Studies in Higher Education

ISSN: 0307-5079 (Print) 1470-174X (Online) Journal homepage: https://www.tandfonline.com/loi/cshe20

# Individual and institutional factors in the tendency to drop out of higher education: a multilevel analysis using data from the Konstanz Student Survey

Werner Georg

**To cite this article:** Werner Georg (2009) Individual and institutional factors in the tendency to drop out of higher education: a multilevel analysis using data from the Konstanz Student Survey, Studies in Higher Education, 34:6, 647-661, DOI: 10.1080/03075070802592730

**To link to this article:** https://doi.org/10.1080/03075070802592730

*Studies in Higher Education*
Vol. 34, No. 6, September 2009, 647–661

Routledge
Taylor & Francis Group

# Individual and institutional factors in the tendency to drop out of higher education: a multilevel analysis using data from the Konstanz Student Survey

Werner Georg*

*Department of History and Sociology, University of Konstanz, D-78457 Konstanz, Germany*

Since the 1970s, research on why students discontinue their university studies has been a major topic, especially in American educational sociology and university socialization research. With the aid of multilevel models, this contribution examines the relationship between institutional and individual factors in influencing the tendency to drop out. The data employed here from the Konstanz Student Survey are typical of German universities. This study shows that students do not contemplate dropping out because of stress or a lack of ability, but primarily because of weak commitment to their course of study in general, or to the specific field of study in particular. The institutional influence on the tendency to drop out is thus modest, being limited to maintaining or improving teaching quality.

## Theoretical background

One of the main reasons why Germany is introducing new BA and MA programmes, besides compatibility with other countries' university programmes, is to speed up the completion of the first university degree and to reduce the number of dropouts. With increasing evaluation pressure and the spread of economic rationality in the university system, dropout rates have become a significant evaluation criterion. The perspectives of different social scientific disciplines on dropout are quite varied: while educational economics is above all interested in the efficiency of educational investments, educational sociology approaches dropout above all from the perspective of inequality at the university, due to different social backgrounds and the failure of university socialization. In international comparisons, the Organization for Economic Cooperation and Development (OECD) focuses on dropout as an indicator of the quality of the national educational systems (OECD 2006, 55).

The classic research on dropout appeared in the 1970s (Spady 1970; Tinto 1975). These approaches were more akin to a heuristic model than a detailed theory; however, they had a formative influence on subsequent research. The models of Spady and Tinto implicitly relate to Durkheim's anomie theory (Durkheim 1973, 1992), in so far as they focus primarily on unsuccessful integration processes in the university system as the causes of dropout. Tinto distinguishes more clearly than Spady between integration into the academic system (grades and intellectual development) and the social system of the university (peer group and subject culture). In empirical replications of Tinto's model, Pascarella et al. (Pascarella and Terenzini 1983; Pascarella,

*Email: werner.georg@uni-konstanz.de

ISSN 0307-5079 print/ISSN 1470-174X online

DOI: 10.1080/03075070802592730
http://www.informaworld.com

Terenzini, and Wolfle 1986) criticize the inadequate consideration of institutional contexts in the decision to drop out.

In German research on this topic, subject cultural research (which deals with the differing lifestyles of individual subject groups, as reflected in the everyday distinctions made by students) plays a major role, where Bourdieu's habitus theory is central (Apel 1989; Bourdieu 1986; Bourdieu and Passeron 1971; Huber et al. 1983; Lange-Vester and Teiwes-Kügler 2006; Preißer 1989). The core assumption is that study programmes are defined, and differ not only through the transmission of specific subject knowledge, but also through a subject-specific lifestyle and habitus, as well as different cognitive styles and evaluation patterns. In several studies comparing different subjects, it was possible to demonstrate not only different everyday aesthetic preferences (Apel 1989), but also different value orientations (Multrus 2004; Windolf 1990).

Subject cultural research, in accordance with Bourdieu's theory, assumes that students from the upper classes have a better habitual fit between culture of origin and university subject culture (Zinnecker 1989), and hence enjoy a competitive advantage in comparison with students from lower social strata. Students from the upper strata, according to Bourdieu, have internalized more cultural capital, which can be operationalized, for example, by attendance at high-cultural events or by familiarity with high culture. Several studies have shown the effects of the family of origin's cultural capital on success in the educational system (Di Maggio 1982; De Graaf 1986; De Graaf and De Graaf 2006; Georg 2004, 2005).

The points of contact of Tinto's model (1975) with subject cultural research can be seen in that both assume an origin-specific fit with the university system (be it on the levels of grades and intellectual development, or of peer contacts and the subject culture) as a precondition for success. If there is an inadequate fit between the two areas, a student from the lower strata must, besides acquiring knowledge, also successfully achieve acculturation with regard to integration into the social system of the university or into the subject culture. If this process fails, it is assumed, the probability of dropping out simultaneously increases.

The models of Spady and Tinto do not reduce the influence of individual factors on dropping out to social origins, but rather supplement them with academic potential (i.e. learning and working styles, along with intellectual competence), normative consistency (e.g. motivation for the choice of subject), as well as institutional and aim related commitment. With Pascarella et al. (Pascarella and Terenzini 1983; Pascarella, Terenzini, and Wolfle 1986), we must critically point out that Tinto's model reduces the decision to drop out to a purely individual attribute, without considering the institutional characteristics of the subject area, such as, for example, the extent of regulation of the programme of study, the transparency of the examination regulations, and the quality of teaching and advising. In taking action at the level of the university or subject area, it is important to isolate those influencing factors that contribute to reducing the dropout rate.

