

Taming troubled teens: The social production of mental morbidity amongst young mothers in Pelotas, Brazil

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Abstract

Explanations for the association between teen-childbearing and subsequent mental morbidity vary considerably, from those based on neurological theories of development to those investigating underlying social and economic determinants. Based on longitudinal epidemiological and ethnographic sub-studies of the 1982 Pelotas birth cohort study, this paper explores the hypothesis that teen childbearing and subsequent mental morbidity have become associated through the interplay of culture, society, and biology in situations where teen pregnancy has become a stigmatised object of scientific and public health attention. Results show that the effect of teen childbearing on subsequent mental morbidity remained significant in the multivariate analysis. Ethnographic analysis, together with epidemiological effect modification analyses, suggest that this association is partially accounted for by the fact that it is more pronounced amongst a specific subgroup of women of low socio-economic status who, being more politicised about societal injustice, were also more critically engaged with – and thus troubled by – the inequitable institutionalisation of life-cycle transitions. With time, these women became highly critical of the institutionalised identification of early childbearing as a key violation of life-cycle norms and the differential class-based application of scientific knowledge on its causes and consequences. Public health campaigns should consider how the age-based institutionalisation of developmental norms has enabled the stigmatisation of those identified as transgressors.

Keywords: Brazil, Teen child-bearing, Mental morbidity, Stigma, Life-cycle, Ethnography.

Introduction

Though many studies have shown that teen-childbearing is statistically associated with mental morbidity in early adulthood, theories put forth to explain these findings vary considerably (Schmidt et al., 2006). Some researchers contend that the adverse outcomes of teen childbearing are related to adolescent-specific brain maturation processes that predispose youth to risky behaviours (e.g. unprotected sex) and that account for their neurological and cognitive inability to cope with parenting demands (Steinberg, 2008). Increasingly, the explanatory prism of neurological immaturity has been used to explain why teen childbearing is associated with an array of co-morbid outcomes for both mother and child, including psychiatric morbidity, drug abuse, delinquency, crime, and poor child growth and development (Spear, 2000).

Support for the idea that heightened risk-taking during adolescence is largely biologically-driven has gained considerable clout, yet many scientists take exception to the claim of developmental immutability (Males, 2009). For critical neuroscientists, for example, recent evidence of rapid changes in the adolescent brain can just as easily be interpreted to suggest much greater potential variability in development than is often assumed, or even allowed to be the case in societies where life-cycle transitions are highly regulated. Such authors argue that teen risk-taking is not biologically determined and thus inevitable, but is, rather the result of complex socio-biological processes (Sercombe, 2010).

Sociologists, in turn, contend that the "risk factors" now associated with adolescent pregnancy result primarily from socio-economic deprivation and from inequities in the pedagogic institutionalisation of age-based development (Geronimus, 2003). Evidence from longitudinal life-course epidemiology supports the assertion that the negative consequences of teen childbearing are predicted largely by socio-economic status. That is, teen childbearing is a consequence of a cyclical relationship that begins in early childhood, from socio-economic exclusion, to adverse family and social conditions, psychiatric morbidity, heightened risk-taking, and only then, to teen parenting and subsequent heightened psychiatric morbidity (Hoffman, 1998; Kessler et al., 1997).

Though even the most biologically inclined of scientists do temper their interpretations by acknowledging the importance of context, oversimplified notions of the immutably risk-prone adolescent have gained considerable policy and popular interest in several countries, including Brazil. The first author of this paper first encountered the localised effect of such notions in Pelotas, Southern Brazil, while conducting ethnographic research on what became widely known in the 1990s as an "epidemic" of teen childbearing. Several of the teen mothers we came to know gravitated spontaneously to

the topic of their psychological development, describing themselves as impulsive, volatile, and even “at risk,” though they also went to great lengths to demonstrate that they were, in fact, “good and mature” parents. Most had acquired these perceptions through their interactions with teachers, psychologists, clinicians, and parents, as well as from the media.

How, we began to ask, might the use of scientific knowledge about risk and development be contributing to the detrimental psychological effects ensuing from teen child-bearing? As others have shown, the question of how science contributes to shaping troubled teen motherhood must be contextualised within a broader understanding of its social production as a deviant and stigmatising state (Luker, 1996). This stigmatisation is more likely to occur where teen childbearing is widely regarded to be a violation of socially sanctioned norms that have been created through: (1) the age-based institutionalisation of the life-cycle – from completion of education, to full psychological maturation to financial independence and only then, to marriage and parenthood (Mollborn & Morningstar, 2009; Whitley & Kirmayer, 2008) – and (2) the rapid production of scientific knowledge on what it means to violate life-transition norms (and to be at risk of violating them) and how such violations (and potential violations) should be treated (and prevented) (Hacking, 1999). In societies where this institutionalisation is inequitable, individuals experience a chasm between their reality and the ideal espoused: a difference that has a considerable detrimental effect on well-being (Dressler et al., 2007; Wilkinson & Pickett, 2009).

