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Effects of Family Structure during Childhood and Adolescence on Premarital Sexual Intercourse

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ABSTRACT

Although researchers agree that family is a potential contextual factor shaping adolescent's behavior, its influences on premarital sexual intercourse in Sub-Saharan Africa are poorly documented. This study extends our knowledge on several dimensions of its association with sexual initiation, using various specifications of family structure. Data come from two independent samples of 1,403 and 2,382 young people aged 10-29 years-old respectively fielded in Cameroon in 1996 and 2002 under the auspices of the Population Observatory in Socio-clinical Epidemiology (POSE) in Bandjoun (West Cameroon). The study tested three hypotheses on sexual behavior: socialization hypothesis; social control hypothesis and instability and change hypothesis. Results indicated that the proportion of youth who initiated premarital sexual intercourse declined substantially from 45.2 % in 1996 to 34 % in 2002, exhibiting an annual change of 2 %. Age at first intercourse increased during the inter-survey period from 16.9 years to 17.7 years. Over time, girls were more likely to initiate sexual intercourse than boys. Multivariate discrete-time hazard analyses lend support to the socialization hypothesis and to some extent to the control hypothesis and instability hypothesis. Adolescents who resided in two-parent families were less likely to have premarital intercourse than those who resided in one-parent and neither-parent families. Young people in monogamous and polygamous families were less likely to initiate sexual intercourse compared to those who lived in other family types. Compared to monogamous families, young people in polygamous families were more likely than those to initiate sexual intercourse.

Keywords: Family Structure; Adolescence and Youth; Premarital Sexual Intercourse

INTRODUCTION

Recent studies in Sub-Saharan in Africa showed that age at first intercourse is decreasing (Bozon 2003) and consequently, the percent of young people engaged in premarital sexual intercourse is increasing. There are several and justifiable reasons for further research on factors affecting early sexual intercourse in Africa (Kuate-Defo 1998). First, sexual intercourse at adolescence is often unprotected, occurs in a context of short-tem relationship between partners and tends to increase the risk of sexually transmitted diseases including HIV/AIDS, pregnancy and various risky sexual behaviors. Premarital sexual activity is frequently risky-casual sex and sexual relations with commercial sex workers (CSW) are often reported by youth, especially among young males. High percentage of young people initiating premarital intercourse and low contraceptive use jointly jeopardize adolescents' reproductive health outcomes. Early premarital intercourse had been shown to be a strong predictor of the high prevalence of sexually transmitted infections (STIs), adolescent fertility, and lifetime sexual partners (Miller 2002; Upchurch et al. 1999). Second, adolescent sexual activity carries adverse social, cultural and economic consequences which could be averted. For example, unplanned pregnancies constitute in many cultures a burden first and foremost for girls and their families. Teenage motherhood has also been associated with lower rates of high school completion and high rates of poverty; thereafter decreasing their social capital and human capital.

While the linkages between family structure and child's well-being are quite well documented in Western countries, there is only scanty evidence from developing countries and especially in Sub-Saharan Africa where divorce, separation and parental death due to HIV/AIDS are increasing. There is evidence suggesting that a large proportion of young people will live during their infancy and adolescence with only one parent – often the mother – in large sized households and with older siblings (Lloyd and Desai 1992). Female headed household is often associated with poverty and adverse child's outcomes within families and neighborhoods (Brooks-Gunn et al. 1997; Rwenge 2003; Valle et al. 2005) which tend to

hamper child's well-being (Albrecht and Teachman 2004; Demo and Cox 2000; Furstenberg 2000; Furstenberg and Cherlin 1991; McLanahan and Bumpass 1988; Wu and Martinson 1993). Researchers in child development and related fields argue that children who grew up in non-intact families face early transitions to adulthood, including early sexual intercourse, early marriage and parenthood. Even though the family is the most important setting ensuring successful transitions to adulthood (Kuate-Defo 2006), little is known on its effects on sexual initiation in African settings. There is a consensus among researchers and policymakers around the world about the impact of family structure on sexual initiation. This study examines the associations of various family structures and sexual initiation among 10-29 aged young people in Bandjoun (West Cameroon).

The remainder of this paper is organized as follows. Section two sets out the conceptual framework and the main hypotheses tested in the study. Section three describes data and methods used in the research. Results are presented in section four, structured according to the conceptual framework and the hypotheses. The final section presents the main findings of the study and their implications in light of previous studies.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

Age at first intercourse had received increasing attention in sociological, anthropological and developmental studies in Western countries with an attempt to identify mechanisms through which sexual initiation is hastened by certain family configurations and not other. This study test three hypotheses derived from the socialization perspective, the social control perspective and the instability and change perspective (Albrecht and Teachman 2004; 1994; Wu 1996; Wu and Martinson 1993) in the African context where these conjectures have not yet been fully examined.

Socialization hypothesis

Childhood development's theorists have generally held the view that parent-child interactions during early infancy have lasting consequences during the life course (Albrecht and Teachman 2004; Hogan and Kitagawa 1985; Wu and Martinson 1993; Wu and Thomson 2001). They have argued that better child's psychosocial development and adjustment are well provided in two-parent families while other family configurations are less conducive to a child's well-being. Three major arguments for expecting that children will do better when they live with two biological parents have been considered. First, it is argued that the quality of parenting is likely to be higher in two-parent families than single-parent families or other family types (Amato 1987). Two parents are more likely to provide a best emotional support and life lessons necessary for a child's development and psychosocial adjustment. Several studies found consistently that father's absence is detrimental for child's development, and have insisted on the presence of the biological father in the home because of the conflict climate which may result from the remarriage of father or mother (East et al. 2006; Ellis et al. 2003). Second, the importance of parents as models has been demonstrated, adolescents whose parents are not married having a tendency to believe that premarital sexual intercourse is socially acceptable and thereafter to initiate sexual intercourse prematurely (Wu and Thomson 2001). Adolescents living in two-parent families take advantage of the presence of their parents in the home and can learn and internalize from both father and mother about heterosexual love and commitment. Third, the role of economic deprivation on premarital sexual intercourse has been highlighted. They have argued that single-mother families are often poor (Upchurch et al. 1998; Wu 1996). The nature of biological relationships in the home can lead to a selection among young people when meeting adolescents' needs in various social, economic, educational domains. It is possible that young people who have less or no direct relationships in the home with their parents can be in disadvantaged situation and face economic deprivation.

There is ample empirical evidence in support of the socialization hypothesis from Western countries. For instance, positive and supportive relationships between parents and children have been shown to be

correlated with positive child outcomes such as delayed first sexual intercourse, high self-esteem, and low prevalence of premarital birth (Manscill and Rollins 1990; Miller et al. 2001; Miller and Bingham 1989). Rollins and Thomas (1979) also found a remarkable consistency of results across time, developmental stages, cultural contexts, and sex-of-parent-sex-of-child variations, between parental support and numerous child outcomes behaviors such as school performance, early sexual initiation, problem behaviors like crime, gang involvement smoking, illegal drugs and alcohol consumption, and health status. For instance, Wu and Martinson (1993) showed that American female adolescents who grew up witnessing their parents' intimate relationships outside of marital unions were more likely to initiate premarital sexual activity or to act out role models. This finding has been confirmed by more recent studies (Albrecht and Teachman 2004; Aquilino and Supple 2001; Demo and Cox 2000; Furstenberg 2000; Miller 2002; Miller and Fox 1987; Pearson et al. 2006). Other studies suggested that family structure per se did not influence sexual initiation because rather than family structure, family contexts (including mother-child relationship, mother's attitudes toward dating and discussion of sexuality) were strongly associated with sexual debut (Davis and Friel 2001).

