Family Socioeconomic Status at Birth and Rates of University Participation

David M Fergusson, Ph.D.

Lianne J Woodward, Ph.D.

Christchurch Health and Development Study

Christchurch School of Medicine

P O Box 4345

Christchurch, New Zealand

Correspondence to: Professor David Fergusson

Telephone: 64-3-372 0406

Fax: 64-3-372 0405

Email: david.fergusson@chmeds.ac.nz

ABSTRACT

This paper examines the relationship between family socioeconomic status at birth and rates of university participation in a cohort of 1,011 young New Zealanders studied from birth to 21 years. Results showed that young people from professional/managerial socioeconomic status families were five times more likely to go to university than young people from unskilled/semi-skilled socioeconomic status family backgrounds. This association was in part explained by the effects of socio-demographic factors correlated with socioeconomic status, and by differences in children's cognitive ability and achievement during middle childhood. However, even after taking into account the effects of socio-demographic factors, cognitive ability and educational achievement, young people from professional/managerial family backgrounds continued to have a rate of university participation that was more than one and half times the rate of their peers from unskilled/semi-skilled family backgrounds. This difference in university participation was explained by a tendency for young people from unskilled/semi-skilled socioeconomic status families to gain fewer school leaving qualifications than their higher socioeconomic status peers of similar cognitive and educational ability. Possible reasons for the poorer achievement in the school leaving examinations of young people from less advantaged family backgrounds are explored.

Keywords: Longitudinal study, socioeconomic status, tertiary education.

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INTRODUCTION

One of the best established associations in educational research concerns the linkages between measures of social stratification (family income, socioeconomic status and social class) and measures of educational achievement. As a general rule, this research suggests that with increasing socioeconomic advantage there are corresponding increases in children's levels of educational achievement, with these associations being evident from the point of school entry through to participation in tertiary education (Brody, Stoneman, & Flor, 1995; Brooks-Gunn, Guo, & Furstenberg, 1993; Corcoran, Gordon, Laren, & Solon, 1992; Duncan, Brooks-Gunn, & Klebanov, 1994; Duncan, Yeung, Brooks-Gunn, & Smith, 1998; Smith, Brooks-Gunn, & Klebanov, 1997). There is also growing evidence to suggest that educational achievement is more strongly related to measures of social stratification than other outcomes, including both child health and behavioural adjustment (Corcoran, 1995; Duncan & Brooks-Gunn, 1997; Haveman & Wolfe, 1995).

Research conducted within the context of the New Zealand education system also provides general support for the presence of pervasive linkages between social stratification and educational achievement (Fergusson, Lloyd, & Horwood, 1991; Harker & Nash, 1996; Hughes & Lauder, 1991; Lauder, 1987; Lauder & Hughes, 1990; Lauder, Hughes, & Taberner, 1985). For example, in a study of 2,753 Christchurch school leavers, Lauder and Hughes (Hughes & Lauder, 1991; Lauder & Hughes, 1990) reported a significant association between family socioeconomic status measured using the Elley & Irving (1976) scale and students' high school achievement and planned first destination following school leaving. They found that increasing socioeconomic status was associated with corresponding increases in high school achievement measured on the basis of student performance in School Certificate, University Entrance and the University

Bursary/Scholarship examinations. For example, a comparison of the success rates of similar ability students from different socioeconomic backgrounds showed that 90% of students from professional/managerial families obtained University Entrance compared to less than 70% of similar ability students from blue collar family backgrounds.

One aspect of this relationship that is of particular interest concerns the association between social stratification and university entry, with estimates from available studies showing clear differences in university participation rates for students from differing socioeconomic backgrounds (Hughes & Lauder, 1991; Lauder, 1987). For example, results from the Christchurch school leavers study described above showed that amongst students gaining University Entrance, 70% of young people from professional/managerial backgrounds reported that they intended to go to university compared to only 40% of young people from blue collar backgrounds. These socioeconomic differences in rates of university participation are of particular importance given the growing significance of tertiary level educational qualifications as pathways to later economic and career success. In this context, the lower rates of university participation by able young people from lower socioeconomic status backgrounds are likely to pose an increasing barrier to the social mobility of these young people. For these reasons, it is of considerable importance to examine the life pathways/processes that place young people from socially or economically disadvantaged backgrounds at greater risk of failing to enter university.

