Campinas, a municipality of one million inhabitants in the state of São Paulo, Brazil. All individuals in the sample had their first live-born child at the ages of 17 and 19 in 2005 and were interviewed between 2006 and 2007. Their school achievements were assessed in a cross-sectional observation after fertility. Nonetheless, by the use of retrospective questions, the schooling histories were reconstituted longitudinally from age seven to 16 when all were still nulliparous. **Results:** The high incidence of failures and interruptions prior to the subjects' pregnancy and first live birth indicates that many of them had run into obstacles to their school career before fertility: 28.0% failed AND dropped out while 78.2% failed OR dropped out of at least one school grade before pregnancy and their first live birth. Furthermore, overlaps of grade repetitions and school dropouts – temporally or definitively – were observed in large fractions of the sample subjects. Thus, cross-sectional studies that exclusively analyze the schooling deficits of young mothers after their first pregnancy or childbirth and directly compare them to the school achievements of childless women – or those who delayed their first childbirth to after the age of 20 – may not properly identify the origins of age-school grade gaps and the few years of schooling completed.

Key words: adolescent fertility; teenage pregnancy; education deficits; age-school grade gap.

* Master in Population Studies and Social Research at National School of Statistical Science (Escola Nacional de Ciências Estatísticas) from the Brazilian Institute of Geography and Statistics (Instituto Brasileiro de Geografia e Estatística). PhD candidate in Demography at State University of Campinas (Unicamp – Universidade Estadual de Campinas). Correspondence: Humberto Corrêa. Rua Carlos Gomes, 351/S.102 – Rio de Janeiro, RJ. CEP 20220-050 – Brazil. E-mail: humberto@nepo.unicamp.br



Introduction

The schooling career in the context of adolescent fertility

Formal education represents a key portion of people's social capital and is deemed a sine qua non for improving their well-being. For one thing, as today's labor market is becoming more demanding and technologically dependent, proper schooling is indispensable in producing qualified manpower. For another, education helps build citizenship and minimize the differentiation among genders and races (CORRÊA, 2009). Education is considered so important that it is one of the three dimensions of the Human Development Index adopted by the United Nations with the objective of measuring and comparing the level of well-being of populations. School attendance, literacy, and a minimum amount of formal education during childhood and adolescence do not automatically cut a path up the social strata in adulthood. However, they may be regarded as proxies in creating the contexts for achieving the qualification standards demanded by societies today (Caldwell et. al., 1998). Actual or likely obstacles to school development are thus interpreted as predecessor and/or worsening agents of various levels of risk exposure, instability, poverty, or even social exclusion. Education is, consequently, a dimension generally used as a backdrop to a wide range of social questions.

Several studies on adolescent fertility (hereafter understood as occurring under the age of 20) have attested that, among other negative consequences, young mothers spend fewer years in school and also complete fewer grades than their nulliparous age peers or older child bearers. Although this frequent association does not

necessarily constitute a relationship of cause-and-effect this approach is still appealing in the literature due to the simplicity with which it is presented and turns a complex subject into an apparently plain interpretation ready to be easily assimilated. Moreover, apart from the fact that many papers do not mention the existence of a cause/fertility-and-effect/education deficit relationship, they rarely report that the data used do not support the establishment of such a nexus. Thus, veiled suspicions contribute to the strengthening of all sorts of discussions about the presumed cause-effect pattern, and by omission or repetition, it ends up earning the status of truth.

The Age-School Grade Gap (ASGG, hereafter understood as the compatibility between the age of the student and the school grade he/she is in) is often observed in populations of young mothers and it is frequently attached to discourses linked to the topic of adolescent pregnancy/fertility. Thus, it is a variable of interest for many studies that try to understand the influence of fertility on the present or future life of young mothers.

Schooling system in Brazil

Not so long ago, the minimum mandatory schooling in Brazil was eight years: the 1st grade was to be started at the age of seven and the 8th grade was to be completed at 14 or 15. In 1996, the Law of Guidelines in Education stipulated that minimum compulsory schooling would last nine years, beginning at age six in the "literacy class". This is an unassigned level preceding the first of the eight grades in the "ensino fundamental" (basic or elementary education). This parameter has become a national education goal by means of Federal

Law 10.172 of January 9, 2001, which approved the National Education Plan. Actually, elementary education was officially extended to nine years only with the approval of the Bill of Law 3.675/2004. However, local governments declared they needed more time to adapt to the new setup and another law - 11.114/2005 - settled the year 2010 as the deadline for states and municipalities to fulfill the requirements of Law 3.675/04.

Until recently, therefore, it was only compulsory to enroll children when they reached age seven, and all of them had to finish eight grades. Then as now, three years of "ensino médio" (high school) follow the basic education level and precedes college, but none of them are not mandatory and are far from being universal in Brazil.

The municipality of Campinas

Campinas is located in São Paulo state, the most populous in the Brazilian Federation and the one with the largest economy. Campinas sits on more than 796 km² and around 30% of its the area is considered urban where live 98.3% of its 1.079 million inhabitants. Currently it has the 14th largest population among 5,565 Brazilian municipalities and is the 3rd most populous in São Paulo state, after only the state's homonymous capital and the municipality of Guarulhos (IBGE, 2012).

Campinas is one of the industrial centers of the state and the country. Some of the most important national and multinational computer, telecommunications, and petrochemical companies have facilities or branches in the area and enjoy a steady supply of the skilled labor generated by the local universities. The municipality has largest air cargo terminal of the country,

handling about 18% of total goods moved. Moreover, a call for bids is now underway for the construction a railroad for high-speed trains which will connect the city with the two major metropolitan areas of the country: Rio de Janeiro and São Paulo (Prefeitura Municipal de Campinas, 2012).

Despite its demographic and economic strength, Campinas has very poor outskirts, where basic public services such as transportation, health facilities, and even piped water and sewerage are weak or even absent. These conditions contrast with some areas of its territory that are equipped with infrastructure comparable with the best cities in the world.

It is not surprising, therefore, that Campinas attracts unskilled workers from areas around it, some of which are considered mere dormitory towns. The city, therefore, reflects the conditions found in the more developed regions of Brazil but also reveals the characteristics of the most vulnerable regions, especially those found in the peripheries of the country's large urban centers.

Fertility among female adolescents, especially among the poorest, is not an uncommon event. Also, is a phenomenon of interest among researchers that address a wide range of social issues associated with the fertility of young people.

Objectives of this paper

The main purpose of this article is to investigate the school careers of a cohort of young Brazilian mothers aged between 17 and 19 years at the time they delivered of their first live-born child. Specifically, this paper undertook a longitudinal reconstitution of their school careers from the beginning until the age of 16; in other words, up to a stage of their lives in which

none of them had delivered their first child. We intend to create a comparison between the delay in schooling that had been accumulated up to this point and the level of education observed during the interviews. This may indicate how much of the schooling gap was already present before the birth of the first child and so that, theoretically, it could not be directly assigned to the pregnancy and fertility.

