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ABSTRACT

The paper explores the question of why young people go on from school to higher education in Australia, viewing the decision as a function of individual attributes and situational characteristics. A theory to explain young people's decisions is developed, proposing that young people choose to go because they find higher education to be both attractive and attainable. A model is then advanced to predict the likelihood of a young person going on to higher education. The model examines student motivation, student achievement, home location, parents' socioeconomic status, parent encouragement, teacher encouragement, friends' plans, and type of high school attended. The model was tested using data collected from 1,337 students in Victoria and 1,063 students in Queensland on direct entry from school to higher education. Young people were more likely to go on to higher education if they were attracted to certain features of higher education, had attained better senior year academic achievements, received encouragement for higher education participation, had friends who were planning to go on to higher education, attended a non-Catholic independent rather than a government school, and had parents who were more financially secure and better educated. Includes 59 references. (JDD)

FROM SCHOOL TO HIGHER EDUCATION IN AUSTRALIA

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ABSTRACT

This paper addresses the question of why young people go on from school to higher education in Australia. A person-situation interactionist theory to explain decisions taken in the matter is developed, and in the light of this theory a model to predict entry to higher education is advanced. The model is tested using data from separate studies in two Australian States, Victoria and Queensland. Results of bivariate and logistic regression analyses are generally consistent with expectations from the model. Certain interactive effects of variables in the model upon entry to higher education are reported.

FROM SCHOOL TO HIGHER EDUCATION IN AUSTRALIA

Introduction

This paper addresses the question of why young people go on from school to higher education in Australia. It does so within a conceptual framework in which the kinds of decisions taken in the matter are viewed as a function of both the individual attributes and the situational characteristics of the young people concerned. Relevant individual attributes are the academic achievements of the young people and their motivation to proceed to higher education. The situational characteristics include circumstances of the home, the peer group, the school, the higher education system, government policies and the labour market.

In the paper a theory to explain the decisions taken by young people about entry from school to higher education is developed. In the light of this theory a model to predict the likelihood of a young person going on to higher education in Australia is advanced. The model is tested using data collected on direct entry from school to higher education in separate studies in two Australian States, Victoria and Queensland.[1] The paper begins with a brief review of the context within which the study was undertaken.

The Context

The question of why young people go on from school to higher education has attracted considerable attention over recent years. The policy implications of the question have no doubt contributed to this interest, but it is also the case that the question raises issues that invite investigation by social scientists from a variety of backgrounds.

Interest in the question in Australia has been heavily influenced by its policy implications. During the period from the mid-1970s until the early 1980s there was an unprecedented and unexpected decline in the tendency for young people to go on from school to higher education. The decline was serious, resulting in rates of participation of 17-to-19 year olds in full-time higher education dropping from 10.1 percent in 1975 to 8.5 percent in 1981. The Commonwealth Tertiary Education Commission (CTEC), which investigated the decline (CTEC, 1982), explained it largely in terms of labour market conditions. Academically able young people were said to be responding to a deteriorating labour market by being more likely to take jobs whenever they offered, rather than remain in the education system through to higher education. In addition, they were said to be responding predictably to a deterioration in the income advantage to a higher education qualification in Australia and to the increasing costs of obtaining such a qualification.

Without any marked change in these economic circumstances, however, rates of participation by young people in higher education began to rise from 1982 onwards. By 1988, 12.2 percent of 17-to-19 year olds were enrolled in full-time higher education in Australia. Females led this recovery, and by 1988 their rates of participation in higher education were well ahead of those for males (detailed statistics are available in Australia, Department of Employment, Education and Training, 1989). The recovery resulted from an increasing tendency for young people to remain in school to year 12 (rather than from any improvement in rates of direct transfer from year 12 to higher education). Few attempts have been made to explain the recovery (but see Beswick, 1983).

Political interest in the question has not diminished since the favourable turnaround of the trend. The Commonwealth Government has continued to

express a desire for increases in the rates of participation by young people in higher education, especially among groups that are less well represented in higher education at present (the children of poorer families, members of certain ethnic minorities, rural dwellers and Aboriginals). The search for more effective instruments for implementing this policy has inevitably directed attention back to the basic question of why young people go on to higher education.

The relevant scientific literature is extensive (for reviews from different countries, see Jackson and Weathersby, 1975; Cohn and Morgan, 1978; Gordon, 1981; Jackson, 1981; and Hayden, 1982). In general, three conceptual approaches may be identified.

The first approach is economic. In the most frequently adopted form of this approach, decisions about entry to higher education are said to be influenced by perceptions of the investment yield from having a higher education qualification. The basic proposition is that: given the tastes of preferences of young people for higher education, the demand for higher education will increase as the private rate of return (the income advantage of a higher education qualification less the cost, including income foregone, of obtaining it) increases relative to the return from other investment opportunities. Examples of this approach are numerous (see, for instance, Freeman, 1971; Handa and Skolnik, 1975; Leslie, Johnson and Carlson, 1977; Jackson, 1978; Wish and Hamilton, 1980; Bowman, 1981; Pissarides, 1981; Manski and Wise, 1983; and, from Australia, Nicholls, 1984).

The second approach is sociological. In the usual form of this approach, the direct effects of social origins upon the types of decisions taken by young people about entry to higher education, together with their indirect

effects (by means of home, school, peer group, aspirational, ability and achievement variables), are estimated using path models. Important studies here are those of Blau and Duncan (1967), Sewell and colleagues (1975, 1976, 1980), Alexander and colleagues (1975, 1980, 1987), Jencks and colleagues (1983), and Halsey and colleagues (1980). In Australia, Broom and colleagues (1980) have investigated the general relationship between social origins and educational and social achievements, while Elsworth and colleagues (1982), Carpenter and Western (1984) and Williams (1987) have investigated the specific relationship between social origins and entry to higher education.