In African settings, the impact of father's presence on delaying sexual debut has been demonstrated. In Rwanda, Babalola (2004) found that family structure was associated with sexual initiation for females but not for males. The author found that living in family structure other than two-parent or a father-family increased significantly the risk of sexual initiation. Ngom et al. (2003) found that in Nairobi (Kenya), father's presence reduced substantially the risk of early initiation of sexual intercourse and risky behaviors such as frequency of sexual intercourse and unwanted pregnancy.

Social control hypothesis

This hypothesis, also called parental supervision or monitoring during adolescence, postulates that young people are naturally inclined toward deviance, but that bonds to conventional society cause most individuals to refrain from such behavior (Crockett et al. 1996). Young people's sexual initiation is

portrayed as a result of norm-breaking and deviance. This hypothesis emphasizes the importance of adult's supervision especially that of parents at adolescence (Albrecht and Teachman 2004; Hogan and Kitagawa 1985). Adolescence is generally viewed as a transitional period during which young people move out of childhood and begin to take up adult roles and responsibilities of their own. Thus, parents and other family members, more than anyone else, critically influence the choices available to young people and the decisions they make even in sexual matters (National Research Council and Institute of Medicine 2005). Previous studies emphasized the role of second caregivers (probably the father) in the supervision of adolescents when rebellion run out or increased (Simons et al. 2006). It may be assumed that mother's authority as a primary caregiver is weakened during adolescence while the presence of the father as second caregiver becomes very important. Father's presence will reinforce mother's authority by respecting and supporting her decisions in the home about adolescents' leisure time and acting. As a second caregiver, the father may also relieve the mother when she is away from the home. In single-parent families, these roles can be filled by other adults in the home, such as uncles and aunts, grandparents, older siblings and other relatives.

Modernization has caused major changes in family structure, which disrupted the traditional cohesion within two-parent families. Divorce, cohabitation and remarriage have forced the emergence of new types of family structure such as stepfamilies, blended families, and reconstituted families (Furstenberg 2000; Furstenberg and Cherlin 1991; Miller 2002; Miller et al. 2001). Several studies in the United States showed that two-parent families may exercise greater supervision and control over children than do single-parent families, and hence single-parent families may be less able than do two-parent families to prevent adolescent adverse outcomes like premarital sexuality and out-of-wedlock childbearing (Manscill and Rollins 1990; McLanahan 1988; McLanahan and Bumpass 1988; Wu 1996; Wu and Martinson 1993). Parents' labor force participation had led to new configurations of domestic work and the supervision of adolescents' behaviors on a regulatory and systematic basis. The influence of parental supervision on the timing of sexual debut has been documented (Albrecht and Teachman 2004; Newcomer and Udry 1987;

Noller and Callan 1991; Wu and Martinson 1993), and this influence has been shown to be gender-dependent. Cookston (1999) showed that lower levels of problem behaviors were associated with higher levels of supervision for both females and males. He found that females from homes with low supervision had the highest risk of being involved in problem behaviors while males from homes with anything less than high supervision may be at risk. Finally, he concluded that low supervision is a risk factor which should be addressed in future research.

While it is well established in the United States and other Western countries that parental supervision is positively associated with low intensity of sexual activity among young people, research in developing countries had provided less evidence of the relationship. Traditionally, adolescent supervision in African settings was a social and collective enterprise albeit family structures play the most important role. Economic hardship often under conditions of uneven development observed in many African countries weakened social norms and adult's control over sexuality. It has been conjectured that under such circumstances, adolescents' sexual behaviors may be rational and economically justified (Djamba 1997b; Meekers 1994; Meekers and Calvès 1997). It can be argued that in African settings like Bandjoun (West Cameroon) with an extensive practice of polygamy, adolescents living in polygamous family structures may be more likely to engage in early sexual intercourse than those in monogamous ones (Babalola 2004; Slap et al. 2003) since father's time allocation may vary considerably between monogamous and polygamous families. Polygamous father may spend less time watching over children at home, and this may lead to a lower parental supervision than in monogamous families.

Instability and Change hypothesis

Instability and change in family relations that occur after divorce or remarriage may affect the likelihood of first sexual intercourse. According to this perspective, changes in family structure especially the new configuration inside the home triggered by divorce or remarriage increase the risk of premarital

intercourse. Indeed, changes in family structure are more salient than the type of family structure experienced by young people (Albrecht and Teachman 2004; Berglund et al. 1997), especially changes which occur during adolescence. Other arguments rely on conflict relationships that could result from parents' remarriage. Young people living in stepfamilies are more likely to experience conflicts with stepparents, which can in turn precipitate early initiation of premarital intercourse (Wu and Martinson 1993). The potential role of these conflict relationships hinges on the extent to which parents in the home can exert their authority on young people or on whether young people recognize the parents' or stepparents' authority in the home. Although it is recognized that older people tend to exert authority and control on the youth in African settings, it is also true that the authority of the household head is more recognized by his/her own children in the household (Djamba 1997a).

Another correlate of the instability and change in family structure is the variation of social capital. Berglund and al. (1997) highlighted the linkage between economic deprivation and teenage pregnancies in Nicaragua. They found that girls who experienced premarital pregnancies came from low socio-economic milieu that does not favor positive visions of the future but are exposed to limited access to education and low educational aspirations. They are more likely to drop out of school or jobs before pregnancy. Due to a lack of affection, these adolescents may disengage from a home continuously in transition and seek emotional support or intimacy outside the family through impulsive and rebellious behavior that may be expressed by the initiation of sexual activity.

The parents' death had been found elsewhere as a strong and traumatic stressful event which is positively related to negative adolescents' outcomes such as school enrolment (Case et al. 2004; Gertler et al. 2004). Due to the economic hardship and changes in family structure following parents' death, particularly through child's fostering, it is expected that the lost of parents at adolescence may hasten sexual initiation among young people.

In sum, the three hypotheses might be more fruitfully viewed as complementary rather than competing (Wu and Thomson 2001). For instance, change in family structure can affect potentially the processes of socialization and parental control by providing a series of family environments negatively (or positively) associated with the entry into sexual intercourse. Parents' divorce or remarriage may lead children to question parental commitment or authority in their life especially in matters concerning premarital sexual activity. Divorce and remarriage for example can lead to multiple consequences to the adolescents' life. Indeed, they can reduce the number of (biological) parents in the home as socialization agents. Consequently, the adolescents face stress regarding the absence of the other parent, and making new adaptation in the stepfamilies is a challenge. Furthermore, when adolescents live with two parents (one biological and one stepparent), the new configuration tends to break the relative parental control over children and may increase the risk of loosing virginity. Thus, it is more fruitful to view these perspectives as an overall interactive process. Previous studies have often analyzed the influence of family structure on sexual initiation using only one configuration. Although findings on the relationships between family structure and sexual debut were consistent across studies, they concerned different populations. Our study will reassess these relationships with an attempt to pinpoint some of their underlying mechanisms, using several configurations of family structure from the same population.

DATA AND METHODS

This research is based on data from the Cameroon Family Life and Health Survey (CFLHS) carried out under the auspices of the POSE in western Cameroon which collected data on family life and health's outcomes through the life course in 1996 (baseline) and 2002 (follow-up). The surveys were drawn from a random sample of households in Bandjoun stratified by socio-sanitary regions and neighborhoods.

Bandjoun (West Cameroon) offered a unique African setting for conducting this research for at least three major reasons (Kuate-Defo 1999). First, the risk of HIV infection is generalized in Cameroon, and many

rural and semi-rural areas are rarely reached by most mainstream activities due to problems of accessibility. Second, Bandjoun combined traditional as well as modernized settings in which conservative practices and evolutionary beliefs on adolescent reproductive health coexist, often sending mixed or opposite messages to young people. Third, the geographical distribution of its population depicts one of the highest population densities close to 330 inhabitants per km² in which nothing is virtually known about health reproductive profile, polygamy is widespread and the extended or joint family is the dominant pattern.