Method

All data presented was extracted from the SFYW - Survey of families formed by young women (Corrêa, 2007) carried out in the city of Campinas as part of the author's PhD thesis. The survey was based on a representative probability sampling of the target population that was formed by a set of elementary units (EU) represented by young women with the following characteristics: (a) At least one child should have been born alive as of 2005. Even if the child had already died at the time of the interview, the young mother remained eligible for the survey. (b) The child indicated in item "(a)" was the first live-born to the young mother. A multiple pregnancy (twins or triplets), however, was considered a single event. For the purpose of this paper, eventual miscarriages, stillbirths, or abortions reported, and even those that occurred before the birth of first live-born child¹, were not considered the first fertility event. (c) The young mother should have been 17 to 19 years old (using the demographic concept of "age at last birthday") at the time of child delivery. (d) The young mother should have been living in the city of Campinas when she delivered the child in 2005. Even if she had moved to another city at the time of the interview in 2006–2007, she would still be eligible for the

survey. (e) The parturition mentioned in item "(a)" must have taken place in the city of Campinas.

With the approval of the Ethics Committee on Research on Human Beings and the Demography Department of the State University of Campinas, the Municipal Health Secretariat of the City of Campinas provided electronic data files containing information extracted from birth certificates filled out by the hospital staff. This mandatory administrative record contains information about the mother and her child, including the mother's declared household address on the date of delivery.

The cases that did not meet all the above criteria were excluded and 1,250 eligible records were obtained to form a reference system for the sample extraction.

Although SFYW used a *modus operandi* similar to that of household sampling surveys, its EUs were not households but the young women who met the inclusion criteria and lived at the addresses reported in the birth certificates. As such, household addresses were only an initial means to locate the EUs, but not the EUs themselves.

In accordance with the predetermined criteria for the sampling, two or more records representing the same pregnancy (twins or triplets) would be counted as one – the mother herself. Meanwhile, if two or more young mothers lived at the same address, they would be counted as many EUs referenced to a single household. After the data were passed through the search filters, the number of EUs was reduced to 1,239, from 1,250 birth records associated with 1,238 households.

To determine the sample size (n) and desired statistical precision for estimating the SFYW indicators, the available resources to carry out the project were considered. The final sample size consisted of 225 cases,

based on a confidence level of 90% and a confidence interval of 5%. However, due to the high proportions found in many SFYW measurements, with the same sample size, it is possible to elevate the initial confidence level that was estimated for some of them. Because of their intrinsically descriptive nature, no statistical tests were used on the data presented in this paper.

All interviews were carried out between October 26th, 2006, and October 9th, 2007, by the author alone. The beginning of field survey was planned in such a way that the young mothers would have been at least 18 years old at the time of interview and thus would no longer need a parent's or guardian's consent to answer it. The subjects were asked to read and sign an informed term of consent form that described the nature, purpose and confidentiality of the survey.

To minimize the incidence of missing interviews, no limit was set a priori to the number of visits in finding an EU until the decision was made to discard it.

Of the completed interviews, only 67 (29.8%) required just one visit to establish contact and obtain cooperation. In 20.4% of the cases, four or more attempts were necessary. On average, 2.49 contact attempts were made per concluded interview but all of them was started and finished in a single day. The application time ranged from 21 minutes to 77 minutes; the average duration was 36 minutes.

The questionnaire contained more than 200 closed questions on topics such as school career, work insertion, fertility, migration, and socioeconomic conditions, plus a set of questions about sexual and reproductive behavior. However, this paper will deal with only a fraction of the topic of education.

To reconstruct the school histories of the interviewees and help them remember numerous key events in their life stories, a calendar form was specially designed to be used in this study. It was filled out by the interviewer who followed instructions provided on the questionnaire's queries – and their respective responses were immediately transferred to the calendar form. Every event mentioned by the interviewee was associated with one calendar year and also with her age at the end of the same year.

Each subject was asked – directly or through answers derived from a set of questions – the following topics about her schooling career: if she attended preschool; which calendar years she attended private or state schools; any/each change of school; which calendar years she was promoted to the following grade; which calendar years she repeated a grade; which calendar years she did not attend classes regularly; and which calendar years she did not attend classes at all.

Some other events, when mentioned or identified by specific questions, were also transferred to the calendar form: pregnancy events (suspicions of pregnancy, miscarriages, abortions, and stillbirths); age at the time of giving birth; age when her parents separated; age when her mother and/or father died; calendar year of the start of each job and its duration, counting all jobs held up to the date of the interview; age at menarche; age at the time of her first sexual intercourse; age at the time of her marriage(s) or cohabitation(s) and its/their duration.

There were questions whose purpose was to check the consistency of prior responses, including filter questions to minimize the possibility of interviewee memory lapses. The sequence of the

questionnaire's topics and specific questions was intended to produce a sequential and chronological recall of events. However, if a fact mentioned by the subject conflicted with another answer, the interviewer alerted her, and she could review the recounted sequence.

In summary, the calendar form facilitated the construction of consistent timeline events for each of the young women interviewed. This would probably not have been possible without the application of cross-checking to responses during the interviews. Furthermore, the use of the calendar form allowed the tabulation of data in a format that would not have been feasible using only the filled-out questionnaires.

All the information was stored and tabulated using the software Statistical Package for the Social Sciences® (SPSS®) 13.0 for Windows®.

Results

It is well documented that worldwide (Mensch, 1998; Caldwell, 1998) and in Brazil (Ferraz and Ferreira, 1998; Berquó and Cavenaghi, 2005; Cavenaghi and Alvez, 2011; Heilborn and Cabral, 2011) female adolescent fertility is predominant among the poorest. This pattern could be verified for this population group through the application of Brazilian criteria for economic classification – named “Critério Brasil”² – proposed by the Brazilian Association of Research Institutes to estimate the power of consumption of individuals and families. Reflecting the expected composition of the target-population, the sample comprised individuals essentially belonging to lower economic strata: A1 - 0.0%; A2 - 0.9%; B1 - 3.6; B2 - 12.4%; C - 65.4%; D - 17.3%; and E -

0.4%. Furthermore, we also observed the predominance of groups that are traditionally most vulnerable in Brazilian society, with non-whites counting as many as 56.9% of the sample.

Other household characteristics confirm the vulnerable scenarios uncovered during the interviews. Almost all households (99.1%) had electricity and piped water, but a sewage system was available to only 76.0%. The majority of the subjects were born in Campinas (66.2%) but an important subgroup was composed of migrants who were born in other cities of São Paulo (14.7%) or even in other states (18.7%). One respondent was born in another Latin American country but her family had immigrated during her infancy. Labor insertion was very much present in their lives as 86.7% had worked at least once before pregnancy – and from this amount all of them had at least one informal job. At the time of the interview, 60.4% lived exclusively with their child and partner but 17.8% did not live with the baby's father.

For the cohort studied in this paper, optimal synchronism for the age-grade match would have been obtained if the subject had enrolled in first grade of elementary school in the calendar year that she turned seven years old – if it is completed from January to the end of July. However, if the child would turn seven from August to the end of the year, she could have been enrolled school in the following calendar year – the one she turned eight. In general, we expected the 2nd grade should usually be taken at eight years of age, the 3rd grade at nine, and so forth. Thus, the 8th grade would be completed at 14 or 15. By virtue of the month the child was born and consequently of an eventual postponement of the start of schooling to the following calendar year, for the

purposes of checking optimum synchronism, we shall accept in this paper the completion of the 8th grade in the calendar year that the young girls turned 15. Therefore, we used a conservative parameter in measuring school delay.

By assuming that seven or eight was the appropriate age for a child to enter the 1st grade of elementary school, and using the age as the sole criterion to measure school performance, we expected that by the time they were 18, all cohort subjects would have finished high school. In spite of this reasonable assumption and the fact that the young women were 20.5 years³ on average at the time of the interview, only 28.9% of them had reached the 3rd grade of high school or gone beyond that level (Figure 1:a).