One of the best ways of investigating this association is through the use of a longitudinal research design which permits an examination of the educational, social and family processes that are related to participation in university education.   In this paper, we report on a 21 year longitudinal study of the relationship between young peoples' socioeconomic status at birth and their subsequent entry into university education on or before the age of 21 years. The purpose of the study was twofold. The first aim was to estimate the extent to which University participation by the age of 21 was related to socioeconomic status at birth. The second aim was to explore possible factors that may mediate between family socioeconomic status and later university participation.

There are a number of hypotheses that might explain the pervasive linkages between socioeconomic status and university participation. First, it could be proposed that this association is partially or wholly spurious and arises from factors that are: a) correlated with socioeconomic status; and b) influence long term educational achievement. For example, it might be suggested that associations between socioeconomic status and educational achievement could reflect such factors as family income, maternal age, or single parenthood that are both correlated with socioeconomic status and which also influence childhood educational achievement (Corcoran, 1995; Duncan et al., 1998; Fergusson & Woodward, 1999; Haveman, Wolfe, & Spaulding, 1991). For this reason it is important for studies of the relationship between socioeconomic status and achievement to control for the effects of these correlated factors.

Second, it could be proposed that the association between socioeconomic status and university participation is merely a consequence of the poorer educational achievement of children from disadvantaged families whilst they are at school. In particular, it may be argued that as a result of nature, nurture or a combination of these factors, children from socially advantaged homes perform better at school, with this improved school achievement leading to higher rates of educational attainment, including the pursuit of tertiary education. This explanation implies that when due allowance is made for linkages between social background and children's school achievement, family socioeconomic status will no longer be related to university participation.

A third explanation is that the association between social background and university participation does not simply reflect differences in the educational achievement or social circumstances of children from different socioeconomic backgrounds. Rather, it could be argued that this association might also reflect social and family processes that act to encourage or deter entry into university independently of educational ability or achievement. More generally, it may be argued that children from differing social and family backgrounds may be exposed to different socialisation experiences and other processes that set up differing expectations about the individual's 'life script', which in turn, act to encourage or deter entry into university (Ainley,

Foreman, & Sheret, 1991; Brody et al., 1995; Lauder, Hughes, Dupuis, & McGlinn, 1992; Smith et al., 1997).

Each of these hypotheses can be shown to imply a particular model of the relationships between socioeconomic status, university participation and potential mediating variables.

1. The hypothesis that the association is spurious and arises from confounding factors (such as family income, maternal age, single parenthood) that are correlated with socioeconomic status and are also related to university participation, implies that when due allowance is made for the confounding factors, socioeconomic status and university entry are no longer related.

2. The hypothesis that the association arises because socioeconomic status is related school achievement which, in turn, is related to university participation implies that when due allowance is made for intervening school achievement factors, socioeconomic status and university participation are no longer related.

3. The hypothesis that the association does not simply reflect differences in the social background or educational achievement of children from families of differing status levels implies that even after statistical control for these factors, socioeconomic status and university participation are related.

More generally, the hypotheses above can be tested by fitting regression models in which the relationships between socioeconomic status and university participation are modelled taking into account both confounding and intervening factors. Baron and Kenny (1986) have provided a formal account of the ways in which such models may be used to conduct tests for the effects of both confounding and intervening factors. In this paper, we apply these methods to examine various pathways that may explain the linkages between socioeconomic status and university participation.

METHOD

Sample

Participants were members of an unselected birth cohort that has been extensively studied as part of the Christchurch Health and Development Study (CHDS). The CHDS is a longitudinal study of a birth cohort of 1,265 children (635 males; 630 females) born in the Christchurch, New Zealand urban region over a four month period during 1977. These children have been studied at birth, 4 months, 1 year, then annual intervals to age 16, 18 years and again at 21 years. Data have been collected using a combination of sources, including parent interviews, teacher assessments, child interviews, standardised psychometric tests, and medical and official records. An overview of the study design has been given previously (Fergusson, Horwood, Shannon, & Lawton, 1989). The variables analysed in this report were measured in the following ways.

