Published in final edited form as:
Soc Sci Res. 2009 December ; 38(4): 883–896.

EDUCATION, GENDER, AND MIGRATION IN THE CONTEXT OF SOCIAL CHANGE

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Abstract

Although sociologists have identified education as likely determinant of migration, the ways in which education affects migration are unclear and empirical results are disparate. This paper addresses the relationship between educational attainment, enrolment, and migration, focusing on the role of gender and how it changes with evolving social contexts. Using empirical analyses based in Nepal, results indicate that educational attainment has positive effects and enrolment has negative effects on out-migration and including enrolment in the model increases the effect of attainment. In the case of women, with the changing role of gender, increased education and labor force participation, the affect of educational attainment changes drastically over time, from almost no effect, to a strong positive effect. Consideration of enrolment, and the role of gender in education, employment, and marriage may help to explain the disparate results in past research on education and migration.

Keywords

Migration; Education; Gender; Nepal; Asia

Education has been identified in sociological research as a catalyst of social, economic, and ideational change. Particularly in rural areas and resource-limited countries, where formal education was previously uncommon or even completely inaccessible, the introduction of schools can instigate vast changes in communities and individual behaviour. Social science has linked education to changes in mortality rates (Caldwell, 1979; Caldwell, 1986; Preston, 1996; Sastry, 1996), fertility and marriage patterns (Martin, 1995; Singh and Samara, 1996; Axinn and Barber, 2001; Bongaarts, 2003; Yabiku, 2005), and gender roles (Niraula and Morgan, 1996; De Jong, 2000). In this paper, I examine the relationship between education and migration, and hope to add to this body of knowledge about the effects of education on social life.

The relationship between education and migration is not new in theory or research. It is however, a complex relationship, both from the theoretical and empirical standpoint, which is not thoroughly understood. Some studies have indeed found strong positive effects of educational attainment on the propensity to migrate (Caldwell, 1969; Stark and Taylor, 1991; Donato, 1993; White, Moreno, and Guo 1995; Yang and Guo, 1999). However, other

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studies have found negative effects of educational attainment on migration in certain settings (Lucas, 1985; Massey et al., 1987; Taylor, 1987; Massey and Espinosa, 1997; Quinn and Rubb, 2005), and still others have found no significant effects at all (Emerson, 1989; Adams, 1993; Massey and Espinosa, 1997; Curran and Rivero-Fuentes, 2003). In general, the literature appears to favour the prospect that educational attainment does increase the likelihood of migration. However, it is not entirely clear why such disparate results may appear in different studies.

In this paper, I address the role of gender as one reason that might explain why research on the relationship between education and migration might yield such different results. Given that educational outcomes, the meaning attached to educational outcomes, and migration are heavily influenced by gender in many settings, there is little reason to believe that the relationship between education and migration is not moderated by gender. My theoretical and empirical analyses concentrate on out-migration from rural areas in resource-limited countries. Using a broad theoretical framework drawing on economic and social theories of migration and empirical data analysis, I examine how different aspects of education—educational attainment and enrolment—may affect the likelihood that men and women will move away from a rural area. I conduct separate analyses for men and women in order to better understand how social norms, roles, opportunities, and expectations may result in different causes of migration for men and women. I use two data sets from the Chitwan Valley Family Study (CVFS) in Nepal for this paper. I use a retrospective data set that covers about five decades until 1996 to provide a historical perspective. I also use a prospective panel study from 1997–99 to provide a more contemporary perspective on this issue. This allows me to examine how the rapidly evolving social context and changing role of gender affect the education-migration relationship over time.

Theoretical Framework

Economic theories of the relationship between education and out-migration are some of the oldest in the field. Both the neo-classical and new economics of migration theories conceptualize educational attainment as a form of human capital that leads an individual to expect better outcomes from migration (Harris and Todaro, 1970; Stark and Bloom, 1985; Massey and Espinosa, 1997). The skills, knowledge, and credentials gained from formal education increase the possibility of gaining employment outside the household as well as advancing an individual to higher pay scales. This may lead an individual to expect better (economic) outcomes from migrating away from a rural community. The knowledge and skills gained from school may also increase the ability of an individual to complete a journey and cope in a new place, thereby decreasing the costs and risks of migration (Stark and Bloom, 1985). Through these mechanisms, economic theories generally predict that educational attainment is positively related to migration.

However, research has shown that the positive effect of educational attainment on migration changes based on several contingencies. For example, this relationship is can differ by international or domestic destination (Caldwell, 1969; Lucas, 1985; Stark and Taylor, 1991; Taylor 1987; Yang and Guo, 1999), documentation status (Massey and Espinosa, 1997), and occupation (Quinn and Rubb, 2005).

Enrolment might be another contingency, or factor that explains the disparate results in studies of educational attainment and migration. Economic theories of migration would predict different outcomes for individuals who are enrolled in school and those who are not. The process of migrating forces a student to quit their current schooling; it can interrupt their studies, and in many cases precludes them from re-enrolling. This truncates the knowledge and skills they are able to gain from education and can prevent them from earning certain

credentials. Consequently migration has high opportunity costs for the enrolled student. There may also be opportunity costs for parents who have already invested in their children's education, particularly if they expect their children to care for them in older years. Thus, the neo-classical and new economic theories of migration would lead us to predict that enrolment in school would decrease the likelihood of migration, independent of the effects of educational attainment.

Sex may also moderate the link between education and out-migration. In many places, cultural norms and expectations dictate that men are more likely than women to seek employment outside the home. In this context, educational attainment might have stronger effects on migration for men, and weaker effects for women. Similarly, the opportunity costs of quitting school may be higher for men. The skills, knowledge, and credentials that a migrant effectively loses from quitting school are more likely to impact men because they are more likely to need them to seek employment outside the home. Thus we would expect the negative effects of enrolment on migration to be stronger for men and weaker for women.

Other theories linking education to out-migration through social mechanisms do not have the historical legacy of economic theories, but have received strong support in the past couple decades. Social networks theory (Massey et al., 1987) adapts Bourdieu's concept of social capital to migration, arguing that social contacts with individuals who have migrated, or are currently resident at a destination, provide information and assistance to the new migrant, thereby decreasing the costs and risks of migration. Thus social networks may increase the probability of out-migration. Empirical research has consistently found social contacts to be a strong determinant of out-migration. (Donato, 1993; Zlotnik, 1995; Massey and Espinosa, 1997; De Jong, 2000). Education enters this causal relationship through expanding social networks. Participation in formal education increases the number of non-family social relationships of an individual, regardless of whether they have gained any knowledge, skills, or credentials from school. Additionally, social networks may in fact relate synergistically with economic theory. Not only does formal schooling provide an individual with wider social networks, but these social networks are selectively comprised of educated individuals who may be more likely to migrate themselves. Thus, we would expect educational attainment, or more years spent in formal schooling, to increase an individual's social network and thereby increase the likelihood that they will migrate.