Based on a multidisciplinary longitudinal epidemiologic and ethnographic 1982 birth cohort study from Pelotas, Brazil, this paper explores the hypothesis that teen childbearing and mental morbidity become cyclically associated in situations where teen childbearing has become problematised through the interplay of culture, society, science, and biology (Lock, 2001). In what follows, we explore how this problematisation ensues from: (1) the inequitable institutionalisation of life-cycle norms, (2) the stigmatizing identification of teen childbearing as first and foremost a violation of these age-appropriate norms, and (3) the use of a science-informed public policy lens for examining and redressing these violations.

Methodology

This paper uses longitudinal epidemiological and ethnographic material collected from the 1982 Pelotas (Brazil) birth cohort study, a prospective birth cohort study of 5914 children. All births in Pelotas in that year ($N=6011$) were identified and recruited into the cohort. The original cohort has been followed up at regular intervals using quantitative surveys for a total of 11 follow-ups (Victora & Barros, 2006). The incorporation of an

ethnographic component into the cohort began in 1997, when participants turned 15, and has continued up until their 25th birthday (2007) (Béhague et al., 2008). Our mixed method approach used an iterative process, moving back and forth between inductive (qualitative) and deductive (hypothesis testing, quantitative) methods (Trostle, 2005). Because of the small number of teen-age fathers in the ethnographic cohort, this paper focused exclusively on teen mothers.

Ethics approval was obtained from the Federal University of Pelotas' Faculty of Medicine ethics board at each new follow-up; informed consent was elicited from participants at each of these. When cohort children were under 18 years of age, informed consent was obtained from parents and children; once over 18 years of age, informed consent was obtained only from cohort youth.

Epidemiological methods

The epidemiological analysis tested the hypothesis that teen childbearing remains associated with subsequent mental morbidity in adulthood – both on the whole and linearly according to age of pregnancy – after accounting for key measurable covariates.

We used variables collected in the 1982 base-line survey conducted with the whole sample; the 2001 follow-up conducted with a sample living in a random selection of 27% of the census tracts in the city; and the 2004–05 follow-up, which sought to interview all individuals in the original cohort. Loss to follow-up for these two surveys was 21% and 23% respectively (Victora & Barros, 2006).

Teen childbearing, assessed in the 2004–05 follow-up, was defined as a pregnancy that resulted in a live birth any time between the ages of 11 and 19 years. Because becoming a mother at ages 17–19 is more socially acceptable than at younger ages, “early teen childbearing” was defined as a pregnancy between 11 and 16 years and used as our primary outcome. We also carried out some analyses using age of pregnancy subdivided into three groups (11–14, 15–16, and 17–19 years) as a secondary ordinal exposure. To assess mental morbidity in early adulthood, the SRQ-20 screening instrument was used in the 2004–05 follow-up. The SRQ-20 has been found to have sensitivity of 83% and specificity of 80% in detecting psycho-emotional disturbance when using a cut-off of greater than 7 for women, and greater than 5 for men (Mari & Williams, 1986).

To guide the regression analysis, we used a hierarchical conceptual model derived from the literature and our own ethnographic insight (Figure 1). Our main association of interest is bolded. Hypothesised confounders include: maternal skin colour, maternal schooling, family income, and maternal age (all collected in the 1982 base-line survey and the first three used as indicators of baseline socio-economic status), and young

person's school failure before the 4th grade (collected in the 2004–05 follow-up). Because previous studies suggest that in Pelotas school failure precedes teen childbearing (rather than the converse) (Gonçalves & Gigante, 2006), we used school failure prior to the 4th year to identify only youth who had already failed scholastically prior to becoming pregnant. We then adjusted for mediators of the association, shown in italics: income in 2004–05 and smoking behaviour, as the latter has been shown in the literature to be associated with both teen pregnancies and higher levels of depression. All analyses were carried out using Stata v. 11.

Figure 1: Conceptual model for the analysis of the relationship between teen childbearing and mental morbidity in early adulthood.



To assess whether the marital and familial environments in which motherhood unfolded account for subsequent mental morbidity, a number of variables were collected in the 2001 follow-up (details of variables can be found in Table 3). Multiple regression analysis was conducted with those variables that were found to be associated in the univariate analysis.

Table 3
Relationship between social context of teen pregnancy and mental morbidity in adulthood.

	N (%) of whole sample	n (%) of youth with an SRQ score > 7 in 2004-05	Unadjusted Odds Ratio	95% CI
Variables from 2001 follow-up with a subsample of cohort				
Age of father of child at time of pregnancy				
12-19 yrs	200 (48)	85 (42)	1.0	
20-24 yrs	167	60 (36)	1.7	0.8-

Table 3: Relationship between social context of teen pregnancy and mental morbidity in adulthood.

Based on initial ethnographic insight, we also hypothesised that the association between teen childbearing and mental morbidity is modified according to socio-economic status,

politicisation, and the subjective experience of discrimination. To measure politicisation, we asked youth in the 2004–05 whether they had ever participated in a local neighbourhood association or a local political group, and grouped answers to these into a single dichotomous yes/no variable. Experiences with discrimination due to income or skin colour were asked about in the last year in the 2004–05 follow-up and were also grouped into a dichotomous yes/no variable. Effect modification analysis was conducted by estimating separate ORs for each level of socio-economic status, for example, in the regression model and then carrying out chi-squared tests of interaction to check for heterogeneity of these ORs; the degrees of freedom for this equal the number of levels minus one.