Besides the sociological, there are also psychological explanatory approaches to dropping out (Entwistle, Mayer, and Tait 1991; Gerdes and Mallinckrodt 1994; Stage 1988; Tracey and Sedlacek 1987). These approaches assume that the reasons for dropping out can be found in the student's personality. Of relevance in this respect are cognitive abilities, capabilities for achievement, academic self-concept and motivational aspects. According to Ethington (1990), academic performance and staying at the university can be predicted from expectations of success and the subjective value

attached to a university degree. The expectation of success is influenced by the student's academic self-concept.

## Previous research

One of the first difficulties encountered in research on dropout is how to operationalize the concept. A student can simply terminate a course of studies he/she has begun without completing a degree programme, but this must be differentiated from cases where students simultaneously change their subject and university, change only their university, or interrupt their studies for various reasons. According to the 2006 Hochschul Informations System (HIS) study of dropout (Heublein, Schmelzer, and Sommer 2008), in 2004 the dropout rate was 24% at universities and 17% at universities of applied sciences. There were clear differences among subject groups: while in the language and cultural disciplines 43% of all students broke off their studies, in medicine only 8% did so. In 2006 the German dropout rate was 21% overall: 22% at universities and 21% at universities of applied sciences. The subject-specific dropout rates ranged from 33% in the cultural disciplines to 8% in medicine. The dropout rate was higher for bachelor programme students (at 30%) than for other courses of study (Heublein, Schmelzer, and Sommer 2008). In international comparisons, Germany is in the middle range of the countries studied – tenth of 21 countries – according to OECD calculations (OECD 2006: 56).

Besides the factors named in the models of Spady (1970) and Tinto (1975), a large number of additional factors have been found to contribute to dropout. A study by HIS, for example, identified the following factors: excessive demands, distance from university, a desire for practical experience, poor labor market chances, a critique of the pedagogical abilities of the teaching staff, financial and family reasons (Lewin 1999, 20). On the basis of a 1998 survey by AG University Research, Bargel (2003) describes a profile of potential university dropouts, pointing in particular to achievement, motivation for the choice of subject, coping with demands and examinations, contact problems and anonymity, stress caused by university study and life situation, as well as a student's mental state. In an overview of the state of international research, Schröder-Gronostay (1999, 222) distinguishes the following groups of factors: demographic variables, socio-economic variables, family-related variables, psychological variables, pre-university variables, characteristics of the course of studies, achievement characteristics, academic variables, as well as characteristics related to institutional and extra-university factors.

Based on a factor analysis of motives for discontinuing studies, Heublein, Spangenberg, and Sommer (2003, 10) identify a total of eight dimensions: problematic study conditions, achievement problems, professional reorientation, inadequate study motivation, family and financial problems, examination failure and illness. Of these, problematic study conditions (viewed by 71% of those sampled as important for dropping out), professional reorientation (64%) and inadequate study motivation (61%) are the most significant. Heublein, Spangenberg, and Sommer also isolate a multiplicity of conditioning factors for dropping out, including social origin, school deficiencies, problematic choice of a course of study, willingness and ability to succeed, social integration, financing for the course of studies, as well as gainful employment during the period of study (45).

Already it is becoming clear that a mono-causal approach cannot adequately explain the phenomenon of dropout, but rather that several bundles of influences must

be taken into account. Of particular significance from the perspective of institutional action may be the consideration of the interplay between institutional conditions and individual decisions and characteristics. As Schröder-Gronostay points out: 'the question frequently arises of whether dropping out is determined more by the student's personality or the institutional circumstances of the university' (1999, 226, translation by the author). The study of this interrelationship is, however, not methodologically trivial, for, if one makes inferences back from the aggregate characteristics of the university, or of the subject area, to individual characteristics and decisions, one risks committing the ecological fallacy (Robinson 1950). It can be shown statistically that the inference from distributions on an aggregate level, be it a country or an institution, to an individual behaviour or characteristic is not appropriate and leads to misleading interpretations, the so called 'ecological fallacy'.

**Data and measurements**

The Konstanz Student Survey was first conducted in the winter semester 1982/83. It collected data representative for all German universities and universities of applied sciences. Since then nine further surveys have been made at intervals of between two and three years, so that the tenth survey was conducted in the winter semester 2006/07. This has, however, not yet been released, so for this analysis we use the ninth survey of the winter semester 2003/04, which had a response rate of 36.4%. The aim was to collect a representative sample of the experiences of university students and their orientations toward study, profession and politics as part of an ongoing observation of society (Peisert, Framhein, and Bargel 1984).

As a result of the lack of a data set on students, a simple random sample of students was not possible. Instead, a two-step selection procedure was used. First, there was a structured selection of institutions of higher education, categorized by state, date of foundation and subject offerings. The study did not collect data from a large number of institutions of higher education; rather for each institution of higher education selected an adequate number of students was surveyed to allow differentiated, comparative analyses. The number of institutions was intentionally kept small, with care taken to ensure that the institutions surveyed were often located in the same local settings. Second, the group to be contacted was selected in each case by random sampling from the German students at the chosen higher educational institutions. They received a covering letter with a questionnaire, with the mailings distributed over the course of the semester.