Measures

Family Socioeconomic Status (birth)

The measurement of family socioeconomic status used in the present study was based on the Elley & Irving (1976) scale of socioeconomic status for New Zealand. This scale ranks families into a series of six socioeconomic groups on the basis of male occupation. These groups are: level 1: professional; level 2: managerial; level 3: clerical/technical; level 4: skilled; level 5: semi skilled; level 6: unskilled. These classes were formed by a statistical procedure in which occupations in the New Zealand census were classified into a series of groups on the basis of median income and educational levels associated with each occupation. The application of this method of classification proved to be difficult for a minority (7%) of cohort members for whom details on male occupation for the family were unavailable. These cases involved: a) families in which the male was unemployed; or b) single parent families in which a male was absent. These difficulties were addressed by devising a further scale category "not classifiable". Examination of the not

classifiable groups showed them to have income and educational levels similar to those of level 6 on the Elley/Irving scale. Therefore for the purposes of this analysis, it was decided to group the categories of the Elley/Irving scale into three broad classes: 1 = levels 1, 2 (professional, managerial); 2 = levels 3, 4 (clerical, technical, skilled); and 3 = levels 5, 6 (semi-skilled, unskilled) including those not classifiable.

Using this classification, 211 (20.9%) families were classified as professional/managerial; 553 (54.7%) as clerical/technical; and the remaining 247 (24.4%) as of semi-skilled/unskilled socioeconomic status. The choice to classify the scale into broad groups was made on the grounds that this classification fairly represented the approximate nature of the scale and, further, that increasing the number of categories did not lead to any appreciable increase in the predictive validity of the measure. The measure of socioeconomic status thus derived provides a comparatively simple method of subdividing the cohort into relatively homogeneous socioeconomic groups.

University Participation (21 years)

As part of the 21 year interview, sample members were questioned about their educational and occupational history since the age of 18 years. As part of this interview, sample members were asked a series of questions about their involvement in tertiary education, including whether or not they had been enrolled in a university level course during the previous three years. A university level course was defined as a degree or diploma offered by an institution with national recognition as a university at the time of the assessment. These institutions included the: University of Canterbury; University of Otago; Lincoln University; Victoria University; Massey University; University of Waikato; and the University of Auckland. A total of 30.6% had enrolled for a university degree or diploma by age 21, with 98% of these enrolments involving degree study.

Confounding Socio-Demographic Factors (birth)

To examine the extent to which associations between socioeconomic status and university participation could be explained by the effects of socio-demographic factors that were correlated with both socioeconomic status and university participation the following measures were included in the analysis.

1. Maternal age. Measured in whole years at the time of the survey child's birth.

2. Family type. The type of family (single/two parent) the child entered at birth.

3. Maternal education. The highest level of maternal educational achievement was scored on a 3-point scale: 1 = mother lacked educational qualifications; 2 = mother had high school qualifications; 3 = mother had tertiary level (college) qualifications.

4. Child ethnicity. Children were classified as Maori or non-Maori on the basis of their origins of descent. If either natural parent reported being of Maori or part Maori descent, then the child was classified as Maori, otherwise the child was classified as non-Maori.

5. Family income (0-10 years). At annual intervals between the ages of birth and 10 years, the family's total gross income was recorded. The total income for each assessment was recoded into decile categories and then averaged over the 10 years to provide a summary measure of the family's average income decile rank.

Cognitive Ability and School Achievement

To assess the effects of students' cognitive ability and educational achievement at primary and secondary school in explaining the association between socioeconomic status and university participation the following variables were selected for inclusion in the analysis.

Child Cognitive Ability, Educational Achievement and Behaviour

1. Intelligence (8 years). At age 8, children completed the revised Wechsler Intelligence Scale for Children (Wechsler, 1974). The full scale was used in the present analysis. The reliability of this score, assessed using split half methods, was .93.

2.   Mathematics achievement (11 years). At age 11, children completed the Progressive Achievement Test (PAT) of mathematics. This test provides a measure of children's mathematical reasoning ability and facility with numerical concepts. An account of the construction and validation of this test has been given by Reid & Hughes (1974). Test scores were expressed as the number of correct responses made by each child. The reliability of this score, assessed using coefficient alpha, was .87.

3.   Reading comprehension (12 years). At age 12, children completed the Progressive Achievement Test (PAT) of reading comprehension. This test provides a measure of reading comprehension suitable for New Zealand children. An account of the construction and validation of this test has been given by Elley & Reid (1969). Test scores were expressed as the number of correct responses made by each child. The reliability of this score, assessed using coefficient alpha, was .86.