Randomly selected households and representative samples of 2,377 and 4,950 men and women (and sub-samples respectively of 1, 445 in 1996 and of 2,461 young people in 2002 of both sexes 10-29 years old) were drawn from the 12 socio-sanitary regions in 1996 and 2002, respectively. Data were representative by sex and within the major age groups (10-14, 15-19, 20-29, 30-49, and 50 and over). Information was collected on individual and family history, and a set of individual biographies. By its richness, it was possible to carry out analyses of the debut of sexual intercourse in a longitudinal approach, taking into account the family structure and its processes. These data coupled with age-dependent information facilitated a better grasp of events occurring during an individual lifecourse, and provide an opportunity to assess the effects of pre-existing social and family structures on subsequent sexual behavior. Data for the present study were constructed to capture family-related information at two stages of life: at 6 years of age for the childhood and at 12 years for the adolescence.

Measurement of Selected Variables

< TABLE 1 ABOUT HERE >

Age at first intercourse. The study's outcome variable is based on responses to the questions "Have you ever had sexual intercourse?" and "How old were you first had sexual intercourse?" for those who were

sexually experienced. Responses to this last question were recorded in the nearest year. Young people who did not experience sexual intercourse at the time of the survey were censored at their age at interview.

Family structure and the specification of potential mechanisms mediating sexual initiation

Defining family structure has been a subject of debate, and the resulting ambiguity in terminology has contributed to the confusion about its effects on youth's sexual behaviors. In Western countries, studies on the relationships between family structure and adolescent's sexual behaviors have inconsistently used several definitions which render problematic comparisons across studies of influences of family structure on sexual behavioral outcomes.

Arguments developed by socialization hypothesis have emphasized the role of two biological parents in childrearing, the father's presence in the home, and the parents' role models as protective factors. Other studies took into account the role of grandparents and other adults in the home as well as marital status, distinguishing monogamous from polygamous families. Family structure consisted in a set of yes/no items of people who lived with the 10-29 years old at age 6 captured with the questions "With whom did you live with at the moment of [age 6]?" Yes/no items included father, mother, brother/sister, cousins, uncle/aunt, grandfather/grandmother among others. These items allowed the construction of six types of family structure, each one taking into account the presence of one or two biological parents, and the presence of grandparents or other relatives in the home. Three potential mechanisms had been identified in this study which can mediate the effects of family structure on sexual initiation: economic deprivation, parents' financial support and the quality of parent-child relationships. *Economic deprivation* is a set of the following three variables measured at age 6. First, "What was the lighting type that you were using in the home at age 6?" Responses were electricity, lamp, candle and other. This variable was coded 1 if the lighting type was electricity and 0 otherwise. Second, the presence of radio or television at home captured by the question "Did you have a radio or a television at home at age 6?" coded 1 if yes and 0 otherwise.

Third, educational attainment of parents or tutor was measured by the question "What was the education level of the person in charge of you at age 6?" Responses were recorded as follow: 0=none, 1=primary, 2=high school and 3=university. *Financial support* was captured by the question "Who was giving the most pocket money at age 6?" Multiple yes/no responses to the question included father and mother, mother, father, grandmother/grandfather, brother/sister/uncle/aunt, cousin, myself, parents friend, respondents' friend, and other. Thus parents' financial support is a dummy variable coded 1 if adolescents received financial support from at least one biological parent and 0 elsewhere. The *quality of parent/child relationships at age 6* was captured through the question "How did you see your relationships between your parents/guardian at age 6?" Reponses on the quality of parent-child relationships ranged from 1=very good to 5=difficult or bad. In this study, the quality of parent-child relationship is a dummy variable coded 0 if parent-child was difficult and 1 elsewhere.

The social control hypothesis put even more importance on the family structure at adolescence (which referred to as age 12) captured by yes/no items as at age 6, and similarly six types of family structures were defined as above. Three mechanisms were identified as mediating factors between family structure and sexual initiation including parental supervision, financial support at age 12 and parent-child communication about puberty and sexuality. The level of parental supervision is expected to vary with the number of parents in the home and it is assumed that biological parents have more legitimate authority than other adults. Additionally, parental supervision can vary by gender to the extent that social norms and expectations on sexuality are generally more severe for girls than boys because the consequences of risky sexual behaviors are generally greater for girls than boys. This study utilized direct measures of parental supervision at age 12 which indicated whether parents controlled for the adolescent's out-home activities using the question "Were your parents or guardians controlling your leisure at age 12?" Responses ranged from (1) a lot to (5) not at all. This variable was inversely recorded to expect a better gradient with sexual initiation and was grouped into three categories: (1) not at all, (2) very little/little, and (3) enough/a lot. It is expected that the higher the level of parents' supervision, the lower the likelihood of initiating first

sexual intercourse. Parents' financial support is a similar variable coded as above except that its effect is measured at age 12. The last mechanism for the social control hypothesis was the parent-child communication about puberty and sexuality. It is largely none that direct communication on sexual matters in African settings is infrequent. Openness of communication, clear focus on sexual topics, quality of parent-child relationships, and parents' values toward sexuality are determinants that can enhance the effect of parent-child communication (Miller et al. 2001). Nevertheless, findings on the relationships between parent-child communication and sexual initiation are almost inconclusive. For instance, Wang (2007) found that the effect of parent-child communication varied according the parent's gender and youth's gender. They found that father-child communication about sex-related issues increased significantly the risk of premarital sex while it decreased the risk for females. Conversely, mother-child communication about sexual topics increased significantly the risk of premarital sex among females whereas it increased but not significantly the risk for boys. In African settings, it is expected that parent-child communication is negatively associated with sexual intercourse for two reasons. First, it is possible that parent-child communication occurs in educated parents and second, these parents are more likely to head families with less economic depletion. The question "Did you ever have conversations with your parents/guardians about (i) puberty and (ii) sexual education?" captured parent-child communication. These two items were coded 1 if the child interacted with parents or guardians and 0 otherwise.

Instability and change hypothesis suggested that early sexual initiation is affected by the number of transitions of young people's family history. In this study, it was assumed that changes in family structure and socioeconomic status can influence the risk of sexual initiation. Frequent changes in family structure which result from divorce, remarriage, parents' death may increase the risk of premarital sex. Parents' divorce or remarriage are sometimes accompanied with family conflicts and low levels of parent-child connectedness. Changes in family structure between age 6 and age 12 were assessed by comparing family structures at these two points. Practically, taking the family structure at age 6 as the baseline, a dichotomous variable was defined and coded 1 if the family structure at age 6 differed from that of age 12,

and 0 otherwise. In the same manner, it is assumed that change in family structure may lead to changes in socioeconomic variables that were defined above. Thus, changes were assessed in the presence of radio or television, educational level of parents/guardians, and the lighting type. Beyond these changes, another factor explaining changes in family structure is the parents' death which can hasten the mobility of children in families headed by other adults in the kinship. In this study, the lost of at least one parent is treated as a source of family structure's instability. The question "What was the main reason why you weren't living with your biological parents at age 12?" captured the parents' survival status. Responses were mother and father died, father died, mother died, school, and other. This variable was coded 1 if at least one parent was dead and 0 otherwise.