Schooling progress was even worse than expected in that only one in every 25 young women (4.0%) had achieved or gone past the 3rd grade of high school (11th grade) and had remained in the formal education system at the time of the interview (Figure 1:b).

At the lower end of the school career, we observed that 28.4% of all young women had not yet concluded the 8th grade (Figure 1:c). Moreover, 25.3% of the sample – 89.1% of those who had not finished the basic cycle up to the 8th grade – were already out of the educational system when interviewed (Figure 1:d).

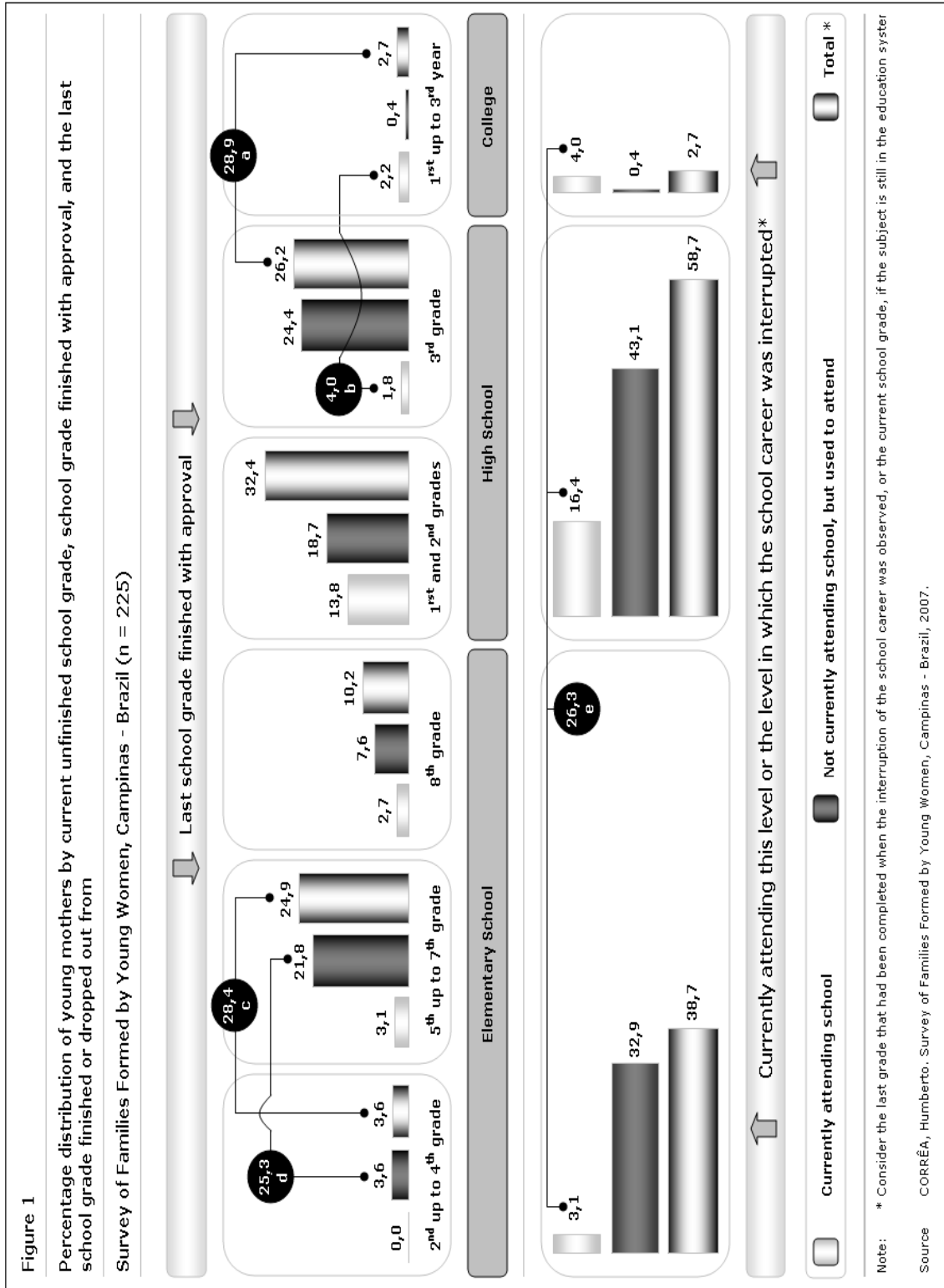
As observed in many surveys the figures presented above result from a cross-sectional observation after the event of fertility and almost nothing can be inferred about the processes that generated them. However, figures of restricted meaning such as these underlie the corollary used as the basis of several interpretative hypotheses about adolescent fertility and its supposed deleterious effects on the lives of

young women who have experienced pregnancy and child delivery in the second decade of life.

In fact, the figures presented suggest that, if any, the influence of fertility on the schooling progress of the subjects was expressed by more complex mechanisms than those of a supposed direct cause-effect relationship. This statement stems from the realization that, on average, the SFYW interviews were conducted on average 22 months⁴ after the young mothers delivered their first child. For this reason, we can safely infer that an important portion of the ASGG observed for the sample cohort occurs prior to fertility. Otherwise, we would not have encountered high proportions of young women with an ASGG of more than two or three years.⁵ This can be confirmed by analyzing the subgroup of young women who had finished high school at the time of the interview; or, using a more conservative parameter, if we consider only the proportion of young women who had not even finished elementary school when they were interviewed.

It is also relevant to mention that even when using conservative assumptions to assess schooling progress, an ASGG score of up to three years does not necessarily mean that it was an effect of fertility. However, on an individual level, one can ensure that any gap of over three years, continuously or intermittently, began before the birth of the first child.

Hence, it would be worth investigating how the school careers of these young mothers were developed, as well as the extent to which the deficits indicated were present before fertility. By adopting a longitudinal perspective and analyzing the schooling progress of the subjects before