The third approach is social psychological. Studies illustrating this approach (see, for example, Beswick, 1975; Ekehammer, 1978, Rubenson, 1976, 1983; and Harnqvist, 1978) do not form a discrete grouping in the way that studies illustrating the economic and sociological approaches do, but they have in common a starting point with the distinctive aspects of an individual's personality and with the ways in which these interact with key elements in the decision-making environment to affect behaviour.

Each approach has contributed to an understanding of the influences upon decision-making by young people about going on to higher education. The economic approach, for example, has highlighted the role of financial expectations (Ferber and McMahon, 1979; Williams and Gordon, 1981; Psacharopoulos, 1982), labour market opportunities for graduates (Freeman, 1971,1976, 1981) and the provision of student financial aid (Jackson, 1981; Reuterberg and Svenson, 1983). The sociological approach has highlighted the role of academic achievements in school, parent encouragement of further studies, educational and vocational aspirations, teacher encouragement of further studies and peer group influence (see, for example, Sewell and Hauser, 1980; Carpenter and Western, 1984). And the

social psychological approach has highlighted the role of individual differences in abilities and motivational attributes (Beswick, 1975, 1983; Ekehammar, 1978; Biggs, 1982).

The economic and sociological approaches to the question are considered to have some important limitations, however. The economic approach is limited by the way in which so many potentially relevant considerations are subsumed under the general notion of 'tastes and preferences', which are said to be 'given' (that is, held constant), while the relationship between demand for higher education and purely economic variables (financial costs and benefits) is examined. And the sociological approach largely confines the selection of influences relevant to decision making about entry to higher education to those that can be related to socioeconomic status. Thus, some influences that are highly likely to be relevant to the types of decisions taken by young people about entry to higher education (such as, distinctive motivational attributes, the existence of course quotas and the availability of student financial assistance) are not readily accommodated by the approach.

In this paper a social psychological approach is preferred because it permits the development of a model of decision making about entry to higher education in which adequate expression may be given to a full range of potentially relevant influences upon such decision making.

A Theoretical Approach

Why do young people go on from school to higher education? The answer proposed here is simply that it is because they find higher education to be both attractive and attainable.

The Attractiveness of Higher Education

An expectancy-valence theory of motivation provides a useful insight into the nature of the influences upon the attractiveness of higher education to a young person. Within such a theory, motivation, "the strength of a tendency to act in a certain way" (Atkinson and Birch, 1978: 348), is said to be a function of both perceptions of the value of an activity and expectations that certain valued outcomes of the activity will result from its adoption. The attractiveness of higher education to a young person may be said to be influenced, therefore, by whatever affects the young person's perceptions of the value of higher education or shapes expectations about attaining valued outcomes from participation in it.

Perceptions of the value of an activity are a function of the way in which incentives from an individual's immediate situation combine with motive structures of the individual. There are many incentives for going on to higher education that are typically brought to the attention of a year 12 student. Some of these are intrinsic to higher education (for example, the incentive of undertaking a new area of study that will be conceptually complex and challenging), and some are extrinsic to higher education (for example, the incentive of better financial rewards as a graduate). The extent to which these incentives influence a young person's attraction to higher education depends upon how they combine with the psychological needs (or motive structures) of the young person. Thus, the incentive of undertaking a new area of study that will be conceptually complex will have greatest impact upon a young person with a tendency to be curious about the world; and the incentive of better financial rewards as a graduate will have greatest impact upon a young person with a tendency to be attracted to the material pay-offs of a course of action.

Expectations that certain valued outcomes will result from undertaking a course of action are affected by the cognitive structures of the individual in relation to the activity. Cognitive structures refer here to the knowledge, beliefs and conceptions of an individual about an activity (Feather, 1975: 13). As a result of interaction with family, teachers and friends, as well as through exposure to the media and through personal experiences of the education system, a young person in year 12 can reasonably be anticipated to have developed a relatively stable set of cognitive structures, and thus expectations, in relation to higher education. These expectations can be changed, however, by any late change in circumstances, such as the offer of a valuable scholarship that widens markedly the expectations of a young person about being able to enjoy the benefits of higher education free of the worry of running out of money.

In summary, then, higher education will be attractive to a young person to the extent that motive forces relevant to higher education are aroused by incentives for going on to higher education, and to the extent that the young person's knowledge, beliefs and conceptions about higher education predispose the young person to expect that certain valued outcomes of participation in higher education can be obtained. Both individual attributes (motive structures and cognitive structures) and characteristics of the individual's immediate situation (the availability of incentives, and any change in opportunities for obtaining desired outcomes from the pursuit of higher education) act in combination to affect the attractiveness of higher education for the young person.

The Attainability of Higher Education

The attainability of higher education is also affected by the way in which individual attributes act in combination with characteristics of a young person's situation. The attributes that are relevant here concern abilities and achievements, and the situational characteristics include particularly the admission and selection policies of higher education institutions and the availability of financial support for studies.

In Australia selection into higher education is decided upon by the individual institutions of higher education, though within a context in which government policies and labour market requirements are important influences. Higher education in Australia is financed predominantly by government, the policies of which affect the aggregate number of places available and the proportion of places available in particular types of professional courses. Higher education institutions are also responsive to the demands of the labour market in deciding how many places should be provided in particular fields. The typical way of allocating the scarce number of places available within higher education to young people is by offering a place first to those applicants with the best year 12 examination results. The attainability of a course in higher education is affected, therefore, by the interplay between a young person's achievements in the year 12 examinations and the selection policies of the higher education institutions (which, in turn, reflect other situational characteristics, such as government policies and labour market conditions). Because prerequisite study requirements for entry to certain higher education courses (particularly within the sciences) are also applied, students wishing to enter these courses must have undertaken secondary school studies in certain groups of subject areas, that is, they must have particular types of year 12 achievements.