Ethnographic methods

Given the social complexity of the relationships in question, we cannot assume that associations shown to be statistically significant are intrinsic or self-evident. It is, rather, the ethnographic material that allows us to explore how teen childbearing can come to have a sustained detrimental effect on mental health.

The ethnographic sub-study, initiated in 1997, drew from a subsample of 96 mother–child pairs, 45 of which were girls. This sample was selected at random from the larger birth cohort study not because we intended to conduct probabilistic analyses, but because we sought to capture a full array of experiences, including those of socially isolated youth. Youth and their families were visited intermittently for 10 years, with intensive periods of fieldwork in 1997–1999, 2000–01, 2005–06, and 2007, by two of the authors (DB and HG) and a team of 4 research assistants. Methods were based on participant observation in communities, schools, and clinics, and repeated semi-structured and informal interviewing with youth, their mothers and other key family members and friends. Most formal interviews were tape-recorded and transcribed in Portuguese. All ethnographic material was translated into English only at the time of writing this paper.

The ethnographic analysis used an inductive and comparative approach; we compared cases of teen childbearing with and without probable mental morbidity, focussing on women’s social and psychological trajectories before and after they discovered their pregnancy. Mental morbidity was explored through open-ended questions, as well as the SRQ score collected by the epidemiological team. We restricted our analysis to the experiences of lower and lower-middle class women, since only 10% of teen pregnancies in Pelotas occur amongst families with higher incomes.

Results

Epidemiological

Of the 2084 women who participated in the 2004–05 follow-up, 602 (29%) became pregnant as teens; 390/2083 (19%) between 17 and 19 years, 176/2084 (8%) between 15 and 16 years, and 26/2084 (2%) between 11 and 14 years. 684/2079 (33%) had probable mental morbidity.

Table 1 demonstrates that teen childbearing is positively associated with high SRQ scores in early adulthood. A linear trend is probable, with larger proportions of younger teen mothers developing mental morbidity in adulthood than those who became mothers as older teens.

Early teen childbearing	Total N	n (%) with an SRQ score > 7 in 2004–05	SRQ > 7 according to early teen childbearing		
			Crude OR (95%CI)	Adjusted OR level 1 ^a (95%CI)	Adjusted OR level 2 ^b (95%CI)
No	1866	582 (31)	1.0	1.0	1.0
11–16 yrs	212	100 (47)	2.0 (1.5–2.6)	1.7 (1.3–2.3)	1.6 (1.2–2.3)
p-value		<0.001	<0.001	0.001	0.002

Age of teen childbearing	Total N	% of all teen	n (%)	Crude OR	Adjusted OR	Adjusted OR
11–14	26	1.2	13 (50)	3.0 (1.5–6.0)	2.5 (1.2–5.2)	2.4 (1.1–5.3)
15–16	176	8.0	88 (49)	2.0 (1.5–2.6)	1.7 (1.3–2.3)	1.6 (1.2–2.3)
17–19	390	18.7	197 (50)	1.9 (1.5–2.5)	1.6 (1.2–2.1)	1.5 (1.1–2.0)
20–21	1038	49.8	388 (37)	1.0	1.0	1.0

Table 1: Univariate and multivariate analysis for the effect of teen childbearing on mental morbidity in early adulthood (22 years).

Table 2 considers other risk-factors for mental morbidity, included in our conceptual model as potential confounders and mediators. SRQ scores are higher amongst those of lower family incomes, with less education, who have failed at least one year in school prior to the 4th grade, of mothers who were younger mothers themselves, and of brown or black skin colour.

	Total N	n (%) with an SRQ score > 7 in 2004–05	Odds Ratio	95% CI	p-value
Family income (1992) ^a					<0.0001
≥10 minimum salary	120	25 (21)	1.0		
6.1–10.0 minimum salary	122	31 (25)	1.3	0.7–2.4	
3.1–6.0 minimum salary	383	95 (25)	1.3	0.8–2.1	
1.1–3.0 minimum salary	1028	352 (34)	2.0	1.3–3.1	
≤1 minimum salary	414	173 (42)	2.7	1.8–4.4	

Table 2: Risk factors for mental morbidity in 2004–05 for young women.

Multiple regression analysis showed that the effect of early teen childbearing on subsequent SRQ score remains after controlling for confounders, with a crude OR of 2.0

reducing to an adjusted OR of 1.7. When controlling for mediators, the OR reduced to 1.6 (Table 1). Table 1 also shows the existence of a dose–response association: the younger the girl was when she became a mother, the more likely she was to have a high SRQ score in early adulthood. The crude ORs of 1.5 for 17/19 year olds, 2.0 for 15/16 year olds, and 3.0 for 11/14 year olds were reduced to 1.2, 1.6, and 2.4 respectively when controlling for the same confounders and mediators listed above.

Table 3 explores whether the relationship between teen childbearing and subsequent mental morbidity is explained through negative familial and marital factors generally assumed to typify teen pregnancies. As shown, the marital and familial contexts in which motherhood emerged were relatively stable and supportive for most women.

Larger proportions of young mothers with less education, from families with lower family incomes and with mothers with less education, actively desired their pregnancy and were married with the father of their child (data not shown). We checked to see if the distribution of any of these contextual variables varied according to age of pregnancy; of all variables considered, a greater proportion of teens who became pregnant between the ages of 17 and 19 were married when compared to younger teens (data not shown).