4.   Scholastic ability (13 years). At age 13, children completed the Test of Scholastic Abilities (TOSCA). The TOSCA is a general purpose test designed to assess "verbal and numerical reasoning abilities deemed to be requisite for success in academic aspects of the... school curriculum" (Reid, Jackson, Gilmore, & Croft, 1981, p. 4). An account of the construction and validation of this measure has been provided by Reid et al., (1981). The test score was expressed as the number of correct responses made by each child. The reliability of the test, assessed using coefficient alpha, was .95.

5.   Attentional problems (8 years). At age 8, parent and teacher reports of children's tendencies to inattentive, restless or hyperactive behaviours were obtained using a measure which combined items from the Rutter (Rutter, Tizard, & Whitmore, 1970) and Conners (1969); (1970) parent and teacher questionnaires. A scale score representing the extent to which children were described as exhibiting inattentive, distractible, restless or hyperactive behaviour was created by summing the parent and teacher item scores for each child. The reliability of this scale, assessed using coefficient alpha, was .88.

High School Achievement

    1. School Certificate. At age 21, sample members were questioned about the number of School Certificate subjects sat and the number of A, B or C grades obtained. School Certificate achievement was measured using the total number of subjects for which an A, B or C grade was obtained.

    2. Sixth Form Certificate. At age 21, sample members were asked whether they had gained their Sixth Form Certificate: 64.2% of respondents reported gaining Sixth Form Certificate.

    3. Higher School Certificate. At age 21, sample members were also asked whether they had obtained their High School Certificate: 42.0% of respondents reported obtaining their Higher School Certificate.

    4. University Bursary Examinations. Finally, at age 21, sample members were asked whether they had sat the University Bursary examinations, and if so the level of bursary gained. A total of 13.4% of respondents reported obtaining an A level bursary, 13.5% a B level bursary; whilst the remaining 73.2% either did not sit or did not pass these examinations.

Sample Size

    The analyses reported in this paper are based on a sample of 1,011 young people for whom complete data were available on the measures of socioeconomic status at birth and university participation at the age of 21 years. This sample represented 79.9% of the original cohort of 1,265 children and 90.4% of all cohort members alive and resident in New Zealand at the age of 21 years. Losses to follow-up arose as a result of emigration (50%), refusal to participate in the research (40%) and mortality (10%).

    To examine the effects of sample loss on the representativeness of the sample, those children who were included and excluded from the analysis were compared across a range of social background measures collected at birth. This analysis suggested that there were small but statistically detectable tendencies ($p<.05$) for this sample to under-represent children from family

backgrounds characterised by early motherhood, single parenthood, Maori or Pacific Island ethnicity, and lower maternal educational achievement. Whilst these results suggest some bias within the present sample towards the under-representation of children from socially disadvantaged family backgrounds, it is unlikely that this bias will materially influence results since previous efforts to correct for non-random sample loss have shown these effects to be negligible (Fergusson & Lloyd, 1991; Horwood & Fergusson, 1999).

RESULTS

Relationship Between Socioeconomic Status and University Participation

Table 1 (A) shows the unadjusted association between family socioeconomic status (classified into three broad groupings) and rates of university participation by age 21. From this table it is clear that a very strong relationship exists between family socioeconomic status at birth and later entry to university, with children from families of professional or managerial status having a rate of university entry (57%) that was more than five times higher than the rate found for children from families of unskilled or semi-skilled socioeconomic status (11%) (p<.0001). The important issue raised by this finding clearly concerns the factors that lead to this strong association between socioeconomic status and university entry. Below we examine a number of possible explanations of this association.

The Role of Socio-Demographic Factors

One explanation of the relationship shown in Table 1 (A) is that this association may be due to the effects of socio-demographic factors that are correlated with socioeconomic status. In particular, it has been well documented that measures of socioeconomic status are related to a series of other measures of social disadvantage, including single parenthood, teenage motherhood,

parental education, ethnicity and family income. Therefore, it could be proposed that the association reported in Table 1 could reflect the effects or other disadvantageous factors that are associated with socioeconomic status, rather than the direct effects of socioeconomic status on university attendance. To address this issue, the association between socioeconomic status and university entry was adjusted, through the use of logistic regression, to take into account the confounding effects of a series of socio-demographic factors. These factors consisted of a range of family measures assessed at birth, including entry into a single parent family, maternal age, child ethnicity and maternal educational achievement. A measure of each family's mean income decile for the first ten years of the child's life was also included. The model fitted was:

$$\text{Logit Pr } (Y = 1) = B0 + B1X1 + \Sigma Bj\ Zj$$

where logit Pr $(Y = 1)$ denotes the log odds of entering university, X1 was the measure of socioeconomic status and Z_j were the other socio-demographic factors listed above. From this model it was possible to estimate the association between socioeconomic status and rates of university entry after adjustment for the effects of socio-demographic factors known to be correlated with socioeconomic status. Table 1 (B) shows the probability of university entry for children born into families of different socioeconomic levels after adjustment for the effects of correlated social disadvantage. The adjusted rates shown in this table can be interpreted as the proportion of children in each group that would be expected to go to university had all groups been exposed to equivalent levels of the covariate factors. These results show that control for correlated socio-demographic factors substantially reduced the association between socioeconomic status and university participation. However, even after adjustment for the effects of these socio-demographic factors, a clear and statistically significant $(p<.0001)$ association between family socioeconomic status and rates of university entry remained, with young people from professional/managerial status family backgrounds being twice as likely to go to university as their lower socioeconomic status peers.

The Contribution of Child Cognitive Ability, Achievement and Behaviour

A further explanation of the association between socioeconomic status and university participation is that this may reflect a more general tendency for children from socially advantaged family backgrounds to be more cognitively and academically able. To examine the extent to which differences in the rate of university participation for children from different socioeconomic backgrounds could be explained by differences in ability and school achievement, the logistic regression model described above was extended to include a series of measures of childhood cognitive ability and educational achievement. These measures included: children's total WISC-R IQ scores assessed at 8 years; their PAT reading comprehension test scores at 10 and 12 years; PAT mathematics achievement test scores at age 11; TOSCA scores obtained at age 13 and the extent of child attentional problems reported at age 8. From the fitted model it was possible to estimate the association between socioeconomic status and rates of university participation after adjustment for both socio-demographic and childhood achievement and academic ability measures. The results are provided in Table 1 (C) which shows the association between socioeconomic status and rates of university participation after adjustment for measures of socio-demographic factors and cognitive ability/academic achievement in middle childhood. These results suggest that differences in children's academic ability and achievement, most notably scholastic ability, mathematics achievement and attentional behaviour, made significant contributions to the association between socioeconomic status and university participation. However, even after control for ability and achievement, a statistically significant association remained between socioeconomic status and university entry, with children from managerial or professional families having rates of university participation that were nearly one and a half times higher than children born into semi-skilled or unskilled families (36% vs 25%; $p<.05$). These results suggest that independently of other social background factors and childhood levels of academic ability and achievement, children from families of unskilled or semi-skilled status remained at increased risk of failing to enter university.

Academic Achievement at High School

One further explanation of the association between socioeconomic status and university participation is that this could reflect choices made in adolescence about academic qualifications. It may be that independently of academic ability and other socio-demographic factors, children from families of semi-skilled or unskilled status tend to be less prone, for a variety of reasons, to seek the prerequisite academic qualifications for university entry. To examine this issue, the regression model fitted in Table 1 (C) was extended to include measures of academic qualifications obtained from age 15 onwards. These qualifications included: School Certificate; Sixth Form Certificate; Higher School Certificate; University Entrance and Bursary examinations. Table 1 (D) shows the association between socioeconomic status and university participation after adjustment for: a) socio-demographic factors; b) childhood cognitive ability and academic achievement; and c) academic qualifications obtained after age 15. The Table shows that after the inclusion of high school achievement factors, most notably School Certificate achievement, Higher School Certificate and Bursary performance, the association between family socioeconomic status at birth and subsequent university participation was reduced to both practical and statistical non-significance.

Collectively, results shown in Tables 1 (B) to 1 (D) suggest that the association between socioeconomic status and university entry is the result of three processes that place children from lower socioeconomic status families at greater risk of failing to enter university. First, socioeconomic status is correlated with a series of other social factors including family income and maternal educational achievement, that also contribute to rates of university education (Table 1 (B)). Second, an additional component of the association between socioeconomic status and university entry reflects a pervasive tendency for children from lower socioeconomic status families to be less cognitively able and to perform less well on measures of school achievement during middle childhood than their peers from higher socioeconomic status families (Table 1 (C)). Finally, the evidence also suggests that independently of cognitive ability, educational achievement and the

extent of other family resources, children from higher socioeconomic status families have greater success in the school leaving examinations needed for entry to university (Table 1 (D)). The net effect of these three processes (correlated social disadvantage, cognitive ability and school achievement, success in the school leaving examinations) is to produce a strong association between family socioeconomic status at birth and subsequent participation in university education.

