Divorce and Children's Outcomes in Rural Malawi

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Introduction

In Sub-Saharan Africa, parental death is generally associated with adverse outcomes among children (Ainsworth, Beegle and Koda 2005; Beegle and Krutikova 2008; Birdthistle et al. 2008; Case and Ardington 2006; Case, Paxson and Ableidinger 2004; Evans and Miguel 2007; Gregson et al. 2005; Kasirye and Hisali 2010; Nyamukapa and Gregson 2005; Nyamukapa et al. 2008; Operario et al. 2007; Palermo and Peterman 2009; Thurman et al. 2006; Timaeus and Boler 2007; Yamano and Jayne 2005). These outcomes include schooling, health, psychological well-being, sexual behavior, and marriage. Parental divorce, less frequently studied than parental death, can also affect family instability. While the literature on divorce in Sub-Saharan Africa is rather scarce, existing studies show that some African countries have high rates of divorce (Arnaldo 2004; Boileau et al. 2009; Reniers 2003; Smith and Watkins 2005; Takyi and Gyimah 2007; Tilson and Larsen 2000) as well as increasing divorce rates (Amoateng and Heaton 1989; Hutchinson 1990; Locoh and Thiriat 1995). Even though more marriages end in divorce than widowhood (Boileau et al. 2009; Locoh and Thiriat 1995; Smith and Watkins 2005), not much is known about the outcomes of children from divorced marriages.[1]

The vast majority of studies that have examined this relationship have taken place in Western countries, most notably the United States. Outcomes examined include, but are not limited to, schooling, health, and psychological well-being. These studies have generally found that divorce has a deleterious effect on children's outcomes (Amato 2000, 2001, 2010; Amato and Keith 1991b). In several of these studies, researchers have also included children affected by parental death, often comparing children who experienced the loss of a parent to children from divorced or intact marriages. Evidence indicates that children suffering parental death have worse outcomes than those in intact marriages; however, the size of this effect is typically smaller compared to children whose parents are divorced (Amato and Keith 1991a, 1991b). Overall, children from divorced marriages have poorer outcomes than those who have suffered a parental death. This continues into adulthood as children of divorced parents continue to have poorer outcomes, as measured by education, occupational status, happiness, and adjustment (Acock and Kiecolt 1989; Amato and Keith 1991c; Biblarz and Gottainer 2000).

Since findings from Western nations generally indicate that children from divorced marriages are worse-off than those who have suffered a parental death, it is quite possible that this is also the case in Sub-Saharan Africa. In this paper, I study the relationship between divorce and children's outcomes, specifically schooling and health, in the setting of rural Malawi. I examine whether children from divorced marriages are more likely to suffer worse outcomes than children from intact marriages. Understanding whether this is the case is significant for

[1] I have found only one study examining divorce and children in Sub-Saharan Africa. Bojuwoye and Akpan (2009) conducted a qualitative study with the objective of understanding children's reactions to their parents' divorce. Their sample consisted of ten children (5 girls and 5 boys) from South Africa with a mean age of 14.2 years.

several reasons. First, the relationship between divorce and children's outcomes is a rarely studied and often neglected aspect of family instability in Sub-Saharan Africa. While the HIV/AIDS epidemic has brought increasing attention to the plight of orphans, virtually no attention has been paid to children from divorced marriages. Second, in addition to increasing adult mortality, the HIV/AIDS epidemic has led to rising divorce rates, most likely increasing the number of children affected by divorce. Third, studies conducted in Western nations, especially the United States, have generally found that the consequences of parental divorce extend into adulthood. If this is also the case in Sub-Saharan Africa, this will lead to lower levels of human capital, and potentially continue the intergenerational cycle of poverty. Furthermore, the intergenerational transmission of divorce may occur as children of divorced parents are more likely to divorce themselves (Amato and DeBoer 2001; Wolfinger, Kowaleski-Jones and Smith 2003). Lastly, results obtained from this paper can have potential implications for programs and policy formation. If children from divorced marriages are worse-off than their counterparts in intact marriages, steps can be taken to alleviate the effects of divorce.

The Setting: Rural Malawi

Malawi, a relatively poor, developing country in East Africa, is ranked 153 out of 169 countries according to the Human Development Index and has a gross national income (GNI) per capita of US$911 (in purchasing power parity) (UNDP 2010). More than 80 percent of its population resides in rural areas (World Bank 2011). Like many other African countries, Malawi has been particularly hard-hit by the AIDS epidemic. Recent HIV testing conducted by Demographic and Health Surveys estimates that 11 percent of adults, ages 15-49, are HIV-positive (National Statistical Office (NSO) and ICF Macro 2010). Life expectancy is also quite low. After peaking at 52 years in 1996 (World Bank 2011), it fell steadily and reached a low of 50 years in 2003. Life expectancy is now rising (World Bank 2011), most likely due to increasing availability of anti-retroviral therapy.

Several reasons make rural Malawi a suitable setting for examining the relationship between divorce and children's outcomes in Sub-Saharan Africa. First, marital instability is common in present-day Malawi. It is not a recent phenomenon and has, in fact, been observed throughout much of the twentieth century (Kaler 2001; Mitchell 1956; Reniers 2003; Tew 1950; Vaughan 1983). Reniers (2003), providing much of our current knowledge about divorce in rural Malawi, calculated estimates of the frequency of divorce. He found that life table probabilities of divorce ranged from 40 to 65 percent among females living in rural areas in 2001. These probabilities are believed to be some of the highest in Sub-Saharan Africa.[2]

[2] Divorce rates are not a widely collected statistic in Sub-Saharan Africa. What is known about the frequency of divorce comes from surveys conducted in only a handful of countries. As some of these studies did not occur in the past few years, the following figures may not be indicative of current levels of divorce. More importantly, they may not be representative of all African countries. In Ethiopia, 34 and 45 percent of marriages ended in divorce after 10 and 30 years, respectively (Tilson and Larsen 2000). In Ghana, 32 percent of women experienced a divorce after 20 years of marriage (Amoateng and Heaton 1989). Among the Nuer in Sudan, 12.3 percent of women were divorced in 1983. In Nigeria, 10 percent of ever-married women have been divorced at least once in their lifetime (Isiugo-

Second, Malawi's diverse ethnic and religious composition makes it an interesting candidate for a study of the association between divorce and children's outcomes. Malawi is composed of three distinct regions representing a variety of cultural and religious practices. Marriage traditions also differ across regions. The Northern region, primarily Christian, is patrilineal with virilocal residence after marriage. The Tumbuku are the dominant ethnic group. The Southern region, primarily Muslim, is matrilineal with uxorilocal residence after marriage. Yao are the dominant ethnic group. The Central region, primarily Christian, was once matrilineal, but now observes a mixture of patrilineal and matrilineal kinship structures (Phiri 1983). The Chewa are the dominant ethnic group and residence can be either virilocal or uxorilocal after marriage. Results found in this analysis may be applicable to other African countries with similar cultural and religious practices.