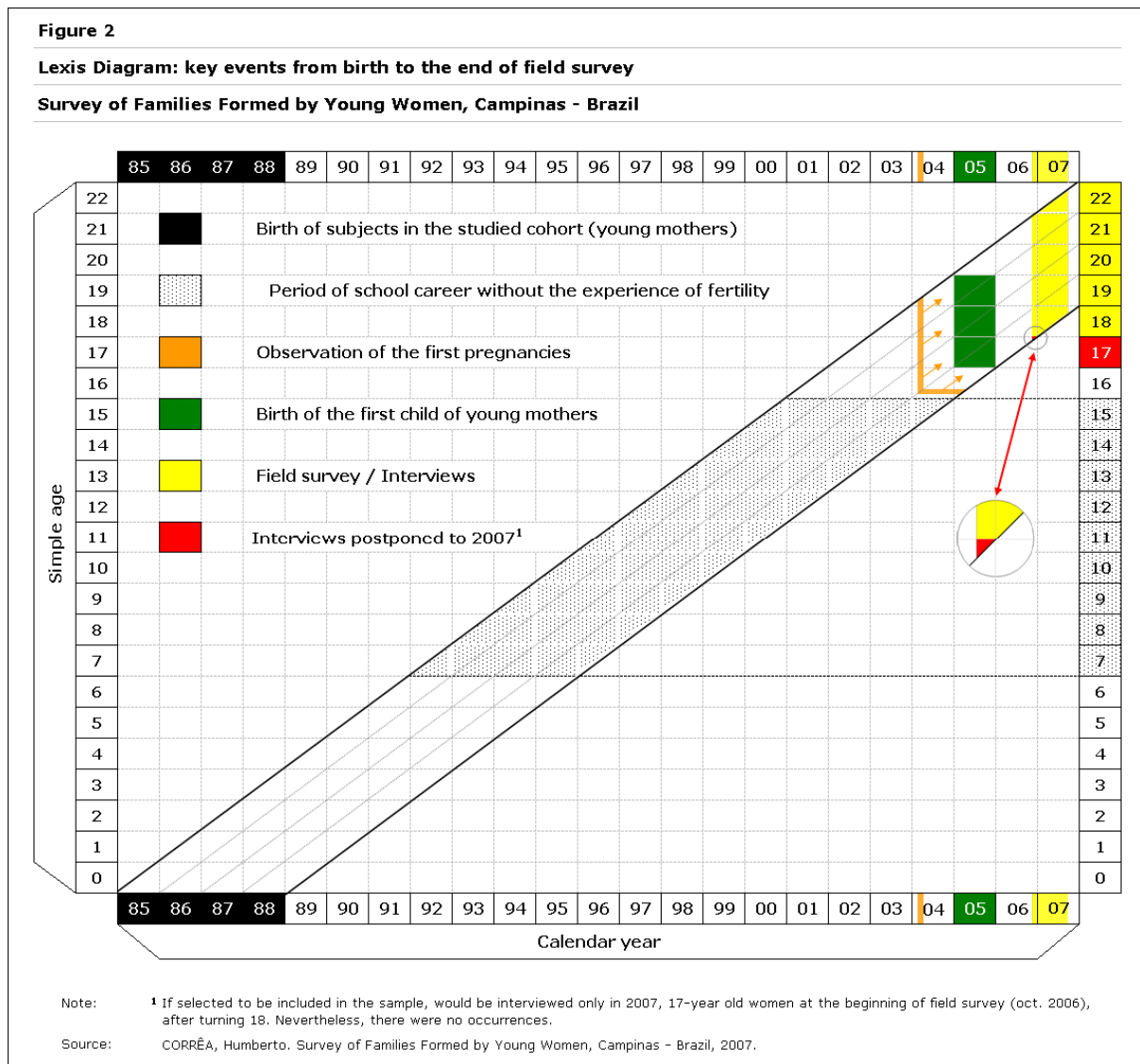
they reached the age of fertility seems a good way of finding answers to these questions.

The Age-School Grade Gap

As it has been said, for the considered cohort – young women born between 1985 and 1988 – constitutionally mandatory education lasts until the end of elementary school; that is, finishing the first eight grades of schooling. If we consider that the girls had entered the formal education

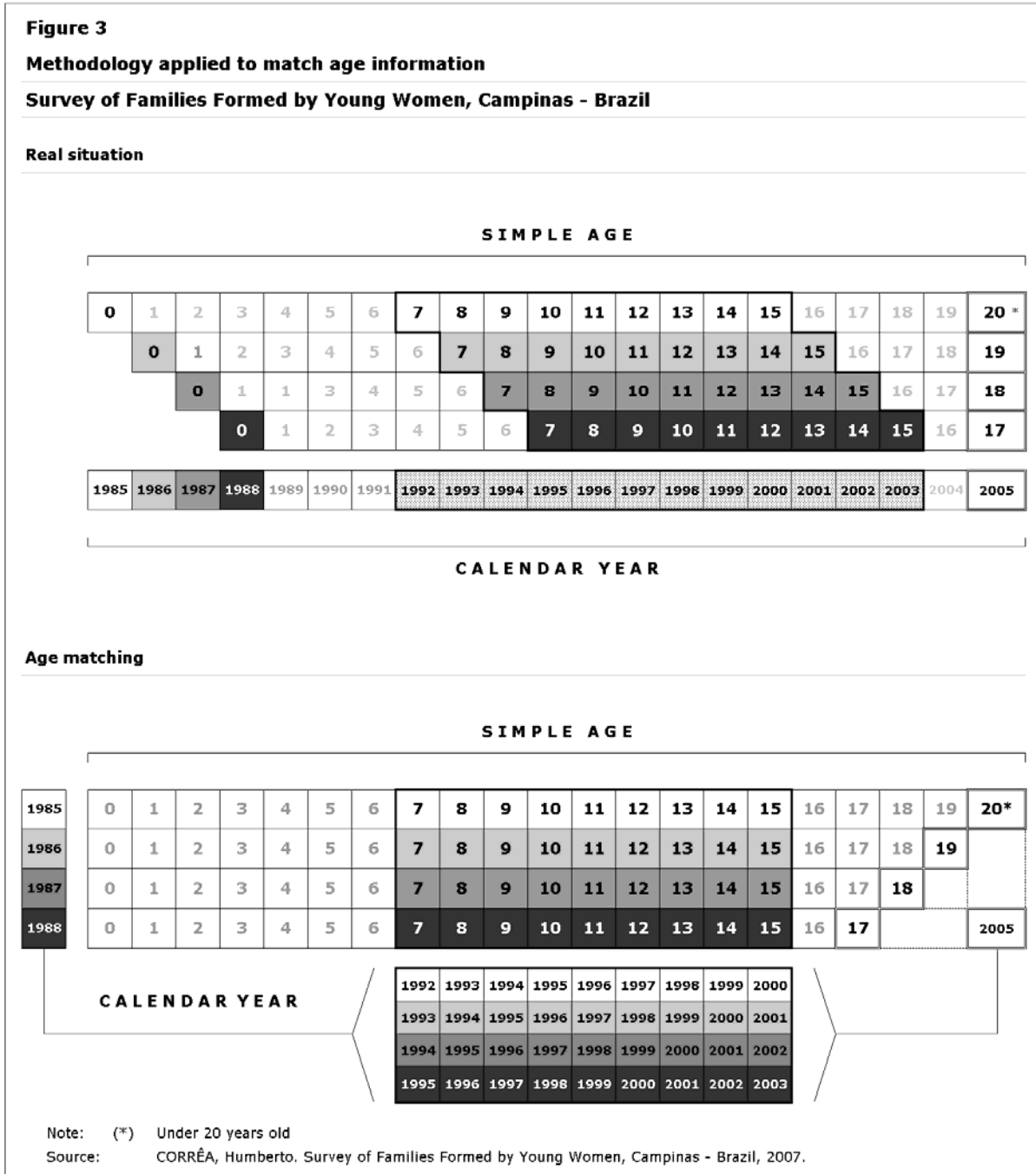
system at the age of seven or eight, we could expect to see all of them reaching the 8th grade by 14 or 15. Therefore, firstly we analyzed the young women’s schooling career until the age of 15.

It is worth mentioning that at 15 years old, none of the young mothers included in the SFYW had become pregnant with their first live-born child (Figure 2). In fact, for the sample considered, we only observed a small number of pregnancies at age 16 and first deliveries at age 17.



As we simultaneously analyzed information about young people of different ages that also started school in different times, we disregarded the calendar years

and considered the aggregated information by simple ages. Figure 3 schematically summarizes the adaptation of Lexis Diagram presented in Figure 2.