Another characteristic of a young person's situation that can affect the attainability of higher education concerns financial support. In Australia, support from the government or from prospective employers is generally contingent upon, at least, having passed the year 12 examinations and having been offered a place in higher education. Its availability is linked, therefore, with year 12 achievements. Support from parents may be similarly linked, in that parents may be more or less willing to make offers of financial support for full-time study depending upon year 12 academic achievements and their estimate of the likelihood of subsequent academic success.

In summary, the attainability of higher education is affected by the way in which individual attributes (in this case, abilities and achievements) interact with opportunities provided from the situation for going on to higher education. The two main types of opportunity for going on to higher education referred to here are the availability of places in higher education and the availability of financial support for studies.

Sources of Incentives and Opportunities

Six institutional sources of incentives and opportunities for a young person to proceed to higher education may be identified. These are: the home, the peer group, the school, the higher education system, the government and the labour market.

Members of the home (parents in particular) have been widely found (in the relevant literature cited above) to have a substantial influence upon decision making by young people about entry to higher education. The reason advanced here for this influence is the extensive nature of the incentives and opportunities parents can provide for going on higher

education. They can provide both extrinsic incentives (for example, by making their approval or their financial support contingent upon participation in higher education) and intrinsic incentives (for example, by providing prompts that highlight the internal satisfaction to be obtained from further studies). And they can provide opportunities for going on to higher education by making available financial support, accommodation, assistance with travel, and so on. The extent to which parents provide these incentives and opportunities is likely to be related to their perceptions of the value of higher education, and these seem likely to be related to certain socio-cultural characteristics of the home. In general, parents who have themselves experienced the rewards provided by additional years of education are more likely to be willing and able to provide incentives and opportunities for a young person to go on to higher education.

Members of the peer group can also exert influence, for example, by making the incentive of continued membership of the peer group contingent upon going on to higher education, by sharing knowledge and opinions about higher education that affect expectations of its likelihood of providing valued outcomes, or by making certain opportunities available (such as, shared accommodation or travel) that affect the attainability of higher education. In general, the more members of the peer group aspire to proceed to higher education, the greater will be the incentives and opportunities provided by them for a young person to proceed to higher education.

The encouragement of teachers and the type of school attended can affect entry to higher education in various ways. Teachers can play an important role in making students aware of what further study at a university or college involves, and, to that extent, can draw the attention of young

people to possible incentives for going on to higher education and to possible outcomes from going on. In some types of schools, teachers may make a greater effort to do this than in others.

The higher education system exercises substantial control over opportunities for going on to higher education. While, in Australia, the total number of places available in higher education, the location of institutions, and the types of courses that may be taught at particular institutions, are matters that are decided upon by government, or in consultation with government, the number of places within particular courses and the prerequisite conditions that apply to obtaining entry to courses are matters that are largely under the control of individual institutions. Such considerations have an important bearing upon the extent to which a place in higher education is attainable.

The influence of government on the probability of transition by young people to higher education in Australia occurs principally by means of the control exercised over both the provision of the capital and recurrent costs of higher education and the provision of financial assistance to students. In the main this influence is directed mainly at affecting opportunities for going on to higher education, rather than at providing incentives.

The labour market is one of the most important sources of extrinsic incentives for participation in higher education. It is the case in Australia, as in many other countries, that a young person who goes on to qualify for a university or college qualification is more likely to obtain a well-paid occupation with high social standing.

A Model

The model of entry to higher education advanced here posits that the probability of a young person going on from school to higher education is a function of the combination of certain attributes of the young person and of certain characteristics of the young person's immediate situation. The model does not give expression to all of the variables introduced in the theory from which it derives, but the main ones are included (and the linear model proposed is assumed to approximate the monotonic relationships implied by the theory).

Two attributes of the individual young person are included in the model. These are: a young person's motivation to proceed to higher education, and the achievement attributes of the young person. It is proposed that the stronger the attraction to certain readily identifiable features of higher education, the greater is the likelihood of the young person being influenced by incentives to proceed to higher education. It is also proposed that the better the year 12 academic achievements of the young person, especially if in science subjects (because of the widespread use of science subjects as prerequisites for entry to various fields of study within higher education in Australia), the greater is the likelihood of the young person being able to take advantage of opportunities to proceed from year 12 to higher education.

Five characteristics of a young person's immediate situation are also included. These are: home location, parents' socioeconomic status, parent encouragement of further studies, teacher encouragement of further studies, friends' plans for further study, and the type of school attended. It is proposed that the young people in year 12 who are more likely to go on to higher education are those: -

(a) whose homes are in the city rather than the country, because the opportunities (in the form of lower costs, mainly) for young people from the city to go on to higher education are greater;

(b) whose parents are better-off and better educated, because such parents are considered likely to be more willing and more able to provide both incentives and opportunities for going on to higher education on account of their personal experience of its rewards, their personal knowledge of what it involves, and their likely ability to be able to afford to support their children financially through higher education;

(c) whose parents encourage participation in higher education, because such parents are more likely to provide incentives and opportunities for going on to higher education;

(d) whose teachers encourage participation in higher education, because such teachers are more likely to provide incentives for going on to higher education and to point out the likely beneficial outcomes of going on to higher education;

(e) whose friends are likely to go on to higher education, because such friends may provide incentives for going on to higher education and they may also create opportunities for doing so (through shared travel and accommodation, for example); and

(f) who attend private schools (and, particularly, non-Catholic independent schools) rather than government schools, because in private schools (in Australia, certainly) there tends to be an expectation that most year 12 students will proceed to higher education, which provides social reinforcement for this kind of behaviour and shapes expectations about what the appropriate course of action is upon completing year 12.