The Federal Ministry for Education and Research (Bundesministerium für Bildung und Forschung) provided the main source of support, supplemented by funds from the state of Baden-Württemberg. The substantive focus of the survey was on all 12 topics:

- professional training and access to higher education institutions;
- choice of training and expectations from higher education;
- teaching situation and quality of study programme;
- learning strategies;
- life situation, finance and employment;
- contacts, communication and counselling;
- difficulties, problems and stress of studying;
- computer and Internet use, new media in teaching;
- wishes and demands for development of higher education institutions;

- choice and conceptions of professions;
- societal and political demands;
- social background data and biographical situation.

The study aims at a continuing observation of German students and their perception of the university system, with the goal of recognizing undesirable developments early enough to be able to take suitable counter-measures against them. The survey represents all German students at institutions of higher education (which total 279). In the ninth survey used here 26 institutions were selected. While, in the earlier surveys, about 20,000 students were sent questionnaires (with a response rate of *ca.* 40%), the number of participants was, after a slump in response rate, increased to 28,000. In all, 80,000 students have participated up to now, of whom 63,000 came from universities and 17,000 from universities of applied sciences.

The cumulated data set across all nine surveys can be accessed in the Central Archive for Empirical Social Research (Zentralarchiv für Empirische Sozialforschung). It is also available in several social scientific program systems: SPSS, SAS and KOSTAS. It is widely applicable for a variety of secondary analyses, as well as for final and examination papers and theses (Simeaner, Röhl, and Bargel 2004: it can also be viewed on the Internet: http://www.uni-konstanz.de/studierendesurvey).

The following scales were constructed factor-analytically for further analysis:

- intrinsic motivation for choosing a programme of study (sample item: 'special subject interest'): 3 items;
- extrinsic motivation for the choice of subject area (sample item: 'income potential in later profession'): 3 items;
- transparency and practicality of the course of study (sample item: 'well-organized plan of studies'): 3 items;
- performance demands and competition in the course of study (sample item: 'high performance norms'): 2 items;
- counselling and support by teachers (sample item: 'can you obtain personal counselling from college teachers if this is necessary for the course of study?'): 6 items;
- teaching quality (sample item: 'the learning aim of the course is clearly defined'): 7 items;
- achievement motivation and ambition (sample item: 'I work intensively in order to get good examination results'): 5 items;
- examination stress (sample item: 'before examinations I usually feel stress'): 2 items;
- difficulties with achievement requirements (sample item: 'I find it hard to prepare efficiently for examinations'): 3 items;
- communicative difficulties (sample item: 'I find it hard to relate to teachers'): 3 items;
- stress due to the overall situation (sample item: 'I feel under pressure due to the anonymity of the university'): 3 items;
- future-related stress (sample item: 'uncertain professional prospects'): 2 items.

Besides these scales, the analyses include gender, father's educational attainment, certainty of being able to study at the university, consideration of a change of subject, financial situation, amount of time devoted per week to classes and private study,

employment while the university is in session, and secondary school and intermediate examination grades. The dependent variable was whether the student is seriously thinking at the time of giving up their studies, with the response options ranging from 0 = not at all, to 6 = very seriously. The variable was dichotomized in such a way that the categories 4–6, which contained weak to very strong agreement, were combined. We started from the view that the tendency to drop out is not a matter of a continuum, but rather is a discretely distinguishable tendency of a specific, small group of students.

## Method

The aim of this article is to simultaneously analyse individual and institutional influences on the tendency to drop out of higher education. Multilevel analyses of this type have been developed since the start of the 1990s (Bryk and Raudenbush 1992; Ditton 1998; Engel 1998; Kreft and de Leeuw 1998; Langer 2004; Snijders and Bosker 1999). The basis for the application of multilevel analysis is usually a hierarchical data structure: e.g. pupils in different school grades or forms, residents of city wards or employees in different organizations. In the simplest case only the mean and a random error are estimated at each level:

$$\text{Individual level:} \quad y_{ij} = \beta_{0j} + r_{ij} \tag{1}$$

$$\text{Aggregate level:} \quad \beta_{0j} = \gamma_{00} + u_{0j} \tag{2}$$

Here $y_{ij}$ represents the measured value of individual i in group j, and $\beta_{0j}$ is the mean (or the intercept) of each group. On the aggregate level (e.g. a school) the group mean of a unit consists of the overall mean of the sample and a random error $u_{0j}$. As a rule, however, this model serves only as a starting point for further analysis.

If the group mean, $\beta_{0j,}$ is to be explained by characteristics at the aggregate level (e.g. the performance of a school by its social composition; so-called random-intercept models), in the simplest case the following model results (as in the case of the teaching quality of a subject area and the tendency to drop out):

$$\text{Individual level:} \quad y_{ij} = \beta_{0j} + r_{ij} \tag{3}$$

$$\text{Aggregate level:} \quad \beta_{0j} = \gamma_{00} + \gamma_{01}\ (\text{teaching quality}) + u_{0j} \tag{4}$$

Here the average value of each group $\beta_{0j}$ is explained by the overall mean $\gamma_{00}$, the teaching quality measured on the subject area level $\gamma_{01}$, as well as the random sampling error $u_{0j}$.