We tested the statistical association between each of the contextual variables and subsequent SRQ scores and found that not receiving help from family and coming to accept the pregnancy after 9 weeks were both associated with an elevated SRQ score (ORs of 2.0 and 1.5 respectively). This association disappeared when controlling for co-variables. Though larger proportion of early teen mothers were unmarried, in stratifying the relationship between variables presented in Table 3 and mental morbidity by early and late teen childbearing, no significant differences were found.

As will be exemplified below, initial ethnographic results suggested that the effect of childbearing was greater for a subgroup of women of lower socio-economic status who, being more politicised about societal injustice, were also more critically engaged with – and thus troubled by – the inequitable institutionalisation of life-cycle transitions. Tests for interaction showed that the effect of teen childbearing on mental morbidity is more pronounced amongst youth who have failed in school prior to their 4th year of education and whose mothers have lower levels of education (Table 4). No effect modification was found by young person’s completed education level or by family income as measured either in 1982 or 2004–05.

Table 4 Effect modification of the association between early teen childbearing (11–16 years) and high mental morbidity (SRQ score > 7) in early adulthood (23 years).			
Effect modifier (follow-up year)	n	Stratum specific odds ratios (95% confidence intervals)	p-value for interaction
Family income (1992)			
Less than 1 MS	413	2.0 (1.2–3.4)	0.198
1.1–3 MS	1029	1.6 (1.0–2.3)	
3+ MS	636	2.1 (1.0–4.3)	
Family income (2004–05)			
Less than 1 MS	142	1.3 (0.6–2.8)	0.479
1.1–3 MS	703	1.6 (1.1–2.4)	
3+ MS	1231	2.0 (1.2–3.3)	

Table 4: Effect modification of the association between early teen childbearing (11–16 years) and high mental morbidity (SRQ score > 7) in early adulthood (23 years).

The table also shows that the effect of teen childbearing on mental morbidity was substantially higher amongst youth who were politically active as young adults than those who were not, as well as amongst those who had felt discriminated against due to their class status in the past year (Table 4).

Ethnographic

The statistical associations highlighted above are snap-shots of social trends, some of which are highly normative (e.g. the majority of teen mothers set up a new family home with their parenting partners) and others that can be thought of as new patterns that may, with time, become a norm. We consider the relationship between teen childbearing and subsequent mental morbidity to be one such norm-in-the-making: though statistically significant, an important proportion (50%) of teen mothers did not develop mental morbidity. The comparative analysis presented below explores how this difference is being shaped and thus how an emotionally turbulent form of teen pregnancy is becoming normalised.

The two comparative groups we used were derived in the following manner: of the 45 women who participated in the ethnographic subsample, 10 become teen mothers, all between 15 and 19 years. Three of these had SRQ scores of equal to or greater than 7, and 2 had SRQ scores of equal to or greater than 5: because both of these self-identified in the ethnography as having “nerves” problems (a culturally-entrenched idiom of distress), we considered them cases of emotional distress. To corroborate findings from these cases, we also considered material from all additional teen mothers (aged 13–19) we came into contact with naturally in the fieldwork. This included 5 teen mothers who were close female friends or family members of ethnographic cohort participants and 10 teen mothers who became pregnant with young men in the ethnographic cohort sample. In the ethnographic interviews, 7 of these women stated that they suffered from “nerves.” The mental health of these supplemental cases was not assessed through the

SRQ-20 for logistical reasons and because “nerves” has been shown to be a valid marker of mental morbidity for Latin American populations (Guarnaccia et al., 2010). In total, our analysis counted on 25 teen mothers, 13 of whom progressed into motherhood with minimal emotional distress and 12 whom experienced considerable anxiety.

Women who did not develop emotional distress came from families who were of very similar socio-economic standing to those who did, yet their social positioning was noticeably distinct in that they were not simply marginalised from normative society, but actively chose to live on its margins. “We go out to the city centre sometimes,” explained one such woman, “but we don’t leave here [the shantytown] too often, it can create problems with other people, especially for younger ones who can’t defend themselves.” At the heart of these more insular life-style choices lay social discomfort, oftentimes blatant classist discrimination, ambivalence regarding the merits of formal education, and crucially, the desire to retain family as a core life value.

The desire for family life has, however, become implicit, at times actively “hidden.” Most young women publically endorsed the view that pregnant teens are “irresponsible” and the importance they attributed to the establishment of family life became visible only through their practices or in rare moments of private conversation. Only one woman spoke of her desire to marry explicitly, poignantly referring to the difficulty of seeking both education and marriage by describing these as her “Plan A” and Plan B.” In formal situations she always claimed that Plan A was her first priority. Yet in practice, assessing the viability of her current relationship to lead to marriage or cohabitation – her Plan B – shown through as being foremost in her mind, for she often went through long periods of minimal school attendance, only to return to school when, in the midst of a disagreement with her boyfriend, it appeared that her Plan B might be failing.

