

Intergenerational Resemblance in Field of Study in the Netherlands

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Level of education has always been the focus of attention in studies on the intergenerational transmission of education. Consequently, we do not know whether field of study is a relevant new boundary. We expect field of study to be important, because it indicates the type of resources that students acquire. We tested hypotheses about parental effects on the field of study of respondents to the Dutch Family Surveys of 1992 and 1998 (N=2949). In the Dutch educational system the choice of a specific educational programme is made at various educational levels. The association between the educational fields of father and child appeared to be particularly strong in general, teacher/educational, and agricultural fields, and was hardly affected by other family characteristics. Interestingly, children from lower-class backgrounds were over-represented in fields of study with favourable labour-market opportunities, and children from the economic and cultural élite selected fields where they could reproduce their family capital.

Introduction

The impact of family background on one's educational attainment is a central issue in social stratification research. It is believed that the intergenerational transmission of status positions, such as education, offers insight into the openness of society (Ultee and Luijkx, 1990). Past and current research mostly focuses on the similarity in educational level of parents and children. It is a well-established fact that children of better-educated parents have a relatively high chance of obtaining a high educational level themselves (Jencks *et al.*, 1972; Shavit and Blossfeld, 1993). Moreover, the association between the educational level of parents and children seems fairly stable over time (Shavit and Blossfeld, 1993).

Recent developments indicate a large increase in the number of people experiencing tertiary education (Hauser and Featherman, 1978; Van der Ploeg, 1994). In Western societies, with currently about 30 to 40 per cent of young people completing tertiary education, other intergenerational similarities may

be relevant to judge accurately societal openness. In this paper we analyse the intergenerational transmission of field of study. It is assumed that, in affecting their offspring's choice of a specific educational field, parents see their own resources reproduced. Since field of education, net of level of education, affects occupational opportunities (Kalmijn and Van der Lippe, 1997; Marini and Fan, 1997), leisure time behaviour (Van de Werfhorst, Kraaykamp, and De Graaf, 1997), and bounds marriage markets (Uunk, 1996), intergenerational reproduction of field of education has a limiting effect on the openness and social cohesion of society.

The topic of background effects on field choice is of particular interest in an educational system where the choice of educational field is made early and at various educational levels. In Anglo-Saxon and Scandinavian countries, the choice of discrete educational fields with separate curricula and school environments is mostly made at college level and higher. Although different subjects or tracks exist

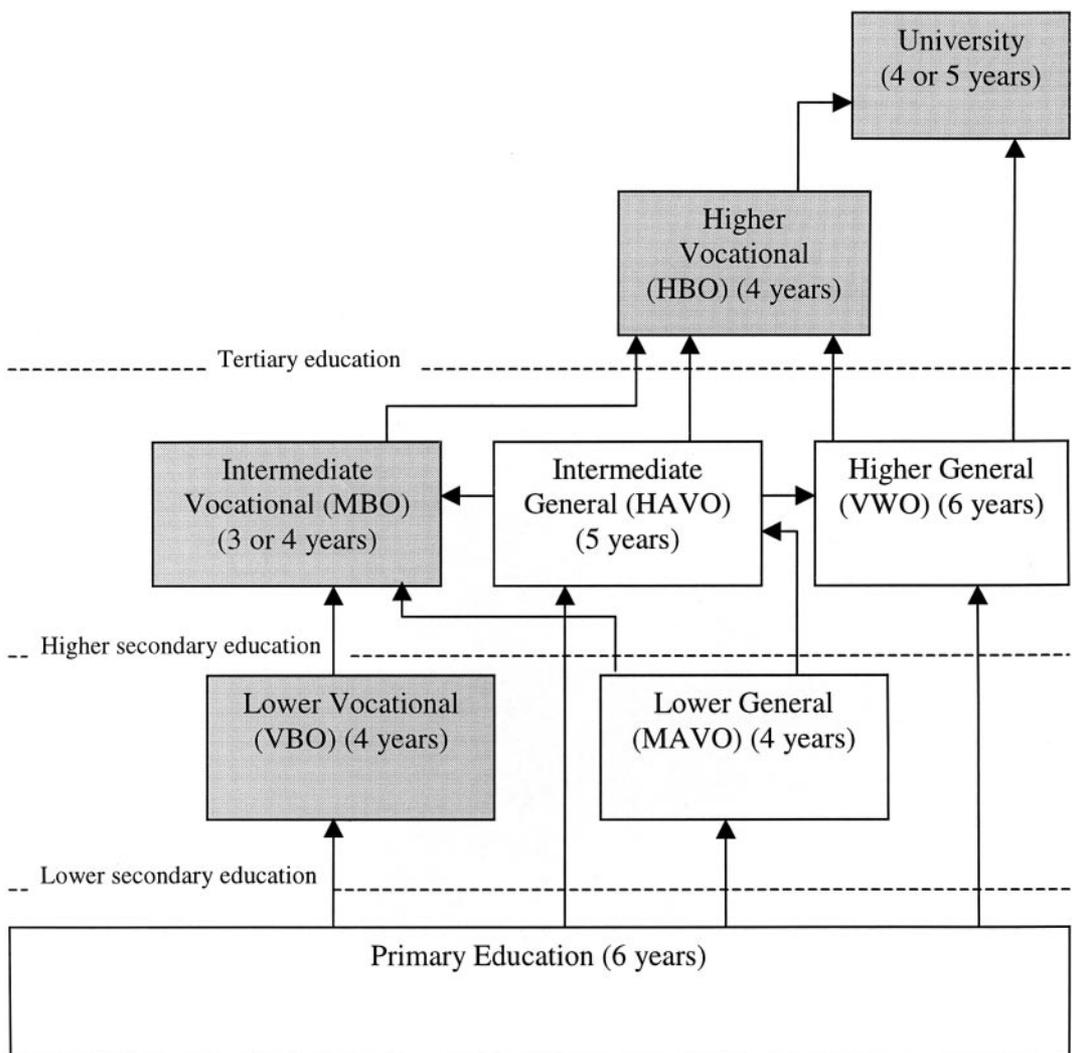


Figure 1. *The Dutch educational system*

within secondary education, this implies that students generally follow the same curriculum or are at least in the same school environment up to age 17 or 18. In the Netherlands, however, the choice of a specialized field of study can be made after primary education as early as age 12. In Figure 1 we see that from the age of 12, when leaving primary education, one option to choose is lower vocational education, which provides several fields of study such as technical, caring, and administrative programmes. These types of education mostly imply separate curricula

and school environments. Other options at this stage of the educational career are several general tracks, differing in length and difficulty. Grades and test-results in primary education determine the options for a child.¹ At the higher secondary level, again a distinction can be made in general and vocational types of training. All three types of higher secondary education give access to tertiary education, although only the higher general track (VWO) gives direct admission to university. Since children's educational choices are to a greater extent

influenced by their parents at younger ages (Mare, 1980), the Netherlands offers an interesting case for analysing effects of parental resources on the choice of educational fields.