Modeling strategy for testing the research hypotheses

The timing of first sexual intercourse can be viewed as an age-dependent process and examined using event-history analysis in the form of discrete-time logistic regression equations (Allison 1982; Allison 1984). Using the person-age observation as the unit of analysis, multivariate hazard discrete-time logit models were fitted to capture the effects of family structure at childhood and adolescence on the hazard of experiencing a first intercourse. The hazard of premarital sexual intercourse can be parameterized with a general formulation as follows:

$$h[(t_i) \mid X(t_i)] = \exp[\alpha(t_i) + \beta X(t_i)]$$

where $h(t_i)$ represents the risk of premarital sexual intercourse at age t given that the individual i has not yet experienced a first sexual intercourse before t; β is a vector of parameters corresponding to covariates X; and α represents the specific effect of being in a given age interval. The hazard coefficients represent the effects that being in the estimated variable category has on the odds of having a first premarital intercourse relative to remaining virgin.

An event-history file comprising person-age records was constructed, in which data were expanded in such a way that each age of observation for each respondent is treated as a separate observation of the unit of analysis. The task consisted of building a file with multiple pseudo-observations for each individual in which he/she is followed at each unit of analysis (a year) in which he/she is at risk of experiencing a first sexual intercourse. Each unit of analysis contains information on the occurrence or non-occurrence of transition to first intercourse, and the values of other covariates. The model fitting was carried out in four stages. First, a model including separately each of the six types of family structure considered in this study given their pertinence in the African context was fitted, in order to capture the gross effect of each type of family structure on the risk of premarital sex among young people. Second, each mechanism mediating the effect of family structure on sexual initiation was tested separately. Third, a model is fitted that includes family structure and all conjectured mechanisms for the three research hypotheses, for assessing the net effect of each type of family structure on premarital sexual initiation. Finally, interactions were tested for each hypothesis.

RESULTS

Sample Description

< TABLE 2 ABOUT HERE >

Table 2 presents the distribution of the two samples by family structure at ages 6 and 12 years. We have considered six family configurations that capture the diversity of family structures encountered in African societies irrespective of the social environment. The frequency distribution of young people by age co-residence status with their two biological parents when they were aged 6 and 12 confirms as expected a consistent and declining trend in the percentage of young people who co-reside with their biological parents (mother-and-father, father-only, mother-only) as they move from childhood to adolescence years. In general, differences in family structure between boys and girls are trivial.

In Type 1 family structure, the presence of the two biological parents in the home is the emphasis and is contrasted with all other family configurations. About two-thirds of young males and females aged 10-29 years old at the time of interview in 1996 and 2002 in Bandjoun belonged to a father-and-mother family type when they were 6 years of age. By the time they are 12 years old, only 61% of them in 1996 and 66% of them in 2002 were still residing with their biological parents.

In Type 2 family structure, besides the father-and-mother configuration as in type 1 family structure, mother-only family and father-only family are augmented. In 1996 and 2002 and irrespective of age at co-residence, there are more young people living in mother-only families than father-only families.

Type 3 family structure is concerned with the presence of the father co-residing in the home with the young person. About 80% and 77% of young people at 6 years of age were living in a family with a living co-residing father in 1996 and 2002, respectively. By age 12, only 67% and 68% of them were still living in a home with a present father in 1996 and 2002, respectively.

Type 4 family structure distinguishes nuclear and extended families with one or two biological parents as opposed to other family configurations. Consistent with the higher proportions of young people who lived with their two biological when they were 6 or 12 years old than those who were in other family structures, there are significantly more young people who lived with their two biological parents in nuclear or in extended families. Extended families with two biological parents predominate at age 6 (54% and 33% in 1996 and 2002, respectively) and 12 (24% and 22% in 1996 and 2002, respectively).

Type 5 family structure highlights the presence of grand-parents within the family housed by one or two biological parents. The dominant configuration of co-residence of young people when they were 6 years old (72% in 1996 and 2002) or 12 years old (over 55% in 1996 and over 63% in 2002) was with their mother-and-father and no grandparents.

Type 6 family structure puts emphasis on the type of union and considers families with two biological parents by monogamous or polygamous status. The proportions of young people who were living at 6 years of age with their two biological parents in monogamous families is 48% in 1996 and over 53% in 2002 and declines by the time they reach 12 years old to 39% in 1996 and 47% in 2002. It is worth noting the sizeable proportions of youth people living with their two biological parents in polygamous unions at age 6 (over 26% in 1996 and 20% in 2002) and age 12 (21% in 1996 and 18% in 2002), explained by the extensive practice of polygamy in Cameroon.

IV.2. Bivariate Results

< TABLE 3 ABOUT HERE >

Table 3 displays the estimated probability of sexual initiation by family structure and sex of the respondent. The overall probability for a young person to have experienced premarital first coitus in 1996 and 2002 is 0.452 and 0.339 respectively, indicating a percentage decline of 25 %. Irrespective of types of family structures where young people resided when they were aged 6 and 12 years old, females are more likely than males to initiate sexual intercourse over time. The decline in probabilities of first premarital sexual intercourse between 1996 and 2002 is steeper among males (from 0.417 to 0.294, respectively) than females (from 0.484 to 0.372, respectively). Living in two-parent families is consistently associated with the lowest risks of first premarital sexual intercourse over time and the life cycle of the young person. The probabilities of premarital sexual initiation are generally higher for girls than boys in all family configurations except in mother-only families, father-only families and one biological parent (nuclear or extended) families. The presence of the father in the home at any age and over time reduces the risk of sexual intercourse among females and males.

Multivariate Results

The multivariate findings are reported in ways that allow us to test our conceptual framework and the hypothesized relationships between family structures and premarital sexual intercourse.

Socialization hypothesis

< TABLE 4 ABOUT HERE >

Table 4 presented the effects of the types of family structures in which young people were living in at age 6 on premarital sexual initiation, in an attempt to test the socialization hypothesis which considers that childhood living arrangements covary with the risk of sexual debut. Residence in two-parent families at any age over time consistently and significantly reduces young people's risks of premarital sexual intercourse. This protective effect remains statistically robust significant even after all controls are introduced. Mother-only families are associated with higher risks of premarital sexual intercourse than father-and-mother families and father-only families. Indeed, young people who were living at age 6 with biological father are significantly less likely to experience premarital sexual intercourse over time than other young people. Compared with nuclear two-parent families, all other types of families are associated with higher risks of sexual initiation both in 1996 and 2002. Accounting for the presence of grandparents in the home during the socialization process of the child indicates that in 1996, young people who at age 6 were in two-parent families with grandparents have lower risks of premarital sexual intercourse than other young people. There is strong evidence indicating that parents' marital status matter for the risk of premarital sexual intercourse. Children who have grown up in monogamous or polygamous two-biological parents have lower risks of premarital sex than their counterparts from other family configurations.

The three conjectured mechanisms of the links between the types of family structure and premarital sexual intercourse relate to socioeconomic status, parents' financial support and parenting styles captured by the quality of parent-child relationships. A comparison of Models 1 and 2 shows that the sex of the respondent

(Model 2) does not modify the gross effects of family structures (Model 1) on premarital sexual intercourse. Socioeconomic status appears to modify slightly the effects of family structures on the risk of premarital sexual initiation. The parental support mechanism (Model 4 versus Model 1) is more present than the SES mechanism, but does not significantly modify the significance of the underlying associations between the different types of family structures and the sexual behavior considered here. The mechanism involving the quality of parent/child relationships is even more limited at mediating the links between family structure and sexual initiation (Model 5). When all the mechanisms are considered, their mediating role is more pronounced and modifies to some extent the magnitude of the estimated effects of family structure covariates, but not their statistical significance.