It is proposed that the individual and situational factors introduced above combine both additively and interactively to affect the probability of entry by a young person from year 12 to higher education. The additive model (in the form $Y = a + b_1X_1 + b_2X_2 + b_nX_n + e$, where Y is the probability of direct entry from year 12 to higher education, X_1 to X_n are predictor variables, b_1 to b_n are logistic regression coefficients, and e is an error term) permits estimation of the separate contributions of each of the independent variables to the variance in the dependent variable. The addition of interactive terms (in the form of $b_3 X_1 X_2$) allows for an exploration of the extent to which the influence of an independent variable upon the probability of a young person going on from year 12 to higher education is stronger (or may be observed only) in the presence or absence of certain conditions described by another variable or group of variables. Interaction effects on decisions taken about entry to higher education have not been widely investigated in the relevant literature (but see Elsworth et al., 1982: 73-78; and Alexander et al., 1987), and this contributes to some difficulty in predicting their exact nature. Specific interactions are not predicted here, but it is expected that certain interaction effects on entry from year 12 to higher education will be found.

Data

Data from two separate sample surveys, one in Victoria and one in Queensland, of year 12 students (high school seniors) are used here to test the model. The surveys were not designed to replicate one another. The Victorian survey was undertaken as part of an evaluation of the Tertiary Education Assistance Scheme (TEAS), the Australian Government's financial assistance scheme for tertiary education students (Beswick, Hayden and Schofield, 1983). The Queensland survey was undertaken as a panel study of the career beginnings of year 12 school leavers (Carpenter and Western,

1984). The use made here of these data sets can be classed as conceptual cross-validation (Otto and Haller, 1979) because of interest are the interrelationships between certain theoretical concepts identified as comparable in both data sets. Previous uses of the data sets in this way include studies of the academic achievements of year 12 students (Carpenter and Hayden, 1985) and of the impact of single-sex schooling upon both the year 12 academic achievements of girls (Carpenter and Hayden, 1987) and their entrance to higher education (Carpenter and Hayden, 1988).

The Victorian survey involved a two-stage, stratified probability sample of year 12 students across the State in late 1980. In the first stage, government, Catholic and independent non-Catholic schools were selected in such a way that each institution had a probability of selection proportional to the number of year 12 students at the school. In the second stage, one quarter of the year 12 students at each of the selected schools were chosen using a systematic procedure in which every fourth student from a randomly selected starting point on a class list was chosen. A 6 percent sample was thus obtained. The procedure forced some clustering, and this resulted in a reduction in the number of small schools that might otherwise have been chosen. Some sample correction was required (see Beswick et al., 1983: 257-59). The students surveyed in 1980 were followed-up in 1981 to determine whether or not entry to higher education had taken place. The survey provided information on, amongst other things, the students' age, sex, social origins, schooling, perceptions of encouragement of further studies by significant others, reasons for being attracted to higher education, year 12 academic achievements and decision outcomes regarding entry to higher education. The response rate was 85 percent.

The Queensland survey involved a panel of year 12 students enrolled in secondary schools in that State in late 1978. A 9 percent sample was drawn with a probability proportional to the size of the year 12 students in each type of school (government, Catholic and independent non-Catholic), the proportions in metropolitan and non-metropolitan areas, and the proportions of males and females. Information was obtained on, amongst other things, the students' social origins, their perceptions of encouragement of further studies by significant others and their general attitudes to higher education. Other information concerning sex, age, schooling, year 12 academic achievements and decision outcomes regarding entry to higher education was able to be obtained from official sources. The response rate was 86 percent.

Using procedures suggested both by Kish (1965) and by Ross (1978), the design effects of the multiple stages of sampling used in both the Victorian and Queensland studies were estimated in order to establish the size of the simple random samples with a sampling precision equivalent to the sampling procedures used here. These values were used to determine appropriate confidence levels for tests of significance.

Variables and Data Analysis

Table 1 presents the coding of each of the variables in the hypothesized model of higher education entrance. Several of these variables require explanation.

(PLACE TABLE 1 HERE)

The parents' socioeconomic status variable was measured by summing scores on a number of scaled indicators of the socioeconomic character of the home. For the Victorian survey, the indicators that combined to form the socioeconomic status scale were father's and mother's education level, father's occupational status and parents' combined gross income (the standardized reliability of the scale was 0.80); while, for the Queensland survey, the indicators that combined best were father's and mother's education level, father's occupational status and the number of books in the home (the standardized reliability coefficient of the scale was 0.59). Responses regarding father's (or male guardian's) occupation were assigned occupational status scores based on the ANU2 scale of occupational status (Broom et al., 1977).

The motivational attributes of Victorian respondents were able to be measured from responses to a series of questions (with four-point rating scales) concerning the importance attached to various factors that might have affected the choice of further studies and of an occupation. Responses to items emphasizing intrinsic considerations that affected these choices were summed to form a scale representing the importance to a young person of intrinsic motives in the pursuit of higher education. The items were: the opportunity to work in an area that really interests me, a job

that requires hard thinking, to develop talents and creative abilities, to study in a field that really interests me, and to learn about subjects that interested me in school. The standardized reliability coefficient for the scale was a low (but sufficient) 0.56. Responses to items emphasizing extrinsic considerations were summed to form a scale representing the importance to a young person of extrinsic motives in the pursuit of higher education. The items were: a good salary, the social standing of the occupation in the community, security in employment, current availability of work in this area, to get training for a specific job, to gain entrance to a financially attractive career, to have a professional career, and to improve job prospects. The standardized reliability coefficient for the scale was a satisfactory 0.78.