In Figure 2 trends are depicted in the participation in several fields of study, for all three (highest completed) educational levels (excluding primary education). Figure 2 shows that, among people who attained an education at the lower secondary level, the share of the general field was fairly stable. Among people born between 1914 and 1935, around 35 per cent of those whose highest education was at lower secondary level received general education. Another 35 per cent of them acquired a technical qualification. Among people born between 1966 and 1972, around 30 per cent chose the general field, and 35 per cent a technical field. A caring field gained some popularity initially, but this decreased substantially in the third and fourth birth cohorts. The economic-administrative field gained popularity during the course of the century, especially after the 1950s birth cohorts. It should be noted that, during the course of the twentieth century, fewer people obtained lower secondary education as their highest credential as a result of educational expansion.

At the higher secondary level, the popularity of general education decreased across cohorts. Educational expansion is presumably responsible for this trend; as more people enter tertiary education, mostly via the intermediate and higher general tracks, fewer people exit the educational system after completion of general education. Those who do not enter tertiary education, increasingly chose specialized education at the higher secondary level, as can be seen from the increase in the economic-administrative and technical fields.

The share of people educated at tertiary level who enter the educational field, for instance to become teachers, decreased during the twentieth century. Of the oldest two cohorts, around 25 per cent of the tertiary-educated became teachers. This percentage fell dramatically to less than 10 per cent of the last cohort, in favour of the economic-administrative field, which experienced an increase from 20 to 35 per cent. According to Dronkers (1993), the rise of the economic field can be interpreted as a defensive strategy to respond to diploma inflation: in a labour market that becomes

too highly educated, people invest in commercial and financial skills. Another explanation of the rise of economic fields is that an increasing number of lower- (and middle-) class students enter tertiary education, who, as we will argue later, strongly consider the labour-market value in their choice for an educational field. In sum, we conclude that general education as end-station in the educational career has become less common, and specialized schooling has become more common, especially when we realize that educational expansion has decreased the number of people educated at lower-secondary level (see also Dronkers, 1993). The topic of field-choice therefore has become important in sociological research.

In this article, we focus on three explanations for the relation between family background and field of study. The first, and most general one, simply stresses the direct intergenerational transmission of field of study. The second one specifies the impact of parental cultural and economic capital in general. The third explanation specifies the likelihood of attending technical and economic fields of study depending on the socio-economic status of the parents. We will elaborate on these three explanations subsequently.

Three Explanations for the Choice of a Field of Study

Theories on the impact of family background on educational level can be applied to make predictions about the influence of parents on the choice of a field of study. Two theories, which yield similar predictions, are evaluated with respect to their applicability to our research problem. Conflict theory, which has been widely used to explain the persistent relationship between the status positions of parents and children, states that children of parents with a lot of cultural capital do better in school than children with poor cultural backgrounds (Collins, 1971; Bourdieu and Passeron [1977] 1990). Cultural capital is believed to be relevant for educational achievement for three reasons (Kalmijn and Kraaykamp, 1996). First, children who are exposed to cultural capital have apt ability to master the curriculum, resulting in self-selection. Secondly, they simply like learning more than

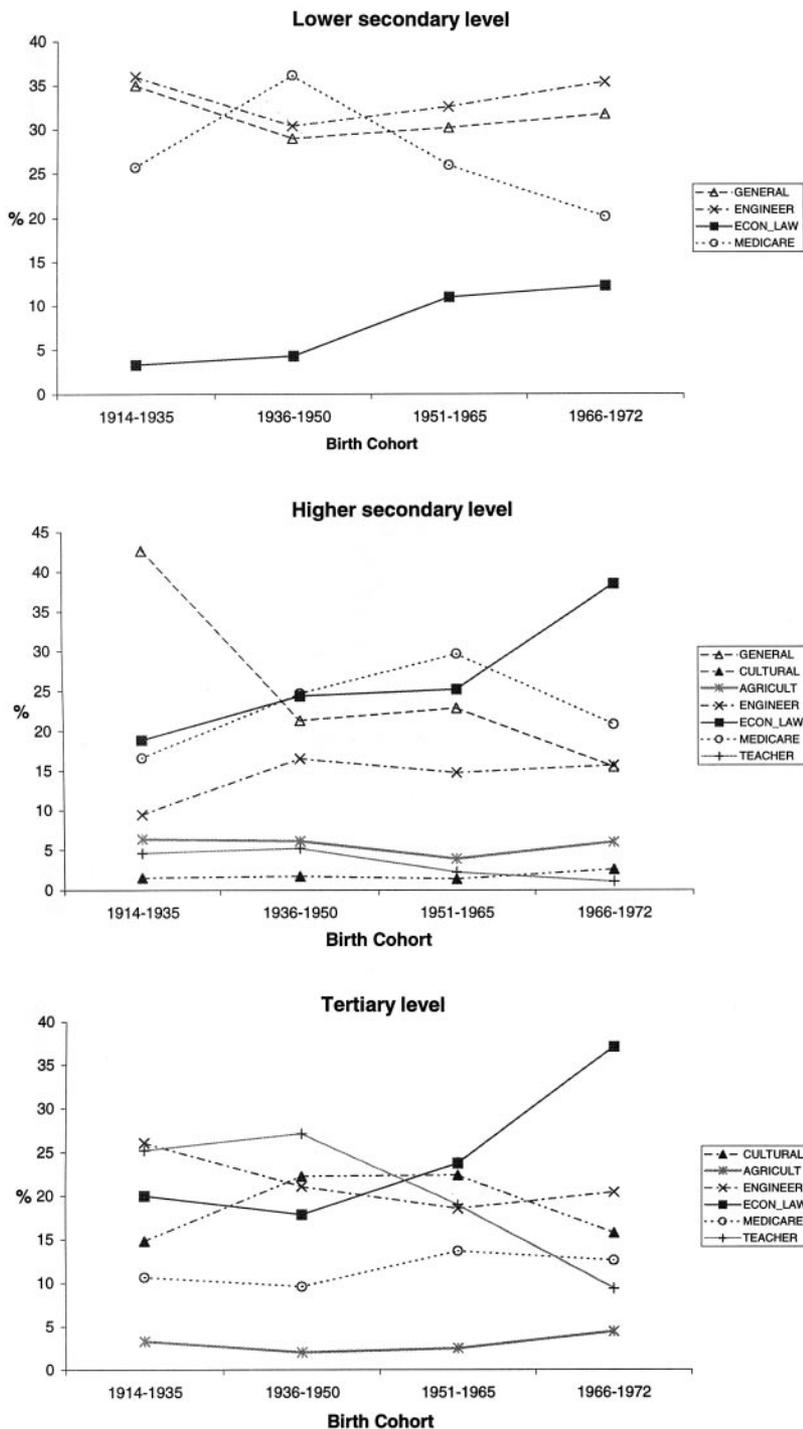


Figure 2. Trends in participation in fields of study

Source: Labour Force Surveys 1992, 1994, 1995, 1997 for lower secondary level (N=79 281); Supplementary Use of Services Research 1991, 1995 for higher secondary (N=4624) and tertiary level (N=4284)

children with poor cultural backgrounds do, which impedes the latter group's performance. Thirdly, teachers are believed to reward children from a high cultural background.