Setting

The setting of this study is the western side of the Chitwan Valley in Nepal. The Chitwan Valley is a flat, agriculturally fertile area in south-central Nepal. It was originally inhabited by the Tharu people; however vast structural changes have now rendered the valley home to a wide range of peoples from all over Nepal and even India. Since the mid-1950s, the Government of Nepal has undertaken an intensive campaign to populate the terai, and in particular Chitwan Valley, with peoples from the hill regions of the country (Elder et al., 1976). Since 1979, paved roads have been built connecting Chitwan's largest town to Kathmandu in the north and to the east and west of the country. As a result of these changes, provision of land, services, and transportation opportunities, large numbers of people from across Nepal have moved into the Chitwan Valley, as planned. More than half of the migrants to the study area came from the hill districts adjacent to Chitwan. However, significant and increasing proportions of in-migrants come from other districts across Nepal and border areas of the Indian terai. The Tharu are now a minority group in their native region. The in-migrants since the 1950s have represented almost all ethnic groups in Nepal.

In conjunction with the rapid population growth and provision of basic government services to initially attract settlers, Chitwan has experienced extensive social changes (Axinn and Yabiku, 2001). Roads, markets, schools, and health posts have proliferated across the valley. In particular, the late 1950s witnessed a huge influx of government services. Public institutions that had previously been functionally inaccessible became accessible within 50 to 100 minutes walk (Axinn and Barber, 2001). After the late 1950s, service provision continued, but at a slower rate. Similarly, from the late 1950s through the mid-1960s there was a proliferation of private institutions, such as markets, employers, bus stops, and banks. These services are now also generally accessible to most neighbourhoods.

The town of Narayanghat on the northern edge of the study area is now a large urban area and hosts a hospital, movie theatres, a national highway, and an array of other services. Travelling south from Narayanghat, the study area is increasingly rural, villages are smaller, and government and private services such as schools, markets, road, hospitals, and health posts are increasingly fewer. For more in-depth discussion of social change in the Chitwan Valley, see Axinn and Yabiku, 2001 and Beutel and Axinn, 2002.

Migration

Historically, there has been a large amount of internal migration in Nepal. Much of the migration is seasonal and is viewed as a strategy to supplement regular farm and household incomes during low periods of the harvest and planting cycle (Kollmair et al. 2006; Thieme and Wyss 2005). Agricultural work is common (HMG et al. 2004), as well as urban wage labor in factories, and informal sector jobs (Graner 2001).

International migration is also common. Most Nepali's who migrate to other countries go to India where they can work as seasonal laborers in the larger wage labor markets in rural and urban areas (Kollmair et al. 2006). Nepal and India share an open border, so there are no restrictions on Nepali cross-border travel to India, making this international migration no more difficult than migration to other areas of Nepal. This is particularly true for the Chitwan District which is on the Nepal-India border. The 2001 census estimated that 2.5–5.0% of Chitwan residents were living abroad in 2001 (HMG et al. 2002) and 77% of these international migrants were in India. Data from a nationally representative sample survey allow us to estimate that about as many Chitwan residents are internal migrants (HMG et al. 2004). More recently, the Persian Gulf has become an important destination for Nepali migrants, including those from Chitwan. It is estimated that more than 100,000 and perhaps as many as 200,000 Nepali migrants were living in Gulf countries by the early twenty-first century, including both men and women (Graner and Gurung 2003; Seddon, Adhikari, and Gurung 2002).

Education

There has also been a large increase in educational opportunities and participation in Nepal in recent decades. Before the 1950s a public education system did not exist in Nepal and the majority of rural Nepali people were illiterate. Formal public schooling was instituted nationwide in 1951. The Nepali school system is comprised of five-year primary schools, lower secondary schools (6^{th}–7^{th} grades), upper secondary schools (8^{th}–10^{th} grades), and the option of attending another two years of higher secondary school (11^{th}–12^{th} grades) (Beutel and Axinn, 2002; Khaniya and Kiernan, 1994; Stash and Hannum, 2001). The main credentials are a School Leaving Certificate after completion of the 10^{th} grade and a Higher Secondary Certificate after completion of the 12^{th} grade. There are five main tertiary institutions in Nepal that provide a Bachelor's degree (three to five years), a Master's degree (another two to three years), and a PhD (after an additional three years).

The first school in the Chitwan Valley was established in 1954. Figure 1 shows the increase in number of schools in the Chitwan Valley since 1950, marked on the right-side y-axis. Since the 1950s there has been a continuous and steady increase in the number of schools in Chitwan, from only ten in 1960, to over 100 in the early 1990s.

The provision of schools alone has not necessarily been paralleled by an increase in students; consequent increases in literacy rates have also lagged behind the increase in schools. Figure 1 also shows the changes in school attendance over time; the left-side y-axis marks the number of students in Chitwan Valley. There was slow, steady improvement in enrolment until the 1960s, when boys' enrolment dramatically increased, and then again in the 1970s when girls' enrolment increased. This large increase in enrolment did not occur until about 15 years after the proliferation of schools. By 1996, 100% of children ages five and six in the study area had attended school for at least one day, more than half attended over three years of school, and adult literacy had reached about 50% (Beutel and Axinn, 2002).

Gender

Nepali society is strictly stratified by sex. Men and women experience very different opportunities and expectations regarding work, relationships, and personal autonomy. In this context, migration may be instigated through different mechanisms for men and women. Although Nepal is ethnically, economically, and geographically heterogeneous, in general it is a patrilineal, patrilocal society (Niraula and Morgan, 1996). Upon marriage, young couples most often reside with the groom's parents for many years (Reed and Reed, 1968; Bennett, 1983; Shrestha and Bhattarai, 2003; Yabiku, 2005). In a minority of cases, the couple moves to their own house, or they live with the bride's parents. Functionally, marriage instigates women to migrate to a much larger extent than men. The rates of marriage are very high in Nepal, the singulate mean age of first marriage for women is 19.5 and 98.8% of women are married by the age of 49 (Central Bureau of Statistics, 2001; Chaudhary and Niraula, 2003). Thus it is likely that most women will marry and consequently migrate at least once. Studies that analyze the likelihood of migration for some women may actually be analyzing the likelihood of first marriage.

Furthermore, empirical evidence has shown a negative relationship between school enrolment and marriage for women in Nepal as well as in the US (Thornton, Axinn, and Teachman, 1995; Yabiku, 2005). This suggests an alternative causal pathway with marriage as an intervening factor in the relationship between enrolment and migration for women. Enrolment may decrease the likelihood of marriage which in turn would decrease the likelihood of migration.