Of the three regions, the North has the lowest first marriage divorce probabilities (Reniers 2003). Approximately 14 and 40 percent of first marriages end in divorce after 5 and 25 years, respectively. The Southern region, historically known for its lack of marital stability (Kaler 2001; Mitchell 1956; Tew 1950), has much higher figures, 33 and 65 percent, respectively (Reniers 2003). Statistics for the Central region lie between those of the North and South.

Lastly, while it is not known if divorce rates are rising in Malawi, evidence indicates that women are increasingly using divorce as a strategy to reduce their own risk of HIV infection (Reniers 2008; Smith and Watkins 2005). If this is the case, then it is plausible that divorce rates have also risen, at least in the recent past, assuming that a secular decline in divorce has not occurred. More importantly, the number of children affected by divorce will have experienced a corresponding increase.

Literature Review

Divorce in Sub-Saharan Africa

The HIV/AIDS epidemic may play a role in increasing divorce rates in Sub-Saharan Africa. Within marriage, condoms are rarely used (Chimbiri 2007; Watkins 2004), leaving few safeguards against HIV infection, especially for women. In cases of suspected spousal infidelity, women are increasingly using divorce as a strategy to reduce their own risk of HIV infection (Reniers 2008; Schatz 2005; Smith and Watkins 2005). Evidence also indicates that HIV prevalence is higher among divorced individuals compared to those who are currently married or never married (Boileau et al. 2009; Bongaarts 2007; Macro International 2008). It is also higher among ever divorced women than women who have never divorced (Boileau et al. 2009). Although it is not yet clear in which direction causality flows, it is quite possible that HIV positive individuals are at greater risk of divorce. Furthermore, the availability of HIV testing has become more widespread in Sub-Saharan Africa, providing greater opportunities for Africans to learn their HIV status. Studies have shown that individuals who learn that they are HIV-positive

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Abanihe 1998). In Togo, only half of all women are still in their first marriage at age 50 (Locoh and Thiriat 1995). Of first marriages that have ended, 78 percent were due to divorce or separation.

are more likely to get divorced (Grinstead et al. 2001; Porter et al. 2004). As more individuals learn their HIV status, it is likely that divorce rates will also rise.

HIV/AIDS is not the only factor that can influence divorce rates. Greater female autonomy observed through higher education levels and increased labor force participation has been found to be associated with divorce (Locoh and Thiriat 1995; Oya and Sender 2009; Takyi and Broughton 2006; Takyi and Gyimah 2007). It is well established in the literature that greater female education increases female empowerment, increasing their likelihood of initiating divorce. Better educated women are also more likely to enter the workforce, decreasing reliance on their husbands for financial support. Along with greater female autonomy, urbanization may play a factor in increasing divorce rates. Divorce rates tend to be higher in urban than in rural areas (Locoh and Thiriat 1995; Takyi 2001). As more Africans move from rural to urban areas, the institution of marriage may become more similar to that which exists in Western nations. Marriages, once viewed as a way of uniting families and communities, are becoming less of a family affair. Arranged marriages, for instance, are becoming less common. Because families have less of an interest in keeping marriages intact, greater marital instability may ensue. Urbanization may also increase female autonomy by virtue of higher levels of education and greater availability of jobs.

Consequences of Divorce for Children

The consequences of divorce for children have been extensively studied in Western nations, especially in the United States. Outcomes examined include, but are not limited to, academic achievement, health, behavioral problems, and emotional well-being. Researchers have generally found that divorce has a deleterious effect on children's outcomes (Amato 2000, 2001, 2010; Amato and Keith 1991b; Frisco, Muller and Frank 2007; Furstenberg and Kiernan 2001; Sun and Li 2002). Furthermore, the consequences of divorce are long-lasting, extending into adulthood. Adults whose parents are divorced have lower educational attainment, greater levels of depression, lower income levels, worse physical health, and a higher likelihood of ever being divorced (Amato and DeBoer 2001; Amato and Sobolewski 2001; Cherlin, Chase-Lansdale and McRae 1998; Wolfinger et al. 2003). It is unclear to what extent the results of these studies are applicable for children living in Sub-Saharan Africa. It is quite possible that divorce can affect children similarly, regardless of their country of residence.

The pattern of children's living arrangements after divorce may not be the same in Sub-Saharan Africa as it is in the United States, where children tend to live with their mother, even if parents share joint custody of their children (Kelly 2007). This may not be the case in Sub-Saharan Africa where kinship systems often dictate to which family children belong. In patrilineal societies, children belong to the father's family, increasing the likelihood that children will remain with their father or his family. In matrilineal societies, children belong to the mother's family and will, in most cases, remain with their mother or her family. In addition to type of kinship system, the child's age might be taken into consideration in decisions involving living arrangements. Young children, especially those still breastfeeding, are more dependent on their mothers, increasing the likelihood that they will continue to live with them. This may not be

the case for older children who are less dependent on their mothers. Household resources may also affect children's living arrangements. Parents may send their children to live with the parent who has the financial means to better provide for their health and schooling needs. Lastly, whether parents remarry may play a factor in determining children's living arrangements.

Data

I use data from the Malawi Longitudinal Study of Families and Health (MLSFH), formerly known as the Malawi Diffusion and Ideational Change Project (MDICP). The Malawi Longitudinal Study of Families and Health is a panel survey that examines the role of social interactions in changing attitudes and behaviors in three rural districts of Malawi: Rumphi (Northern), Mchinji (Central), and Balaka (Southern). The first wave of data collection (MLSFH1), begun in 1998, interviewed 1,541 ever-married women ages 15-49 and 1,065 of their husbands. In 2001, during the second wave (MLSFH2), they re-interviewed these respondents as well as all new spouses of men and women who remarried between 1998 and 2001. In 2004, during the third wave (MLSFH3), the original sample and their new spouses were interviewed, along with a sample of approximately 1,000 adolescents, ages 15-24. In the fourth (2006), fifth (2008), and sixth (2010) waves, also known as MLSFH4, MLSFH5, and MLSFH6, all respondents from previous waves were included in the sample, along with all spouses of MLSFH3 adolescents, and any new spouses to respondents. In MLSFH5, a sample of approximately 800 parents of MLSFH respondents was added.