Another theory, Boudon's market model (1974), assumes that children take their parents' social status as a reference point in school continuation decisions. Because children want to reach at least their parents' social position, the costs of obtaining a specific educational programme are lower and the gains higher when one's parents have also attained this educational level. Furthermore, Erikson and Jonsson (1996) assert that the status difference in costs–benefit perceptions is partly due to high-status parents' ability to give their offspring accurate information about the educational system and provide help with mastering the programme. The cultural approach and the market model are both used to make predictions about the impact of parental background on field choice.

Explanation 1: Intergenerational Transmission of Field of Study

Both perspectives give reason to predict intergenerational similarity of field of study. The cultural approach, for instance, suggests that children of medically trained parents have gained the appropriate attitude to master a medical curriculum and are rewarded for studying in this field. Children of teachers will be more interested in becoming teachers themselves, and thereby establish self-selection, and are rewarded highly in teacher education.² When the strict economic perception of costs and benefits of the market model is abandoned, this model provides similar predictions. When children take their parents' status position as a reference for their own aspirations, it is likely that they are attracted to those branches in the educational system that established the social position of their parents. Also, parents provide their offspring with accurate information about the difficulty and labour-market opportunities of their own field of study.³ Parents' ability to help with doing homework is strongly dependent on being educated in the same field. Another perspective holds that parents are role models, influencing children to choose educational fields in the same branch as they are educated or occupied in (Dryler, 1998). As

children particularly see their parent of the same sex as a role model, field choice of sons may be stronger affected by fathers' characteristics, and daughters by mothers'. However, empirical research by Dryler (1998) only partly found evidence for this in Sweden: this 'same-sex effect' was only observed for boys.

In sum, through intergenerational transmission of preferences and aspirations it seems likely that children are attracted to the kinds of subjects typical for their background culture. Limiting ourselves to father's field of study only,⁴ we formulate our first hypothesis as follows:

H1: Children are likely to choose the same field of education as their father.

Explanation 2: Cultural and Economic Capital

Bourdieu ([1979] 1984) distinguishes cultural and economic capital to describe separate social hierarchies. Individuals are positioned in these hierarchies on the basis of their socio-economic and social-cultural characteristics. People who form the economic élite are, for instance, managers and executives, and can be characterized by a life style aimed at luxury and comfort. Their value orientation is traditional, for status quo assures their dominant position in society. The cultural élite, on the other hand, consists of, for example, journalists, teachers, and artists, and distinguishes itself by a refined taste in the beaux arts. Furthermore, the cultural élite provides its offspring with cultural capital, indicating familiarity with the dominant culture of society, through which educational performance is established. Its value orientation is more progressive in comparison to the economic élite. In regard to the choice of educational fields, Hansen (1997) found that economic élite children's likelihood of choosing professional fields (law, medicine, or business administration) was twice as large as their likelihood of choosing academic programmes, like humanities and social sciences. For the cultural élite, this likelihood was 1.5 times as high, indicating a moderately different pattern for the two independent status groups.

The economic élite establishes its position in the social space through economic wealth and the accompanying life-style and values. Furthermore, because knowledge and competences in commercial

and financial matters are the dominant type of resources, children of the economic *élite* are acquainted with those sectors of society where these skills are valuable. It can then be expected that the economic *élite* regards labour-market prospects important when choosing between educational fields. Hence, a specification of our first hypothesis concerning intergenerational resemblance with respect to field of study is that children from economically educated parents are relatively likely to choose economic fields of study, like economics and law. Obviously, parents generate economic capital in more ways than by their education alone. Another way by which the economic resources of parental background can be traced is by looking at the possession of material goods (De Graaf, 1988; Niehof, 1997; Wong, 1998). Our second hypothesis therefore predicts that:

H2: Children of the economic *élite* (i.e. whose parents studied in economic fields and have high levels of material possessions) are likely to attend an economic field of study.

Parental cultural capital is also influential in the choice of a field of study. For Britain, Cheung (1997) examined Bourdieu's cultural approach in regard to the relation between parental characteristics and the choice of a field of education. She found that children of higher-educated parents are over-represented in 'élite' fields of study (medicine and law). Additionally, Cheung tested a hypothesis about the influence of parental participation in high culture on field choice in higher education. She did not find an effect of this kind of parental cultural capital on the choice for *élite* versus middle- and lower-prestige fields. Nor did Davies and Guppy (1997) find an effect of cultural capital, measured by parental cultural participation, on the choice of economically lucrative fields in the USA, i.e. fields related to high incomes. Since 'élite' fields are also the ones offering the greatest financial returns in the labour market, Davies and Guppy's analysis seems in line with Cheung's findings.

Does this mean that cultural capital in the home environment is not important for the choice of a field of study? We think cultural capital does have an effect on field choice, but not on the choice of economically lucrative fields. Rather, children of the cultural *élite* select educational fields where

they acquire cultural capital themselves, e.g. in the humanities. To predict which fields children of the cultural *élite* select, one should therefore evaluate the cultural returns, rather than financial returns, to educational fields. Parental cultural capital has an effect on the educational level of children because personal interests, values, and world-views, i.e. affinity with the dominant culture, are transmitted. In fields where cultural aspects of society are studied, these parental cultural resources are of more help than in fields where non-cultural aspects are the object of study. Furthermore, cultural families appreciate intellectual and aesthetic stimulation, and in cultural fields, like the humanities, this makes up a large part of the curriculum. A specification of our first hypothesis, concerning intergenerational resemblance with respect to field of study, is that children from culturally educated parents are more attracted to cultural fields than other children, so that they will have a relatively high chance of choosing these fields. Parents generate cultural capital in more ways than by education alone. A second indicator of cultural capital has been used by many other social scientists to explain the educational attainment of children: namely, parental cultural participation (e.g. De Graaf, 1986, 1988; Ganzeboom, De Graaf, and Róbert, 1990; Kalmijn and Kraaykamp, 1996; Aschaffenburg and Maas, 1997; Niehof, 1997; Wong, 1998). This leads to our third hypothesis:

H3: Children of the cultural *élite* (i.e. whose parents studied in cultural fields and have a high level of cultural participation) are likely to choose a cultural field of study.

Explanation 3: Socio-Economic Parental Background

A strict interpretation of Boudon's (1974) market model states that the evaluation of costs and benefits is crucial for the choice of a field of study. If this holds for all people to the same extent, everyone would be inclined to choose those fields of study that offered the highest salary afterwards. However, considerations concerning labour-market prospects and, more specifically, income later in the life course, are not equally important to all people. Following Kelsall *et al.* (1972) we expect that, especially in low socioeconomic status (SES) families,

labour-market prospects are a very important reason for choosing a specific field of study. In these strata, personal achievement is mainly evaluated on socio-economic grounds, rather than on cultural ones (De Graaf, 1991). Davies and Guppy (1997: 1427) presented the idea that 'able working class students who have reached college are more likely to view their undergraduate education instrumentally as a route to upward mobility, and are more likely to enroll in lucrative fields that are of a relatively technical nature, such as engineering or business'. In addition, intellectual and aesthetic competences and skills, which are taught in cultural educational fields, are less important for low SES groups than they are for élites. This implies that children of low SES background have little reason to choose cultural fields. But it is not only labour-market incentives that explain low-status children's choice of technical fields. According to Kelsall *et al.* (1972: 53), working-class children 'will tend to prefer technology, and by association, science courses, not only because they are seen to be related to future work, but also because they are likely to lie within the occupational experience of many manual working-class fathers'.