Men on the other hand, are much more likely than women to move for reasons other than marriage. In 1980, men in Nepal had much higher rates of employment outside the home, 66% of the labour force was male (World Bank Group 2004). In 1991, there were twice as many boys as girls enrolled in secondary school and the military service was almost solely comprised of men (Acharya, Mathema, and Acharya, 1999). This, however, is changing rapidly. From 66% in 1980, the percentage of the paid labour force that is male decreased to 62% in 1990 and 60% in 2000 (World Bank Group, 2004). In the Chitwan Valley Family Study (which is described in detail in the Study Design section below), women's employment outside the home is similarly increasing, but still remains much lower than men's. As shown in Figure 2, the percentage of men employed outside the home has increased steadily until 1997, when about 22% and 27% of men were employed in salaried and wage jobs (respectively). Women's employment outside the home has also steadily increased overall. By 1997, almost 40% of women in the study sample were employed outside the home. However, they are largely employed in wage labor jobs which usually

involve lower skill and educational requirements in addition to lower remuneration. In contrast, by 1997, just under 2% of women were employed in salaried positions that require higher educational attainment and credentials.

Historically, women in Nepal have also experienced restricted autonomy and decision-making power (Fricke, Axinn, and Thornton, 1993; Niraula and Morgan, 1996; Yabiku, 2005). This may ultimately limit individual women's ability to decide to migrate and to build a life in a destination community, as well as their decision-making power with regard to family moves. However, norms for women and men differ and are rapidly changing in many Nepali communities. Research has shown that women of higher status families and ethnic groups from the hill regions enjoy more autonomy and decision-making power (Niraula and Morgan, 1996). Niraula and Morgan have also linked higher education to greater female autonomy, and show that female autonomy is dictated more by community level structures than individual or family characteristics (Niraula and Morgan, 1996). Thus, female autonomy, decision-making abilities, and ultimately the ability of women to migrate are changing as ideas and institutions in communities change in Nepal.

Sex differences in Nepal also affect educational outcomes (Stash and Hannum, 2001; Beutel and Axinn, 2002), and likely the relationship between education and out-migration. Overall, boys attend school at a much higher rate and achieve higher educational outcomes than girls. Of the most recent cohort in the Chitwan Valley Family study that has completed schooling age (those born between 1962 and 1971), men completed an average of 9.38 years, and women completed a much lower average of 5.66 years. However, as shown in Table 1, these averages are heavily affected by the much higher percentage of women who have never attended school; the male/female gap in educational attainment drastically decreases for those who have attended some school. Of this same cohort, 10% of men have never attended school, while 37% of women have never attended school. Among individuals in this cohort who have completed at least two years of school, men completed an average of 10.74 years, while women completed an average 9.71 years. In this select group, the male/female gap in attainment is (surprisingly) only about one year. Furthermore, this gap in educational attainment and enrolment is consistently decreasing with time; the most recent cohorts exhibit the smallest male/female gaps in attainment. Currently in Chitwan, there are still significant proportions of the female population that do not attend any school and also significant proportions that achieve very high educational outcomes.

Some of the reasons that explain gender differences in education attainment are not surprisingly expectations of adult gender roles, marriage and employment. In rural Nepal, women and girls are generally expected to contribute to farm and household labor, thus the expected returns to girls' education are low (Acharya and Bennet, 1981) and girls are often taken out of school at earlier ages than boys. Amongst other reasons, in a study of this same area, Axinn and Beutel (2002) report that only 3.2% of males left school for marriage, while 32.7% of females did so. Conversely, 16.0% of males left school for a job, compared to only 0.7% of females.

For the preceding reasons, the relationship between education and out-migration in this setting may be very different for men and women. The opportunities, expectations, and decision-making process may result in different mechanisms through which education affects migration for women and men. To reflect these differences, I create separate models for women and men in my empirical analysis.

However, because women in Nepal have been increasingly participating and excelling in education and in the paid workforce in recent decades, the mechanisms that affect their migration decisions may be changing. Educational attainment and enrolment may become

more important factors for women as they are increasingly able to use the skills, knowledge, and credentials to obtain non-family employment. In addition, while women are currently enrolling and achieving higher education in larger numbers than before, they are still less common in higher grades than men. In this situation, women who are enrolled, especially in higher grades, are extra-ordinary and may value attainment and enrolment more than their male counterparts. The opportunity costs of quitting school to migrate may be greater for women for whom the experience of higher education is more rare. In this case, the effect of enrolment and attainment on migration in recent decades might become greater for women. My empirical analyses using a retrospective data set that covers about 50 years previous to 1996, and a prospective data set that covers the period of 1997–99 should provide some insight into these hypotheses.

Research Design, Measurement, and Analytic Approach

Study Design

The empirical study of migration is hindered by the difficulties of obtaining a representative sample of individuals or households. To study migration, a representative sample requires the inclusion of those who have migrated (many of whom no longer live in the area under study) and those who have not migrated. A long-term prospective survey in an area of origin is arguably the best way to capture all types of migration in a representative population sample. However, this type of data is often not available. There are several other research design strategies that have been used in the migration literature. Retrospective surveys are used most often, however they include only those who have never migrated and those who have migrated and returned (temporary or non-permanent migrants). They do not include those who migrated (permanently) and did not return to be included in the survey. Retrospective survey data is used in many recent and classical studies of migration and temporary migration (de Jong, Chamratrithirong, and Tran, 2002; Lundquist and Massey, 2005; Massey and Capoferro, 2006; Stark and Taylor, 1989; Stark and Taylor 1991). Another strategy is to use a retrospective survey supplemented by a non-random sample of migrants in communities of destination. This strategy is employed by the Mexican Migration Project is used extensively in the migration literature (Curran and Rivero-Fuentes, 2003; Donato, 1993; Donato, Durand, and Massey, 1992; Durand, Kandel, Parrado, and Massey, 1996; Massey and Espinosa, 1997; Palloni et al., 2001).

In this study, I use another strategy of supplementing analyses of retrospective survey data with similar analyses of data from a prospective panel study from the same geographic area. The benefit to using the retrospective data is that they provide five decades of detailed life histories of individuals over a period of vast social change. However, these data are subject to the standard limitation that they do not include permanent out-migrants. The prospective panel data provide a representative sample of all migrants, but cover a shorter period of time of three years.

Both the retrospective and prospective data sets come from the Chitwan Valley Family Study (CVFS), a large-scale multidisciplinary study designed to investigate the impact of macro-level socioeconomic changes on micro-level individual behavior. The CVFS includes 171 separate neighbourhoods in the western part of the Chitwan Valley that were selected with an equal probability, systematic sample. All individuals between the ages of 12 and 59 and their spouses within these neighbourhoods were included in the survey. At 97% of the original sample, the response rates are exceptional.

The retrospective data set was collected in 1996 using life history calendars to record detailed measures of individual characteristics and life events on a yearly basis, from 1996 back to the date of birth (Axinn, Pearce, and Ghimire, 1999). In this analysis, I include the

4825 individuals who were living in the study area during the initial interview in 1996 and between the ages of 15–59 at that time.