Comparable measures were not available from the Queensland data. A scale of attitudes towards higher education, measuring the perceived value of a higher education qualification, was able to be constructed from the data, however. Responses to seven items (inviting an agree or disagree response) were summed to form the scale. The items were: I am dissatisfied with my present level of knowledge, my hoped-for job requires a higher education qualification, I like the idea of working at a high intellectual level, tertiary education broadens and develops personality, earning money on the job is better than tertiary education, learning on the job is more practical than school learning, and success depends on ability and effort - not education. Agreement with the first four items, and disagreement with the last three items, were regarded as indicating a high value attached to further studies. The standardized reliability coefficient for the scale was a sufficient 0.69.

Logit analysis was used as the estimation technique. This technique was adopted because the dependent variable, entrance to higher education, was cast as a dichotomy. As Walsh (1987) indicates, ordinary least squares (OLS) regression is robust in most of its assumptions, but it is not robust where continuous linearity of the dependent variable cannot be safely assumed. Unless a dichotomous dependent variable has a mean close to 0.5 and is not seriously skewed, the use of OLS can lead to serious misestimations of the effects of independent variables upon the dichotomous dependent variable. Logit enables the performance of regression-like analysis where the probabilities fall between zero and one (Aldrich and Nelson, 1986). As Rumberger (1983) observes, the estimates of the effects of the independent variables from logit analysis may be interpreted in the same way as estimates derived from ordinary least squares analysis.

The statistical package used for the analysis (SPSSx User's Guide, 1986) deleted cases with missing data on any of the selected variables. The final samples numbered 1,337 for Victoria and 1,063 for Queensland.

Results

Descriptive Statistics

Table 2 presents the correlations, means and standard deviations of variables used in the analysis. There are some findings that deserve comment.

(PLACE TABLE 2 HERE)

Among both groups of respondents, the direction of the correlations was generally as predicted. Among the Victorians, there were significant ($p<0.01$) associations between going on to higher education and obtaining better year 12 examination results ($r=0.391$), having positive parent encouragement ($r=0.325$), doing science subjects mainly in year 12 ($r=0.264$) and having positive teacher encouragement ($r=0.201$). And, as expected, those going on to higher education were more likely to have come from the city rather than the country ($r=0.056$), to have had parents with higher socioeconomic status attainments ($r=0.113$), to have attended an independent non-Catholic school rather than a government school ($r=0.110$), to have had friends going on to higher education ($r=0.101$), and to be attracted to both intrinsic ($r=0.012$) and extrinsic ($r=0.037$) features of higher education.

Among the Queenslanders, there were significant ($p<0.01$) associations between going on to higher education and obtaining better year 12 examination results ($r=0.580$), attaching value to a place in higher education($r=0.479$), having positive parent encouragement (0.396), doing science subjects mainly in year 12 ($r=0.311$), having friends going on to higher education ($r=0.301$) and having positive teacher encouragement (0.246). And, as expected, those going on to higher education were more likely to have had parents with higher socioeconomic status attainments ($r=0.105$) and to have attended either a Catholic or an independent non-Catholic school rather than a government school ($r=0.062$ and 0.073 respectively).

Multivariate Statistics

Table 3 presents the results of the logit analyses. The unstandardized regression coefficients, their standard errors and the t-ratio values are shown.

(PLACE TABLE 3 HERE)

Among Victorian respondents, six of the predictors of direct entrance to higher education that were included in the logistic regression equation were significant. These were, in descending order of importance, year 12 academic achievements, parent encouragement of higher education, completion of science subjects mainly in year 12, teacher encouragement of higher education and gender.

Three of these predictors can be treated with confidence. The achievement variables, that is, doing well in the year 12 examinations, and doing science subjects mainly in year 12, together with the variable describing parent encouragement of higher education studies, are clearly very important predictors of entry from year 12 to higher education. Care must be exercised, however, in the interpretation of the three other significant predictors, that is, teacher encouragement of higher education, having an attraction to the extrinsic rewards of higher education and gender. When the effects of the two-stage cluster sampling used in the study are accounted for by multiplying the standard errors by a factor of 1.6 (Ross, 1978), the unstandardized regression coefficients for teacher encouragement, having an attraction to the extrinsic rewards of higher education and gender were less than twice their standard errors. Hence, the present results, which suggest that year 12 students with positive teacher encouragement, year 12 students with a tendency to be attracted to the extrinsic rewards of higher education, and boys rather than girls, were more likely to enter higher education from school (other variables in the equation held constant), must be treated with caution.

It is (note that, among the Victorian sample group, the home background variab that is, home location and parental socioeconomic status, bore little impact upon the likelihood of entry from year 12 to higher education once the achievement and parent encouragement variables were taken into account. And neither were the motivational, school background or peer group influence variables significant in predicting entry from year 12 to higher education when the achievement and parent encouragement variables were controlled.

Among Queensland respondents, three of the variables included in the logistic regression equation were significant in predicting entry from year 12 to higher education. These were, in descending order of importance, year 12 academic achievements, parent encouragement of higher education and the value attached to higher education. None of the other variables, describing home location, parental socioeconomic status, type of school attended, teacher encouragement, friends' plans, the type of year 12 subjects studied and gender, was significant as a predictor of entry from year 12 to higher education when all other variables in the equation were held constant.

Three possible interaction effects were explored. These were: the interaction between parent encouragement and student motivational attributes, the interaction between teacher encouragement and student motivational attributes, and the interaction between year 12 academic achievements and a year 12 science curriculum.

The method used was to add to the logistic regression equation a cross-product interaction term for each of the interactions being examined. One such interaction term was added at a time, and the separate variables comprising the interactive term were retained in the relevant analysis.