DISCUSSION

In this paper, we have used data gathered over the course of a 21 year longitudinal study of a birth cohort of Christchurch born children to examine the relationship between a measure of socioeconomic status based on parental occupation and young people's subsequent participation in university education. The major findings and implications of the study are discussed below.

Relationship Between Socioeconomic Status and University Participation

The present study found very strong linkages between socioeconomic status assessed at birth and subsequent rates of university participation. Children born into families of professional/ managerial status had rates of participation in university education that were more than five times higher than the participation rate for children from families of unskilled or semi-skilled socioeconomic status. What is perhaps most striking about this result is the way in which a relatively unsophisticated assessment of family socioeconomic status obtained at birth proved to be so strongly prognostic of children's university participation more than twenty years later. This association clearly suggests the presence of a strong and robust relationship between early family socioeconomic status and children's long term educational achievement. This finding concurs with previous research showing a strong association between measures of family income and

socioeconomic status and levels of academic achievement, see for example: (Brody et al., 1995; Brooks-Gunn et al., 1993; Corcoran et al., 1992; Duncan et al., 1994; Duncan et al., 1998; Harker & Nash, 1996; Hughes & Lauder, 1991; Lauder & Hughes, 1990; Smith et al., 1997; Walker, Greenwood, Hart, & Carta, 1994). It is also consistent with research suggesting that family socioeconomic conditions in early childhood may be more important than later family economic conditions in shaping children's educational choices and opportunities (Duncan & Brooks-Gunn, 1997).

The availability of longitudinally collected data throughout childhood and early adulthood also allowed us to explore a number of possible intervening or mediating factors that could potentially explain the association between a global measure of SES at birth and participation in university education. The major findings of the study in relation to these mediating processes are summarised below.

Explanations of the Relationship Between Socioeconomic Status and University Participation

The first explanation considered by the analysis was the possibility that the association between socioeconomic status and university participation was spurious and reflected the presence of other disadvantageous family factors known to be correlated with socioeconomic status and also to predict later educational achievement. These factors included: family income; maternal educational achievement; maternal age; ethnicity; and single parenthood. This explanation was examined by fitting a logistic regression model to adjust the association between socioeconomic status and university entry for the effects of these correlated socio-demographic factors. Results of this analysis showed that whilst control for these factors substantially reduced the size of the association between socioeconomic status and university entry, even after such control, clear and highly significant associations remained between socioeconomic status and university participation. After adjustment for other socio-demographic factors, the offspring of professional/managerial families were more than twice as likely to go to university compared to the offspring of semi-skilled

or unskilled socioeconomic status families. These results clearly suggest that independently of family income and other socio-demographic factors, children from lower socioeconomic status families were clearly at an elevated risk of failing to enter university.

A second explanation is that the association between socioeconomic status and university participation reflects class related differences in levels of child intellectual ability, educational achievement and behaviour. In particular, it could be proposed that as a result of nature, nurture or a combination of these factors, children from higher socioeconomic status families are more academically able, with this academic ability being reflected in their higher rate of participation in university education. This explanation implies that the association between socioeconomic status and university participation is explained by intervening cognitive ability and school achievement processes.

The present study was well placed to test this hypothesis given the availability of prospectively assessed measures of cognitive ability, scholastic achievement and behaviour collected at regular intervals over the school career of this cohort. As might be expected, statistical control for these intervening ability, achievement and behavioural factors, reduced the association between socioeconomic status and university participation, but tellingly, did not entirely eliminate the association. In general, our results suggest that independently of measures of cognitive ability (intelligence; scholastic ability), school achievement (reading comprehension; mathematical ability) and behaviour during middle childhood (attentional problems), children from professional/ managerial families had rates of university participation that were approximately one and a half times higher than the rate of their peers from unskilled or semi-skilled family backgrounds. These results are generally consistent with the findings of previous research suggesting that independently of academic achievement or ability, children from socially or economically disadvantaged family environments are at greater risk of educational underachievement (Harker & Nash, 1996; Hughes & Lauder, 1991; Lauder & Hughes, 1990).