If, on the contrary, one does not want to predict the group mean, but rather the effect of an independent variable at the individual level using an aggregate characteristic (e.g. class membership and the tendency to drop out in terms of teaching quality), the model structure becomes somewhat more complex (so-called cross-level interaction models):

$$\text{Individual level:} \quad y_{ij} = \beta_{0j} + \beta_{1j}\ (\text{class membership}) + r_{ij} \tag{5}$$

Aggregate level: $\beta_{0j} = \gamma_{00} + u_{0j}$ (6)

$$\beta_{1j} = \gamma_{10} + \gamma_{11}\ (\text{teaching quality}) + u_{1j} \quad (7)$$

In this model, the slope of the regression lines between the tendency to drop out and class membership is predicted by the mean of the regression lines of all groups $\gamma_{10}$, the teaching quality of a subject area $\gamma_{11}$, as well as a random sampling error $u_{1j}$. Thus, with models of this type we can estimate the varying institutional influence on individual relationships.

**Results**

The following multilevel models were calculated using Mplus, Version 4.2 (Muthen and Muthen 2006). Since the dependent variable is dichotomous (1 = considered dropping out), logit models were specified; the consequence of this is that, at the individual level, no residual variance is yielded by this program, and the coefficients are present in logarithmic form. However, it is possible to calculate the intra-class correlation and the explained variance at the individual level (Snijders and Bosker 1999, 226). In all, three models were specified: a first random intercept model (cf. equations 3 and 4) uses the average values of transparency, achievement norms, counselling and teaching quality in 12 subject groups at the 26 higher educational institutions studied (in all 147 clusters), as well as the subjects themselves as aggregate variables. All the other variables (cf. Table 1) served as predictors at the individual level. In order to make the effect strength of the scales and items comparable, in a second model these were normed to the value domain between 0 and 1. In a third model, as an enhancement of models 2 and 3, a cross-level interaction model was estimated for the relationship between father's educational attainment and the tendency to drop out (equation 7), in which the teaching quality of the subject served as an explanatory aggregate variable. In Table 2 significant coefficients are printed in bold. The variables at the individual level were centred with the group mean, while at the aggregate level the overall mean was used.

To aid in interpreting the results, we will briefly review the structure of the German educational system. German school students attend different types of secondary school: the Realschule, Hauptschule and Gymnasium. If they plan to study at a university, students usually must attend a Gymnasium and obtain an Abitur, a diploma that qualifies them for university study. Those who attend a Realschule or Hauptschule usually do not go on to a university, but instead enter the job market through on-the-job training in a Lehrstelle organized by German business and industry. In exceptional cases, however, a technical diploma (Fachabitur) from a technical secondary school (Fachgymnasium) can also be used to obtain university admission. In all, Germany has 176 universities and 103 universities of applied sciences (Fachhochschule, providing practice-oriented scientific/technical training). Traditionally the first degree at a German university was a Diplom or a Magister. In the course of the Bologna Process (begun by a 1999 agreement of European countries to harmonize their university systems to create a European Higher Education Area), a large number of German university programmes have been transformed into Bachelor of Arts and Master of Arts programmes similar to those in countries such as the USA and UK.

Table 1. Means, standard deviations, range, reliability and case numbers for the variables of the model.

| Variable | X | S | Range | Cronbach's α | *n* |
|---|---|---|---|---|---|
| Intrinsic motivation | 12.53 | 3.05 | 0–18 | 0.41 | 9898 |
| Extrinsic motivation | 8.86 | 4.43 | 0–18 | 0.78 | 9901 |
| Transparency of study programme | 9.41 | 3.50 | 0–18 | 0.62 | 9874 |
| Achievement norm of study programme | 6.09 | 2.44 | 0–12 | 0.37 | 9883 |
| Counselling quality of programme of studies | 19.40 | 6.19 | 0–36 | 0.75 | 9414 |
| Pedagogical quality of programme of studies | 21.61 | 3.98 | 7–35 | 0.77 | 9637 |
| Achievement motivation | 19.70 | 4.81 | 0–30 | 0.73 | 9891 |
| Examination stress | 5.87 | 3.38 | 0–12 | 0.76 | 9907 |
| Performance difficulties | 6.69 | 1.85 | 3–12 | 0.58 | 9849 |
| Communication difficulties | 6.10 | 1.87 | 3–12 | 0.57 | 9882 |
| Stress of overall situation | 7.12 | 4.07 | 0–18 | 0.66 | 9886 |
| Stress concerning the future | 5.50 | 3.36 | 0–12 | 0.77 | 9802 |
| Stress due to financial situation | 3.00 | 1.99 | 0–6 | | 9919 |
| Grades on intermediate examination | 2.44 | 0.67 | 1–6 | | 7176 |
| Grades on final secondary school examinations | 2.32 | 0.63 | 1–6 | | 9858 |
| Certainty of university study | 3.24 | 0.87 | 1–4 | | 9941 |
| Considered changing subject | 0.47 | 1.25 | 0–6 | | 9926 |
| Considered ending studies | 0.04 | | 0–1 | | 9932 |
| Time budget for classes | 16.81 | 9.28 | 0–60 | | 9607 |
| Time budget for private study | 11.70 | 9.49 | 0–90 | | 9605 |
| Gainful employment during semester | 1.78 | 0.74 | 1–3 | | 9953 |
| Gender (0 = male) | 0.56 | | 0–1 | | 9943 |