One significant ($p < 0.01$) interaction effect was found in each of the sample groups. Among the Queensland respondents, the product variable for parent encouragement and scores on the scale for the value attached by the year 12 students to higher education was significant when added to the main logistic regression equation (regression coefficient of - 0.160; S.E. 0.055; regression coefficient/S.E. -2.914). As may be seen in Figure 1, the nature of the interaction was such that, while the likelihood of direct entry to higher education increased markedly as year 12 students attached more value to a place in higher education, this relationship was less pronounced among those year 12 students with lower levels of parent encouragement of further study. The important point here is to note the boost to the likelihood of going on to higher education given by positive parent encouragement in the case of year 12 students who did not attach great value to higher education.

(PLACE FIGURE 1 HERE)

Among the Victorian respondents, the product variable for teacher encouragement and scores on the scale for being attracted to extrinsic rewards was significant when added to the main logistic regression equation (regression coefficient of 0.073; S.E. 0.024; regression coefficient/S.E. 3.018). As may be seen in Figure 2, the nature of the interaction was such that, while the likelihood of direct entry to higher education increased overall with higher levels of attraction to the extrinsic rewards of further study, this relationship occurred only among those year 12 students with positive teacher encouragement of higher education. Put another way, positive teacher encouragement was the "sine qua non" for whether or not being attracted to the extrinsic rewards of higher education had any influence (other variables in the equation held constant) upon direct entry to higher education.

(PLACE FIGURE 2 HERE)

Discussion and Conclusions

In this study it was proposed that going on from school to higher education in Australia is a function of the combination of certain individual attributes and certain situational characteristics of the young people concerned. Relevant individual attributes were said to be the academic achievements of the young people and their motivation to proceed to higher education. The situational characteristics were seen as including circumstances of the home, the peer group, the school, the higher education system, government policies and the labour market. In the light of this person-situation interactionist perspective, a model to predict the likelihood of a young person going on from school to higher education in Australia was advanced. The model was tested using data collected on direct entry from school to higher education from separate studies in two Australian States, Victoria and Queensland.

Results of the bivariate correlation and logistic regression analyses were generally consistent with expectations. The bivariate correlations were generally as predicted, with young people from both the Victorian and the Queensland sample groups being more likely to have gone on from school to higher education if they were attracted to certain features of higher education, if they had attained better year 12 academic achievements (especially if in science subjects), if parents and teachers encouraged participation in higher education, if friends were planning to go on to higher education, if they attended a non-Catholic independent rather than a government school, and if their parents were better-off and better educated. The logistic regression analyses of the additive effects of these variables upon entry to higher education indicated that, among both

sample groups, year 12 academic achievements and parent encouragement of further studies were significant independent predictors of direct entry to higher education, and that, among Victorian respondents, having done science subjects mainly in year 12 was an additional significant independent predictor, while, among Queensland respondents, the value attached to higher education was an additional significant independent predictor. Logistic regression analyses of certain interactive effects indicated that, among Victorian respondents, the combination of high teacher encouragement of further studies and a strong attraction to the extrinsic rewards of higher education significantly enhanced the likelihood of going on to higher education, while, among Queensland respondents, the combination of low parent encouragement of further studies and a low value attached to higher education significantly diminished the likelihood of going on to higher education.

These results add to the existing body of knowledge in several respects. First, they confirm and give additional precision to a developing pattern in Australian findings whereby factors such as year 12 academic achievements (including the type of year 12 subjects studied) and the encouragement of significant others such as parents, teachers and friends have been found to have an important bearing upon the likelihood of direct entry from school to higher education, and whereby the importance of these factors has been found to be much greater than that of social background and home location variables (though these background variables certainly affect rates of retention in school to year 12) (Hayden, 1982). Second, the interactive effects identified in the results are not only interesting in themselves, in that they show how a certain combination of an individual motivational attribute and a circumstance of the immediate situation can have a significant impact upon direct entry to higher education, but they are also relatively new to the relevant empirical literature because, as

indicated above, the interactive effects of variables upon entry to higher education have generally not been investigated in previous Australian studies.

What is most important about the results, however, is their meaning within the context of the theory developed in this paper. The importance of year 12 academic achievements to the likelihood of direct entry to higher education is a clear indication that the availability of a place in higher education does matter in terms of who goes on from school to higher education. Higher education institutions in Australia are generally selective in their admission practices, and year 12 examination results are the "currency" used to gain admission to preferred courses. Year 12 students with good examination results have greater access to preferred courses within higher education, and students with good examination results in science subjects have an added advantage (particularly in Victoria) because of their even wider range of access to such courses (that is, not only to courses with science prerequisites but also to those without them).

The attractiveness of higher education is clearly also an important consideration affecting who goes on from school to higher education. Among Queenslanders particularly, but also among the Victorian respondents, those young people who showed a tendency to be attracted to higher education were more likely to have proceeded directly to higher education. Parent and teacher encouragement are especially important in this context. The results of the interactions provide supportive evidence of this. Among Victorian respondents, the combination of being attracted to the extrinsic benefits of higher education and having teachers point out the benefits of going on to higher education significantly affected the likelihood of going on to higher education. While, among the Queensland respondents, the negative effects on the likelihood of going on to higher education of

placing a lower value on higher education were contained significantly where parent encouragement of higher education was strong.

The policy implications of the results, and of the theoretical context within which they have been derived, are extensive. Two broad sets of implications are identified here. First, the results suggest that measures designed to increase the availability of places in higher education will positively affect the likelihood of direct entry to higher education. Such measures might include a greater provision of places at higher education institutions, a reduction in the use of prerequisite study requirements that restrict access by students to certain courses within higher education, and an increase in the ability of parents to support their children in higher education (such as by the greater availability of student aid or by the use of taxation incentives). Second, the results suggest that measures that have a favourable impact upon the attractiveness of higher education will positively affect the likelihood of direct entry to higher education. In particular, if parents and teachers are well informed about the benefits of higher education for a young person and are encouraged to exercise positive support for young people going on to higher education, then the young people concerned are in fact more likely to proceed to higher education. The best sources of this information would seem to be the higher education institutions themselves and the government.