The CVFS prospective data come from a monthly panel study of individuals in 151 of the original 171 CVFS neighborhoods. Interviewers visited each household in the sample once a month from 1997 through the present. My analysis of these prospective data includes all 3819 individuals ages 15–59 who were present in the 151 CVFS neighbourhoods in 1997. I use the first thirty six months of this panel data, from 1997 through 1999. After this time, a violent insurrection broke out in Nepal that may confound the relationship between education and migration.

Measures

Migration—My measures of migration from the retrospective data come from the life history calendar. Respondents were asked to record their primary place of residence for each year of their life. Primary place of residence for a year was defined as the place the individual lived for over six months during that year. If an individual was absent from their residence in the study area for six months or more, this was coded as an out-migration from Chitwan in that year. 24% of the retrospective survey respondents migrated away from the study area after the age of fifteen. Of those who migrated, age at first migration is young. 78% of out-migrants left the study area by the age of 24, and the average age of first migration is 21.

My measure of migration from the prospective data is straightforward. Interviewers visited each household monthly. If a respondent was not resident in their primary place of residence for at least 15 days at a time, this was recorded as a migration for that month[1]. 46% of the prospective survey respondents migrated away between 1997 and 1999. Age at first migration in the prospective data set was also low, but higher than in the retrospective data set. 46% of out-migrants had left the study area by the age of 24, and the average age of first migration is 29. The higher age at first migration in the prospective data, compared with the retrospective data, is likely in part because both men and women are staying in school longer and getting married later.

Education—My independent variables for education include measures of current enrolment and attainment. For *Current Enrolment*, respondents were asked if they attended school in each year of their life history calendar. For attainment, respondents were asked "What is the highest grade in school or year of college you have completed?" for each year of the retrospective study. Answers ranged from 0 to 25 years for men and 0 to 24 years for women. These education measures are time-varying variables in the retrospective data set.

In the prospective data, the same questions were used to measure enrolment and attainment. However, the questions were asked of respondents only at the beginning of the study in 1997 and not any time afterwards. Thus the measures for enrolment and attainment are non-time-varying measures of enrolment and attainment in 1997[2].

Table 2 shows descriptive statistics for these and other variables for both the retrospective and prospective data sets.

[1]I also tested my analyses using three-month and six-month absences to define 'migration'. The results are similar to using a one-month absence to define migration.

[2]These measures are the closest proxy for enrolment and attainment possible with the prospective data set. They are obviously less accurate than time-varying measures during the second and third years of the three year data set. However, I do obtain statistically significant estimates in the hypothesized directions.

Control variables—I included several control variables that can affect the relationship between education and migration, including measures of employment, childhood community context, adult community context, parental characteristics, and individual characteristics.

My measure of employment includes any type of non-family work, both wage labor and salaried jobs. In the retrospective data, this measure is time-varying and is coded '1' if an individual was working outside the home at any time during the year. In the prospective data, this measure is not a time-varying and refers to an individual's employment status in 1997.

An individual's childhood community and the services available therein can affect their educational attainment and the likelihood that they will migrate later in life. Research has shown that growing up with community services, such as schools and markets, can increase the human and social capital endowments of young people, which in turn affects their adult behaviors such as migration (Massey et al., forthcoming). To operationalize the concept of 'childhood community' I used measures of the presence of schools, health services, markets, employers, and bus services within a one hour walk of an individual's community before they were twelve years old. Markets were the most common service available in childhood among survey respondents, followed by employers, bus services, and income-generating programs. Alone, any of these five individual variables may not represent a community or induce measurable behaviour change. Therefore I created an index variable of the total number of the above services available within a one hour walk of an individual's home before the age of twelve. In the retrospective data, the mean value was 4.34, with a standard deviation of 1.69.

I also use a measure of the services available in an individual's adult community. Opposite the effect of services in one's childhood community, services available in an individual's current adult community can increase local opportunities for employment, education, and consumption and thereby decrease the likelihood of migration (Massey et al., forthcoming). To characterize adult community context, I used time-varying measures of the presence of the same community services (schools, health services, markets, employers, and bus services) within a fifteen minute walk of an individual's community. I use a much smaller radius of fifteen minutes walk to reflect the increasing availability of services in the Chitwan Valley. Within this radius, schools were the most common service available in the adult community (in 84% of communities), followed by markets, buses, employers, and health services (in 40% of communities). Similar to the childhood community measure, I created an index variable of the total number of these services available within an individual's current adult community. In the retrospective data the mean value was 4.52, with a standard deviation of 1.13. In the prospective data, I use a non-time varying measure of adult community context that was measured in 1997.

To measure marital status, I created five dichotomous variables. *Single* measures if a respondent is single and has never been married. The other marital status variables measure an individual's current status from their most recent marriage. These include-*Married and living with spouse*, *Married and not living with spouse*, *Divorced/Separated*, and *Widowed*. The variable *Married and not living with spouse* is an important designation for a study of Nepal. It is fairly common in Nepal, particularly in the case of younger brides, for the newly married bride and groom to return to live with their respective parents after the wedding ceremony. They may not take up residence together nor consummate the marriage for another several years. In these cases, getting married in a particular year prescribes very different behaviours than those couples who marry at later ages and immediately thereafter begin living together. For both the retrospective and prospective data, these five marital status variables are time-varying.

All other control variables in this study are measures of an individual's family endowments, or ascriptive characteristics such as time of birth, sex, and ethnicity. With the exception of age, they are all non-time-varying and measured in the same way for both the retrospective and prospective data. The descriptive statistics for these variables are similar in both the retrospective and prospective data.

Parental characteristics are also likely to affect migration or childhood community context. Parents' education and work outside the home affect the economic circumstances of the family and their choice of place of residence. Prosperous families have greater opportunities to live in or travel to areas where more services are available. Parents' travel accustoms a child to travel and may in fact indicate that the child grew up in a household whose livelihood was predicated on migration- such as trading or seasonal labour migration. Parents' experience with travel to other places may also serve as a conduit of new ideas into the household and thereby affect the attitudes and beliefs of the children. I created dichotomous variables to control for parental characteristics: *Parents' school* measured if the respondent's mother or father ever attended school, *Parents' work* measured if the respondent's mother or father ever worked outside the home, and *Parents' travel* measured if the respondent's mother or father ever travelled (including short trips and longer term moves) outside Chitwan.

Ethnicity and caste are also salient factors in all aspects of Nepali life, including place of residence, livelihood strategies, economic circumstances, political relationships, and, most notably, opportunities. For this study, the 53 different castes were coded into five functional ethnic groups: Upper-Caste Hindu, Lower-Caste Hindu, Newar, Hill Tibeto-Burmese, and Terai Tibeto-Burmese. Upper-Caste Hindu was the largest ethnic group represented in the CVFS. The Tharu people who are indigenous to the Chitwan Valley are included in the Terai-Tibeto-Burmese ethnic group.