This analysis uses data collected from respondents in MLSFH4, MLSFH5, and MLSFH6. These survey waves were chosen because of the nature of data collected on the children of respondents.[3] Beginning in 2006, MLSFH collected data on all biological children of respondents, regardless of their child's usual place of residence. Furthermore, I exclude male respondents, restricting the analysis to females. The practice of polygamy makes it difficult to determine from which marriages children were produced. Except in the case of premarital and extramarital births, this should not be a problem for women. By comparing children's dates of birth and mother's dates of marriage, I can determine premarital births and exclude them from this analysis. Because information on the child's paternity was not collected, I cannot determine whether a child was conceived in an extramarital affair. Therefore, I must assume that none of the children were produced as a result of extramarital sexual relations.[4] Lastly, I restrict the sample to children under age 17 who have longitudinal data for at least two of the three survey waves.[5]

[3] In 2004, MLSFH began collecting detailed data, including age, sex, marital status, health status, and educational attainment, on household members living with the respondent at the time of the survey. No information was collected on biological children of respondents who usually live elsewhere.

[4] In the most recent survey conducted by Demographic and Health Surveys, less than one percent of married female respondents reported extramarital sexual relations in the twelve months preceding the survey (National Statistical Office (NSO) and ICF Macro 2010).

[5] In this survey, children are not followed longitudinally. Rather, their mothers are followed. MLSFH collects detailed information on all biological children of respondents in household rosters. These children have been manually linked by comparing their name, age, and sex across survey waves.

The ability to categorize children based on parents' marriage status depends largely on the accuracy of their mothers' retrospective marriage histories. Analyses conducted in an unpublished paper indicate that respondents tend to underreport the number of marriages and divorces they have experienced (Chae 2011). This can cause problems in correctly classifying children as coming from intact or divorced marriages. As a result, I use reconstructed marriage histories of mothers of children in my analytical sample to categorize children based on their parents' marriage status. I created reconstructed marriage histories from marriage history data collected in MLSFH4, MLSFH5, and MLSFH6. Detailed information on the methodology used to construct these histories is available upon request.

Methods

Dependent Variables

In this paper, I examine both schooling and health outcomes. I focus on three schooling outcomes: currently attending school, grades of schooling completed, and schooling gap. These three outcomes represent different aspects of schooling. Current school attendance measures a recent decision by parents to keep children in school to further their education. Grades of schooling completed, which is measured regardless of current school attendance, represent children's cumulative educational attainment. Schooling gap, measured among children currently in school, reflects children's progression in school. It is not uncommon for children to experience delayed school entry and to repeat several grades, resulting in most children being behind in school.

I construct outcome variables from mothers' reports of their child's highest level of schooling attained (never attended school, Standard, Form, or Higher)[6] and whether their child was still in school. If their child ever attended school, then they report the number of grades of schooling completed at that level. While reports of current school attendance seem fairly straightforward, this is not the case for grades of schooling completed. Between 2006 and 2008, 8.5 percent of children experienced a gain of "-1" grades of schooling. A similar pattern was observed between 2008 and 2010. In these cases, I assume a gain of zero grades of schooling. A small proportion of children also gained three grades of schooling between survey waves. In these cases, I assume a gain of two grades. If mothers reported gains in schooling of less than "-1" or more than "3", I exclude these children from the analysis. The schooling gap measures the difference between the expected number of grades completed for the child's age and the actual number of grades completed. A positive gap indicates that a child is not in the appropriate grade for his or her age.

I focus on one health outcome: child health index. I create this index from three health-related questions that MLSFH asks mothers concerning their child's health. The first question is "Has (NAME) been ill in the past 12 months? If yes, for how long?" Possible responses include "No", "Yes, for less than a month", "Yes, for 1 to 3 months", "Yes, 3 to 6 months", and "Yes for 6 months or longer." The second question is "How would you rate (NAME)'s health in general?"

[6] In Malawi, Standard refers to grades 1-8 in primary school and Form refers to grades 1-4 in secondary school.

Possible responses include “Excellent”, “Very good”, “Good”, “Poor”, “Very Poor”, and “Don’t know”. The last question is “How would you compare (NAME)’s health to other people in your village who are the same age and sex?” Possible responses include “Much better”, “Better”, “Same”, “Worse”, “Much worse”, and “Don’t know.” All three health-related questions measure mother’s perception of her child’s health, making it highly susceptible to measurement error. Therefore, I created a child health index using reports obtained from the above three questions. I used principal components analysis to generate a variable representing child health. Afterwards, I standardized this variable so that it has a mean of 0 and a standard deviation of 1. In order to ease the interpretation of this variable, I rescaled it so that values lie between 0 and 10. Higher values correspond to better health.

Model Specification

I use longitudinal data methods, specifically random effects models, to test whether children of divorced parents are more likely than those from intact marriages to have poorer schooling and health outcomes. Due to the multilevel nature of the data, whereby children are nested within mothers, I include random intercepts to control for the contribution of mother-level and child-level characteristics to the overall variance in schooling and health outcomes (Rabe-Hesketh and Skrondal 2008).

For the outcome, currently attending school, I use the following three-level logistic random-intercept model:

$$logit\{\Pr(y_{ijt} = 1 | \boldsymbol{X}_{ijt}, \zeta_{ij}, \zeta_i, Y_t)\} = \beta_0 + \beta \boldsymbol{X}_{ijt} + \zeta_{ij} + \zeta_i + Y_t$$

where y_{ijt} represents current school attendance, β_0 represents the constant (or population mean), $\boldsymbol{X}_{ijt}$ represents a vector of explanatory variables observed for child *i* nested in mother *j* at time *t*, ζ_{ij} represents a random intercept for mother *j* and child *i*, ζ_i represents a random intercept for child *i*, and Y_t represents a time dummy. I build two models. In Model 1, I include the following child-level variables: parents are divorced, age, male child, ethnicity, health index, and lives with mother. In Model 2, I add the following mother-level variables: age, educational attainment, lives with husband, wealth index, and number of children under age 15 living in household. Regressions are run separately by age group: 0-5 years, 6-10 years, and 11-16 years.