Being a “hidden” value, these young women and their parents sought ways to nurture family life indirectly so as to comply with prevailing social norms. For most, for example, the attempt to observe normative life-cycle prescriptions entailed not the radical altering of their life-plan, nor the adoption of a totalizing middle-class aesthetics, but simply a compromise: the postponement of the search for a suitable husband by a year or two. Even this, however, was implemented with considerable hesitation, in part because of the fear of long-term singlehood and the fact that investing in education is commonly seen to compromise the establishment of family-life. As one particularly forthright teen mother explained, “If you’ve found the right person, I don’t see why you can’t start your family. I’ve seen so many friends end up single well into their 20s just because they thought they had to finish school first, which for most of us [in the shantytown] takes many years.”

What truly worried these women's parents was precisely irremediable single-hood, whether because of single motherhood from a pregnancy that is rejected by the father of the child or the reality that, as their daughters leave teen-hood, the numbers of eligible young men begins to decline rapidly. As such, public compliance with the view that parenthood must be delayed did not obviate the importance these women and their parents attributed to searching for a suitable partner during adolescence. While virtually all these young women fell pregnant while still technically single, premarital pregnancy came to constitute a core part of the courtship process. Indeed, though these young women's parents were initially dismayed upon discovering the pregnancy, all played a central role in helping women and their partners stay together and set up a new family home.

When pregnancy was discovered, then, it was both an unexpected anxiety-provoking event and a possible window into a stable future and an enhanced social status. As one particularly forthright woman described, just before giving birth, "when I discovered I was pregnant, I wouldn't say it was a shock, like a real shock: of course it frightens you, but just at first, just until everyone, and the father, has accepted it." Because in almost all cases, transitions were carefully nurtured by families to ensure cohabitation, most of these women said they came to positively enjoy pregnancy and the prospect of becoming a mother. "If I could go back in time" said one mother, "I definitely would have been more careful with contraception, because in a certain way, I did become lax with it, and this meant I had to stop my life to take care of [the baby]. But I do not regret it. It has been the best experience in my whole life up to now."

However, motherhood only continued to be experienced as a positive rite of passage for these women because they made structural life changes that ensured their seclusion – and protection – from normative society and the stigma of teen childbearing. All dropped out of school upon discovering their pregnancies and most withdrew further into a restricted life of socialising with like-minded shantytown peers and family members (so much so that some would have been difficult to meet had we not used random sampling). As they recoiled, they demonstrated growing indifference to the pedagogic institutionalisation of life-transition norms. "I know there are many people that are against [teen motherhood]...", one woman casually told us years after having had her daughter, "but I think that for me, it was the best thing that has happened. It's good, you learn tons from being with your children as well you know..." Women thus progressed into their new role as young mothers with minimal emotional turmoil and an optimistic – rather than shameful – view of motherhood.

These women's experiences contrasted, quite starkly at times, with those for whom teen motherhood did become a private and public source of emotional distress. What characterised this latter group's approaches to the normative institutionalisation of the life-span – already prior to their actual pregnancies – was not indifference and withdrawal. Rather, they approached the normalisation of the life-span with a view to positively engaging with it and its promise of upward mobility, while remaining critically vigilant of its classist limitations.

Though all women were to some extent ambivalent about life-cycle norms, the politicised and dualistic positioning of this latter group of women was particularly accentuated. Already as children, these girls had been highly attuned to the realities of socio-economic inequity. Rather than adopt a more socially isolated life-style, however, they made a commitment to seeking a more 'legitimate' place in society through formal education and the informal learning that they explained socialising with middle-class peers endows. This approach to development had been actively shaped by these girls' mothers, who encouraged their children to complete education, to avoid what they identified as "social conformism" and to circulate widely, beyond the confines of the shantytown. At the same time, these families retained a marked sense of class-based *consciência crítica* (critical awareness); several were politically active advocates of the rights of shantytown dwellers and most demonstrated a strong sense of working-class pride. Parents typically argued, for example, that the search for upward mobility should not lead their children to uncritically "buy into" the values of the upper-middle class and to reject their working-class heritage. Notably, though non-white women are more likely to be teen mothers and to have higher levels of mental morbidity, our ethnographic analysis suggested that even for non-white women the politicisation of their experiences with social marginalisation was virtually always articulated in terms of classism rather than racism.

These young women's multi-layered positions vis-à-vis the politics of inequity were reproduced in the multiple meanings they attributed to teen motherhood. On the one hand, most came to publicly articulate the view that teen childbearing represents a constraint to upward mobility. "I may be wrong," said one woman, "but in my mind, I associate having children [in adolescence] directly with poverty." Having greater contact with middle-class peers and values, all had been repeatedly exposed to the notion that teen pregnancy is a consequence of psychological immaturity and a cause of ensuing distress. The avoidance of pregnancy, together with the use of a strong anti-teen pregnancy discourse, was not only instrumental, it was deeply moral: "I *do* think having children is beautiful," said one woman, "you don't have to be 30, but you do need to have a stable life, be working, have finished your studies... the younger ones that get

pregnant say they want to, but I think it's also because *falta cabeça* (their head is not on right). A pregnant woman is a beautiful thing, but not a pregnant child." In publically endorsing such positions, these women were partially defending their own moral integrity by countering common stereotypes of the poor, demonstrating their psychological health, and reaffirming their commitment to education.