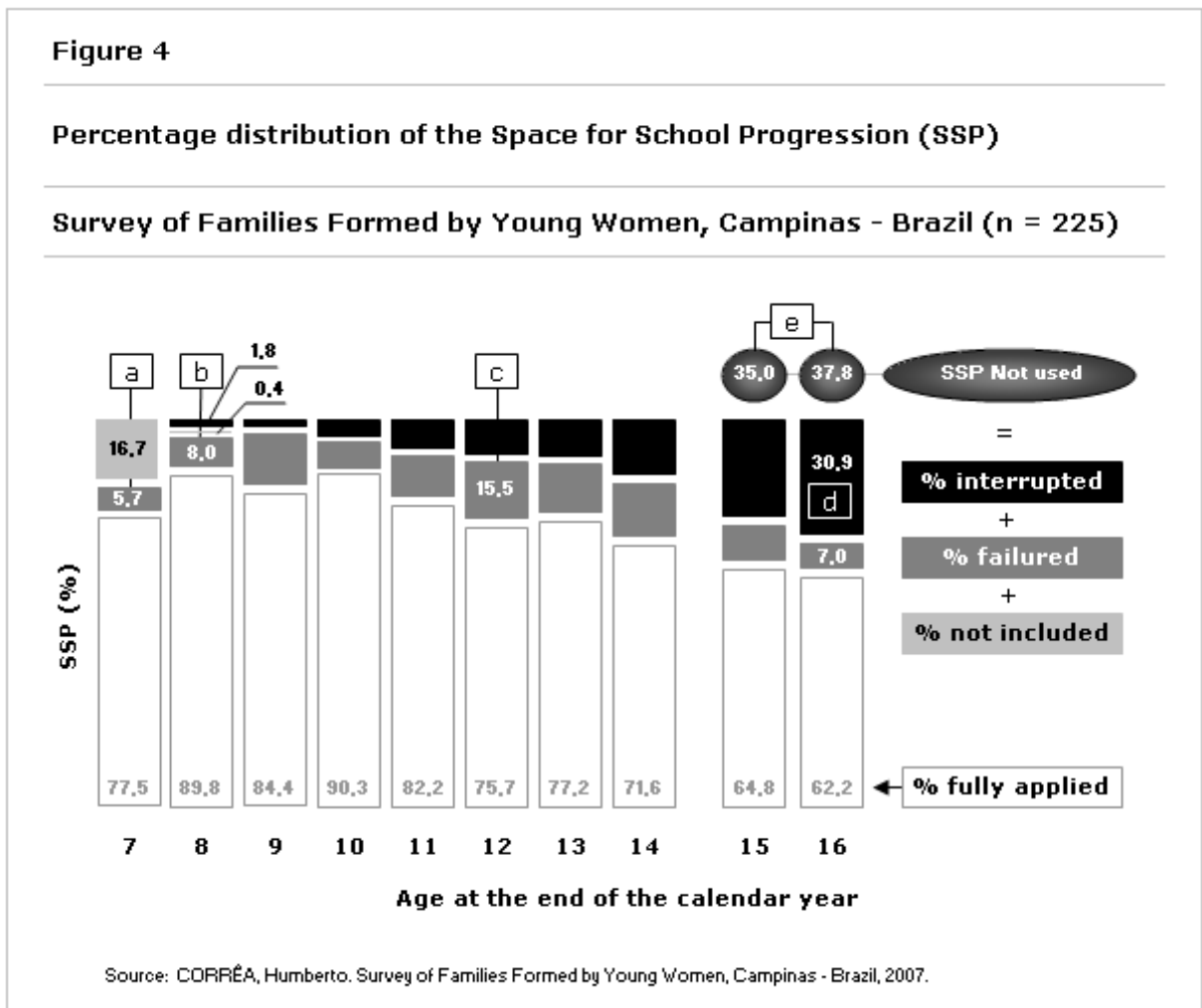
The method applied rendered an age match to simultaneously analyze the schooling career of these three groups, who

are relatively homogeneous in age and may be considered both as a birth and a childbearing cohort. Furthermore, the age

matching overcomes the hypothetical results that a simple age-standardization would produce over a direct cross-sectional observation of the school careers of these young mothers with three similar albeit distinct ages (17, 18, and 19 years).

Thus, let us initially assume that in each calendar year the child can conclude one single school grade. If succeeded, she would benefit from the full potential for schooling progress corresponding to its calendar year. Otherwise, if the subject fails to be promoted to the following grade or drops out of the schooling system during the calendar year, she would be wasting the potential time to move on to the next grade.

We shall call this theoretical opportunity to advance one single grade in the school career in relation to a specific calendar year as the Space for Schooling Progression (SSP). Under this assumption, we can briefly note that at the age of seven, 16.7% of the future young mothers were not in school, while 5.7% had already failed one grade (Figure 4:a). Thus, at age seven, 22.5% of this group did not maximize their SSP. At the end of the following year the girls turned eight. At this age, failure rates had reached 8.0% of the total, while the dropout level was 1.8%. In addition, one girl (0.4%) was still outside the schooling system. Altogether, therefore, they had wasted 10.2% of their SSP (Figure 4:b).



A measure of “failure”, oftentimes hidden by interruptions of less than one school year, was observed from the very beginning of their schooling careers. The peak was at 12 years of age as 15.5% of young women had not been approved to the following grade (Figure 4:c).

It is worth mentioning that transition from 4th to 5th grade occurs approximately at age 12. Up to the present, this age is an important landmark of the educational career in the Brazilian educational system because, in general, it corresponds to passing from primary school (4th grade) to the beginning of “ginásio” (5th grade).

Although elementary school is no longer divided into these two levels, it is true that an intangible division persists especially in the public education system. It is still quite common for students move compulsory to another school after the 4th grade as many educational institutions still do not offer all eight elementary grades and/or have adopted complex time schedules in order to address the heterogeneity of their students’ ages and grade ranges. In fact, the aggregate numbers generated in this study suggest that moving to another institution after primary school may contribute to the ruptures in the educational career.

Finally, interruptions (temporary or ultimate) of education careers were observed since the age of eight. From age 10 onward, the annual proportion of interruption was characterized by a clear growth trend, which at age 16 reached 30.9% of the sample (Figure 4:d).

Thus, at age 15, when none of the respondents had gotten pregnant yet, 35.0% of the SSP had not been used. At age 16, when the first pregnancies that produced live-born children occurred, the rate went up to 37.8% (Figure 4:e). The figures reinforce, therefore, that a portion of the

ASGG captured in the interviews – conducted about 22 months after the birth of the first child of the subjects – began prior to fertility.

While expanding our analytical perception, these numbers still do not allow us to make safe inferences. Annual SSP rates, for example, tell us little about failure and/or dropout patterns. In other words, would the patterns have manifested in the same individuals or were these events disseminated in large segments of the sample? To answer this question, the data were disaggregated in order to identify the failures and dropouts profiles.

Figure 5 presents the accumulated failure rates in relation to the number of times this kind of event occurred. Data shows the increasing proportion of young women who have an event of grade failure since the age of seven. By the time the subjects were 15 years old, 64.0% of them had already failed at least one grade: 41.3% failed once; 18.7, twice; and 4.0%, three or more times.

As to schooling interruption, herein defined as the number of years without any record of attendance, the figures revealed once again a well-defined trend. At 15, 42.2% of the young women had left school at least once for a whole school/calendar year or longer (Figure 6).