To test for differences by parents’ marriage status in grades of schooling completed, schooling gap, and child health index, I use the following three-level linear random-intercept model:

$$y_{ijt} = \beta_0 + \beta \boldsymbol{X}_{ijt} + \zeta_{ij} + \zeta_i + Y_t + \epsilon_{ijt}$$

where y_{ijt} represents grades of schooling completed, schooling gap, or child index, β_0 represents the constant (or population mean), $\boldsymbol{X}_{ijt}$ represents a vector of explanatory variables observed for child *i* nested in mother *j* at time *t*, ζ_{ij} represents a random intercept for mother *j* and child *i*, ζ_i represents a random intercept for child *i*, Y_t represents a time dummy, and ϵ_{ijt} represents a child-specific error term. I build two models. In Model 1, I include the following child-level variables:

parents are divorced, age, male child, ethnicity, health index[7], and lives with mother. In Model 2, I add the following mother-level variables: age, educational attainment, lives with husband, wealth index, and number of children under age 15 living in household. Regressions are run separately by age group: 6-10 years and 11-16 years. For the outcome, schooling gap, I restrict the analysis to children who are currently attending school. Because six years is the official start age of primary school in Malawi, a schooling gap should not exist at six years of age. Therefore, I restrict this portion of the analysis to children ages 7-16 years.

For all outcomes, I tested for differences in the association between parents' marriage status and outcome variables by gender. To do this, I included an interaction term for gender. With the exception of child health index for older children, ages 11-16 years, this interaction term was not significant. Due to its lack of significance, I do not include it in any of the models presented in the following section.

Results

Descriptive statistics in this section are based on MLSFH5 because all mothers and children in my analytical sample have data for this survey wave.

Characteristics of Mothers

In Table 1, I present characteristics of mothers of children in my analytical sample according to whether they have ever been divorced.[8] Approximately one-third of mothers have been divorced at some point in their lives. On average, ever divorced mothers are three years older and less educated than never divorced mothers. Ethnic composition varies by ever divorced status. Tumbuka and Yao make up the largest proportion of never and ever divorced mothers, respectively. This is consistent with previous findings that levels of divorce are lowest in the Northern region, where the Tumbuka predominate, and highest in the Southern region, where the Yao primarily reside (Reniers 2003). More than 90 percent of never married mothers are living with their husband. In contrast, only three-quarters of ever divorced mothers are doing so. Ever divorced mothers have, on average, 0.5 more children than never divorced mothers. Their greater number of children is probably due to their older age. Although they differ on the mean number of children ever born, they have comparable numbers of children in the analytical sample.[9] Furthermore, similar numbers of children under age 15 are found living in the households of never divorced and ever divorced mothers. In terms of household wealth, a greater proportion of never divorced mothers live in wealthier households while a greater proportion of ever divorced mothers live in poorer households. This leads to the generalization that ever divorced mothers live in poorer households than never divorced mothers.

[7] I do not include this variable for the outcome, child health index.
[8] Refers to women ever divorced by 2008 survey.
[9] Several possibilities may explain why all children ever born are not included in the analytical sample: 1) child's age is outside the age range 2) child died and 3) child is not linked across surveys. Some children were not linked across survey waves for two reasons. First, mothers did not list their children in all survey waves. Second, mothers may not have reported the same names for children across survey waves, making it difficult to link children over time. For instance, they may have reported nicknames in the earlier wave and first names in the later wave,.

[Table 1 about here]

Characteristics of Children

Table 2 contains characteristics of children in my analytical sample. In total, I have 3,334 children with longitudinal data for at least two survey waves. No gender differences are found by parents' marriage status. Among children whose parents are still married, the distribution of children is skewed towards the youngest age group, 0-5 years. In contrast, children whose parents are divorced are more likely to be older. In terms of ethnicity, the Tumbuka and Yao make up the greatest proportion of children whose parents are still married and divorced, respectively. Ethnic differences by parents' marriage status largely reflect regional divorce patterns (Reniers 2003). Lastly, most children, regardless of parents' marriage status, live with their mother. However, the proportion of children from intact marriages who live with their mother is significantly greater.

[Table 2 about here]

Outcomes of Interest

In Table 3, I present descriptive statistics of outcomes of interest by parents' marriage status. The majority of children are currently attending school, regardless of parents' marriage status. Among younger school-aged children, ages 6-10, similar levels of current school attendance are observed. Differences by parents' marriage status become more apparent among older children. While 90 percent of children from intact marriages are currently attending school, only 80 percent of children from divorced marriages are attending school. Among both younger and older school-age children, differences in mean grades of schooling completed and schooling gap by parents' marriage status exist. Children from intact marriages have completed more grades of schooling. Of those currently attending school, they have a smaller schooling gap, indicating better progress in school than children from divorced marriages. Levels of child health, as measured by the child health index, are similar by parents' marriage status.

[Table 3 about here]

Figures 1-4 present a graphical depiction of the aforementioned results by individual age rather than age group. Levels of current school attendance appear to be similar for children ages 6-10 by parents' marriage status (Figure 1). Starting at age 11, a noticeable decline in the percentage of children attending school is observed among children whose parents are divorced. The only exception occurs at age 14, where similar levels of education are observed. This outlier is most likely due to a small number of children in this category. In Figure 2, a similar pattern is observed for grades of schooling completed by parents' marriage status. While a steady increase is seen for children from intact marriages, this is not the case among those from divorced marriages. From age 11 onwards, the slope of the line becomes less steep. In contrast to current school attendance and grades of schooling completed, a slightly larger schooling gap is observed

among children from divorced marriages (Figure 3). This gap continues to widen as age increases. With respect to health, differences by parents' marriage status are minimal (Figure 4). At some ages, children from divorced marriages have better health, while at other ages, children from intact marriages have better health. Overall, no clear pattern emerges.

[Figures 1, 2, 3, & 4 about here]

Schooling

1. 6-10 years

In Table 4, I present regression results of schooling outcomes for younger children. Overall, no difference exists in schooling outcomes by parents' marriage status. Children of divorced parents have similar schooling outcomes to those of still married parents. The relationships between control variables and outcomes are generally in the expected direction. As age increases, children have higher odds of current school attendance, higher number of grades completed, and a larger schooling gap. Although male children are less likely to be in school, they have similar number of grades of schooling completed and schooling gap to female children. Child health only seems to matter for current school attendance. Each unit increase in child health is associated with greater odds of current school attendance. A surprising finding is that children living with their mother have poorer schooling outcomes. One possible explanation could be that parents send their children to live with other relatives for school-related reasons. Ethnic differences are also observed for schooling outcomes. These differences are as expected as education levels are highest in the North, where the Tumbuka predominate, and lowest in the South, where the Yao primarily reside.