On the other hand, many of these women had, like most shantytown youth, begun experiencing social and scholastic difficulties in school, well before they became sexually active. As they struggled to implement the ideals of normative development, their everyday interactions in schools became typified by a frustrating awareness of their disadvantaged positions. As the mother of one young woman pointed out, succeeding in school for the "shantytown child" is difficult, not simply because "these days you need eight years of schooling just to be a garbage collector," but because it requires "a great deal of *jeitinho*," or informal savvy. Importantly, those with *jeitinho* skills are typically able to avoid getting "*marcado*," or "marked up," a term widely used to designate students who have been identified as "problem youth" in schools often to the point of acquiring an irreversible reputation.

Though many of these women did become "marked up," they stayed in school and persisted in trying to negotiate a legitimate place for themselves. Being more exposed to such dynamics, however, they were also more exposed to formal and informal teacher–student interactions that reinforce views of early childbearing as a near-inevitable occurrence for poor youth for whom scholastic achievement and "impulse control" are a challenge. Young women described how teachers, school staff and some school psychologists typically warn students who come from lower family incomes of the perils of early motherhood, oftentimes even before their sexual debut. Our observations in schools confirmed that many school staff used deterministic understandings of what are in effect probabilistic links between teen fertility, health consequences, and poverty. These conceptual class distinctions were reinforced by specific institutionalised practices: for example, young women who began failing in school were often put into different classrooms designated for older children. While these dividing practices are formally based on age, over time, they came to be used informally to predict young women's future, with old age relative to school grade being transformed into a "risk factor" for impending pregnancy. "If you are not progressing in school," one woman explained, "then many people say it can only mean that you must be, or will be, making children at home."

As these women matured, their continued conflict-ridden interactions in school contributed to the production of a new *kind* of teen pregnancy (Hacking, 1999) that we

argue is inextricably bound with institutionally-produced emotional distress. Central to this production process was teachers' use of scientific knowledge to designate young people as being "at risk". For several young women, such designations are understood to be discriminatory because they portray low income students in a negative light and thus translate into unfair practices. "If girls from the vila (shantytown) hang out with their boyfriend in the school playground," explained one woman, "they will get pegged by teachers and may be even referred to the school psychologist [whereas middle-class girls] are left alone. For virtually anything, we get all marked up by teachers."

With time, these young women not surprisingly reacted to being identified as probable "teen pregnancies" by elaborating critical appraisals of formal education and by becoming less careful about contraception, no longer feeling as compelled to avoid early pregnancy. Though none went so far as to have planned pregnancies, they did begin to question the alleged pitfalls of young motherhood and to actively – if also anxiously – tip the balance of their ideological commitments away from the search for a "normal" middle-class existence and towards marriage and young motherhood.

A small number ($N=2$) of these women eventually recoiled, sheltering themselves from society's view of them as "backward" and psychologically weak. Those that remained in school, socially engaged and, it could be argued, true to their politicised upbringing ($N=10$) were far more confrontational, extroverting their reactions into disillusionment and highlighting the detrimental effects of living in a stigmatizing society. While still considering their pregnancies to have been "unplanned," they were also loath to accept depictions of their trajectory towards motherhood as having been embedded in immaturity or indeed as necessarily linked to a future life of destitute poverty.

It was at this point that teen motherhood was actively re-conceptualised from an unexpected fait-accompli to an explicitly embraced positive identity. One such woman emphasised the way that the establishment of family life became, for her, a catapult for other key life improvements, despite its unexpected nature: "I always imagined that I would structure my life a bit better before having children; finish schooling, set up a home... you know. But it ended up being the reverse. I had a child and that forced me to start structuring myself, tending to things, financially, and even psychologically. But no one ever talks about this do they..."

Like this woman, most delved into an intense form of identity-refashioning, using the transition to motherhood as a way of legitimizing their politicised rejection of normative middle-class values. One of the most vocal of these women stated that it was only when she married and became a "teen" mother, battling life as an adult, that she was able to "see things as they are," the extent to which "rich people" actually exploit the poor. In

experiencing such insights, women such as these made a point of demonstrating not shame for their “unintended pregnancies,” but joy in their new-found status as young mothers. And they did so even while they remained (at least partially) in school and retained the full array of social relations they had been reared to appreciate – and even while the public nature of their “life-choices” led to growing conflict, stigma, and anxiety.

Discussion

Teen childbearing remained associated with mental morbidity in adulthood after accounting for measurable confounders and mediators; younger age of pregnancy was associated with a higher risk of mental morbidity. It is unlikely that the association is due primarily to negative familial and marital responses, as most pregnancies were eventually supported. Rather, the ethnographic analysis suggests that it is partially accounted for by the fact that it is more pronounced amongst a specific subgroup of socially engaged women who sought to comply with normative developmental prescriptions and whose failure to do so exposed them to social conflict and stigma (Béhague, 2009). Importantly, these women’s politicised and discouraging attempts to engage with the institutionalisation of the life-cycle and with scientific knowledge about psychological development, already from a young age, were at the root of *both* their teen pregnancy *and* ensuing emotional distress. The importance of understanding the circumstances of this particular subgroup of poor women was confirmed through epidemiological tests for interaction. These findings give credence to our original assumption that the psychological effect of teen child-bearing constitutes a norm-in-the-making that may become increasingly entrenched as youth continue to experience institutionalised marginalisation.