Table 2. Multilevel models for predicting the tendency to drop out.

| Variable | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| *Individual level* | | | |
| Intercept | 5.87 | 5.87 | 5.40 |
| Intrinsic motivation | –0.04 | –0.63 | –0.04 |
| Extrinsic motivation | –0.02 | –0.26 | –0.01 |
| Gender | –0.01 | –0.01 | –0.02 |
| Grade on final secondary school examination | 0.01 | 0.78 | 0.01 |
| Certainty of being able to study | **–0.44** | **–1.78** | **–0.46** |
| Considered change of subject | **0.48** | **2.87** | **0.49** |
| Time budget for instruction | **–0.04** | **–2.12** | **–0.04** |
| Time budget for private study | –0.01 | –0.72 | –0.01 |
| Gainful employment during semester | **0.32** | **0.97** | **0.33** |
| Motivation to succeed | **–0.09** | **–2.69** | **–0.09** |
| Grade on intermediate examination | 0.02 | 1.14 | 0.02 |
| Examination stress | –0.01 | –0.06 | –0.01 |
| Performance difficulty | 0.07 | 0.87 | 0.07 |
| Communication difficulty | –0.03 | –0.34 | –0.03 |

*(Continued.)*

Table 2. (*Continued.*)

| Variable | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| Father's educational attainment | **–0.10** | **–0.59** | |
| General stress | **0.14** | **2.44** | **0.14** |
| Future-related stress | 0.02 | 0.21 | 0.02 |
| Financial stress | 0.08 | –0.59 | 0.08 |
| $R^2$ Individual level | 0.40 | 0.40 | 0.40 |
| *Subject level* | | | |
| Transparency | 0.14 | 2.45 | 0.15 |
| Achievement norm | –0.23 | –2.74 | –0.23 |
| Quality of counseling | 0.04 | 1.59 | 0.05 |
| Teaching quality | **–0.49** | **–17.22** | **–0.49** |
| *University* | | | |
| Social sciences | –0.66 | –0.66 | –0.64 |
| Law | 0.52 | 0.52 | 0.50 |
| Economics | –0.48 | –0.48 | –0.48 |
| Medicine | –0.67 | –0.67 | –0.64 |
| Natural sciences | –0.25 | –0.25 | –0.24 |
| Engineering | –0.22 | –0.22 | –0.19 |
| Other subjects | –0.21 | –0.21 | –0.20 |
| *Universities of applied sciences* | | | |
| Social sciences | –0.10 | –0.10 | –0.08 |
| Economics | 0.34 | 0.34 | 0.35 |
| Engineering | –0.00 | –0.00 | 0.01 |
| Other subjects | 0.52 | 0.52 | 0.51 |
| Intercept Slope | | | **–2.67** |
| Residual variance intercept | 0.07 | 0.07 | 0.07 |
| Residual variance slope | | | 0.02 |
| Effect of teaching quality slope | | | **0.12** |
| Log likelihood | –769.80 | –769.80 | –765.62 |
| $R^2$ Aggregate level | 0.63 | 0.63 | 0.58 |
| Intra-class correlation | 0.05 | 0.05 | 0.05 |

From Model 1 it is clear that it is primarily neither motivation (for the choice of a subject area of study) nor achievement, as measured by the secondary school leaving and intermediate examination grades, that increases the tendency to drop out. Similarly, examination stress, performance and communication related difficulties in the academic field, and future or financial burdens are *not* the factors that lead to thoughts of dropping out. What really leads to dropout seems to be low commitment with regard to university study in general, or the student's major subject in particular. Students who have a tendency to drop out were from the start less certain of being able to study (–0.44) and have already considered changing subject areas at least once (0.48). They spend less time attending classes (–0.04, which means that for every hour that is not spent in classes the tendency to drop out increases by 3.5%), and they are

more likely to work while the university is in session, although, as already explained, financial problems play no significant role. Potential dropouts exhibit less achievement motivation and less ambition (–0.09) than other students, and have more orientation problems in their university study; they feel more anonymous at the university and experience the large numbers of students as a source of stress (0.14). As to their social origins, students with a tendency to drop out more frequently come from the less educationally-oriented strata (–0.10). The child of a Hauptschule (middle school) graduate has a 45% higher chance of dropping out than one whose father has a higher educational degree.

How does the institutional side of the process look? Many researchers have hypothesized that lack of transparency, high achievement demands and competition in studying, poor quality counselling by teachers, as well as a teaching staff with low pedagogical ability, increase the probability of making a decision to drop out (e.g. Schröder-Gronostay 1999, 226). However, the present results support this theory only in part. According to the intra-class correlation, only 5% of variance is found at the institutional level, whereas 95% relates to the individual level. In Model 1, the quality of counselling, the transparency of the programme of study, and the prevalence of high achievement norms do not exert a significant influence on the tendency to drop out; the important factor is teaching quality. No significant differences are apparent at subject level in relation to the tendency to drop out. Since the residual variance is not more significant, it can be assumed that the present model, which explains 63% of the variance of the intercept differences between subject groups, contains the most significant determinants on the institutional level.