Social control hypothesis

< TABLE 5 ABOUT HERE >

Table 5 presents the results of the test of the social control hypothesis which underlines the importance of family structure at adolescence (captured at age 12 in this study). Two-parent families and father's presence in the home remain the most protective environments for delaying premarital sexual intercourse among young people, especially in the recent period (2002). Mother-only-families are associated (in 1996) and other family configurations (in 2002) are associated with higher risks of premarital sexual intercourse than father-and-mother families in either period. Young people who were living at age 12 in extended father-and-mother families have higher risks of premarital sexual intercourse than young people who were living in nuclear father-and-mother families. Intriguing findings that deserve further investigation concern the significantly higher risks of premarital sexual intercourse among young people who resided at age 12 in extended one-parent families in 1996 and lower such risks in 2002, compared with their counterparts who resided in nuclear father-and-mother families. Finally, the general tendency of the protective effects of the marital status of parents indicates that young people living in monogamous and polygamous

families had lower risks of premarital sexual initiation compared to other youth. Furthermore, young people who resided at age 12 in monogamous families are the least likely of having premarital sex.

Here again, we consider the mediating mechanisms conjectured to modify the associations between family structure and sexual behavior. Here again, the sex of the respondent is empirically unimportant (Model 2 versus Model 1). We find only weak evidence of the operation of these mechanisms since their influences are rather modest in all models, including the full model.

Instability and change hypothesis

< TABLE 6 ABOUT HERE >

For the instability and change hypothesis, two major conjectures were used to capture its effects on sexual initiation: parents' survival and change in socioeconomic status. Overall, results were closer to those found previously in the socialization hypothesis, starting with family structure at age 6 considered as the basis in addition to observed changes in family structure between age 6 and age 12. For instance, living in two-parent families was associated with a lower risk of sexual initiation both at baseline and follow-up. Thus, interpretation of the results focuses mainly in the effect of change in family structure which can be observed in model 1 whatever the family structure considered for the crude effect and in model 6, net of controls. Results indicated overall that change in family structure had no significant effect at the baseline. By contrast, changes in family structure had positive and significant effect at the follow-up suggesting that it may be a risk factor that can hasten transition to nonvirginity (models 1). Controlling for gender (model 2), parents' death (model 3) and change in socioeconomic variables (model 4) did not change significantly the effects of family structure at baseline and follow-up. Net of controls (models 5), the effects of family structure on sexual initiation remained unchanged at baseline's models and follow-up's models.

V. Discussion and concluding remarks

The paper has examined the effects of family structure on the risk of experiencing first sexual intercourse using three theoretical perspectives: socialization, social control and instability and change perspective. Heterosexual contact is the foremost risk factor spreading HIV/AIDS in Sub-Saharan Africa where young people face highest prevalence of STD and HIV/AIDS. Thus, research on sexual initiation is of particular interest because early age at first intercourse is associated with negative outcomes such as contraceptive nonuse and high risk of pregnancy and other associated consequences such as school drop out. Moreover the timing of first intercourse may be a useful marker for risky sexual behavior and a history of STD as claimed in local and international meetings. On the other hand, family has been identified as strong influential factor of adolescent sexual behavior which can be protective or risky, depending on time of developmental stages during the life. Family structure, one of the most important features of family as socialization agent, had been addressed in this paper in association with sexual initiation among 10-29 aged young people.

There were four consistent findings which emerged from the socialization hypothesis. Firstly, father-and-mother families were protective in such a way that young people living in two-parent families were less likely to initiate sexual initiation at baseline and follow-up, and after controlled for the overall mechanisms which were identified as moderating the association between family structure and premarital sexuality. Secondly, father's presence in the home decreased significantly the risk of sexual initiation. Thirdly, two-parent monogamous families were associated with lower risk of sexual initiation. Fourthly, living in other relatives' families was consistently detrimental for young people because it increased significantly the risk of sexual initiation. These findings were consistent with previous studies in the United States of America which contended that two-parent families were protective and that other relatives' family were associated with adverse sexual outcomes (Albrecht and Teachman 2004; Miller 2002; Miller et al. 1997; Wu 1996; Wu and Martinson 1993). Controlled for gender, findings indicated

that females were more likely than males to initiate sexual intercourse. Additional analyses tested the interaction between gender and family structure but showed any significant effect.

Social control hypothesis produced only one consistent result between baseline and follow-up. As expected, living in monogamous families decreased significantly the risk of sexual initiation. One explanation rested on the father's time allocation about the child's supervision. As earlier studies predicted adolescence usually coincided with rebellion and adolescent's distancing from values and beliefs of the family. Furthermore, the peers' influence generally increased at adolescence and young people are exposed to multiple models, values and beliefs. At this time, mother's authority as the primary caregiver become insufficient to overcome adolescent's conduct. In such case, the father was still a significant figure in the home due to tradition which sanctioned the authority of the father over children. Elsewhere, a cross-sectional study on sexual behavior in Nigeria showed that young people in polygamous families were more likely to engage in sexual behavior than those in monogamous families (Slap et al. 2003).

Findings on instability and change hypothesis were more questionable due to the inconstancy of the results between baseline and follow-up. Nevertheless, it was clear that change in family structure increased significantly the likelihood of sexual initiation at the follow-up. Parents' death was the most salient mechanism showing a strong and significant effect on the sexual initiation through the instability and change hypothesis. Probably, the stress following the loss of parents was detrimental for young people and heightened the risk of sexual initiation. Furthermore, its effect may be more catastrophic in the absence of family's support. Albeit not statistically significant, findings indicated at baseline that change in family structure increased the risk of premarital sexuality. Yet previous studies contended that stressful situations accompanying change in family structure may explain partly the high risk of sexual intercourse (Albrecht and Teachman 2004; Wu and Thomson 2001). In Sub-Saharan Africa nonetheless, collective childrearing associated with social practices can act as a buffer of the strong association observed in Western countries.

In summary, sexual initiation had received great attention in developed countries as well as in developing because it remains today an important route spreading HIV/AIDS and STD. In addition, family structure had been identified as a major predictor of sexual intercourse. Studies had established that living in two-parent families was associated with low risk of sexual initiation. Other studies had found that family structure was not associated with high risk of sexual initiation. Obviously, these studies had used one classification in family structure leading to various findings which were not necessarily comparable due to the differences in populations under observation. The innovative approach of this study resided in a depth of family structure and its effects using multiple classifications on the same population at baseline and follow-up respectively. Thus results were easily comparable.

Policy Implications

Sub-Saharan African is facing since 1990s dramatically many health reproductive outcomes among young people with the highest prevalence of STD and HIV/AIDS, the highest level of adolescent fertility, the highest level of abortions around the world, and conversely exhibits the lowest contraceptive use. Jointly, early sexual initiation and low use of contraception especially condom use explain the spread of negative health reproductive outcomes mentioned previously.

In practice, family structure in Sub-Saharan Africa may be addressed as the centrality in reproductive health programs because adolescents do not act in isolation. In Western Countries, it has been shown that growing up in two-parent families was a strong protective factor whereas growing up in one-parent families was disadvantaged for female and male adolescents due to the associated negative outcomes (early sexual initial, premarital birth, school drop out, lower utilization of contraception, high rates of sexually transmitted diseases). Furthermore, findings showed that more effective programs on adolescent reproductive health could involve community leaders, and family (Kirby 2001). Indeed, family is the most important agent of socialization to involve necessarily and consistently in the design and the

implementation of reproductive health programs and policies in Sub-Saharan Africa as the POSE program innovatively proposed. Many reproductive health policies in Africa had focused on the individual as the epicentre of the interventions within the implicit linear prevention model. This model postulates that knowledge of sexual reproductive matters will lead automatically to behavior change and then improve the prevention of pregnancies and sexually transmitted diseases including HIV/AIDS. Today, it is almost clear that such policies work neither in Africa nor in Western countries. To be more efficient, policies may account for the living conditions, especially families, and the cultural context where adolescents and young people live. Finally, this work is a starting point of a vast field to investigate at the aim to an accumulation of empirical evidence which can lead to more effective programs in Africa, especially amongst young people.