[Table 4 about here]

In Model 2, I added mother-level variables. The addition of these variables did not change the significance levels of the primary predictor variable, parents are divorced. It did, however, change the significance of the control variable, lives with mother. Mother-level characteristics explain most of the association between lives with mother and current school attendance and grades of schooling completed. Having an older mother is associated with completing more grades and having a smaller schooling gap, but not associated with current school attendance. Not surprisingly, children whose mothers have some secondary schooling have better schooling outcomes. Also, children whose mothers have no schooling are less likely to be attending school than children whose mothers have completed some primary schooling. While it does not seem to matter if the child's mother lives with her husband, the number of children under age 15 living in the mother's household does seem to matter. As the number of children living in the household increases, the number of grades completed declines and the schooling gap widens. Lastly, children living in the wealthiest households have better schooling outcomes compared to those living in households of average wealth.

2. 11-16 years

In Table 5, I present regression results of schooling outcomes among older children. In contrast to results obtained for younger children, older children whose parents are divorced have significantly poorer schooling outcomes than children whose parents are still married. Specifically, they have half the odds of current school attendance, completed 0.4 fewer grades of schooling, and have a schooling gap that is 0.3 grades wider. Not surprisingly, as children get older, they are less likely to be in school, have completed more years of schooling, and have accumulated a larger schooling gap. Although male children are more likely to be in school, they have completed fewer grades of schooling and have a wider schooling gap than female children. Pregnancy and marriage-related reasons may explain why girls are less likely to currently attend school. Health does not appear to matter in children's schooling outcomes. An interesting finding is found for the variable, lives with mother. Children living with their mother are significantly more likely to currently attend school but have a larger schooling gap than those who live elsewhere. It is not clear why this is the case. Results for ethnicity are similar to that of younger children.

[Table 5 about here]

In Model 2, where I control for mother-level characteristics, the odds ratio and coefficients for whether parents are divorced remain relatively unchanged. In addition, the significance levels of control variables do not change when I include mother-level characteristics. In contrast to findings for younger children, mother's education strong predicts schooling outcomes. Although no association exists between child's mother lives with her husband and currently attending school and grades of schooling completed, it does exist for the schooling gap. Children whose mothers live with their husband have a larger schooling gap. Number of children under age 15 living in the household does not predict schooling outcomes. Lastly, household wealth is not associated with current school attendance and number of grades completed. It is, however, associated with schooling gap. Children with mothers living in wealthier households have a significantly smaller schooling gap.

Health

In Table 6, I present regression coefficients of child health for all age groups. I tested whether children of divorced parents are more likely to have worse health than children whose parents are still married. The youngest and oldest children, ages 0-5 and 11-16 years, respectively, appear to have similar levels of health by parents' marriage status (Model 1). This is also the case after controlling for mother-level characteristics (Model 2). Among children ages 6-10 years, children whose parents are divorced have poorer health than those whose parents are still married (Model 1). When I control for mother-level variables in Model 2, this is no longer the case. Mother-level variables appear to explain the difference in health by parents' marriage status.

[Table 6 about here]

Age is only significant for children, ages 6-10 years. Among this age group, better health is observed as age increases. No relationship exists between being a male child and child health index for any of the age groups. The youngest and oldest children who live with their mother are significantly more likely to have poorer health than those who are not co-resident. It is not clear why this is the case. Ethnic differences are also apparent in levels of child health. Tumbuka children have better reported health than those belonging to the reference group, Chewa. Yao children have poorer health but only for the youngest and oldest age groups.

Several mother-level variables have significant relationships with child health index. Children whose mothers have no education have better health than children whose mothers have some primary education. This relationship, however, is not in the expected direction. One would expect that children whose mothers have more education would have better health outcomes. Not surprisingly, mother's health index is positively associated with child health index. As mother's health index increases, the child health index also increases. The number of children under age 15 living in the household is associated with health for children ages 6-10 and 11-16. As the number of children under age 15 increases, children have lower levels of health. A possible explanation could be competition for household resources. Because the youngest children are most vulnerable to poor health, parents may devote greater resources to their health needs rather than those of older children. Household wealth does not appear to be strongly associated with child health.

Discussion

In this paper, I explored the relationship between divorce and children's outcomes, specifically schooling and health, in rural Malawi. While no association exists between parents' marriage status and schooling outcomes among younger school-age children, ages 6-10, a statistically significant relationship is observed among older school-age children, ages 11-16. Older children whose parents are divorced are less likely to be in school, have completed fewer grades of schooling, and have a larger schooling gap than children whose parents are still married. This relationship does not differ by gender. In terms of health, parental divorce does not predict children's health for any of the age groups.

Several reasons may explain why divorce is associated with poorer schooling outcomes among older children, but not among younger children. In 1994, the government of Malawi implemented a policy in which school fees were no longer required to attend primary school. In contrast, school fees are still required to attend secondary school, preventing many children from transitioning to secondary school. Furthermore, qualitative interviews have shown that Malawian parents stress the importance of education to their children's future success (Van Blerk and Ansell 2006). The lack of school fees and widespread importance of education may explain why no association exists between parents' marriage status and schooling outcomes for younger children. Another possible explanation relates to the opportunity cost of sending children to school (Kadzamira and Rose 2003). Compared to older children, younger children are less able

to contribute to household needs, such as helping out with household chores, taking care of children or sick family members, and participating in wage labor. Consequently, very few obstacles stand in the way of parents sending their younger children to school.

Although having divorced parents is associated with poorer schooling outcomes, at least in the case for older children, no relationship appears to exist between parents' marriage status and health for children of any age. Selection could possibly explain this lack of significance. For instance, child mortality may be higher among children whose parents are divorced. Those who survive may be healthier. Another explanation could be that divorced parents make decisions to place their children in households that have the best financial resources, ensuring that their health and nutrition needs are met. Lastly, the child health index is a composite measure that is based on subjective reports of child health and may not accurately reflect child health. Objective measures, such as anthropometric measurements, may be better at capturing actual child health rather than mothers' perceptions of child health. Furthermore, mothers provide reports for children, regardless of whether children are co-resident at the time of the survey. These reports may not be accurate for children who are not co-resident. Almost 20 percent of children from divorced marriages are not co-resident with their mother, which leads to questions about the accuracy of this measure.