One can view students' serious consideration of dropping out as a kind of early-warning signal. An appropriate institutional response would be to improve the teaching quality in the subject area. However, we should have no illusions concerning the potential effectiveness of such improvement: low commitment with regard to study can be reduced, but not eliminated, using institutional measures.

If one compares the coefficients in Model 2 in terms of their effect strength, it becomes clear that, at the individual level, the tendency to drop out is influenced especially by an earlier consideration of change of subject (2.87), low achievement motivation (–2.69), overall stress in the student role (2.44) and the time allocated for classes (–2.12). These four factors again underline the significance of identification and motivational processes with regard to potentially dropping out.

Model 3, finally, focuses attention on a special aspect of social inequality at the university. Although in Model 2 the effect of social origin on the tendency to drop out is the weakest of all significant variables, it is especially critical with regard to its legitimation, because this runs counter to the principle of meritocratic selection in institutions of higher education. Thus, Bourdieu and Passeron (1971) comment that educational institutions do not provide the 'prerequisites for understanding' to students from the lower social strata, and they confirm an insight found already in the Gospel according to Matthew: 'to those who have more will be given.'

In order to model the influence of teaching quality on the relationship between social origin and the tendency to drop out, a cross-level interaction model was created in which the slope was explained by this aggregate variable. While all the other parameters of the model remain almost unchanged, a significant effect of .12 was found for teaching quality. When we insert the corresponding parameter in equation 7, keeping all the other variables of the model constant, we obtain the following effect:

$$\beta_{1j} = -2.67 + .12\ (\text{teaching quality}) + .02$$

whereby –2.67 represents the mean value of the slopes across all groups, and .12 conceptualizes the effect of a unit of the 'teaching quality' scale on this mean value. Thus, to counteract the effect of social origin on the tendency to drop out, a difference of 22.25 scale steps would be needed on this scale (with a range of 28); to improve equality of opportunity by one step of social origin (for example, from Hauptschule to Realschule), an increase in teaching quality of 3.71 scale steps would be needed. If we take into account that the mean difference between the lower and upper deciles of institutions of higher education on this scale amounts to exactly 3.70 units, we can conclude that, even with a maximal effort to improve pedagogy, we could achieve only a minimal reduction in social-origin contingent inequality in the tendency to drop out (in the present example a reduction of precisely one unit in social position). This shows that relatively narrow limits exist for institutional action intended to reduce individual inequality.

## Conclusions

Due to the cross-sectional character and the methods of surveying the tendency to discontinue university study, the database used in this article is subject to limitations in its usefulness for explaining this phenomenon. It must first be noted that the data employed are only representative of Germany, and thus conclusions based on them cannot necessarily be applied to other countries. In England, for example, it has been shown that capabilities at the start of a course of studies had an effect on early dropout (Yorke 1999).

From the perspective of action theory, there is only a moderate relationship between attitudes toward an action and the initiation of this action itself. Thus, in environmental sociology, Diekmann and Preisendörfer (2001) assume that an environmentally conscious attitude comes to fruition above all in low-cost situations: i.e. if little extra effort and only a small departure from routines are necessary. Dropping out of the university is a major, biographically influenced, decision and thus more of a high-cost action. According to this theory, then, we can assume only a modest relationship between the tendency to drop out and actually dropping out. On the other hand, we can ask whether, precisely because it involves a drastic biographical change, students might wrestle with the idea of dropping out for a long time before they actually do so. As a result, we must conclude that the strength of the relationship between the tendency to drop out and the ultimate action is not only theoretically, but also empirically, unclear, and conclusions on this must of necessity be speculative.

Nevertheless, universities can use the indicator employed here preventively in order to be able to respond early enough to students' tendency to drop out. The findings at the individual level sketch a profile of potential university dropouts characterized less by weak performance, examination stress, social and communicative difficulties, or financial or labour market related problems, and more by general problems and a low identification with the role as a student and with their subject, a (perhaps as a result of this) low achievement motivation and limited class attendance. Since social origin was controlled for in this model, and exerts its own influence on the tendency to drop out, these factors exercise an influence independently of family educational background.

On the basis of these findings, the picture we get is that, at the beginning of the development toward dropping out of the university, the student decides in favour of university study in general or a subject that does not fit well with his or her personal preferences. The path dependency of this decision causes the student to become dissatisfied with their general situation, and, despite having the same achievement ability (school leaving and intermediate examination grades), they develop less achievement motivation, consequently spend less time in classes and ultimately even consider changing subjects. It thus appears that here we are witnessing more a problem of fit than of ability or specific disadvantage. Accordingly, the institutional response would have to start early with counselling on the decision to study in general or to choose a specific subject.

Once a biographically 'wrong decision' has been made, experience suggests that an institution has less free space to intervene to make a correction. Although the model explains nearly two-thirds of the variance at the institutional level, and the residual variance is not significant, it is the pedagogical quality alone that exercises an, even if clearly diminishing, influence on the tendency to drop out. Accordingly a university must intervene above all here if it wants to reduce the dropout rate.