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Table 1: Variables definition and measurement

Variables	Definition	Specification	Hypotheses[1]
PANEL A: DEPENDENT VARIABLE			
First sexual intercourse	Dummy variable coded 1 if adolescent ever had vaginal intercourse, 0 otherwise	0=No if virgin and 1=Yes if non-virgin	
Age at first sexual intercourse	Continuous variable in years at which sexual initiation occurred for non-virgin or age at the survey for censored cases i.e virgins.		
PANEL B: FAMILY STRUCTURE MEASURES[2]			
Family structure	Dichotomous or polychotomous variable indicating adolescent's living arrangement. Family structure was constructed with a set of dummy variables capturing the relationship a young person had with people with whom he/she was living lived at 6 and 12 years. Thus, six types of family structure are constructed to represent the diversity of the reality of family structures in the African context.		H1; H2 7 H3
Type 1		0=Other family configurations; 1=Father-and-Mother family	H1; H2 & H3
Type 2		1=Father-and-Mother family; 2=Mother-only family 3=Father-only family; 4=Other family configurations	H1; H2 & H3
Type 3		0=Father is absent in the home; 1=Father is present in the home	H1; H2 & H3
Type 4		1=One Bio, Nuclear; 2=One Bio, Extended 3=Two Bio, Nuclear; 4= Two Bio, Extended 5= Other family configurations	H1; H2 & H3
Type 5		1=One Bio, No grandparents; 2=One Bio, with grandparents 3=Two Bio, No grandparents; 4=Two Bio, with grandparents 5=Other family configurations	H1; H2 & H3
Type 6		1=Two Bio, monogamous; 2=Two Bio, polygamous 3=Other family configurations	H1; H2 & H3
Change in family structure	Dichotomous variable indicating whether family structure changed between age 6 and age 12	0=No; 1=Yes	H3
PANEL C: MEDIATING FACTORS			
Sex of the respondent	Dummy variable coded 1 if female, 0 otherwise	0=Male; 1=Female	H1; H2 & H3
Parents' financial support	Dichotomous variable coded 1 if at least one biological provided financial support to child, and 0 otherwise	0=No; 1=Yes	H1 & H2
Quality of parent-child relationships	Dichotomous variable coded 0 if parent-child interactions were difficult and 1 otherwise	0=Difficult; 1=Good	H1
Parental supervision	Polychotomous variable indicating the level of parental supervision of adolescent's leisure time	1=Not at all; 2=Very little/Little 3=Enough/Much	H2
Parent-child communication about puberty	Dichotomous variable coded 1 if child interacted with parents/tutor about puberty and 0 otherwise	0=No; 1=Yes	H2
Parent-child communication about sexuality	Dichotomous variable coded 1 if child interacted with parents/tutor about sexuality and 0 otherwise	0=No 1=Yes	H2
Change in family structure	Dummy variable coded 1 if adolescent experienced a change in family structure between ages 6 and 12 years	0=No; 1=Yes	H3
Parents' survival status	Dummy variables coded 0 if parents are alive and 1 if at least one parent died	0=No; 1=Yes	H3
Educational attainment of tutor	Polychotomous variable indicating the high level of educational attainment of the adolescent's tutor	0=None; 1=Primary 2=High School; 3=University	H1
Lighting mode at home	Dummy variable coded 1 if electricity was used at home, 0 otherwise	0=Lamp or candle; 1=Electricity	H1
Radio/Television at home	Dummy coded 1 if radio and/or TV available at home, 0 otherwise	0=No; 1=Yes	H1

[1] H1: Socialization hypothesis; H2: Social control Hypothesis and H3: Instability and change hypothesis.
[2] Family structure was measured at age 6 (used in *socialization hypothesis*) and at age 12 (for use in *social control hypothesis*) while changes in family structure between age 6 and age 12 were used in *instability and change hypothesis*.

Table 2: Percentage Distribution of young people by Family Structure at age 6 and age 12

Family Structure	AGE 6						AGE 12					
	1996			2002			1996			2002		
	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS
TYPE 1												
Father-and-Mother Family	74.7	74.6	74.7	74.6	75.8	73.8	60.8	63.5	58.2	65.8	67.2	64.8
Other	25.3	25.4	25.3	25.4	24.2	26.2	39.2	36.5	41.8	34.2	32.8	35.2
TYPE 2												
Father-and-Mother Family	74.7	74.6	74.7	74.6	75.8	73.8	60.8	63.5	58.2	65.8	67.2	64.8
Mother-only Family	7.1	6.8	7.3	7.7	6.9	8.3	8.8	8.7	8.9	9.8	10.0	9.7
Father-only Family	5.0	5.8	4.3	2.3	3.0	1.8	6.0	6.6	5.5	2.7	3.6	2.1
Other configurations	13.3	12.8	13.7	15.4	14.2	16.2	24.4	21.2	27.4	21.6	19.2	23.4
TYPE 3 : Father's Presence												
No	20.3	19.6	21.0	23.0	21.1	24.5	33.2	29.9	36.3	31.5	29.2	33.1
Yes	79.7	80.4	79.0	77.0	78.9	75.5	66.8	70.1	63.7	68.5	70.8	66.9
TYPE 4												
One Biological Parent, Nuclear	7.3	7.4	7.2	7.2	7.6	7.0	7.8	7.2	8.4	8.0	8.7	7.4
One Biological Parent, Extended	4.8	5.2	4.4	2.8	2.4	3.1	7.0	8.1	6.0	4.6	4.8	4.4
Two Biological, Nuclear	20.7	20.2	21.1	41.6	42.8	40.7	17.2	18.0	16.5	36.2	37.6	35.2
Two-Biological, Extended	54.0	54.4	53.6	33.0	33.0	33.1	43.5	45.5	41.8	29.6	29.6	29.6
Other relatives	13.3	12.8	13.7	15.4	14.2	16.2	24.4	21.2	27.4	21.6	19.2	23.4
TYPE 5												
One Biological Parent, No Grandparents	11.3	12.0	10.6	9.6	9.8	9.5	13.8	14.3	13.3	11.7	12.7	11.0
One Biological Parent, with Grandparents	0.8	0.6	0.9	0.4	0.2	0.5	1.0	1.0	1.1	0.8	0.9	0.8
Two Biological parents, No Grandparents	71.8	72.0	71.5	72.2	72.9	71.6	58.2	61.3	55.3	63.7	64.6	63.0
Two-Biological parents, with Grandparents	2.9	2.6	3.2	2.5	2.9	2.1	2.6	2.2	2.9	2.1	2.6	1.8
Other relatives	13.3	12.8	13.7	15.4	14.2	16.2	24.4	21.2	27.4	21.6	19.2	23.4
TYPE 6												
Two Biological parents, Monogamous	47.8	48.1	47.6	54.4	55.9	53.3	39.0	41.1	37.0	46.5	47.8	45.5
Two-Biological parents, Polygamous	26.9	26.6	27.1	20.2	19.9	20.4	21.3	21.6	21.0	17.8	18.0	17.6
Other relatives	25.3	25.4	25.3	25.4	24.2	26.2	39.7	37.2	42.0	35.8	34.2	36.9
Total	1,445	693	752	2,461	1,055	1,406	1,445	693	752	2,461	1,055	1,406

Source: CFHS-1996 and CFHS-2002

Table 3: Estimated Probability of Sexual Initiation by Family Structure and changes over time