The scenarios of failures and interruptions were even grimmer when taking into account the frequency and/or duration by which these phenomena affected their school careers. The high percentage of young women who had dropped out of the education system for at least one year (42.2%) or had failed at least once (64.0%) indicates multiple overlaps of both events (Figures 7 and 8).

Figure 5

Evolution of accumulated proportions of young women with grades failures, by the number of repetitions declared

Survey of Families Formed by Young Women, Campinas - Brazil (n = 225)

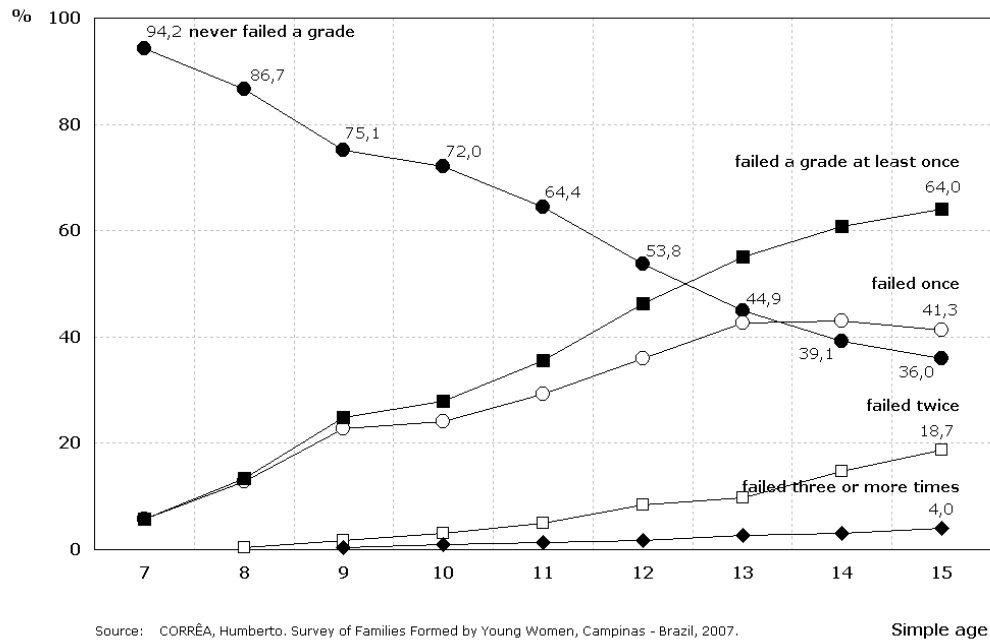


Figure 6

Evolution of accumulated proportions of young women with interrupted grades (whether continuously or every other year), by the declared duration of interruptions

Survey of Families Formed by Young Women, Campinas - Brazil (n = 225)

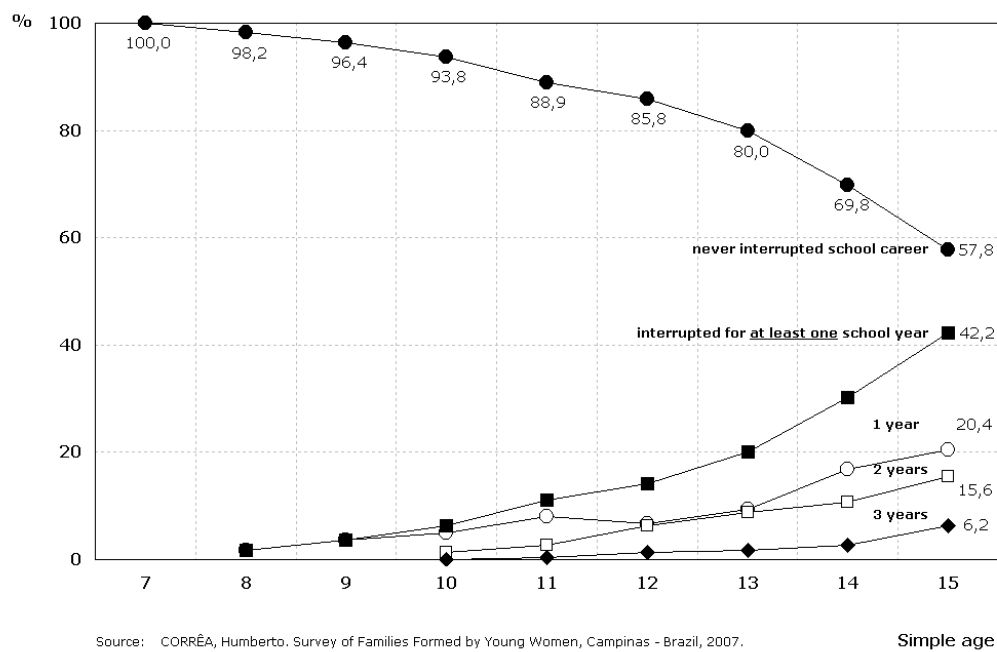


Figure 7

Evolution of accumulated proportions of young women who failed AND interrupted their school career, by simple age and the number of times the events were declared

Survey of Families Formed by Young Women, Campinas - Brazil (n = 225)

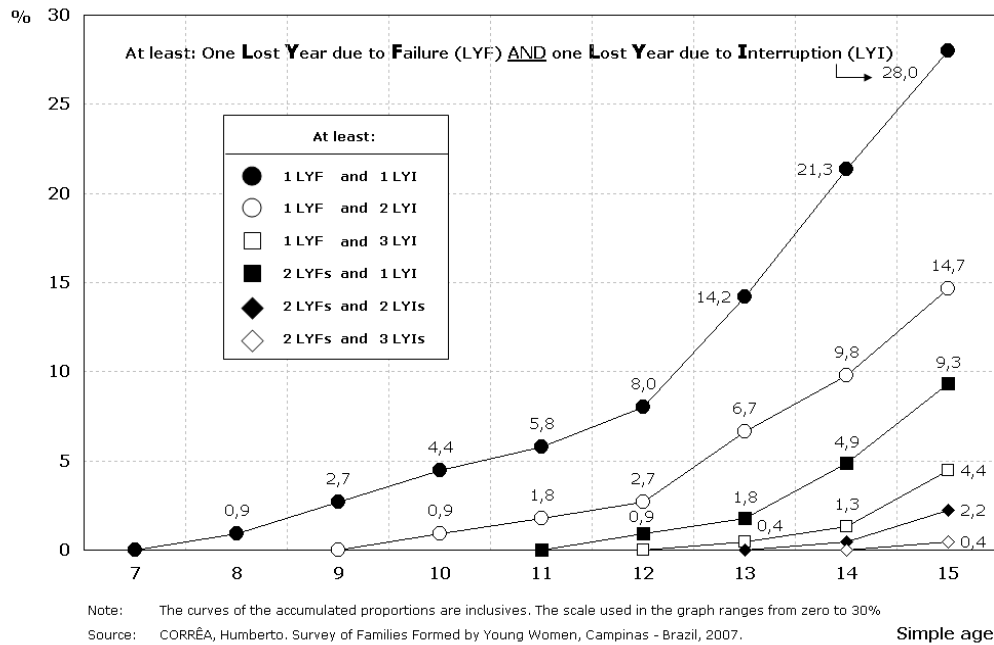
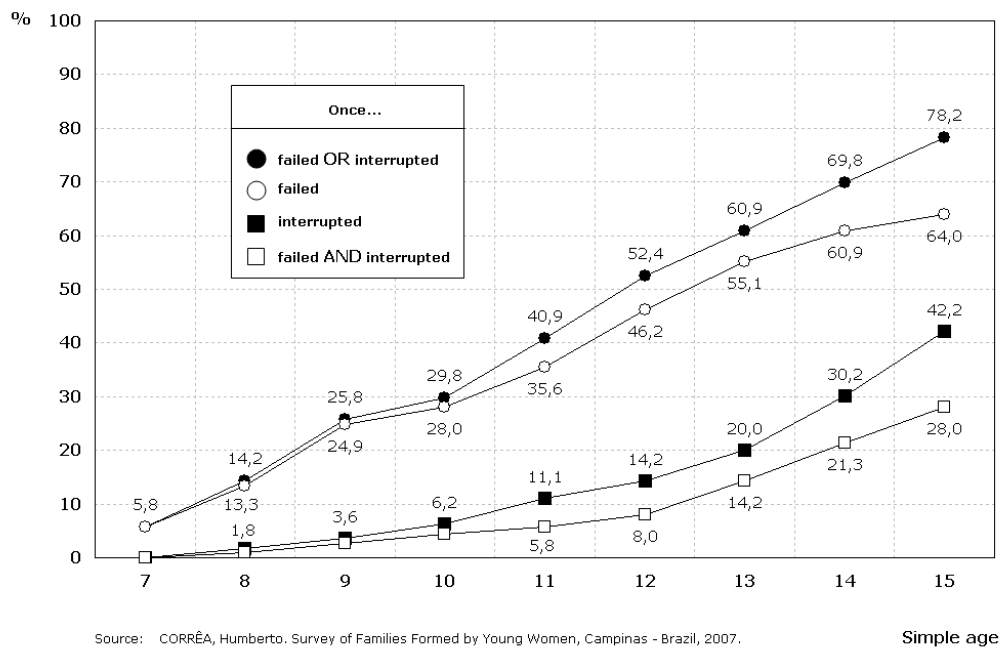