Birth Cohort is an important control variable to account for the vast changes Chitwan has seen over the past 50 years. Migration rates have not been stable over the past 50 years. There has been an increase in the number of people migrating from Chitwan; however, because the total population of the area has also increased, the *percentage* of migrants in the population has actually decreased. Similarly, participation in education has not been independent of time (Beutel and Axinn, 2002; Axinn and Barber, 2001). To reflect these temporal changes and essentially control for period effects in the retrospective analysis, I created five birth cohorts: cohort 1 born after 1971, cohort 2 was born between 1962–71, cohort 3 was born between 1952–61, cohort 4 was born between 1942–51, and cohort 5 was born between 1932–41. I do not use these variables in the prospective analysis which covers a much shorter period of time (as described below).

I used a spline function to measure age. This creates five distinct age groups and allows different slopes for each age group to better reflect the different overall rates of migration that appeared in the data for these ranges of years. I used the following age groups: 15–19 years old, 20–24 years old, 25–29 years old, 30–39 years old, and 40+ years old.

I included the place of birth as a dichotomous variable to differentiate those who were born in Chitwan from those who were not. The dependent variable of this study is the first move away from Chitwan, as opposed to the first move of an individual's life. Earlier migrations, when an individual moved to Chitwan, could have a large effect on their subsequent propensity to move away from Chitwan. Thus by separating those who were born in or outside the study area, I am effectively controlling for previous migrations. Additionally, outside Chitwan there is likely greater heterogeneity in community contexts to which

individuals were exposed in childhood. Including place of birth also provides a degree of control for this heterogeneity.

Finally, I created a variable to designate individuals who initially moved into Chitwan after the age of twelve. For these individuals, the hazard of moving away from Chitwan did not begin until after the age of twelve, thus effectively setting them apart from the bulk of respondents for whom the hazard began at age twelve.

Analytic Strategy

I use a series of nested discrete-time event history models to test the likelihood of an individual to move out of Chitwan Valley. For the retrospective analysis, I use person-years as the unit of exposure to risk; these models test the yearly hazard of moving out of the Chitwan Valley study area, beginning in whatever year the respondent turned age fifteen. For the prospective analysis, I use person-months as the unit of exposure to risk; these models test the monthly hazard of moving out of the Chitwan Valley study area, beginning in January 1997 among those aged fifteen and over at that time. I lagged all the time-varying independent measures in order to assure that the migration occurred chronologically after the independent variables. This analysis allows us to predict the likelihood of out-migration in a given year or month, based on education and other independent variables in the prior year or month in the retrospective and prospective models[3].

I use the logistic regression equation given below:

$$\ln\left(\frac{p}{1-p}\right) = a + \sum (B_k)(X_k) \qquad (1)$$

where p is the probability of migrating out of the Chitwan study area, $\frac{p}{(1-p)}$ is the odds of migrating out, a is a constant term, B_k is the effect of independent variables in the model, and X_k is the value of these independent variables.

I created a separate set of nested models for males and females to analyze how education may affect migration differently for men than for women. I first present the models from the retrospective data in Table 3. Models 1a and 1b (for men and women, respectively) test the independent variable *Educational Attainment*, along with the timing, controls, and childhood community context variables. Models 2a and 2b (again for men and women, respectively) test both of the independent education variables: *Current Enrolment and Educational Attainment*[4]. Models 3a and 3b (for men and women) include the marital status variables, to test if marriage intervenes in the relationship between the education variables and out-migration.

I present the models from the prospective data similarly in Table 4. Models 1a and 1b (for men and women, respectively) test the independent variable *Educational Attainment*, along with the timing, controls, and childhood community context variables. Models 2a and 2b (again for men and women, respectively) test both of the independent education variables: *Current Enrolment and Educational Attainment*. I am not able to model the effects of

[3]The relationship between education and migration may include some reciprocal causation. However, because I am using longitudinal data with lagged independent variables, this analysis focuses only on the effect of education on migration.

[4]Based on past evidence of cases where education has a curvilinear effect on migration (Yang and Guo 1999), I also assessed possible non-linear effects of the education variables on migration. I tested models using the natural log of attainment, the square of attainment, and a model with an interaction term for enrolment and attainment. None of these variations resulted in coefficients that were substantially different from 1, nor did they substantially improve the model fit.

marriage on migration in the prospective models as there is not sufficient variation in marital status and the educational variables in this data set.

Results and Discussion

The results of the retrospective analysis and prospective analysis show similar patterns for the relationship between educational attainment, enrolment, and migration for men and very different patterns for women. I first present the results of the retrospective event-history models, in Tables 3, and then the results of the prospective models in Table 4.

Retrospective Analysis

The education variables in the retrospective analysis produced significant effects on out-migration from Chitwan. Educational attainment is positively related to the likelihood of out-migration for men. As shown in Table 3 the coefficient for *Educational Attainment* (as operationalized in most previous migration research) in Model 1a, for men, shows that for each additional year of education, the odds of migration increase by 1.06. Odds-ratios are multiplicative, thus a man who has completed one year of school will have 1.06 higher odds of out-migration than a man who has completed no school; a man who has completed five years of school will have $1.06^{\wedge 5}$ or 1.34 higher odds of out-migration; and a man who has completed 10 years of school (at which point he will earn a school leaving certificate) will have $1.06^{\wedge 10}$ or 1.79 higher odds of out-migration. *Educational Attainment* is not significant for women in Model 1b. This effect of attainment on migration for men is consistent with economic theories. Increased attainment can lead to knowledge, skills, and credentials that will help an individual on the labour market, as well as possibly increasing the social network of the individual.

The effects of educational attainment are significant and stronger when enrolment is included in the models for men. The odds ratio for *Attainment* for men increases slightly from 1.06 in Model 1a when *Enrolment* is not controlled, to 1.07 in Model 2a when *Enrolment* is controlled. This evidence that including enrolment in statistical models of migration strengthens the effect of educational attainment suggests that models that do not include measures of enrolment might actually underestimate the effects of educational attainment. The exclusion of enrolment from past research might help to explain some of the disparate results for the relationship between educational attainment and migration.

In the case of women, the odds ratio for *Attainment* is still not significant when *Enrolment* is controlled in Model 1b in Model 2b. As discussed earlier, historically men in Chitwan (and all of Nepal) are much more likely to migrate to seek employment outside the household and thereby use the human capital benefits gained from educational attainment. Historically, women have also been employed outside the household, but at a smaller number than men and more often in wage labor jobs, where the knowledge, skills, and credentials gained from education are not usually required. Thus, men may have had more to gain than women from educational attainment.

Enrolment is negatively related to the likelihood of out-migration for both women and men, as shown in Models 2a and 2b. The odds ratio of 0.65 for men indicates that men who were not enrolled during any particular year were about one and a half (1.54) times more likely to migrate away than those who were enrolled. Women who were not enrolled were more than two (2.22) times more likely to migrate away. This negative result for enrolment is consistent with the hypothesis that the opportunity costs of truncating education for those who are currently enrolled may depress migration.