Family Structure	AGE 6									AGE 12								
	1996			2002			Change (%)			1996			2002			Change (%)		
	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS	TOTAL	BOYS	GIRLS
Number of cases	1,445	693	752	2,461	1,055	1,406	…	…	…	1,445	693	752	2,461	1,055	1,406	…	…	…
TYPE 1																		
Father-and-Mother Family	0.427	0.384	0.467	0.327	0.280	0.362	-23.4	-27.1	-22.5	0.467	0.387	0.497	0.325	0.322	0.358	-30.4	-16.8	-28.0
Other	0.525	0.496	0.551	0.373	0.374	0.391	-29.0	-24.6	-29.0	0.442	0.454	0.478	0.365	0.282	0.394	-17.4	-37.9	-17.6
TYPE 2																		
Father-and-Mother Family	0.427	0.384	0.467	0.327	0.280	0.362	-23.4	-27.1	-22.5	0.442	0.386	0.497	0.325	0.282	0.358	-26.5	-26.9	-28.0
Mother-only Family	0.559	0.626	0.501	0.291	0.288	0.292	-47.9	-54.0	-41.7	0.520	0.522	0.517	0.269	0.252	0.276	-48.3	-51.7	-46.6
Father-only Family	0.403	0.457	0.334	0.298	0.291	0.308	-26.1	-36.3	-7.8	0.425	0.416	0.436	0.313	0.295	0.337	-26.4	-29.1	-22.7
Other relatives	0.552	0.449	0.641	0.426	0.374	0.460	-22.8	-16.7	-28.2	0.459	0.439	0.473	0.415	0.346	0.458	-9.6	-21.2	-3.2
Type 3: Father's presence																		
No	0.554	0.493	0.604	0.381	0.348	0.402	-31.2	-29.4	-33.4	0.475	0.459	0.487	0.370	0.321	0.401	-22.1	-30.1	-17.7
Yes	0.426	0.389	0.459	0.326	0.281	0.361	-23.5	-27.8	-21.4	0.440	0.391	0.497	0.324	0.283	0.357	-26.4	-27.6	-28.2
TYPE 4																		
One Biological Parent, Nuclear	0.467	0.521	0.415	0.298	0.279	0.312	-36.2	-46.4	-24.8	0.434	0.454	0.417	0.316	0.310	0.322	-27.2	-31.7	-22.8
One Biological Parent, Extended	0.536	0.613	0.452	0.279	0.331	0.249	-47.9	-46.0	-44.9	0.534	0.519	0.553	0.212	0.209	0.215	-60.3	-59.7	-61.1
Two Biological, Nuclear	0.401	0.368	0.430	0.335	0.285	0.374	-16.5	-22.6	-13.0	0.457	0.410	0.506	0.324	0.275	0.363	-29.1	-32.9	-28.3
Two-Biological, Extended	0.437	0.389	0.482	0.316	0.273	0.348	-27.7	-29.8	-27.8	0.436	0.376	0.495	0.326	0.289	0.352	-25.2	-23.1	-28.9
Other relatives	0.552	0.449	0.641	0.426	0.374	0.460	-22.8	-16.7	-28.2	0.459	0.439	0.473	0.415	0.346	0.458	-9.6	-21.2	-3.2
TYPE 5																		
One Biological Parent, No Grandparents	0.491	0.534	0.445	0.295	0.295	0.295	-39.9	-44.8	-33.7	0.487	0.486	0.488	0.280	0.274	0.285	-42.5	-43.6	-41.6
One Biological Parent, with Grandparents	0.545	(0.901)	(0.337)	(0.222)	(0.325)	(0.192)	-140.7	-63.9	-43.0	0.400	(0.502)	(0.310)	(0.250)	(0.247)	(0.252)	-162.5	-50.8	-18.7
Two Biological parents, No Grandparents	0.431	0.391	0.468	0.325	0.278	0.361	-24.6	-28.9	-22.9	0.447	0.395	0.500	0.322	0.277	0.356	-28.0	-29.9	-28.8
Two-Biological parents, with Grandparents	0.333	0.237	0.401	0.377	0.320	0.436	13.2	35.0	8.7	0.324	(0.219)	0.396	0.404	0.407	0.401	24.7	-285.8	1.3
Other relatives	0.552	0.449	0.641	0.426	0.375	0.460	-22.8	-16.5	-28.2	0.459	0.439	0.473	0.415	0.346	0.458	-9.6	-21.2	-3.2
TYPE 6																		
Two Biological parents, Monogamous	0.402	0.356	0.445	0.316	0.274	0.348	-21.4	-23.0	-21.8	0.409	0.360	0.458	0.319	0.285	0.347	-22.0	-20.8	-24.2
Two-Biological parents, Polygamous	0.472	0.434	0.506	0.356	0.296	0.399	-24.6	-31.8	-21.1	0.507	0.445	0.565	0.334	0.272	0.382	-34.1	-38.9	-32.4
Other relatives	0.525	0.496	0.551	0.373	0.347	0.391	-29.0	-30.0	-29.0	0.459	0.448	0.479	0.365	0.321	0.395	-20.5	-28.3	-17.5
TOTAL	0.452	0.417	0.484	0.339	0.294	0.372	-25.0	-29.5	-23.1	0.452	0.417	0.484	0.339	0.294	0.372	-25.0	-29.5	-23.1

In parentheses, cells with a few cases. For the number of cases in those cells, refer to table 2 above.
Source: CFHS-1996 and CFHS-2002

Table 4: Multivariate Discrete-Time Hazard Models (*Socialization hypothesis*)

Family Structure	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002
TYPE 1 *(Other)*												
Father-and-Mother Family	0.819**	0.795***	0.821**	0.796***	0.795**	0.750***	0.781**	0.781**	0.812**	0.786***	0.759**	0.750***
TYPE 2 *(Father-and-Mother)*												
Mother-only Family	1.558***	1.168	1.550***	1.168	1.689***	1.262	1.537***	1.174	1.557***	1.174	1.677***	1.263
Father-only Family	0.941	0.875	0.927	0.867	0.911	0.877	0.920	0.867	0.937	0.879	0.912	0.881
Other	1.171	1.358***	1.175	1.359***	1.209	1.444***	1.300	1.534***	1.190	1.378***	1.317	1.574***
TYPE 3 : Father's Presence *(No)*												
Yes	0.773**	0.765***	0.772**	0.764***	0.737***	0.716***	0.710***	0.732***	0.764***	0.756***	0.677***	0.699***
TYPE 4 *(Two Biological, Nuclear)*												
One Biological Parent, Nuclear	1.542**	1.139	1.530**	1.137	1.566**	1.192	1.532**	1.132	1.562**	1.147	1.589**	1.189
One Biological Parent, Extended	2.051***	1.032	2.034**	1.029	2.187***	1.098	2.028***	1.053	2.037***	1.029	2.188***	1.109
Two-Biological, Extended	1.519***	1.051	1.519***	1.051	1.529***	1.038	1.541***	1.051	1.532***	1.048	1.556***	1.035
Other	1.577***	1.387***	1.581***	1.389***	1.641***	1.465***	1.809***	1.563***	1.613***	1.401***	1.858***	1.590***
TYPE 5 *(Two Biological parents, No Grandparents)*												
One Biological Parent, No Grandparents	1.249*	1.136	1.242	1.134	1.281*	1.202	1.234	1.131	1.253*	1.146	1.282*	1.203
One Biological Parent, with Grandparents	1.321	0.467	1.311	0.466	1.464	0.495	1.309	0.509	1.283	0.448	1.429	0.500
Two-Biological parents, with Grandparents	0.524**	1.262	0.529**	1.259	0.491**	1.270	0.541**	1.248	0.533**	1.263	0.502**	1.266
Other	1.143	1.369***	1.145	1.370***	1.777	1.453***	1.252	1.519***	1.161	1.389***	1.263	1.553***
TYPE 6 *(Other)*												
Two Biological parents, Monogamous	0.743***	0.789**	0.745***	0.780**	0.713***	0.745***	0.711***	0.778**	0.737***	0.787***	0.680***	0.744***
Two-Biological parents, Polygamous	0.962	0.797**	0.964	0.797**	0.964	0.758**	0.918	0.782**	0.956	0.780**	0.922	0.758**