In view of the effect of teaching quality on the relationship between social origin and the tendency to drop out, a relatively sobering picture emerges, though teaching quality tends to reduce this tendency. However, this effect is relatively modest, because the mean difference in teaching quality between the highest and the lowest 10% barely suffices to compensate for a difference of one educational step in the student's social origin: for example, to make the child of a Hauptschule (middle school) graduate equal to one whose father has a Realschule diploma.

What implications do these findings have for institutions of higher education and for contemporary university policy discussions? Since a tendency to drop out can be traced back above all to an inadequate fit between a decision influenced by personal characteristics (biography), and institutional and social conditions, suitable measures would include interventions to create the preconditions for academic and social integration at the university. Using models that, for reasons of space, are not presented here, it was found that a significant interaction exists between social origin and the general stress in the role of student. From this it can be inferred that, on the one hand, starting from the information available before matriculation, a system of instruction and guidance should be developed in order to create a realistic expectation horizon as a student of a specific subject to prevent a poor fit. On the other hand, institutional services should be made available for students who, on the basis of their situational evaluation and orientation problems, are thinking of dropping out.

In many subject areas the dropout rate has come to be used as an evaluation criterion for the quality of the course of study. A reliable principle for evaluation is to only evaluate characteristics that also lie in the area of influence of the respective person or institution. The findings of this article suggest that the institutional influence on the tendency to drop out is, however, minimal and limited to teaching quality. Hence the dropout rate proves to be an unsuitable evaluation criterion for judging the institutional side of the process. Of greater significance at the individual level is identification with the subject area, and this varies according to experience with the subject cultural context, being lower in the liberal arts and social sciences than, for example, in medicine, law and the natural sciences.

As to the contemporary discussion of university fees, their influence on the tendency to drop out cannot be evaluated on the basis of the findings presented here. These funds could be employed exclusively for the improvement of teaching, which could have a positive effect at the institutional level on the tendency to drop out. On the other hand, however, they could force students to be gainfully employed during the semester, which, according to the models, makes dropping out more probable.

If we apply the findings summarized above to the theoretical approaches presented at the start of the article, we can see the importance of the student's fit, or expressed differently, integration, into the social and institutional network of the university in general and the subject in particular. It appears to be a matter above all of identification with the subject as such, but also of the social environment of the subject culture, as Tinto (1975) emphasized. In further research, it would be desirable to shift from cross-sectional data collection to a longitudinal perspective, in order to be able to more validly represent the processes leading to dropping out. Furthermore, it would be reasonable to distinguish between cases of dropout which can be understood as an aim-guided search strategy, and the dropout who abandons a life perspective they once held because their efforts appear to have been unproductive. For the study of social inequality at the university, it would be important to isolate those factors and mechanisms that lead young people from less educationally oriented strata to have a greater tendency to drop out.

## References


Apel, H. 1989. Fachkulturen und studentischer Habitus: Eine empirische Vergleichsstudie mit Pädagogik- und Jurastudierenden. *Zeitschrift für Sozialisationsforschung und Erziehungssoziologie* 1: 2–22.

Bargel, T. 2003. Neigung zum Studienabbruch: Umfang und Gründe. *News:* 1–4.

Bourdieu, P. 1986. *Die feinen Unterschiede. Kritik der gesellschaftlichen Urteilskraft.* Frankfurt/Main: Suhrkamp.

Bourdieu, P., and J.C. Passeron. 1971. *Die Illusion der Chancengleichheit.* Stuttgart: Klett.

Bryk, A.S., and S.W. Raudenbush. 1992. *Hierarchical linear models: Applications and data analysis methods.* Newbury Park, CA: Sage.

De Graaf, P.M. 1986. The impact of financial and cultural resources on educational attainment in the Netherlands. *Sociology of Education* 59: 237–46.

De Graaf, P.M. and N.D. De Graaf. 2006. Hoch- und populärkulturelle Dimensionen kulturellen Kapitals: Auswirkungen auf den Bildungsstand der Kinder. In: *Soziale Ungleichheit im Bildungssystem,* ed. W. Georg, 147–74. Konstanz: UVK Verlag.

Di Maggio, P. 1982. Cultural capital and school success: The impact of status culture participation on the grades in the US high schools. *American Sociological Review* 47: 189–201.

Diekmann, A., and P. Preisendörfer. 2001. *Umweltsoziologie. Eine Einführung.* Reinbek: Rowohlt.

Ditton, H. 1998. *Mehrebenenanalyse. Grundlagen und Anwendungen des Hierarchisch Linearen Modells.* Weinheim: Juventa.

Durkheim, E. 1973. *Der Selbstmord.* Neuwied/Berlin: Luchterhand.

Durkheim, E. 1992. *Über soziale Arbeitsteilung.* Frankfurt/Main: Suhrkamp.

Engel, U. 1998. *Einführung in die Mehrebenenanalyse. Grundlagen, Auswertungsverfahren und praktische Beispiele.* Opladen: Leske and Budrich.