A few limitations of this analysis are worth mentioning. First, this analysis relies heavily on respondents' reports of children's ages, marriage start and end dates, and reason why marriage ended (in cases of terminated marriages). These reports are used to determine whether children come from divorced or intact marriages. Inaccurate reports can lead to misclassification of children, potentially affecting results. Although 37 percent of mothers have ever been divorced, only 16 percent of children come from divorced marriages. Considering that more than one-third of mothers have ever been divorced, it is likely that the percentage of children coming from divorced marriages is higher. Second, this analysis does not control for characteristics of the father which may be related to the outcomes of interest. While I can control for father-level characteristics among children whose parents are still married, I cannot do this for children whose parents are divorced. Lastly, this analysis does not examine the relationship between divorce and children's outcomes from the perspective of the father. While the data are available, the practice of polygamy makes it difficult to determine from which marriages children were produced.

In conclusion, this paper takes a first step in understanding the relationship between divorce and children's outcomes in Sub-Saharan Africa, an area of research that is just beginning to be explored. While results indicate that older children, ages 11-16, who have experienced a parental divorce have poorer schooling outcomes, this paper does not explore the causal mechanisms underlying this relationship. Future research should examine possible causal mechanisms as well as other aspects of this relationship, such as whether children from divorced marriages experience greater deteriorations in schooling and health outcomes over time. Future research should also examine whether the timing of divorce matters. Are children's outcomes more adversely affected by recent divorce or is there a cumulative effect of divorce? Lastly, what

role does remarriage play in the relationship between divorce and children's outcomes? Most divorced Malawians remarry in a relatively short period of time and most marry eventually (Reniers 2003). Within two and five years of divorce, more than 40 and 75 percent of women remarried, respectively.

Table 1. Summary Statistics, Mothers, by Ever Divorced Status, MLSFH5			
	Never divorced	**Ever divorced**	
Mean age (yrs)	34.4	37.1	***
	(10.6)	(11.2)	
Educational Attainment (%)			***
No schooling	23.2	36.1	
Some primary	58.3	53.4	
Completed primary	10.1	4.2	
Secondary or higher	8.4	6.3	
Mean years of schooling completed	4.4	3.3	***
	(3.3)	(3.2)	
Ethnicity (%)			***
Chewa	29.8	27.0	
Yao	21.3	36.0	
Tumbuka	37.8	23.2	
Other	11.1	13.9	
Lives with husband	91.6	75.4	
Mean number of children ever born	5.3	5.8	**
	(2.9)	(3.1)	
Mean number of children in analytical sample	2.9	2.8	
	(1.5)	(1.4)	
Mean number of children <15 yrs living in household	3.0	2.9	+
	(1.5)	(1.5)	
Household wealth index			***
Lowest	11.0	25.1	
Second	17.1	23.6	
Middle	20.4	22.1	
Fourth	24.5	16.3	
Fifth	27.1	13.1	
Number of mothers	818	475	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Note: All marriage-related variables, except for current marital status, are based on reconstructed marriage histories. Standard deviations are in parentheses.

Table 2. Summary Statistics, Children, by Parents' Marriage Status, MLSFH5

	Still married	Divorced	
Male (%)	49.3	50.7	
Age group (%)			***
0-5 yrs	41.4	27.6	
6-10 yrs	30.1	33.6	
11-16 yrs	28.5	38.8	
Ethnicity (%)			***
Chewa	29.9	25.7	
Yao	22.9	37.3	
Tumbuka	35.1	22.5	
Other	12.2	14.5	
Lives with mother (%)	95.1	82.7	***
Number of children	2801	533	

*** $p<0.001$

Table 3. Descriptive Statistics, Outcomes of Interest, by Parents' Marriage Status, MLSFH5

	0-5 years		6-10 years			11-16 years		
	Still married	**Divorced**	**Still married**	**Divorced**		**Still married**	**Divorced**	
Currently attending school (%)	na	na	82.5	80.1		90.7	80.4	***
Mean grades of schooling completed	na	na	1.3	1.1	+	4.2	3.9	+
			(1.2)	(1.0)		(2.1)	(2.3)	
Mean schooling gap[a]	na	na	0.9	1.2	*	3.1	3.7	***
			(1.1)	(1.8)		(1.9)	(2.2)	
Mean child health index	7.8	7.6	7.9	7.7		8.1	8.1	
	(1.7)	(1.7)	(1.7)	(1.6)		(1.5)	(1.7)	
Total	1159	147	843	179		799	207	

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

Note: na = not applicable

[a]Among children currently in school

Table 4. Random Effects Regression, Schooling Outcomes, 6-10 years, MLSFH, 2006-2010

	Current school attendance[a]		Grades of schooling completed[b]		Schooling gap[bc]	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Child-level variables						
Parents are divorced	1.04	1.15	-0.04	-0.04	0.03	0.03
Age	2.12***	2.15***	0.50***	0.49***	0.39***	0.39***
Male child	0.77+	0.74+	-0.06	-0.07	0.01	0.02
Health index	1.11*	1.09+	0.00	0.00	0.00	0.00
Lives with mother	0.50+	0.58	-0.18*	-0.14	0.24**	0.19*
Ethnicity						
Chewa (ref)	---	---	---	---	---	---
Yao	0.36***	0.53**	-0.35***	-0.31***	0.28***	0.26***
Tumbuka	3.97***	2.22**	0.64***	0.49***	-0.42***	-0.33***
Other	0.83	0.86	-0.04	-0.05	0.01	0.01
Mother-level variables						
Age		0.98		0.01*		-0.01+
Educational attainment						
Some primary (ref)		---		---		---
None		0.45***		-0.07		0.00
Completed primary		1.94		0.11		-0.11
Secondary		2.38+		0.42***		-0.27**
Lives with husband		1.02		-0.03		0.03
Number of children < 15 years living in household		0.98		-0.03*		0.04*
Household wealth index						
Middle (ref)		---		---		---
Lowest		0.65+		0.01		-0.06
Second		0.95		-0.01		0.05
Fourth		1.36		0.05		-0.06
Fifth		1.86*		0.24***		-0.19**
Year						
2006 (ref)	---	---	---	---	---	---
2008	0.77	0.83	-0.30***	-0.30***	0.17***	0.18***
2010	0.94	1.05	-0.46***	-0.47***	0.31***	0.32***
Constant			-2.26***	-2.45***	-2.77***	-2.69***
Number of children	1665	1634	1319	1294	1312	1284
Number of mothers	893	884	797	788	786	778

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

[a] Odds ratios are provided.