The possibilities of both residual confounding and reverse causality cannot be ruled out. Like most studies, we did not measure mental morbidity in childhood, and so, were only able to investigate the latter part of what is likely to be a long causal chain. We did not include other known risk factors for teen childbearing that may also account for mental morbidity, such as exposure to violence, alcohol and drug abuse, and child abuse. On the one hand, many of these antecedents are clustered within deprived populations, such that analyses that include measures of socio-economic status are likely to be controlling for many other associated risk factors (Hillis et al., 2004). On the other hand, the ethnography supports the view that both residual confounding and reverse causality are at play. The distress poor young mothers experienced was linked not just to economic deprivation and the stigma associated with young motherhood, but to women’s marginalised status as “at risk” shantytown youth, something they experienced already as preteens. Identified as being virtually destined to become teen mothers because of

their low income and, it was often presumed, low “impulse control,” these women’s reactions to such knowledge ironically led to an emotionally- and politically-charged form of teen motherhood.

These results raise important questions regarding the epidemiological concepts of confounding and mediation. We originally postulated that socio-economic determinants associated with teen childbearing and mental morbidity are confounders rather than mediators. Being in existence prior to pregnancy, they are presumed not to lie on the causal pathway. However, our ethnographic results suggest that these should still be considered mediators rather than confounders because they help explain the association in question: though low family income at birth precedes both teen childbearing and mental morbidity, it mediates rather than confounds the association because it is precisely in the life-course of an important subset of lower-class women that teen childbearing becomes a compelling, if anxiety-provoking, life-trajectory showing politicised commitment to a (critical) working class ethos.

At a conceptual level, the focus of this paper should not be interpreted to mean that maturation and morbidity do not have biological components, but rather that the neurological underpinnings of development are unlikely to be universal or static. Studies have shown that in cultural settings where young motherhood is an expected social norm that occurs within the context of avowal from society as a whole, teen motherhood is a largely unproblematic experience that does not lead to any health sequelae (Kramer & Lancaster, 2010). In settings where institutions posit teen childbearing as a key constraint to economic and personal well-being, where teen pregnancy has become a potent symbol of immaturity and developmental deviance, the experience itself is more likely to have negative psychological, biological and social effects. These dynamics are likely to be exacerbated when individuals feel the pressures of and strive to comply with normative values (Dressler et al., 2007). So strong are these stigmatizing pressures that some marginalised communities in the US have developed protective responses by nurturing a secluded pro-natalist “minority culture” (Geronimus, 2003), much like the women in our study who eventually opted to withdraw from normative society altogether.

Such findings urge us, as key scholars have argued, to develop a more radical re-conceptualisation of the role of culture and society in shaping biosocial differentiation over time (Kirmayer, 2006; Krieger, 2001; Lock & Nguyen, 2010). Those interested in how this differentiation impinges upon adolescent development should include in their concept of “culture” the very scientific practices, technologies and concepts that have been developed to study young people (Choudhury, 2010). In Pelotas, it is not only the

inequitable institutionalisation of life-transition norms that is having material effects on the emotional lives of some young women. Equally important are women's exposure to epidemiological knowledge about teen childbearing and the fraught relationship they come to have with the differential application of this knowledge (Béhague, 2002). When studying processes of stigmatisation, interventions that use epidemiological-knowledge should not be immune to investigation, no matter how unintended their effects may be.

That epidemiological knowledge can be interpreted in so many different ways must be openly debated, particularly when it pertains to the use of such knowledge in the development of public policies. A view of adolescent development as primarily biologically shaped has been used to support the increased institutionalised control of young people's behaviours through legislative and regulatory institutional policies. Evolutionary biologist Steinberg, for example, argues that institutional measures are "likely be more effective in limiting adolescent smoking, substance abuse, pregnancy, and automobile fatalities than attempts to make adolescents wiser, less impulsive, or less short-sighted" (Steinberg, 2008:19). Even public health experts who are less wedded to the notion of biological immutability tend to focus on redressing the health consequences of teen childbearing by altering proximate determinants, e.g. increasing age of first pregnancy through health education.

Critics argue that these sorts of targeted interventions ignore underlying socio-economic determinants and make teen pregnancy into an inappropriate scapegoat for broader societal problems, diverting attention away from the need for policies that ensure young people's equitable access to non-discriminatory educational and economic systems (Geronimus, 2003; Lawlor & Shaw, 2001). The focus on targeted interventions is demonstrative of a broader public health culture that seeks silver-bullet panaceas to complex problems. What is at stake here is not public health experts' naive denial of the complexity at hand. Socio-economic exclusion is undeniably important for most public health researchers and practitioners. Yet addressing exclusion is considered impractical in a public health system that, according to its remit, should focus efforts on identifying "modifiable" determinants.

However, as we have shown, such targeted approaches not only fail to consider the issue of sustainability: they may actually be contributing to the problem. The inability of the public health apparatus to truly engage with the social, economic and political causes of morbidity has helped to transform teen childbearing into a potent symbol of developmental immaturity, pathology and the perpetuation of poverty. The stigmatizing effects of the practices now associated with this potent symbol are contributing to young women's emotional distress, as well as, in all likelihood, to a rise in teen pregnancies

amongst the most marginalised members of society. That these effects were more pronounced amongst women who entered their teen years with the hopes of engaging with normative society and acting on their political agency demonstrates the depoliticizing elements of public health practices oriented towards the identification and management of “risk.”