Entwistle, N.J., J.H.F. Meyer, and H. Tait. 1991. Student failure: Disintegrated patterns of study strategies and perceptions of the learning environment. *Higher Education* 21: 249–61.

Ethington, C.A. 1990. A psychological model for student persistence. *Research in Higher Education* 31, no. 3: 279–93.

Georg, W. 2004. Cultural capital and social inequality in the life course. *European Sociological Review* 20, no. 4: 333–44.

Georg, W. 2005. Die Reproduktion sozialer Ungleichheit im Lebenslauf. *Zeitschrift für Soziologie der Erziehung und Sozialisationsforschung* 2: 178–97.
Gerdes, H., and B. Mallinckrodt. 1994. Emotional, social and academic adjustment of college students: A longitudinal study of retention. *Journal of Counseling and Development* 73: 281–8.
Heublein, U., R. Schmelzer, and D. Sommer. 2008. *Die Entwicklung der Studienabbruchquote an deutschen Hochschulen.* HIS: Projektbericht. http://www.his.de/publikation/bericht (accessed 30 October 2008).
Heublein, U., H. Spangenberg, and D. Sommer. 2003. *Ursachen des Studienabbruchs. Analyse 2002.* Hanover: Hochschul Informations System.
Huber, L., E. Liebau, G. Portele, and W. Schütte. 1983. Fachcode und studentische Kultur. In *Reflexionsprobleme der Hochschulforschung,* ed. E. Becker. Weinheim: Juventa.
Kreft, I.G.G., and J. de Leeuw. 1998. *Introducing multilevel modelling.* Newbury Park, CA: Sage.
Lange-Vester, A., and C. Teiwes-Kügler. 2006. Die symbolische Gewalt der legitimen Kultur. Zur Reproduktion ungleicher Bildungschancen in Studierendenmilieus. In *Soziale Ungleichheit im Bildungssystem,* ed. W. Georg, 55–92. Konstanz: UVK Verlag.
Langer, W. 2004. *Mehrebenenanalyse: Eine Einführung für Forschung und Praxis.* Wiesbaden: Westdeutscher Verlag.
Lewin, K. 1999. Studienabbruch in Deutschland. In *Studienerfolg und Studienabbruch,* ed. M. Schröder-Gronostay and H.D. Daniel, 17–50. Neuwied: Luchterhand.
Multrus, F. 2004. Fachkulturen: Begriffsbestimmung, Herleitung und Analysen. Dissertation, Universität Konstanz.
Muthen L.K., and B.O. Muthen. 2006. *Mplus user's guide.* Los Angeles, CA: Muthen & Muthen.
Organization for Economic Cooperation and Development (OECD). 2006. *Education at a glance.* Paris: OECD.
Pascarella, E.T., and P.T. Terenzini. 1983. Predicting voluntary freshman year persistence/withdrawal behaviour in a residential university: A path analytic validation of Tinto's model. *Journal of Educational Psychology* 75, no. 2: 215–26.
Pascarella E.T., P.T. Terenzini, and L.M. Wolfle. 1986. Orientation to college and freshman year persistence/withdrawal decisions. *Journal of Higher Education* 57, no. 2: 155–75.
Peisert, H., G. Framhein, and T. Bargel. 1984. *Studiensituation und studentische Orientierungen. Schriftenreihe Studien zur Bildung und Wissenschaft 15.* Bad Honnef.
Preißer, R. 1989. Studienmotive oder Klassenhabitus? *Zeitschrift für Sozialisationsforschung und Erziehungssoziologie,* 10: 53–71.
Robinson, W.S. 1950. Ecological correlations and the behavior of individuals. *American Sociological Review,* 15: 351–7.
Schröder-Gronostay, M. 1999. Studienabbruch – Zusammenfassung des Forschungsstandes. In *Studienerfolg und Studienabbruch,* ed. M. Schröder-Gronostay and H.D. Daniel, 209–40. Neuwiede: Luchterhand.
Simeaner, H., T. Röhl, and T. Bargel. 2004. Datenalmanach Studierendensurvey 1983–2004. Studiensituation und Studierende an Universitäten und Fachhochschulen. Arbeitsgruppe Hochschulforschung, Universität Konstanz.
Snijders, T., and R. Bosker. 1999. *Multilevel analysis. An introduction to basic and advanced multilevel modelling.* London: Sage.
Spady, W.G. 1970. Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange* 19, no. 1: 109–21.
Stage, F.K. 1988. University attrition. LISREL with logistic regression for the persistence criterion. *Research in Higher Education* 29, no. 4: 343–57.
Tinto, V. 1975. Dropout from higher education: A theoretical synthesis of recent research. *Review of Educational Research* 45, no. 1, 89–125.
Tracey, T.J., and W.E. Sedlacek. 1987. A comparison of white and black student academic success using noncognitive variables. A LISREL analysis. *Research in Higher Education* 27, no. 4: 333–48.
Windolf, P. 1990. Fachkultur und Studienfachwahl. *Kölner Zeitschrift für Soziologie und Sozialpsychologie* 44: 76–98.

Yorke, M. 1999. *Leaving early: Undergraduate non-completion in higher education.* London: Falmer Press.
Zinnecker, J. 1989. *Projekt Studium und Biografie.* Unveröffentlichter Projektantrag an die DFG, unpublished.