[b] Coefficients are provided.

[c] Restricted to children, ages 7-10 years, who are currently attending school.

Table 5. Random Effects Regression, Schooling Outcomes, 11-16 years, MLSFH, 2006-2010

	Current school attendance[a]		Grades of schooling completed[b]		Schooling gap[bc]	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Child-level variables						
Parents are divorced	0.51**	0.56*	-0.36***	-0.36***	0.35***	0.32**
Age	0.66***	0.68***	0.57***	0.58***	0.35***	0.35***
Male child	1.50*	1.53*	-0.20*	-0.17*	0.25***	0.26***
Health index	1.08	1.07	0.01	0.02	-0.02	-0.02
Lives with mother	4.11***	3.98***	-0.08	-0.10	0.47***	0.46***
Ethnicity						
Chewa (ref)	---	---	---	---	---	---
Yao	0.34***	0.59+	-1.13***	-0.90***	0.76***	0.65***
Tumbuka	4.26***	2.31*	0.98***	0.51***	-0.77***	-0.38**
Other	1.32	1.44	-0.22	-0.30+	0.21	0.29*
Mother-level variables						
Age		0.97+		0.01		-0.01
Educational attainment						
Some primary (ref)		---		---		---
None		0.39**		-0.56***		0.20
Completed primary		3.02+		0.60**		-0.47**
Secondary		5.53+		1.23***		-0.97***
Lives with husband		1.05		-0.11		0.21+
Number of children < 15 years living in household		0.99		-0.02		0.00
Household wealth index						
Middle (ref)		---		---		---
Lowest		0.61		-0.13+		0.21*
Second		0.68		-0.03		0.03
Fourth		1.31		0.01		-0.20*
Fifth		0.70		0.11		-0.31***
Year						
2006 (ref)	---	---	---	---	---	---
2008	1.19	1.19	-0.27***	-0.29***	0.50***	0.53***
2010	1.05	1.05	-0.29***	-0.31***	0.32***	0.34***
Constant			-3.19***	-3.13***	-2.58***	-2.41***
Number of children	1520	1501	1427	1413	1387	1370
Number of mothers	787	784	772	768	750	747

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

[a] Odds ratios are provided.

[b] Coefficients are provided.

[c] Restricted to children who are currently attending school.

Table 6. Random effects linear regression, child health index, MLSFH, 2006-2010

	0-5 years		6-10 years		11-16 years	
	Model 1	**Model 2**	**Model 1**	**Model 2**	**Model 1**	**Model 2**
Child-level variables						
Parents are divorced	-0.14	-0.05	-0.26*	-0.14	-0.13	-0.12
Age	0.01	0.02	0.06**	0.07**	0.01	0.01
Male child	0.00	0.05	-0.02	-0.04	-0.08	-0.06
Lives with mother	-0.71**	-0.54*	-0.06	0.02	-0.18+	-0.17+
Ethnicity						
Chewa (ref)	---	---	---	---	---	---
Yao	-0.16+	-0.04	-0.08	0.10	-0.40***	-0.33**
Tumbuka	0.40***	0.28**	0.46***	0.37***	0.38***	0.27**
Other	0.17	0.23*	0.10	0.14	0.03	0.08
Mother-level variables						
Age		0.00		-0.01		0.00
Educational attainment						
Some primary (ref)		---		---		---
None		0.28**		-0.01		0.11
Completed primary		-0.08		-0.12		-0.01
Secondary		-0.03		-0.03		-0.08
Health index		0.41***		0.38***		0.30***
Lives with husband		0.02		0.17		0.00
Number of children < 15 years living in household		-0.03		-0.05+		-0.06*
Household wealth index						
Middle (ref)		---		---		---
Lowest		-0.09		-0.16		-0.17
Second		-0.11		-0.29**		-0.13
Fourth		0.10		-0.03		0.03
Fifth		0.21*		-0.15		-0.01
Year						
2006 (ref)	---	---	---	---	---	---
2008	0.15*	-0.10	0.02	-0.17*	0.15*	0.01
2010	-0.22**	-0.43***	-0.15+	-0.31***	0.05	-0.12
Constant	8.21***	5.06***	7.26***	4.78***	7.99***	6.08***
Number of children	1602	1577	1694	1660	1529	1509
Number of mothers	925	917	900	892	790	786

*** p<0.001, ** p<0.01, * p<0.05, + p<0.10

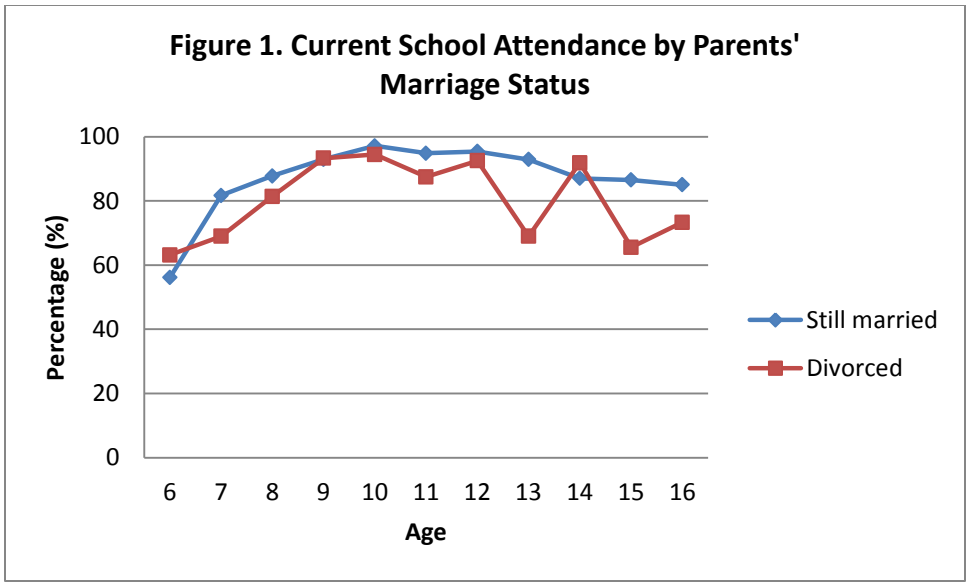
Figure 1. Current School Attendance by Parents' Marriage Status
Percentage (%)
100
80
60
40
20
0
6 7 8 9 10 11 12 13 14 15 16
Age
Still married
Divorced