The argument that has been put forward above, of parents' ability to provide information being influential for educational choices, follows the same logic.⁵ Indeed, Davies and Guppy (1997) found a negative effect of parental socio-economic position on the choice of economically attractive fields; lower SES children were especially likely to end up in those fields offering a high income later in life. Although there may be some fluctuations in the labour-market prospects of fields of education, the way people perceive labour-market opportunities of different fields does not necessarily follow these. Sectors that are on the top of the economic pyramid have always been the ones where knowledge of financial matters and technology is dominant. Therefore, it seems plausible that lower-class children choose the economic field that is related to high income (Marini and Fan, 1997; Kalmijn and Van der Lippe, 1997), or the technical/engineering field because its skills are directly related to occupations and reduce the likelihood of unemployment (Dronkers, 1993), and because of the experience of fathers in the technical sector. Research from the USA indicated that there is also empirical proof for

assuming stability in the effects of fields of study on income, at least during the 1980s (Loury, 1997). Our fourth hypothesis is:

H4: Children from low SES backgrounds (indicated by the low social class and educational level of the father) are likely to attend technical and economic fields of study.⁶

Design

Data

We use The Netherlands Family Surveys of 1992 (Ultee and Ganzeboom, 1993) and 1998 (De Graaf *et al.*, 1999) to test our expectations regarding the effects of parental resources on their offspring's choice of a field of study. Both surveys contain data from nationally representative samples. The 1992 survey consisted of 1000 primary respondents (200 single, 800 married or cohabiting), of whom 800 partners were also interviewed. This survey reached a contact rate (share of contacted persons compared to total sample) of 89.6 per cent. Of the contacted sample, 47.4 per cent cooperated with the face-to-face interview (cooperation rate), resulting in a response rate of $(47.4 \times 89.6) = 42.5$ per cent. The 1998 survey consisted of 1142 primary respondents, whose partners were also interviewed (879). The 1998 survey reached a contact rate of 91 per cent, a cooperation rate of 54.4 per cent and a response rate of $(54.4 \times 91) = 49.5$ per cent. Response rates between 40 and 50 per cent are common in Dutch surveys.⁷

The data-sets contain information on several issues, varying from occupational and educational careers, housing history, family formation, to several types of consumption of respondent and their parents. Details of the social and cultural characteristics of the parental background of both spouses are also available. It can be assumed that most spouses have met during or after the highest attained educational level, and therefore did not have an opportunity to affect their spouse's educational preference. We used the data for both primary respondents and spouses, which can be treated as independent samples. We pooled the data-sets of 1992 and 1998. Respondents of at least 25 years of age are selected, because they are likely to have finished their educational career. After deletion of cases with missing values on any

of the variables, the working datafile consists of 2949 respondents.

Measurements

In our focus on the effect of parental resources on the educational field choice of children, we have to realize that parents acquire resources in many different ways. In this study, we concentrated on father's level and field of education, the social class of the family of origin when the respondent was 15 years of age, and cultural and material life-style indicators of both parents, also in the respondent's fifteenth year.

To measure whether a respondent comes from a *lower-class background* we used information about the father's occupation when the respondent was 15 years old. The occupational title, whether the father was self-employed, and his number of subordinates allowed us to construct EGP-classes (Erikson and Goldthorpe, 1992). Classes VI (skilled manual workers), VIIa (semi-skilled and unskilled manual workers) and VIIb (farm labourers) were classified as low; other classes were not.

Several scholars have claimed that cultural capital is indicated by involvement in high-brow culture (e.g. Bourdieu [1979] 1984; DiMaggio, 1982; DiMaggio and Mohr, 1985; Lamont and Lareau, 1988). Although there is some discussion about whether parental cultural behaviour or that of the child should be considered, the cultural behaviour of parents appeared to have a stronger effect on educational attainment than children's behaviour, especially until college level (Aschaffenburg and Maas, 1997). Moreover, we are interested in parental effects on educational choices. Since it is primarily the reading behaviour of parents, rather than their outdoor cultural participation, that constitutes the cultural capital effect on educational performance (Crook, 1997; De Graaf, De Graaf, and Kraaykamp, 2000), we developed a scale for the *reading behaviour of the parents*.

The items that measured parental reading behaviour differed somewhat between the two data-sets. Therefore, we chose to scale parental reading behaviour for each data-set separately, by computing a standardized average score on seven items in 1992, and on four items in 1998. The 1992 items measured whether parents read:

1. popular poetry,
2. literary poetry,
3. country- and historic novels,
4. detective/science fiction/war novels,
5. literature in Dutch,
6. translated foreign literature, and
7. literature in a foreign language.

The reliability of this scale was 0.81 (Cronbach's alpha). The 1998 items measured whether parents read:

1. Dutch literature,
2. detective/science fiction/war novels,
3. informative books (non-fiction or hobby), and
4. literature in a foreign language.

Because reading behaviour was only measured separately for each parent in 1998, we first selected the response indicating the most frequent reading behaviour of one of the two parents. The reliability of this scale was 0.71 (Cronbach's alpha). There is another argument for treating the scales for parental reading behaviour separately for the two data-sets. Although reading items had three answer categories in both, labels to these values differed. In 1992, the categories were 'never', 'at least once a year', and 'several times a year'. In 1998, the categories were 'never', 'sometimes', and 'frequently'. Therefore, we standardized the scale values for each data-set separately. Because there may be cohort differences in the average scale value, e.g. because of the spread of genres in specific time-periods, we standardized the scores on the scales for each of our four distinguished birth cohorts separately.

Since in our data-set the respondent is the child in our model, giving information about his or her parents, it is hard to gain insight into the parents' economic resources. We would like to know the parental income when the child was 15 years old, but with a cross-sectional design this is hard to measure. Another option is to ask respondents about parental possession of material goods (De Graaf, 1988; Niehof, 1997). Wong (1998: 9) prefers this proxy of material wealth to a direct income measure, because 'it takes time to accumulate these items and thus material possession reflects a stable and continuous level of wealth'. Again, the items that measure the material possessions of parents differed between the 1992 and 1998 data-sets. In 1992, the items were whether, at age 15 of the respondent, parents possessed the following items: garage, telephone, car,

washing machine, refrigerator, camera, television, spin-drier, automatic dish-washer, slide projector, fireplace, and central heating. This scale had a reliability of 0.85 (Cronbach's alpha). The items for the 1998 data also referred to the situation when the respondent was about 15 years old. In this data-set, information was available about the parental possession of the following items: car, video- or film-camera, freezer, automatic dishwasher, and VCR. Cronbach's alpha of this scale, indicating the reliability in answer patterns among the respondents, was 0.63. Because the items differed between the two data-sets, we standardized the scale value for each data-set separately. As we did for the scale of parental reading behaviour, we also standardized the scale values within each birth cohort. In this way, we accounted for the fact that the likelihood of having parents who possess these items is strongly related to the period when one is raised due to the general rise in wealth and technological innovation during recent decades.