However, the difference in the effect of enrolment for women and men is not significant[4]. This is contrary to my hypothesis. Economic theory leads us to believe that the negative effects of enrolment are directly tied to attainment, through the loss of knowledge, skills, and credentials from truncating education. If this were to reflect reality, then the relation between the effects of enrolment and attainment should be proportional for men and women. Given that educational attainment appears to have an effect on men but not on women, the negative affect of enrolment should also be stronger for men. This is not the case. This unexpected result indicates a need to examine alternative mechanisms that may relate enrolment to migration for women.

For women, the association between marriage and migration may be the pathway through which enrolment acts. In the Chitwan study area, research shows a strong negative association between enrolment and marriage—women who are enrolled in school are much less likely to marry (Yabiku, 2005). Marriage in turn is strongly culturally associated with migration for women in Nepal, as discussed earlier. Thereby, enrolment may decrease the likelihood of marriage and thus the likelihood of migration for women. This causal chain is completely different from that proposed to explain the effects of enrolment on migration for men, but it may in fact produce the same empirical results for the effect of enrolment on migration.

To examine this hypothesis, I turn to Models 3a and 3b (for men and women, respectively) that include marital status variables. These models indicate that marital status is an important predictor of out-migration for women and somewhat less so for men. Additionally, as hypothesized, marital status does appear to partially intervene in the relationship between enrolment and migration. Model 3a shows that men who were married and living with their spouses have 0.56 the odds of migrating away than those who were never married. Those who were married and not living with their spouses had 2.37 higher odds of out-migration. Model 3b shows that women who were married and living with their spouses had 1.50 higher odds of out-migration than those who were never married. Women who were married and not living with their spouses had 6.43 higher odds of out-migration. These results are as predicted based on Nepali family traditions. Women are highly likely to move upon marriage, and men are much less likely to do so.

Marital status also affects the relationship between education and migration for women. When I include marital status variables in Model 3b, the coefficient for attainment does not substantially change. The effect of enrolment, however, becomes less negative with the inclusion of marital status variables. The coefficient for enrolment changes from 0.45 in Model 2b, to 0.59 in Model 3b. Combined with the empirical evidence, from this same study area, that current enrolment decreases the likelihood of marriage (Yabiku, 2005), I argue that marriage partially intervenes in the relationship between enrolment and out-migration for women. Current enrolment can decrease the likelihood of marriage, and marriage in turn can increase the likelihood of out-migration. While marriage does change the relationship between enrolment and out-migration for women, there is a substantial and significant remaining independent effect of enrolment on out-migration. The coefficient of 0.59 for enrolment shows that even when marital status is controlled, women who are enrolled are about half as likely to migrate away as those who are not enrolled.

For men, on the other hand, marriage affects the relationship between education and migration to a smaller extent. When I include marital status variables in Model 3a, the effects of educational attainment and current enrolment on out-migration change little. Thus, the effect of marriage on out-migration appears to be largely independent of education for men.

Prospective Analysis

The results for the prospective analysis show different patterns for the effects of education on migration for men and women. In this more contemporary data set, attainment increases the likelihood of migration for both men and women. As shown in Table 4, Model 1a for men, the odds ratio for attainment is 1.03, indicating that for each additional year of schooling a man completes, he has 1.03 higher monthly odds of out-migration. The effect of attainment for women, shown in Model 1b, is 1.08, indicating that for each additional year of schooling a woman completes, she has 1.08 higher monthly odds of out-migration. This significant and strong result for women likely reflects the context changes in the Chitwan Valley, where women are increasingly entering the paid labor force over time. Thus education is becoming an increasingly important predictor of migration for women in recent years.

In addition, contrary to the retrospective models, in the prospective models the effect of attainment on migration is stronger for women than for men. In fact, the odds ratio of 1.09 (in Model 2b) for the effect of attainment on migration for women is three times higher than the effect for men (1.03). This difference is statistically significant, as tested in a pooled model with a dichotomous variable for sex and an interaction term for attainment and sex. This result indicates that those women who are achieving higher attainment and are increasingly entering the non-family labour force in recent years may have more to gain from attainment and enrolment than their male counterparts.

Enrolment in the prospective models decreases the likelihood of out-migration for both men and women. This is similar to the effect of enrolment in the retrospective models. Men who were enrolled in 1997 had 0.78 odds of out-migration during the next three years as those who were not enrolled. For women, enrolment in 1997 resulted in 0.57 odds of out-migration. When enrolment is controlled in Model 2a for men the effect of attainment does not increase. However, in these prospective models, the effect of attainment increases slightly in Model 2b for women.

Conclusion

In general, the results of this study support some of the main theories that explain how education relates to migration. In recent years, educational attainment is positively associated with migration for both men and women. This is consistent with economic and social networks theories of migration that predict a relationship between human capital, social capital, and migration. This study provides new evidence that current enrolment, on the other hand, is negatively associated with migration for both men and women. While marriage partially intervenes in the relationship between enrolment and out-migration for women, enrolment retains an independent negative effect on migration. This again is consistent with theory that the high cost of truncating education (and the associated human and social capital) can decrease the likelihood of migration.

With regard to the sex differences in migration, the retrospective analysis in this study confirms previous work showing that women likely migrate for different reasons than men (Donato, 1993; Pedraza, 1991; Zlotnik, 1995), based on the cultural context, and associated norms, roles, expectations, and opportunities of women. In this study, the different magnitudes of the effect of attainment but not enrolment on migration for women and men and the differing effects of marriage, combined with the cultural context in Nepal, support the proposition that historically, different mechanisms affect the relationship of education to migration for women and men. This ultimately reflects the different decision-making processes, gender roles, norms, opportunities and expectations within which men and women in Nepal conduct their lives. In this particular setting, it appears likely that

employment historically played a larger role in the migration of men, and marriage played a larger role in the migration of women. Specifically, for women, enrolment in formal education decreases the likelihood of marriage, which in turn decreases the likelihood of migration.

However, the results of the prospective analysis indicating that the effect of attainment on migration has increased drastically for women in recent years, suggests that the male-female dichotomy in migration rates is changing and may continue to do so in the future. The rates at which women migrate might increase and the mechanisms that encourage or discourage them to do so might shift more towards economic explanations (such as non-family employment) and away from marriage explanations in the future. While this study is representative of the Chitwan Valley of Nepal, the rapid changes in female education, labor force participation, and associated gender norms are not dissimilar to the social changes that are affecting many historically resource-limited agrarian societies around the world. Thus the results from this study might provide some insight into changes in female migration patterns that can be expected in other parts of the world that are undergoing similar social and economic changes.

A limitation of this study is that due to data constraints, I am not able to classify migrants by destination. As discussed earlier, human capital and in this case educational skills, knowledge, and credentials may be rewarded differently at domestic and international destinations. In the case of Nepal, a large number of international migrants go across the nearest border to India (HMG et al., 2002; Kollmair et al., 2006; Parmanand, 1986; Thieme et al., 2005). Education is likely rewarded very similarly in Nepal and India. The larger difference, and more applicable to the discussion of differential reward of human capital, may be between those who migrate to other rural areas (in Nepal or India) and those who migrate to cities. Still, I am not able distinguish these two groups. It is likely that differentiating between these two groups would make these results even stronger, similar to the effect from disaggregating the effects of attainment and enrolment.