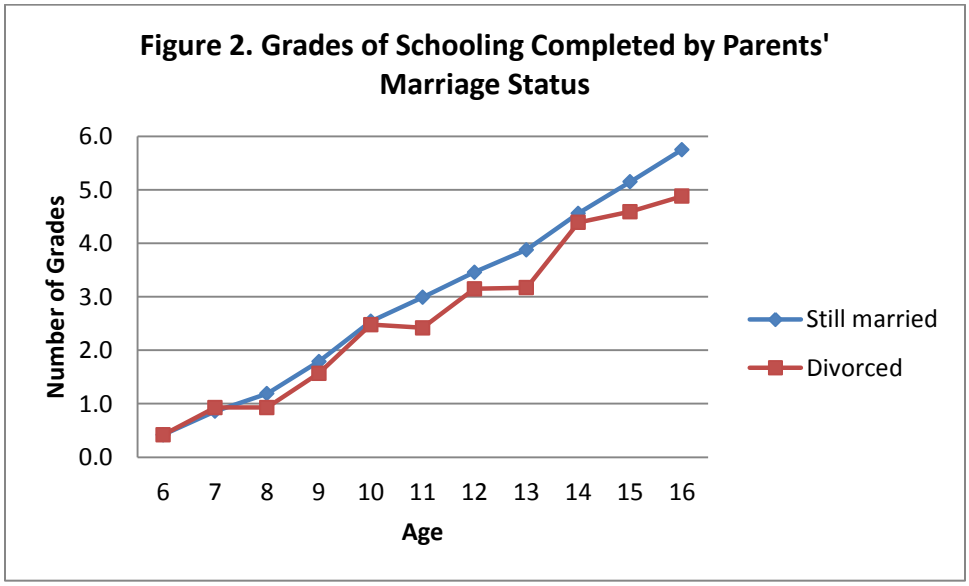
Figure 2. Grades of Schooling Completed by Parents' Marriage Status
Number of Grades
6.0
5.0
4.0
3.0
2.0
1.0
0.0
6 7 8 9 10 11 12 13 14 15 16
Age
Still married
Divorced

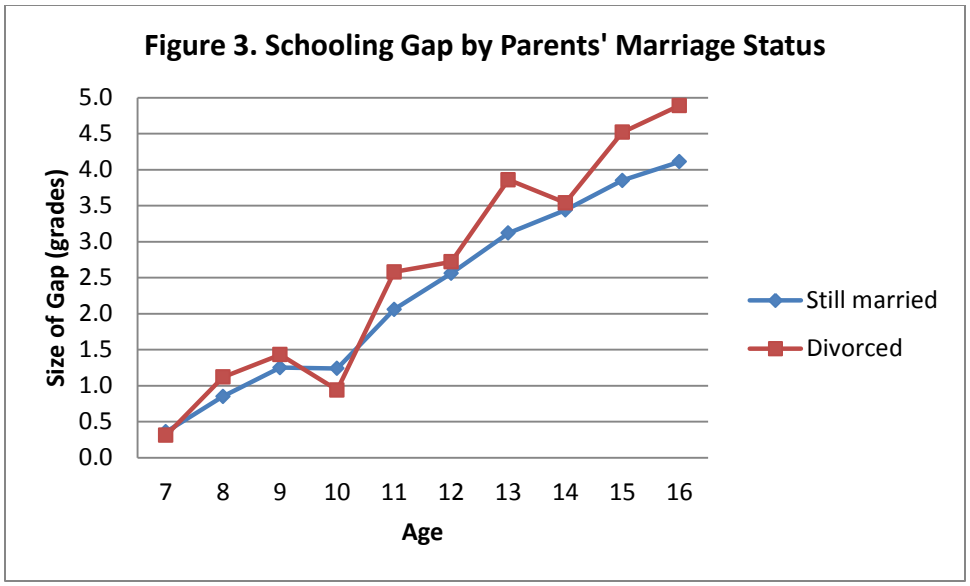
Figure 3. Schooling Gap by Parents' Marriage Status
Size of Gap (grades)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
7
8
9
10
11
12
13
14
15
16
Age
Still married
Divorced

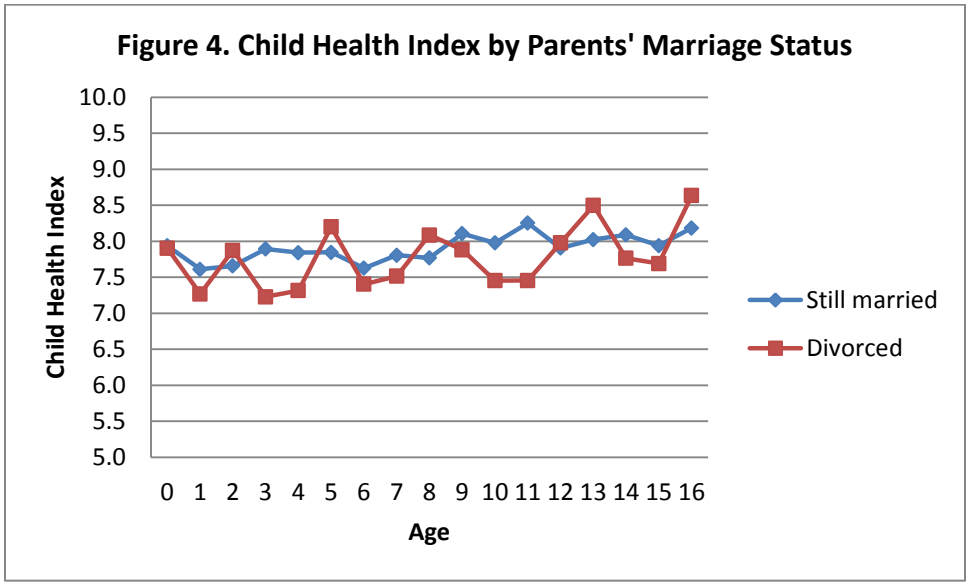
Figure 4. Child Health Index by Parents' Marriage Status
Child Health Index
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
Age
Still married
Divorced

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