Educational level of the father had values 1 for primary education, 2 for lower secondary education (VBO and MAVO in Figure 1), 3 for higher secondary education (preparatory to tertiary education, MBO, HAVO and VWO in Figure 1), and 4 for tertiary education (HBO and University in Figure 1). Educational level was assigned according to the highest completed degree. Furthermore, in our additional analysis where we included a control for the educational level of the child, the same classification was applied.

Field of education of father (independent variable) and *child* (dependent variable) was measured in seven categories. In the 1992 data-set, eleven fields were distinguished. The 1998 data had fourteen categories. However, because some fields, and especially cross-classifications between father's and child's field, had only a few observations, we reduced the number of fields to seven clearly distinct branches. The first, 'general education', includes all general tracks (see Figure 1) at primary and secondary level. The second, 'cultural field', consists of three fields that clearly rely on cultural capital: humanities, socio-cultural and artistic programmes. We think these fields can be grouped together because they all provide students with cultural skills and knowledge (Van de Werfhorst and Kraaykamp, 2000). The third field is 'agriculture', and is distinguished for its

expected high intergenerational resemblance through the transmission of property. Technical and engineering subjects, that all relate to mathematics, machinery, and nature (engineering, transport, programmes preparing for skilled manual work, natural sciences, and mathematics), are collapsed into the 'engineering field'. Economics, administration, and law are labelled 'economics/law' and are related to Bourdieu's economic domain (Van de Werfhorst and Kraaykamp, 2000). The sixth field is 'medical/caring', which comprises all programmes related to the physical and personal treatment of other individuals. The 'teacher/educationalist' field, finally, educates students to become a teacher or educationalist. In Table 1 the cross-classification of the educational fields of fathers and children is presented.

As we see from Table 1, there were large differences among the educational fields with respect to the number of observations. Of all respondents, 27 per cent were educated in the general field, while this share is 58 per cent for the fathers in our data. As higher educational levels imply the choice of a field other than general, this difference is largely a consequence of the educational expansion that took place in the Netherlands. Other differences in the percentage educated in a specific field between the two generations can be understood in terms of gender segregation among fields of study. For instance, the difference in the percentage educated in the medical and caring field (2 per cent of fathers and 16.8 of children) is partly due to the fact that females are over-represented in this field. Also, among fathers 6.5 per cent were educated in the agricultural field, whereas this was the case for only 3.8 per cent of children. A control for gender in our models is therefore highly necessary. Table 1 also shows the within-row percentages, which indicate, given a father educated in a specific field, the percentage of children classified in the same field. This percentage varies between 14.7 (agriculture) and 33.1 (general education), and is thus higher than average ($1/7 = 14.3$ per cent). The overall share of students classified in the same field of education as the father is 29 per cent.

Research has found that men and women differ strongly in their choice of educational fields (Jacobs, 1995). We included a measure for gender (male=1, female=0) in our analyses in order to see whether this is also the case in the Netherlands. We do not

Table 1. *Cross-classification of fathers and children in seven fields of study: within-row percentages (N=2949)*

Father's field of study	Child's field of study							Total (N)
	1	2	3	4	5	6	7	
1. General	33.1	5.3	3.6	21.2	14.9	16.4	5.4	100 (1709)
2. Cultural	15.5	15.5	1.7	20.7	20.7	13.8	12.1	100 (58)
3. Agriculture	17.3	5.8	14.7	16.8	21.5	19.4	4.7	100 (191)
4. Engineering	20.4	9.1	1.9	25.5	19.4	17.4	6.3	100 (671)
5. Economics, Law	13.6	10.7	1.7	15.8	27.7	15.3	15.3	100 (177)
6. Medical, Caring	20.0	14.5	1.8	14.5	20.0	21.8	7.3	100 (55)
7. Teacher, Educational	14.8	10.2	3.4	11.4	21.6	14.8	23.9	100 (88)
Total	26.9	7.1	3.8	21.1	17.5	16.8	6.8	100
N	793	208	111	623	517	495	202	2949

explore the issue of the differing parental effects for sons and daughters.⁸

Birth cohort is operationalized in four categories: 1914–35, 1936–50, 1951–65, and 1966–73. Because our data force us to restrict the number of parameters, we estimated a monotonous effect of birth cohort, rather than treating each cohort separately.

Conditional Logit Analysis

Our dependent variable is a nominal variable with more than two categories, namely the field of education. Furthermore, we have explanatory variables at the individual level, which are partly of a nominal nature, like father's field of study, and partly of an interval level, like parental reading behaviour and material possessions. Because we do not deal with only nominal independent variables, standard log-linear analysis cannot be used to specify our model. A more suitable approach is a multinomial logistic (MNL) design (Agresti, 1990), in which interval and nominal variables can be modelled as predictors of a nominal dependent variable with three or more categories. However, standard multinomial logistic regression analysis has some drawbacks (Lammers, Pelzer, and Hendrickx, 1996). First, for each independent variable the same reference category must be chosen on the dependent variable. Furthermore, MNL models imply that for all positions on the independent variables, all contrasts of being in one category versus the reference are estimated. In this article this suggests that for all positions on the (nominal) independent variables, the odds of end-

ing up in all fields of education versus a reference field would be estimated. However, we are not interested in which field of education is chosen when one is mobile; rather we are interested in the odds of ending up in the same field as the father versus any other field. A conditional logit model (CL) provides a solution to the problem of restricted contrasts (Logan, 1983; Breen, 1994). CL models are a flexible version of MNL models, because they allow multiple response functions on the dependent variable, and selections can be made for which independent variables specific contrasts are estimated. In the case that only one response function is chosen and all independent variables have the same contrasts, MNL and CL models produce identical results (Hendrickx and Ganzeboom, 1998).

Another advantage of using log-linear models is that associations can be observed that are independent of the overall distribution in the educational fields. Especially for our research problem this is of importance. Since there is an unequal distribution among the seven educational fields, as we saw in Table 1, and there are differences between the two generations in this distribution, it is important to estimate margin-free parameters. In this way, it is not so much the overall chance of being classified in a specific category that is modelled, but the likelihood of being classified in a field given a specific distribution.

In all of our models, we estimate the likelihood of choosing the same field as the father, compared to any other field. This model is comparable to quasi-independence models in research on

intergenerational social class mobility (Goodman, 1984). Immobility-parameters δ_j are estimated, which refer to the logit of being classified in the same field of education as the father, versus any other field. Since the probabilities are a non-linear function of the explanatory variables, the logit form is presented, in which the logit of a respondent having response j versus the reference category J is a linear function of the explanatory variables. A general specification of our models is as follows:

$$\log\left(\frac{p_j}{p_J}\right) = \alpha_j + \delta_j + \sum_{k=1}^K \beta_{jk} X_k \quad (1)$$

Where:

- p_j probability of being classified in field j
- p_J probability of being classified in reference field J (general education)
- α_j intercept
- δ_j immobility-parameter
- $\beta_{jk} X_k$ vector of explanatory and control variables.