These results underscore the need for future research to consider reasons that make people stay, in addition to reasons that make people move. Much of the migration literature in the past is overwhelmingly concerned with understanding the reasons why people migrate. Recently however, a few studies have called for migration research to consider the opposite-why people do not migrate (Fischer, Martin, and Straubhaar 1997; Massey et al., 1998; Irwin et al., 2004). This question is particularly pertinent given the fact that the vast majority of people in the world migrate very rarely, if at all. In addition, I argue that understanding why people stay may be even more important to migration research if we consider that in some cases the factors that make people stay at their place of origin may be as, or even more important than the factors that make people leave. For example, the results of this study show that enrolment (a factor that makes people stay) may be more important in determining the outcome of a migration decision than attainment (a factor that makes people leave).

Acknowledgments

The author was supported while working on this article by a traineeship from the National Institute of Child Health and Human Development. I gratefully acknowledge William Axinn, Dirgha Ghimire, John Delfeld, Lynette Hoelter, and the anonymous reviews for their the helpful comments and suggestions, Cathy Sun for programming assistance, and the staff of the Population and Ecology Research Laboratory, Rampur, Chitwan, Nepal for data collection.

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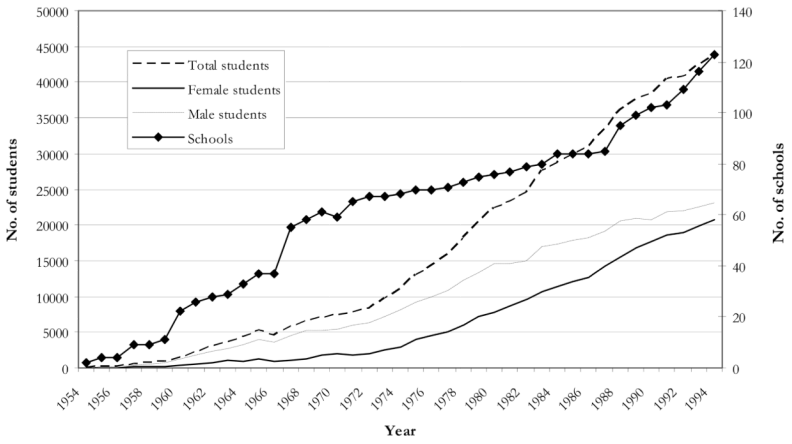

Figure 1.
Proliferation of schools and students in Chitwan Valley, Nepal

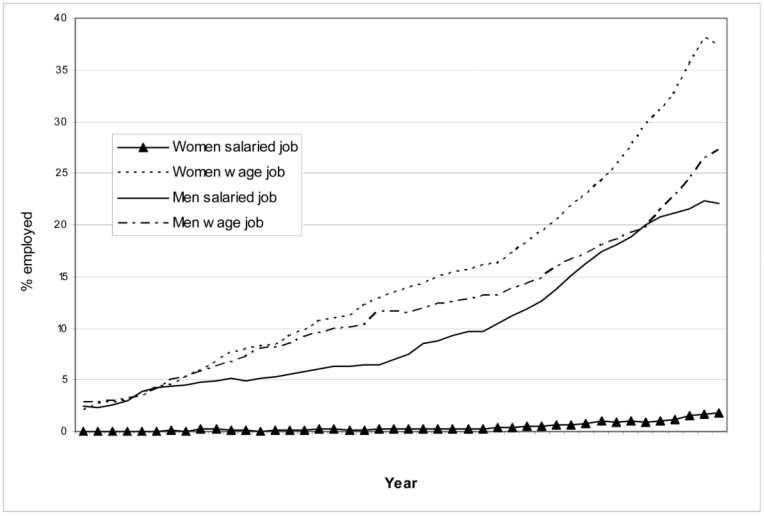

Figure 2.
Changes in Employment Rates in Chitwan Valley, Nepal

Table 1

Education statistics by sex of Chitwan Valley Family Study, retrospective survey.

	% never attended school		Mean years of school completed		Mean years of school completed (of those who finished at least 2 years)	
Birth Cohort	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Cohort 1 (born after 1971)	3	11	9.57	8.21	9.96	9.47
Cohort 2 (born 1962–71)	10	37	9.38	5.66	10.74	9.71
Cohort 3 (born 1952–61)	22	68	6.79	1.77	9.03	6.49
Cohort 4 (born 1942–51)	38	84	4.96	0.83	8.54	6.51
Cohort 5 (born 1932–41)	63	92	2.57	0.21	7.7	3.80

Note- A large portion of Cohort 1 (age 15–20 at the time of survey) may have not yet completed their schooling. Thus, mean years of school completed may not be an accurate measure of completed education for this cohort. This is reflected in the lower mean years of school completed for Cohort 1 than for Cohort 2.

Table 2

Individual-level descriptive statistics of independent variables

	Retrospective Data			Prospective data		
Variable	**Mean**	**Median**	**S.D.**	**Mean**	**Median**	**S.D.**
Educational attainment (yrs of school completed)						
Attainment men	7.38	8	5.36	5.76	6.00	4.37
Attainment women	4.31	1	5.11	3.00	0	3.87
	Mean		S.D.	Mean		S.D.
Marital Status *						
Single	0.35		0.48	0.19		0.39
Married and living with spouse	0.52		0.50	0.53		0.50
Married and not living with sps	0.08		0.28	0.24		0.43
Divorced/Separated	0.02		0.13	0.01		0.09
Widowed	0.02		0.15	0.03		0.17
Employment *	0.39		0.49	0.44		0.50
Childhood Community Index (before age 12)	3.43		1.69	3.40		1.69
Adult Community Index *	4.52		1.13	3.56		1.30
Parental Characteristics						
Parents' Education	0.32		0.46	0.30		0.46
Parents' Work	0.50		0.50	0.48		0.50
Parents' Travel	0.36		0.48	0.35		0.48
Ethnicity						
Upper Caste Hindu	0.45		0.50	0.46		0.50
Lower Caste Hindu	0.11		0.31	0.10		0.30
Newar	0.06		0.24	0.06		0.24
Hill Tibeto-Burmese	0.17		0.37	0.15		0.36
Terai Tibeto-Burmese	0.18		0.38	0.21		0.41
Birth Cohort						
Cohort 1 (born after 1971)	0.24		0.43	0.25		0.43
Cohort 2 (born 1962–71)	0.28		0.45	0.27		0.45

	Retrospective Data			Prospective data		
Variable	**Mean**	**Median**	**S.D.**	**Mean**	**Median**	**S.D.**
Cohort 3 (born 1952–61)	0.22		0.41	0.21		0.41
Cohort 4 (born 1942–51)	0.17		0.37	0.17		0.37
Cohort 5 (born 1932–41)	0.09		0.29	0.10		0.29
Individual Characteristics						
Sex (Female)	0.52		0.50	0.53		0.50
Born in Chitwan	0.47		0.50	0.50		0.50
Moved to Chitwan after age 12	0.35		0.48	0.32		0.47
N (# of people) =	4825			3819		

*Time-varying measures are for last observed month.