An important question raised by this conclusion, concerns the underlying processes which lead children from lower socioeconomic groups to underachieve, or for children from upper socioeconomic groups to overachieve. While the present study was not able to explore all possible mechanisms, it was in a position to localise the developmental period during which this underachievement was likely to have occurred. In particular, further analyses showed that the lower rate of university participation of children from lower socioeconomic status families (after adjustment for social background at birth, cognitive ability, educational achievement and behaviour during middle childhood) was explained, statistically, by their lower levels of attainment in the school leaving examinations (School Certificate, Higher School Certificate and University Bursary). That is, in part, the lower rate of university participation amongst children from lower socioeconomic backgrounds reflects a tendency for these young people to gain fewer school leaving qualifications than their higher socioeconomic status peers of similar cognitive and educational ability.

The underlying processes that lead to this tendency for lower socioeconomic status students to underachieve in their school leaving examinations are not clear from the present study. However, previous research into the linkages between social class and educational achievement suggest the presence of a number of possible mechanisms centering around class related variations in how educational achievement and qualifications are viewed (Lauder et al., 1992). In particular, this research suggested that families of lower socioeconomic status may view university attendance somewhat differently than higher socioeconomic status families. For example, in a qualitative study of a subsample of 149 young people from the Christchurch School Leavers Study, Lauder et al (1992) examined the educational decisions made by similar ability students from a range of social backgrounds. This analysis suggested that for children from professional/managerial backgrounds, university entry was typically seen as an expected part of their life course. In contrast, lower socioeconomic status families tended to place greater emphasis on the role of education as providing entry into a good job or specific vocational course rather than as a means of

gaining a university education. In addition, these families often viewed a university education as a more risky career path than entering the workforce or vocational training following school leaving.

A further factor that may deter lower socioeconomic status students from entering university (or seeking the pre-requisite qualifications to enter university) concerns the financial costs associated with a university education. Due to changes in the funding of tertiary education, university students in New Zealand are now expected to fund a substantial component of the total cost of their university education through the student loan scheme. Current estimates show that during 1998 the average tertiary student borrowed $6,461 under the government student loan scheme (Ministry of Education, personal communication, 1999). This suggests that the average cost of a three year degree is approximately $20,000, a cost that may pose a particular obstacle to the university participation of lower socioeconomic status students who may find the prospect of such a large debt daunting (Lauder, 1987; Lauder et al., 1992). In general, it seems likely that, in part, the lower university participation rate of young people from lower socioeconomic status families may reflect the presence of attitudinal and economic factors that conspire to make university education less attractive to these young people than to their peers from socioeconomically advantaged family backgrounds.

Finally, irrespective of the specific factors that lead to educational underachievement amongst children from low socioeconomic status families, the results of this study make it clear that despite substantial efforts on the part of the New Zealand public education system to offer equal opportunities for all, this ideal has yet to be fully achieved. Our results suggest that able children from professional or managerial family backgrounds are about 1.5 times more likely to enter university than are children of similar ability from low socioeconomic status families. These findings clearly raise the need for further indepth investigation of the factors that deter young people from disadvantaged families from entering university.

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Table 1. Associations Between Socioeconomic Status and University Entry by Age 21.

	% Entering University			
Socioeconomic Status (Birth)	(A) Unadjusted association [a]	(B) Association adjusted for sociodemographic factors [b]	(C) Association adjusted for sociodemographic, factors, educational ability and behaviour [c]	(D) Association adjusted for sociodemographic factors, educational ability, behaviour and high school achievement [d]
Semi-skilled/unskilled, unemployed	10.9	19.9	24.8	29.3
Clerical, technical, skilled	29.3	29.7	30.2	30.5
Professional/Managerial	56.9	41.7	36.0	31.7

[a] p<.0001.
[b] p<.001; Significant covariate factors: maternal educational qualifications (birth); average family income decile (birth-10 years).
[c] p<.05; Significant covariate factors: maternal educational qualifications (birth); average family income (birth-10 years); attentional problems (8 years); maths ability (11 years); scholastic ability (13 years).
[d] p>.50; Significant covariate factors: maternal educational qualifications (birth); average family income (birth-10 years); attentional problems (8 years); maths ability (11 years); scholastic ability (13 years); number of subject passes in School Certificate (21 years); Higher School Certificate (21 years); pass level in Bursary (21 years).