Results

In Table 2 odds ratios are presented for our first model, the quasi-independence model. Inspection of the χ^2 -distributed G^2 , shown in the lower part of Table 2, indicates an improvement of the fit compared to a model with only intercepts. The intercepts, indicating the distribution among fields of study, indicate that the socio-cultural, agricultural, and educational fields were under-represented in our data, compared to the reference group of the generally educated. People educated in engineering were slightly over-represented, after controlling for intergenerational similarity of educational field. All immobility odds ratios were larger than 1, indicating a relatively strong likelihood of choosing the same field as the father. Some fields showed a high level of intergenerational resemblance: general education, culture, agriculture, economics/law, and the educational field. For example, for those with a father educated in the agricultural field, the odds of choosing agriculture versus any other field was almost five times as high

Table 2. Odds ratios for obtaining the same field of education as the father versus any other field (N=2949; standard errors of logits in parentheses)

Model I	Child's field of study						
	1	2	3	4	5	6	7
Intercept	Ref.	0.402*** (0.101)	0.176*** (0.131)	1.198** (0.090)	0.987 (0.086)	0.976 (0.085)	0.369*** (0.103)
Father's field of study							
1. General	2.034*** (0.092)						
2. Cultural		2.149** (0.370)					
3. Agriculture			4.820*** (0.234)				
4. Engineering				1.116 (0.106)			
5. Economics, law					1.598*** (0.176)		
6. Medical, caring						1.181 (0.331)	
7. Teacher, educational							4.030*** (0.262)

Note: $\Delta\chi^2=154.04$; $df=7$; $p=.000$ (fit improvement compared to intercept Model).
 *= significant at 0.10 level, **=significant at 0.05 level, ***significant at 0.01 level (two-tailed tests).

Table 3. Family characteristics and the choice of field of study with no control for child's educational level: odds ratios ($N=2949$; standard errors of logits in parentheses)

Model II	Child's field of study						
	1	2	3	4	5	6	7
Intercept	Ref.	0.054*** (0.355)	0.099*** (0.420)	0.207*** (0.283)	0.119*** (0.286)	0.107*** (0.295)	0.132*** (0.341)
Father's field of study							
1. General	1.341** (0.134)						
2. Cultural		0.887 (0.391)					
3. Agriculture			6.257*** (0.260)				
4. Engineering				1.198 (0.130)			
5. Economics, law					1.434* (0.190)		
6. Medical, caring						0.885 (0.357)	
7. Teacher, educational							3.056*** (0.294)
Cohort 1-4	Ref.	1.331*** (0.101)	1.163 (0.130)	1.331*** (0.074)	1.750*** (0.075)	1.688*** (0.077)	1.114 (0.099)
Male 0/1	Ref.	1.159 (0.165)	7.870*** (0.266)	20.760*** (0.175)	2.042*** (0.119)	0.219*** (0.157)	0.852 (0.168)
Father's educ. level	Ref.	1.501*** (0.104)	0.783* (0.147)	1.068 (0.089)	1.221** (0.087)	1.116 (0.089)	1.167 (0.106)
Lower-class family 0/1	Ref.	0.583** (0.211)	0.490*** (0.251)	0.983 (0.136)	0.803 (0.137)	0.877 (0.136)	0.399*** (0.213)
Parent. reading behaviour	Ref.	1.622*** (0.087)	1.161 (0.125)	1.119 (0.071)	1.101 (0.069)	1.140* (0.071)	1.307*** (0.090)
Parent. material possession	Ref.	0.828** (0.088)	0.951 (0.112)	1.050 (0.062)	1.123* (0.062)	1.038 (0.065)	0.912 (0.088)

Note: $\Delta\chi^2 = 1245.16$; $df = 36$; $p = .000$ (fit improvement compared to Model I).

*= significant at 0.10 level, **= significant at 0.05 level, *** significant at 0.01 level (two-tailed tests).

as the same odds for children of non-agricultural fathers. Since fields of study differ in the rewards they offer in the labour market, with those educated in the economics field having an advantageous position, and teachers having worse prospects, social inequality is transmitted from one generation to another. Hypothesis 1, which predicted a relatively large chance of choosing the same field of education as the father, found support in our data.

In Model II (Table 3) we added gender, cohort, and family characteristics. Inspection of the lower part of Table 3 shows a strong fit improvement compared to Model I ($\Delta\chi^2$ of 1245.16 with 36 degrees

of freedom). The odds ratios that represent the resemblance with respect to field of education were hardly affected by the inclusion of other explanatory variables in the model. After controlling for differences in other individual and family characteristics (gender, cohort, father's educational level, lower-class background, parental reading behaviour, and parental material possession), children still demonstrated a preference for choosing the same field of education as their father. Apparently, independent of various other important explanatory variables, field-of-study preferences are transmitted from one generation to another.

The effects of gender indicate a strong segregation among fields of study: men were over-represented in the agricultural, engineering, and economics/law fields, compared to the gender distribution in the reference category of general education. Women were over-represented in the medical/caring field. This segregation, frequently found in research on gender inequality in education (e.g. Stromquist, 1993; Jacobs, 1995, 1996; Dryler, 1998; Jonsson, 1999) also exists in the Netherlands.

Our second hypothesis predicted that children of the economic elite were likely to choose fields on the basis of labour-market prospects. When we look at the results in Table 3, we see that children of parents with high levels of material wealth were under-represented in the cultural field (odds ratio=0.83) and over-represented in the economics/law field (odds ratio=1.123). When we compare the odds of attending these two extreme fields of study in Bourdieu's sense, material wealth in the home environment decreased the probability of attending the cultural field versus the economics/law field with an odds ratio of 0.73, below 1 at the 5 per cent level.⁹ Contrary to our expectations is the finding that they do not enrol in technical fields relatively often. These findings are compatible with the perspective of independent status groups whose members strive for elite positions in the corresponding hierarchy. So there is some evidence that economic capital in the family, indicated by father's field of education and the material possessions of the parents in the formative period of their children's lives, affects the choice of a specific field of education, either positively or negatively. This confirms our second hypothesis, which predicted a positive effect of parental economic capital on the choice of economic fields.

In order to test hypothesis three, which predicted a positive effect of parental cultural capital on the choice of cultural fields of study, we look at the effects of father's field of education and parental reading behaviour. We see that, again in Table 3, children of fathers educated in the teaching field generally chose the same specialization, indicating intergenerational reproduction of this field with, according to Bourdieu, a high degree of cultural capital. The effects of parental reading behaviour indicate that children from frequent readers chose the cultural, caring, and educational field relatively

often. The cultural capital effect, like the economic capital effect, suggests that independent status groups exist, whose members strive for elite positions in the hierarchy that they are familiar with, rather than for elite positions in the 'other' hierarchy. Children of the economic elite enrolled in fields where their family capital and related knowledge and skills are of great help, and stayed away from fields where cultural capital is conducive to success. The cultural elite, on the other hand, transmitted its preference and cultural capital such that their children chose educational programmes where they increase their already high level of cultural resources. Since fields of study can be regarded as places where predominantly either cultural or economic resources are generated, the effects of parental economic and cultural capital also relate to the high level of intergenerational resemblance in the economic and educational fields.