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Table 1 Descriptions of Variables Used in Analysis

Variables	Description
Home location	A dichotomous variable in which 1 = metropolitan area; 0 = elsewhere
Parents' Socioeconomic Status	See text for description. High score indicates higher SES
Catholic schooling; Independent non-Catholic schooling	These variables are cast as dummy variables : one represents attendance at a Catholic school (1) rather than a Government school (0); the other represents attendance at an Independent school (1) rather than a Government school (0). Such a method of coding *type of school* allows a nominal variable to be incorporated as a predictor in multiple analyses (Suits 1957; Cohen, 1968).
Parent encouragement	Victorian Respondents: A scale from 1 to 5 on which 1 = parents perceived definitely not to want respondent to undertake higher education, and 5 = parents perceived definitely to want respondent to undertake higher education. For Queensland respondents coded 1 if respondent reported parents' encouragement to go to higher education, coded 0 otherwise.
Teacher encouragement	As for 'Parent encouragement'
Friends' plans	For Victorian respondents a scale of 1 to 5 on which 1 = most friends perceived definitely not planning to go on to higher education. For Queensland respondents 'Peer Plans' were coded 3, 2 or 1 depending on whether all, some or none of a students' friends planned to enter college.
Intrinsic attraction	See text for description. High score indicates high intrinsic attraction to higher education. For Victorian respondents only.
Extrinsic attraction of higher education	See text for description. High score indicates high extrinsic attraction to higher education. For Victorian respondents only.
Value of higher education	See text for description. High score indicates high value attached to higher education. For Queensland respondents only.
Science curriculum	Coded 1 if more than half of the respondent's year 12 subjects were in science, 0 otherwise.

Table 1 cont.

Variable	Description
Year 12 academic achievement	For Queensland respondents, the respondent's average grade in year 12 subjects, as calculated by the State Board of Secondary School Studies. This is based on teachers' assessments of the student's achievement in each high school subject, which are then standardized relative to the performances of students in that subject in that particular school. Comparability of scores across courses is facilitated because the distributions of standardized scores for different courses have the same standard deviation. For Victorian respondents the respondent's average percentage score on external public examinations held throughout Victoria at the end of year 12.
Gender	Scored 1 if respondent was male; 0 if female
Entrance to higher education	1 = entered higher education after year 12 0 = did not enter higher education.

Table 2 Correlations, Means and Standard Deviations of Variables used in the Analysis

(Victoria : n = 1,337; Queensland : n = 1,063)

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	Mean	SD
1	Home location		-.032	.061	.022	.058	.005	.064	.001	.034		.066	.062	.121	.056	.891	.311
2	Parents' SES	.127		.053	.420	.127	.006	.146	.001	-.147		.106	.220	.058	.113	27.24	8.634
3	Catholic Schooling	.072	.006		.264	.069	.057	.038	.069	.013		.009	.072	.074	-.054	.211	.408
4	Independent non-Catholic schooling	-.017	.177	-.187		.055	.122	.162	.003	.065		.005	.148	.065	.110	.207	.405
5	Parent encouragement	.046	.202	-.014	.144		.173	.137	.025	.008		.122	.177	.058	.325	4.870	.336
6	Teacher encouragement	-.064	.074	.043	.028	.290		.108	.097	.041		.066	.205	-.017	.201	4.760	.432
7	Friends' plans	.045	-.083	.011	-.210	-.283	-.156		.024	.018		.016	.045	-.050	.101	4.370	.379
8	Intrinsic attraction									.153		.084	.104	-.062	.012	26.806	1.902
9	Extrinsic attraction											.014	.091	.095	.037	24.867	3.192
10	Value of higher education	-.019	.132	.017	.097	.545	.340	.363									
11	Science curriculum	-.018	.122	.096	.034	.225	.068	.256			.219		.211	.220	.264	.300	.411
12	Year 12 academic achievements	-.034	.126	.053	.021	.312	.316	.321			.415	.445		-.012	.391	3.144	1.082
13	Gender	.142	.079	.254	.166	.061	-.073	.026			-.033	.264	.006		.099	.468	.499
14	Entrance to higher education	-.019	.105	.062	.073	.396	.246	.301			.479	.311	.580	.036		.590	.492
	Mean	.519	16.257	.189	.128	.598	.330	1.699			5.175	.376	1034.634	.546	.472		
	S.D.	.499	5.146	.391	.334	.491	.471	.901			1.936	.485	239.309	.498	.499		

NOTE: Correlations for Victorians are above the main diagonal; correlations for Queenslanders are below.

Table 3 Logit Analyses of Entrance to Higher Education Equations

Independent Variables	Regression Coefficient	Standard Error	Coefficient/ Standard error
Victorian (n = 1,337)			
Home location	.034	.128	.263
Parents'SES	.004	.005	.800
Catholic Schooling	-.044	.100	-.440
Independent non-Catholic schooling	.223	.120	1.858
Parent encouragement	.936	.135	6.952***
Teacher encouragement	.229	.093	2.446
Friends' plans	.074	.106	.696
Intrinsic attraction	-.043	.021	-1.977
Extrinsic attraction	.024	.011	2.295
Science curriculum	.604	.117	5.182***
Year 12 academic achievements	.408	.045	9.165***
Gender	.184	.082	2.234
Queensland (n = 1,063)			
Home location	.016	.085	.189
Parents' SES	-.009	.008	-1.049
Catholic schooling	.194	.111	1.755
Independent non-Catholic schooling	.125	.131	.955
Parent encouragement	.435	.098	4.420***
Teacher encouragement	-.078	.091	-.859
Friends' plans	.082	.051	1.624
Value of higher education	.171	.028	6.183***
Science curriculum	.082	.095	.857
Year 12 academic achievements	.003	.0002	11.785***
Gender	-.004	.095	-.043

NOTE : *** indicates $p < 0.001$.