Figure 8

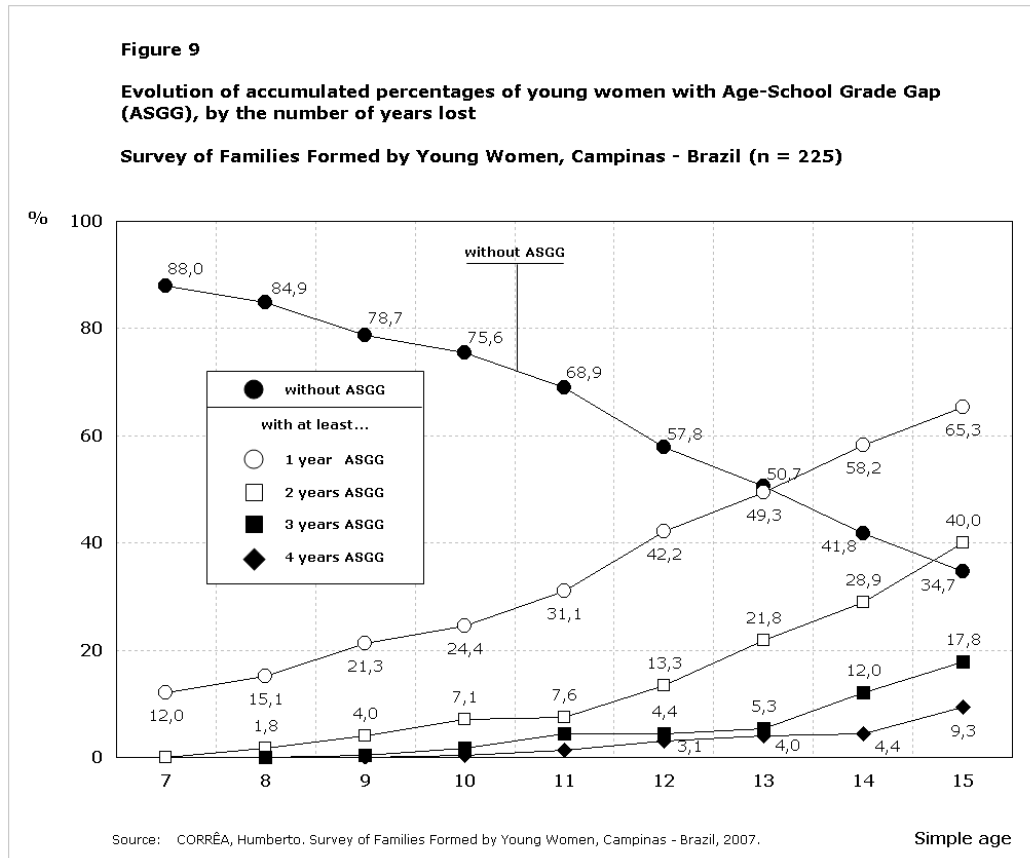
Evolution of accumulated proportions of young women who failed AND/OR interrupted their school career, by simple age and the number of times the events were declared

Survey of Families Formed by Young Women, Campinas - Brazil (n = 225)



Consequently, a high proportion of the subjects had already presented ASGG

problems way before fertility (Figure 9).



Discussion

The longitudinal figures about grade failure and school drops out, whether consecutive or not, are sufficient to demonstrate that significant subgroups of the studied cohort had encountered obstacles to their school career before the event of fertility. The extent to which the respondents' school careers would eventually have been interrupted or resumed if they had not become mothers is out of the scope of this paper. However, it is possible to infer from a previous study (Corrêa, 2009) that the ASGG that occurred to about 70% of Brazilian female

adolescents aged 17 to 19 in 2000 was not directly linked to fertility, simply because they had dropped out before fertility.

In summary, despite the important fraction of literature indicates that fertility is one of the main causes of the interrupted schooling of young mothers, the figures presented here point to the possible existence of other variables that have certainly helped figure out the educational scenario observed for the analyzed cohort. The existence of such relationships nonetheless tends to escape notice in an aggregated analysis, especially when the number of schooling years achieved by the

young mothers are considered only after fertility in a single cross-sectional observation and are directly compared to young women who have not become mothers yet and finished school or with those who postpone childbearing.

Under this kind of approach, which is frequently applied to research of this theme, it is not possible to detect whether the formal educational deficits that are almost always observed among young mothers are generated before or after fertility. However, since the number of years of education of young mothers is quite often directly compared to a nulliparous group of similar ages, it is plausible to consider that a wrong or incomplete scenario would be drawn, and fertility would be wrongly appointed as the variable that explains the deficits observed.

For the subjects of the analyzed cohort in this paper, as in many others, the scenario observed seems to be a result of a bias selection rather than the impact of fertility itself on the school careers of the young mothers (Furstenberg, Brook-Gunn and Morgan, 1987; Geronimus and Korenman, 1992 and 1993; Hoffman, Foster, and Furstenberg, 1993; Furstenberg, 1998 and 2007; Hotz, McElroy and Sanders, 2005). In summary, the high levels of ASGG in the young women appear to be more a product of their inclination to be teenage mothers than of the barriers to schooling erected by fertility.

Further, based on the SFYW data, future papers could analyze the determining factors for school career rupture up to the age of 16 and thus help our understanding of this matter.