Model 1: Gross Effects of Family Structure at age 6
Model 2: Model 1+ gender
Model 3: Model 1+ SES variables
Model 4: Model 1+ parents' financial support at age 6
Model 5: Model 1+ quality of parent/child relationships at age 6
Model 6: Full model (Model 1+all variables)
Significant level: ***: p<1 %; **: p<5 % and *: p<10 %
Source: CFHS-1996 and CFHS-2002

Table 5: Multivariate Discrete-Time Hazard Models (*Social control hypothesis*)

Family Structure	Model 1		Model 2		Model 3		Model 4		Model 5		Model 6	
	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002
TYPE 1 *(Other)*												
Father-and-Mother Family	0.928	0.736***	0.927	0.735***	0.916	0.729***	0.871	0.737***	0.945	0.736***	0.863	0.739***
TYPE 2 *(Father-and-Mother)*												
Mother-only Family	1.385**	1.186	1.382**	1.183	1.377**	1.171	1.381**	1.192	1.404**	1.183	1.402**	1.179
Father-only Family	1.024	1.015	1.016	1.005	1.033	0.981	1.011	1.006	1.043	1.005	1.059	0.980
Other	0.993	1.472***	0.996	1.475***	1.011	1.509***	1.063	1.600***	0.954	1.481***	1.048	1.616***
TYPE 3 : Father's Presence *(No)*												
Yes	0.921	0.718***	0.919	0.716***	0.910	0.707***	0.841	0.706***	0.945	0.717***	0.845	0.706***
TYPE 4 *(Two Biological, Nuclear)*												
One Biological Parent, Nuclear	1.169	1.399**	1.166	1.395**	1.158	1.366**	1.171	1.397**	1.193	1.395**	1.192	1.367**
One Biological Parent, Extended	1.874***	0.921	1.863***	0.918	1.811***	0.901	1.880***	0.930	1.922***	0.918	1.882***	0.912
Two-Biological, Extended	1.278**	1.171*	1.279**	1.172*	1.239**	1.153	1.294**	1.173*	1.289**	1.172*	1.261*	1.153
Other	1.177	1.578***	1.180	1.582***	1.171	1.606***	1.292	1.706***	1.134	1.588***	1.242	1.709***
TYPE 5 *(Two Biological parents, No Grandparents)*												
One Biological Parent, No Grandparents	1.199	1.172	1.195	1.168	1.200	1.151	1.192	1.169	1.218	1.168	1.223	1.151
One Biological Parent, with Grandparents	1.531	0.907	1.523	0.902	1.518	0.895	1.551	0.949	1.605	0.902	1.637	0.938
Two-Biological parents, with Grandparents	0.645	1.346	0.654	1.338	0.644	1.317	0.660	1.325	0.663	1.338	0.663	1.305
Other	0.978	1.487***	0.980	1.490***	0.996	1.523***	1.041	1.602	0.939	1.495***	1.026	1.617***
TYPE 6 *(Other)*												
Two Biological parents, Monogamous	0.743***	0.789**	0.745***	0.780**	0.739***	0.775**	0.724***	0.815**	0.745***	0.792**	0.712***	0.808**
Two-Biological parents, Polygamous	0.962	0.797**	0.964	0.789**	0.948	0.781***	0.936	0.831**	0.968	0.798**	0.917	0.824**

Model 1: Gross Effects of Family Structure at age 12
Model 2: Model 1+ gender
Model 3: Model 1+ parental supervision at age 12
Model 4: Model 1+ financial support at age 12
Model 5: Model 1+ parent/child communication about puberty and sexuality at age 12
Model 6: Full model (Model 1+ all variables)
Significant level: ***: p<1 %; **: p<5 % and *: p<10 %
Source: CFHS-1996 and CFHS-2002

Table 6: Multivariate Discrete-Time Hazard Models (*Instability and change hypothesis*)

Family Structure	Model 1		Model 2		Model 3		Model 4		Model 5	
	1996	2002	1996	2002	1996	2002	1996	2002	1996	2002
TYPE 1 *(Other)*										
Father-and-Mother Family	0.817**	0.822**	0.819**	0.822**	0.836*	0.819**	0.812**	0.804**	0.829**	0.847*
Change in Family Structure	0.984	1.444***	0.984	1.442***	0.918	1.340***	1.065	1.321***	1.051	1.319**
TYPE 2 *(Father-and-Mother)*										
Mother-only Family	1.561***	1.123	1.552***	1.124	1.510***	1.096	1.537***	1.131	1.495**	1.041
Father-only Family	0.944	0.863	0.930	0.857	0.931	0.862	0.936	0.866	0.938	0.849
Other	1.173	1.311***	1.176	1.312***	1.156	1.328***	1.198	1.351***	1.178	1.291**
Change in Family Structure	0.988	1.439***	0.989	1.437***	0.979	1.395***	1.063	1.325***	1.052	1.314**
TYPE 3 : Father's Presence *(No)*										
Yes	0.772**	0.792***	0.771**	0.791***	0.789**	0.787***	0.764***	0.774***	0.781**	0.814**
Change in Family Structure	0.989	1.437***	0.991	1.436***	0.978	1.398***	1.072	1.384***	1.059	1.315**
TYPE 4 *(Two Biological, Nuclear)*										
One Biological Parent, Nuclear	1.551**	1.103	1.539**	1.102	1.529**	1.093	1.562**	1.113	1.552**	1.053
One Biological Parent, Extended	2.068***	0.998	2.050***	0.996	1.976***	0.951	1.996***	1.015	1.924***	0.913
Two-Biological, Extended	1.520***	1.051	1.521***	1.051	1.516***	1.057	1.525***	1.064	1.521***	1.066
Other	1.582***	1.339***	1.587***	1.339***	1.556***	1.356***	1.620***	1.387***	1.589***	1.323***
Change in Family Structure	0.969	1.442***	0.969	1.440***	0.959	1.351***	1.048	1.324***	1.037	1.313**
TYPE 5 *(Two Biological parents, No Grandparents)*										
One Biological Parent, No Grandparents	1.253*	1.095	1.246	1.094	1.223	1.077	1.243	1.103	1.221	1.026
One Biological Parent, with Grandparents	1.327	0.491	1.317	0.491	1.231	0.423	1.268	0.488	1.183	0.463
Two-Biological parents, with Grandparents	0.524**	1.127	0.529**	1.269	0.528**	1.267	0.535**	1.267	0.533	1.276
Other	1.144	1.322***	1.147	1.322***	1.121	1.334***	1.169	1.362***	1.143	1.299***
Change in Family Structure	0.986	1.436***	0.954	1.434***	0.974	1.401***	1.066	1.386***	1.052	1.306**
TYPE 6 *(Other)*										
Two Biological parents, Monogamous	0.742***	0.802**	0.744***	0.803**	0.760***	0.814**	0.739***	0.791**	0.754***	0.823**
Two-Biological parents, Polygamous	0.961	0.831**	0.962	0.831**	0.981	0.822**	0.951	0.811**	0.969	0.857**
Change in Family Structure	0.990	1.447***	0.991	1.446***	0.978	1.412***	1.069	1.391***	1.055	1.323***

Model 1: Gross Effects of Family Structure at age 6 and change in Family Structure between age 6 and age 12
Model 2: Model 1+ gender
Model 3: Model 1+ parents' survival status
Model 4: Model 1+ change in SES variables
Model 5: Full model (Model 1+all variables)
Significant level: ***: p<1 %; **: p<5 % and *: p<10 %
Source: CFHS-1996 and CFHS-2002