After controlling for intergenerational transmission of field of study and other parental characteristics, father's educational level still had a positive effect on the choice of cultural fields of study, again pointing to the usefulness of parental cultural capital in these specialisms. Another interpretation of this effect is that high-status children are over-represented because low-status children have no reason to choose a cultural field. The other indicator of low socio-economic status, low EGP-class, also decreased the probability of entering the cultural and educational fields. In low-status groups, labour-market prospects are an important reason, and intellectual and aesthetic stimulation less important reasons, for choose educational fields. The positive effect of father's educational level on the choice of economic fields (odds ratio=1.221), however, does not correspond to our expectations that low SES children often end up in this field. In general we found support for hypothesis four, that predicted low SES children would choose technical and economic branches. This corroboration, though, is mainly based on their under-representation in cultural and educational fields.

Are Parental Effects on Field Choice Disturbed by Children's Educational Level?

Above we saw that cultural and economic elites are intergenerationally reproduced by the fields of study

of their children. We also found that parental socioeconomic status affected the choice of educational fields in the Netherlands. However, part of these effects may be influenced by the fact that fields of study are not equally distributed among educational levels. For instance, as cultural capital increases the probability of entering higher educational levels, the positive effect of parental cultural capital on the choice of cultural fields of study that appeared in Table 3 may partly be due to the fact that these fields are often found in tertiary education. Also, the negative effect of SES on cultural fields may in part be understood from the fact that low-status children generally achieve lower educational levels. In addition, the intergenerational resemblance in the general field, mostly at lower levels, may also be an artefact of intergenerational educational-level immobility. Therefore, we conducted an additional analysis where we included child's educational level as an independent variable in the model. Table 4 shows the odds ratios.

The first important finding of Table 4 is that the intergenerational reproduction of field of study was hardly affected by the inclusion of child's educational level in the model. Children from generally educated backgrounds had high odds of ending up in general education themselves. Also the intergenerational resemblance in the agriculture and educational fields remained the same. The resemblance in the economics/law field, that was slightly significant in Table 3, was no longer significant after controlling for educational level.

When we observe the other explanatory variables and corresponding odds ratios, some notable differences compared to Table 3 were found. First, the positive effects of father's educational level on the choice for the cultural and economics/law fields turned into negative effects. Children of highly educated fathers were therefore over-represented in the cultural and economic fields because they achieved higher educational levels. The effects of low EGP-class also changed. When we control for the educational level of the child, children of low-status parents do have a high likelihood of entering the engineering, economics, and medical-care fields, as hypothesis four predicted. The effect of parental reading, as an indicator of cultural capital in the home environment, appeared to affect the choice of cultural fields positively in Table 3, whereas in

Table 4 cultural capital decreased the probability of entering the engineering, economic, caring, and educational fields. Both the results with and without control for educational level indicate that children of the cultural elite chose fields where they acquire cultural capital themselves and resisted entering fields where a divergent type of capital is generated. The effects of material possession, a measure of parental economic capital, indicate that the under-representation of the economic elite's children in the cultural field was not an artefact of the child's educational level. A control for educational level shows that these children were also significantly under-represented in the medical-care and educational fields. In general, hypotheses one to three, which related field choice to father's field, economic, and cultural capital, respectively, found support both with and without control for educational level. Hypothesis four, that predicted low SES children would choose technical and economic fields, was even more strongly supported by our model that controlled for educational level. This is probably caused by the fact that, in tertiary education, high-ability children choose technical subjects, but not at lower levels. At lower levels, the technical field is particularly popular among average or lower achievers, for it hinders a short route to tertiary education (see Figure 1). So in a model without controls for educational level (Table 3), the two effects work against each other and result in a non-effect of (ability-related) social class. Once we do control for ability (in the form of educational level), we see that children of lower-class backgrounds often choose the technical field.¹⁰

Conclusion and Discussion

In this paper, we analysed the extent to which family background affects the choice of a field of study in the Netherlands. First, we focused on intergenerational resemblance of field of study: do children often choose the same field of study as their father? Following up on this finding of intergenerational resemblance of educational field, we analysed the impact of other family characteristics that have been shown to be relevant for educational attainment in previous research. To explain the choice of a field of study, we applied theories that have proven their value for the explanation of

Table 4. Family characteristics and the choice of field of study controlled for child's educational level: odds ratios ($N=2949$; standard errors of logits in parentheses)

Model II	Child's field of study						
	1	2	3	4	5	6	7
Intercept	Ref.	0.000*** (0.779)	0.008*** (0.543)	0.014*** (0.388)	0.002*** (0.427)	0.004*** (0.414)	0.000*** (0.903)
Father's field of study							
1. General	1.848*** (0.185)						
2. Cultural		0.765 (0.403)					
3. Agriculture			5.860*** (0.261)				
4. Engineering				1.234 (0.133)			
5. Economics, law					1.356 (0.193)		
6. Medical, caring						1.005 (0.368)	
7. Teacher, educational							3.586*** (0.325)
Child's Educ. Level	Ref.	86.647*** (0.208)	8.887*** (0.168)	9.734*** (0.118)	18.780*** (0.128)	13.438*** (0.127)	171.09*** (0.241)
Cohort 1-4	Ref.	0.693*** (0.126)	0.714** (0.139)	0.802** (0.089)	0.967 (0.094)	0.923 (0.094)	0.533*** (0.130)
Male 0/1	Ref.	0.540*** (0.217)	5.936*** (0.279)	15.544*** (0.192)	1.313* (0.158)	0.152*** (0.187)	0.335*** (0.228)
Father's educ. level	Ref.	0.685*** (0.134)	0.466*** (0.166)	0.621*** (0.116)	0.639*** (0.117)	0.607*** (0.118)	0.502*** (0.138)
Lower-class family 0/1	Ref.	1.241 (0.251)	0.753 (0.265)	1.567*** (0.161)	1.396** (0.169)	1.335* (0.165)	0.906 (0.261)
Parent. reading behaviour	Ref.	0.918 (0.108)	0.810 (0.134)	0.766*** (0.086)	0.712*** (0.088)	0.778*** (0.089)	0.688*** (0.114)
Parent. material possession	Ref.	0.671*** (0.106)	0.826 (0.121)	0.916 (0.076)	0.955 (0.079)	0.876* (0.080)	0.723*** (0.110)

Note: $A\chi^2 = 1790.75$; $df = 6$; $p = .000$ (fit improvement compared to Model II).

*= significant at 0.10 level, **= significant at 0.05 level, *** significant at 0.01 level (two-tailed tests).

inequality of educational opportunity. From Bourdieu's cultural approach (Bourdieu [1979] 1984; Bourdieu and Passeron [1977] 1990) we deduced that tastes and preferences are transmitted from parents to children. Children's preference for a field of study is therefore partially established in the cultural and economic class structure. Based on Boudon's market model (1974) we argued that children take their parents' education as a reference for own aspirations. Parents are especially able to provide their offspring with information about the field of study

they were educated in themselves. When children take their parents' social position as a reference for their own educational choices, they may be very likely to enrol in the same field of study. Furthermore, when one's parent is educated in a specific field, he or she will have reliable information about the opportunities in the labour market of this particular field. Therefore, the perception of costs and benefits of a specific field, crucial in the market model, will be evaluated to the most reliable extent when the parents are educated in this field.