Notes

1 - Eight previous pregnancies were reported by sample subjects. Six young mothers said they had gotten pregnant only once and a seventh one, twice. None of the previous pregnancy produced a live-born child.

2 - See http://www.brazilfield.com/eng_tab1.htm (Tables 1 to 7) for information about the criteria adopted by the Brazilian Association of Research Institutes to build economic strata.

3 - The calculation considered the difference between the date of the interview and date of birth of the interviewee. The result was obtained in days and converted into years of 365 days. Under this assumption, we found that only 7.6% of the respondents had ages in the 18.2–19.0 range; i.e., from exactly 18.2 years up to (less than) 19 years of age. The distribution of the other subjects was: 19–20 years = 23.1%; 20–21 years = 37.3%; 21–22 years = 28.0%; 22 years or above = 4.0%. Therefore, considering the age of 18 for the calculation of the ASGG can be interpreted as conservative parameter, as it dismissed, on average, 2.5 academic potential grades. However, since only primary education is compulsory in Brazil and higher education is not always set as a goal or even a desire of the individuals, we considered the “ensino médio” (intermediate education) as a parameter for the measurement of the ASGG.

4 - Minimum = 10.4 months; 1st Quartile = 18.9 months, mean = 21.9 months, median = 21.8 months; 3rd Quartile = 25.3 months; Maximum = 32.6 months. Moreover, 64% of the interviews were conducted within 24 months after the date of birth of the first child; 70%, up to 24.9 months; 80%, up to 25.9 months; and 90%, up to 27.6 months.

5 - Roughly, if we consider the average of 22 months between the date of delivery and the date of the interview, and add to it about nine months of pregnancy, the delay attributable to the maximum individual fecundity could not exceed two years and seven months.

References

BERQUÓ, Elza; CAVENAGHI, Suzana. Increasing adolescent and youth fertility in Brazil: a new trend or a one-time event? In: *Proceedings of the Annual Meeting of the Population Association of America*, 18 p., Population Association of America, Philadelphia, Pennsylvania, USA, apr. 2005. Session 51, Adolescent Fertility in Developing Countries.

CALDWELL, John Charles (Org.) et al. Adolescent reproductive behavior in the developing world. (Special issue of) *Studies in family planning*, New York, v. 29, n. 2, p. 137-153, June 1998..

CALDWELL, John Charles; CALDWELL, Pat; CALDWELL, Bruce K.; PIERIS, Indrani. The construction of adolescence in a changing world: implications for sexuality, reproduction, and marriage. *Studies in family planning*, New York, v. 29, n. 2, p. 137-153, June 1998. . Special issue: Adolescent reproductive behavior in the developing world.

CAVENAGHI, Suzana and ALVEZ, José Eustáquio Diniz. Diversity of childbearing behavior in the context of below-replacement fertility in Brazil. *United Nations Expert Paper*, n. 2011/8. New York: 2011. 30 p. Available:<http://www.un.org/esa/population/publications/expertpapers/2011-8_Cavenaghi_Expert-Paper_FINAL_ALL-Pages.pdf>. Access: apr. 2012.

CORRÊA, Humberto. *Pesquisa sobre famílias formadas por jovens mulheres* (Survey of families formed by young women). Campinas, Brazil, 2007.

CORRÊA, Humberto. A maternidade na adolescência e a educação formal: convergência e divergência interpretativas a partir de uma avaliação do censo demográfico 2000. In: IBGE. Escola Nacional de Ciências Estatísticas. *Prêmio ENCE 50 anos: o censo 2000 e a pesquisa social no Brasil*. Rio de Janeiro, Brazil, 2009. p. 79-131.

FERRAZ, Elizabeth; FERREIRA, Inês Quental. Início da atividade sexual e características da população adolescente que engravida In: VIEIRA, Elizabeth Meloni et al. (Org.). *Seminário gravidez na adolescência*. Rio de Janeiro: Associação Saúde da Família, 1998. p. 47-54. Presented at Seminário Gravidez na Adolescência, Rio de Janeiro, 1998.

FURSTENBERG Jr., Frank F.; BROOKS-GUNN, Jeanne; MORGAN, S. Philip. *Adolescent mothers in later*

life. Cambridge [Cambridgeshire]; New York: Cambridge University, 1987. 204 p.

FURSTENBERG Jr., Frank F. *Destinies of the disadvantaged: the politics of teenage childbearing*. New York: Russell Sage Foundation, 2007. 203 p.

_____. When will teenage childbearing become a problem? the implication of western experience for developing countries. *Studies in family planning*, New York, v. 29, n. 2, p. 246-253, June 1998. Special Issue: Adolescent reproductive behavior in the developing world.

GERONIMUS, Arline T.; KORENMAN, Sanders. The socioeconomic consequences of teen childbearing reconsidered. *Quarterly Journal of Economics*, Cambridge, MA, v. 107, n. 4, p. 1187-1214, nov. 1992.

_____. The socioeconomic costs of teenage childbearing: evidence and interpretation. *Demography*, Silver Spring, MD, v. 30, n. 2, p. 281-290, may 1993.

HEILBORN, Maria Luiza and CABRAL, Cristiane S. A New Look at Teenage Pregnancy in Brazil. *International Scholarly Research Network - Obstetrics and Gynecology*. v. 2011 (2011), Article ID 975234, 7 p. doi:10.5402/2011/975234

HOFFMAN, Saul D.; FOSTER, E. Michael; FURSTENBERG Jr., Frank F. Reevaluating the costs of teenage childbearing. *Demography*, Silver Spring, MD, v. 30, n. 1, p. 1-13, feb. 1993.

HOTZ, Joseph V.; McELROY, SUZAN WILLIAMS; SANDERS, Seth G. Teenage childbearing and its life cycle consequences. Exploiting a natural experiment. *The journal of human resources*. University of Wisconsin Press, Wisconsin, v. 40, n. 3. p. 683-715, Summer 2005.

IBGE – Instituto Nacional de Geografia e Estatística. *IBGE Cidades@*. Available: <<http://www.ibge.gov.br/cidadesat/topwindow.htm?1>>. Access: apr. 2012.

MENSCH, Barbara S.; BRUCE, Judith and GREENE, Margaret E. *The uncharted passage: girls' adolescence in the developing world*. New York, NY: Population Council, 1998. 115 p.

PREFEITURA MUNICIPAL DE CAMPINAS.
Secretaria de Planejamento e Desenvolvimento Urbano.
Planejamento Urbano e Cadastro Técnico. Campinas,
2012. Available:
<<http://2009.campinas.sp.gov.br/seplama/>>. Access:
apr. 2012.

Acknowledgments

This work was supported by the National Counsel of Technological and Scientific Development of Brazil (CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico). The author wishes to thank his research advisors, Maria Isabel Baltar da Rocha, PhD (in memoriam), and Maria Coleta Ferreira Albino de Oliveira, PhD, both from the Demography Department of Campinas State University (Unicamp – Universidade Estadual de Campinas), São Paulo, Brazil.

Citation information:

CORRÊA, Humberto. *Before or after fertility? Antecedents of the low schooling level achieved by a cohort of young mothers in Campinas, Brazil.*

Poster session presented at:

European Population Conference 2012
13-16 June, Stockholm, Sweden
Poster Session 2, P.23 (PS-2:P.23)
Thursday, June 14
5:00 PM - 6:30 PM

Available at:

<http://epc2012.princeton.edu/download.aspx?submissionId=121226>