Fig.1:Coll. Entry by High. Ed. Value by Par. Enc: Qld

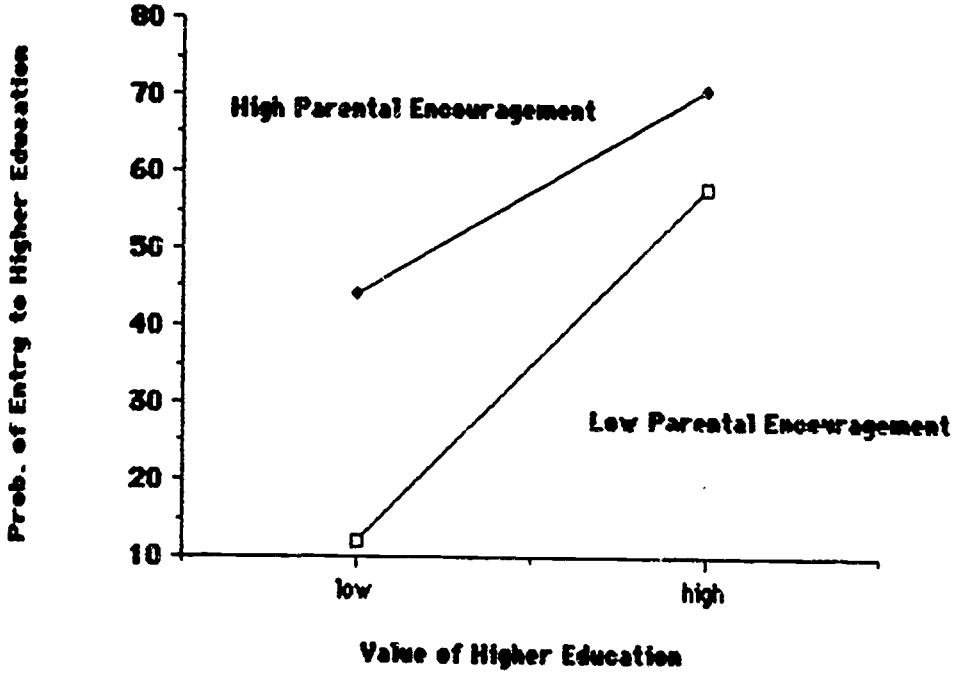
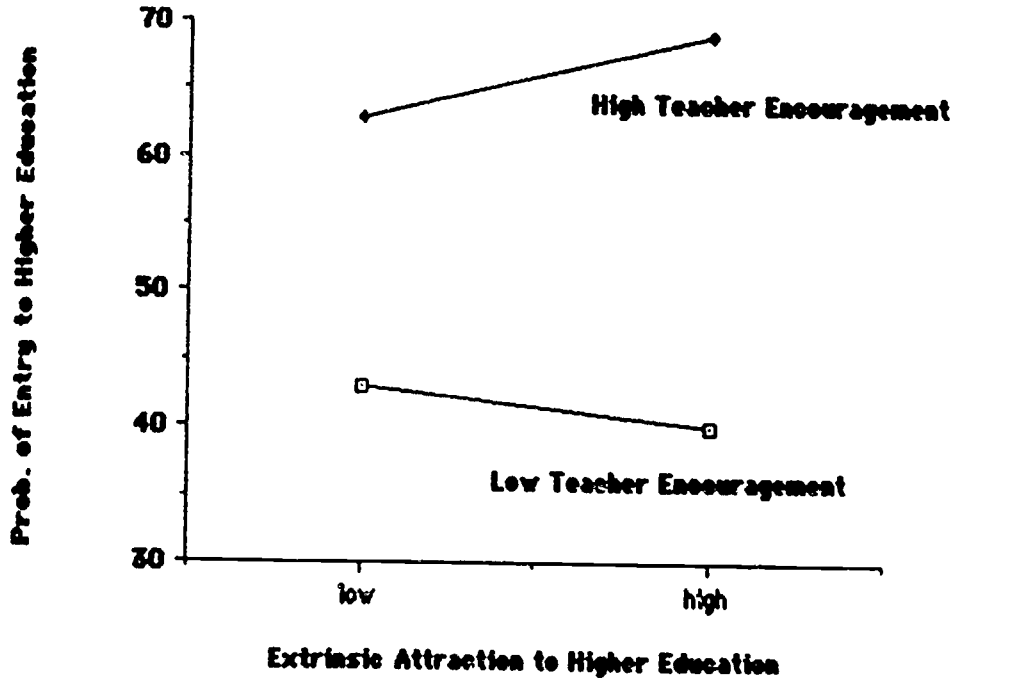


Fig.2: Coll. Entry by Ext. Attrcn by Tch. Enc: Victoria



Notes

1. The Commonwealth of Australia comprises six states and two territories. Its population in June 1988 was approximately 16.5 million. About 26 percent of Australia's population live in the state of Victoria, and about 16 percent live in the state of Queensland. In Victoria, 71 percent of the population live in the capital city, Melbourne. Queensland is much more decentralized: 45 percent of its people live in Brisbane, the capital city (Australian Bureau of Statistics 1986). Elementary and high school education in Australia is controlled, and in the case of government schools, almost completely funded by each state. Additional funds are granted to state government schools by the federal government. Private schools receive partial funding according to their available resources from both state and federal governments.