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References

Béhague D. Beyond the simple economics of cesarean section birthing: women’s resistance to social inequality. *Culture, Medicine and Psychiatry*. 2002;1–35.

Béhague D. Psychiatry and the politicization of youth in Pelotas, Brazil: the equivocal uses of “conduct disorder” and related diagnoses. *Medical Anthropology Quarterly*. 2009; 23(4):455–482.

Béhague D, Gonçalves H, et al. Anthropology and epidemiology: learning epistemological lessons through a collaborative venture. *Ciência & Saúde Coletiva*. 2008; 13(6)

Choudhury S. Culturing the adolescent brain: what can neuroscience learn from anthropology? *Social Cognitive and Affective Neuroscience*. 2010; 5(2–3):159–167.

Dressler WW, Balieiro MC, et al. A prospective study of cultural consonance and depressive symptoms in urban Brazil. *Social Science & Medicine*. 2007; 65(10):2058–2069.

Geronimus A. Damned if you do: culture, identity, privilege, and teenage childbearing in the United States. *Social Science & Medicine*. 2003; 57:881–893.

Gonçalves H, Gigante D. Work, schooling, and reproductive health: an ethno-epidemiological study of adolescent women belonging to a birth cohort. *Cadernos de Saúde Pública*. 2006; 22(7):1459–1469.

Guarnaccia P, Lewis-Fernandez R, et al. Ataque de nervios as a marker of social and psychiatric vulnerability: results from the NLAAS. *International Journal of Social Psychiatry*. 2010; 56(3):298–309.

Hacking I. Teen pregnancy: social construction? In: Wong J, Checkland D, editors. *Teen pregnancy and parenting: Social and ethical issues*. University of Toronto Press; Toronto: 1999. pp. 71–81.

Hillis S, Anda R, et al. The association between adverse childhood experiences and adolescent pregnancy, long-term psychosocial consequences, and fetal death. *Pediatrics*. 2004 Feb; 113(2):320–327.

Hoffman S. Teenage childbearing is not so bad after all. Or is it? A review of the new literature. *Family Planning Perspectives*. 1998; 143:236–239.

Kessler R, Berglund P, et al. Social consequences of psychiatric disorders, II: teenage parenthood. *American Journal of Psychiatry*. 1997; 154:1405–1411.

Kirmayer L. Beyond the 'new cross-cultural psychiatry': cultural biology, discursive psychology and the ironies of globalization. *Transcultural Psychiatry*. 2006; 43(1):126–144.

Kramer K, Lancaster J. Teen motherhood in cross-cultural perspective. *Annals of Human Biology*. 2010; 37(5):613–628.

Krieger N. Commentary: society, biology and the logic of social epidemiology. *International Journal of Epidemiology*. 2001; 30:44–46.

Lawlor D, Shaw M. Too much too young? Teenage pregnancy is not a public health problem (with responses) *International Journal of Epidemiology*. 2001; 31:552–554.

Lock M. The tempering of medical anthropology: troubling natural categories. *Medical Anthropology Quarterly*. 2001; 15(4):478–492.

Lock M, Nguyen V. *An anthropology of biomedicine*. Blackwell Publishing; West Sussex: 2010.

Luker K. *Dubious conceptions: The politics of teen pregnancy*. Harvard University Press; Cambridge, MA: 1996.

Males M. Does the adolescent brain make risk taking inevitable?: A skeptical appraisal. *Journal of Adolescent Research*. 2009; 24(1):3–20.

Mari J, Williams P. A validity study of a psychiatric screening questionnaire (SRQ-20) in primary care in the city of São Paulo. *British Journal of Psychiatry*. 1986; 148:23–26.

Mollborn S, Morningstar E. Investigating the relationship between teenage childbearing and psychological distress using longitudinal evidence. *Journal of Health and Social Behavior*. 2009; 50(3):310–326.

Schmidt R, Wiemann C, et al. Moderate to severe depressive symptoms among adolescent mothers followed four years postpartum. *Journal of Adolescent Health*. 2006; 38(6):712–718.

Sercombe H. The gift and the trap: working the 'teen brain' into our concept of youth. *Journal of Adolescent Research*. 2010; 25(1):31–47.

Spear L. The adolescent brain and age-related behavioral manifestations. *Neuroscience and Biobehavioral Reviews*. 2000; 24:417–463.

Steinberg L. A social neuroscience perspective on adolescent risk-taking. *Development Review*. 2008 March; 28(1):78–106.

Trostle JA. *Epidemiology and culture*. Cambridge University Press; Cambridge: 2005.

Victora C, Barros F. Cohort profile: the 1982 Pelotas (Brazil) birth cohort study. *International Journal of Epidemiology*. 2006; 35(2):237–242.

Wilkinson R, Pickett K. *The spirit level: Why greater equality makes societies stronger*. Bloomsbury Press; London: 2009.

Whitley R, Kirmayer LJ. Perceived stigmatisation of young mothers: an exploratory study of psychological and social experience. *Social Science & Medicine*. 2008; 66(2):339–348.