With respect to the intergenerational resemblance of field of study, we found a 'reproduction' between generations. With this general finding, it seems that preferences are intergenerationally transmitted. In some fields, the odds ratio for choosing the same field as the father is stronger than in other fields. High odds ratios were found in the general, agricultural, and educational fields. Low odds ratios were found in the cultural and caring fields, which may be caused by the fact that parents, who are educated in these fields with limited labour-market value and heavy workloads, discourage their children from choosing the same field. The intergenerational resemblance of field of study is hardly affected by other family characteristics. Family characteristics that independently influenced the choice of a field of study were social-class background, father's educational level, and economic and cultural capital. Lower-class children were over-represented in engineering, economics, and caring subjects. Children of highly educated fathers were over-represented in the cultural field. The availability of cultural capital in the family made the choice of a cultural field most likely and the choice for general and economic fields least likely. Children from high-economic-capital backgrounds also reproduced their family capital, for them indicated by choosing the economics/law field more often and the cultural field infrequently. There certainly is ground for the assumption that 'persisting status group cultures influence educational choices' (Hansen, 1995: 111). The effects of parental resources on the choice of educational fields were not heavily affected by the differential distribution of fields among educational levels.

Our analysis of family background effects on the choice of a field of education revealed new insights into the intergenerational transmission of inequalities and thus into societal openness. It suggests that looking at background effects on educational level alone does not give complete information about the way educational inequalities are transmitted from one generation to another. Especially when a large share of the population attends higher education, implying educational-level mobility for many, the question how parents influence their offspring's field of study is important. Since field of study influences many chances in life – such as finding a job, earning high wages, participating in legitimate culture, and subscribing to liberal

values – a high level of intergenerational transmission of field of study indicates a closed society with respect to crucial boundaries, whereas educational-level mobility would indicate openness.

Previous research on the relationship between family background and field choice mostly takes the association of fields of study with labour-market outcomes as a starting point. For instance, Davies and Guppy (1997) scaled fields according to the mean monthly income later in life, included as a dependent variable in regression models. Cheung (1997) distinguished elite fields from intermediate and low-prestige fields, also implicitly relying on future chances in the labour market. Neither of these studies found an effect of parental cultural capital on field choice, which is, in our opinion, due to a misinterpretation of Bourdieu's theory of independent status groups ([1979] 1984; Bourdieu and Passeron [1977] 1990). Our argument is that children of the cultural elite are not so much inclined to make educational choices that directly affect their opportunities in the labour market. Rather, they tend to reproduce their family capital by choosing cultural fields. This implies that the increase in the relevance of cultural capital in society, as assumed by Bourdieu, does not inspire the cultural elite to establish high-status positions in general, but high-status positions in the cultural hierarchy. A major improvement offered by this study is that we hypothesized and tested empirically the effect of cultural capital on the choice of cultural fields. Indeed, we found proof for the assumption that independent status groups exist that strive for elite positions in the familiar hierarchy. Children of the cultural elite do not end up in fields with high incomes later in life, but choose those fields where they acquire the greatest cultural capital.

Another improvement of this study is that we were able to use information about the field of study of fathers additional to other family characteristics. In this way, intergenerational transmission of preferences can be observed directly. However, to have enough people in the data-set who were educated in the same field of study as their father, we could not distinguish more than seven fields. Consequently, we had to collapse fields together that would provide interesting test-cases on their own. For instance, the medical and caring fields were clustered, which might underestimate

intergenerational reproduction of medical doctors. The clustering of the law and economics fields restricted the possibility of observing resemblance in the high-prestige law field. Future data collections aimed at understanding social inequality in Western societies should therefore include measures of field of study of parents and children. When large enough data-sets are gathered, more detailed distinctions may be used to model intergenerational resemblance of field of study.

Notes

1. Many secondary schools in the Netherlands offer a general programme of one or two years in order to postpone the moment of decision about which type of school to choose. Many of these programmes are combinations of the three general secondary tracks, thereby dividing general from vocational types of study already after primary education.
2. This understanding of cultural resources is consistent with DiMaggio's (1991) approach when he alleges that different types of cultural resources are applicable in different segments of society. This is opposed to the concept of cultural capital, which, according to DiMaggio, only reflects affinity with High Culture as Bourdieu ([1979] 1984) asserts.
3. Obviously, information that parents provide about labour-market opportunities of their own, low-achieving, field of study can also work negatively on the choice of this field.
4. As educational expansion has occurred relatively late for women in the Netherlands, about 72% of the mothers of respondents of our nationally representative sample have not obtained any specialized schooling, and are hence categorized in the 'general' field. For fathers this problem is less severe, with 58% classified in the general field. Additionally, mother's field of education had more missing values. Our datafile forces us to restrict the number of parameter estimates, so we have to choose between father's and mother's field of study. Therefore, we analyse effects of fathers only. Findings by Dryler (1998) that indicate a stronger effect of father's characteristics than of mother's on the choice of educational field of both sons and daughters in Sweden, support this choice.
5. Not only is parents' ability to provide information an additional explanation to labour-market incentives, but also the fact that parents serve as role models (cf. Dryler, 1998) can explain the technical choice of low SES children.
6. Another construct, which is also SES-related, may be important for the choice of a specific educational field: intelligence. Children with a high IQ may end up in the exact or medical sciences at university relatively often. At lower levels, however, clever children will stay in the general field as long as possible, rather than choose a technical or caring vocational programme, for this provides the shortest route to tertiary education. Jonsson (1999) showed that absolute and comparative ability in specific subjects enhanced the chance of choosing a subsequent field in the same branch in secondary education. Unfortunately, our data do not allow us to control for IQ or other ability test scores. We do control for educational level, though, which is also strongly related to ability and IQ.
7. It should be realized, however, that inclusion of partners of primary respondents to the dataset has a consequence for the representativeness of the sample relative to the Dutch population. Weighting the data for the over-representation of married or cohabitating individuals did not change the results of the analyses.
8. Although it has been argued that girls benefit more from cultural capital in education than boys do (DiMaggio, 1982), we did not find clear evidence for this with respect to field choice. We only found that the negative effects of parental reading on the choice of agriculture and of father's educational level on agriculture and engineering were more substantial for men than they were for women. Parental material possessions did not affect sons and daughters differently at all. It is possible that the limited number of significant interaction-effects may be due to few observations in some educational fields.
9. This odds ratio can be computed by subtracting the log-odds of (economics versus general) from (cultural versus general) (the result is B), where e^B gives the odds ratio.
10. It may seem odd to observe substantial differences in odds ratios between the model without (Table 3) and with control for educational level (Table 4) on the one hand, and still interpret the results as both supporting our hypotheses on the other. It should be noted here that the odds ratios are set off against the reference category 'general education' which is strongly (negatively) related to educational level. If the technical/engineering field had been chosen as a reference category, which is more spread out across educational levels in the Netherlands, differences in odds ratios between the two models would have been small. In short, the odds ratios of any independent variable were highly comparable in Tables 3 and 4.

when any two fields are contrasted, except for general education. This indicates that the odds ratios for an independent variable are highly comparable in Tables 3 and 4. Comparison of estimates of two logistic models with a different set of independent variables should be made carefully, though, for the variance in the dependent variable differs between the two models (Long, 1997: ch. 3).

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