Soc Sci Res. Author manuscript; available in PMC 2012 August 14.

Table 3

Logistic regression estimates of discrete-time hazard models of out-migration from Chitwan Valley- Retrospective survey

	Attainment		Attainment and Enrolment		Attainment, Enrolment, and Marriage	
	Model 1a	Model 1b	Model 2a	Model 2b	Model 3a	Model 3b
Variable	Males	Females	Males	Females	Males	Females
Education						
Attainment (time varying)	1.06*** (5.40)	0.99 (0.78)	1.07*** (6.54)	1.01 (0.69)	1.07*** (6.27)	1.02 (0.82)
Current Enrolment (time varying)			0.65*** (4.05)	0.45*** (3.16)	0.60*** (4.65)	0.59* (2.01)
Marital Status (time varying)[a]						
Married, living with spouse					0.56*** (4.88)	1.50* (1.88)
Married, not living with spouse					2.37*** (5.16)	6.43*** (8.37)
Divorced/Separated					1.11 (0.42)	2.52^ (1.50)
Widowed					1.16 (0.28)	N/A
Current Employment (time-warying)	0.93 (0.78)	0.80^ (1.41)	0.91 (1.09)	0.81^ (1.33)	0.86* (1.62)	0.88 (0.78)
Community Context						
Childhood Community Index	1.04 (1.26)	1.02 (0.36)	1.04 (1.08)	1.01 (0.29)	1.04 (1.27)	1.02 (0.30)
Adult Community Index (time-varying)	0.92*** (3.12)	1.04 (0.92)	0.92** (3.06)	1.05 (0.98)	0.91*** (3.28)	1.05 (1.05)
Parental Characteristics						
Parents' school	0.99 (0.07)	1.05 (0.31)	1.02 (0.21)	1.06 (0.39)	0.96 (0.39)	1.05 (0.32)
Parents' work	1.17* (2.03)	1.12 (0.83)	1.15* (1.75)	1.12 (0.81)	1.14* (1.68)	1.14 (0.93)
Parents' travel	1.19* (2.09)	1.48** (2.73)	1.20* (2.19)	1.47** (2.68)	1.21* (2.30)	1.37* (2.19)
Ethnic Group[b]						
Low-caste Hindu	1.66*** (4.03)	1.91*** (3.24)	1.61*** (3.77)	1.83** (3.02)	1.65*** (3.94)	1.78** (2.84)
Newar	0.95 (0.31)	1.26 (0.90)	0.92 (0.49)	1.26 (0.89)	0.99 (0.07)	1.46^ (1.45)
Terai Tibeto-Burmese	0.77* (2.00)	0.45** (3.06)	0.74* (2.30)	0.43*** (3.23)	0.76* (2.05)	0.47** (2.88)
Hill Tibeto-Burmese	1.45*** (3.46)	1.80*** (3.43)	1.41** (2.93)	1.76*** (3.29)	1.40** (3.07)	1.77*** (3.29)
Birth Cohort[c]						
Cohort 2 (born 1962–71)	2.33*** (5.37)	2.69*** (4.00)	2.23*** (5.08)	2.20** (3.08)	2.15*** (4.82)	2.02** (2.71)

	Attainment		Attainment and Enrolment		Attainment, Enrolment, and Marriage	
	Model 1a	**Model 1b**	**Model 2a**	**Model 2b**	**Model 3a**	**Model 3b**
Variable	**Males**	**Females**	**Males**	**Females**	**Males**	**Females**
Cohort 3 (born 1952–61)	1.75*** (3.18)	2.18* (2.64)	1.63** (2.74)	1.74 (1.84)	1.59** (2.61)	1.69* (1.73)
Cohort 4 (born 1942–51)	0.99 (0.03)	1.85* (1.82)	0.94 (0.28)	1.55 (1.27)	0.99 (0.05)	1.46 (1.11)
Cohort 5 (born 1934–41)	0.76 (0.97)	1.79 (1.26)	0.74 (1.09)	1.53 (0.91)	0.75 (1.03)	1.58 (1.00)
Age						
15–19 years old	1.22*** (7.19)	1.09** (2.08)	1.11*** (5.75)	1.05 (1.05)	1.20*** (6.22)	0.96 (0.84)
20–24 years old	0.90*** (3.43)	0.83*** (3.60)	0.88*** (4.16)	0.82*** (3.74)	0.91** (2.75)	0.81*** (4.10)
25–29 years old	0.87** (3.07)	0.79** (2.64)	0.87*** (3.09)	0.80** (2.50)	0.89** (2.65)	0.81** (2.40)
30–39 years old	1.06 (1.11)	1.01 (0.08)	1.06 (1.16)	1.01 (0.09)	1.07^ (1.32)	1.01 (0.08)
40 + years old	0.92** (2.93)	0.89* (1.82)	0.92** (2.93)	0.89* (1.83)	0.92** (3.01)	0.90^ (1.66)
Birthplace						
Born in Chitwan	0.91 (0.95)	1.21 (1.05)	0.91 (0.95)	1.23 (1.11)	0.91 (0.90)	1.26 (1.25)
Moved to Chitwan after age 12	1.03 (0.21)	1.28 (1.26)	1.00 (0.01)	1.25 (1.15)	0.93 (0.59)	1.22 (1.02)
−2 log likelihood	6373	2707	6357	2697	6278	2603
No. of person-years	27,377	33,223	27,377	33,223	27.377	33.223

Note: Estimates are presented as odds ratios. Asymptotic z-statistics are given in parentheses.

^ p<.10

* p<.05

** p<.01

*** p<.005

[a] Reference category is- Single, never married.

[b] Reference category is- Upper-Caste Hindu.

[c] Reference category is- Birth Cohort 1

Table 4

Logistic regression estimates of discrete-time hazard models of out-migration from Chitwan Valley-Prospective survey

	Attainment		Attainment and Enrolment	
	Model 1a	**Model 1b**	**Model 2a**	**Model 2b**
	Males	**Females**	**Males**	**Females**
Variable Education				
Attainment (in 1996)	1.03 ** (2.39)	1.08 *** (5.47)	1.03 ** (2.69)	1.09 *** (6.49)
Current Enrolment (in 1996)			0.78 * (2.22)	0.57 *** (4.71)
−2 log likelihood	8542	8103	8537	8081
No. of person-years	40,036	55,585	40,036	55,585
----------CONTROLS NOT SHOWN----------				

Note: Estimates are presented as odds ratios. Asymptotic z-statistics are given in parentheses.

^ p<.10

* p<.05

** p<.01

*** p<.005