

Evidence on Dropout Phenomena at Universities



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Preface

This publication is an excerpt from the full technical report ‘Dropout Phenomena at Universities: What is Dropout? Why does Dropout Occur? What Can be Done by the Universities to Prevent or Reduce it? A systematic review’, which was completed in April 2013. The purpose of this excerpt is to present the knowledge we have on dropout phenomena at European universities in a short, precise and comprehensible form to allow readers to orient themselves on the subject in a more readable manner.

The technical report was written on the basis of a contract between The Swiss Council for Educational Research (CORECHED) and Danish Clearinghouse for Educational Research (Danish Clearinghouse), Aarhus University.

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Thanks to the The Swiss Council for Educational Research, the members of the review group and to all the colleagues and researchers who have contributed to this brief presentation of the results of the systematic review. The complete report with references and appendices can be found at <http://edu.au.dk/en/research/research-areas/danish-clearinghouse-for-educational-research/>

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Danish Clearinghouse for Educational Research derives knowledge from research. We collect, analyse and distribute results from educational research to politicians, practitioner and other researchers working at all educational levels. Among other things, we investigate whether it is possible to determine what types of initiatives have a positive effect on various educational outcomes by looking across studies. Moreover, Danish Clearinghouse facilitates research & development in educational institutions.

Introduction – dropout phenomena at universities

Conceptualising university dropout

Dropout from university studies is only apparently a straightforward concept.

The term ‘university dropout’ is commonly used to describe situations where a student leaves the university study in which (s)he has enrolled before having obtained a formal degree. The terms used to describe university dropout from a student perspective are many: dropout, departure, withdrawal, academic failure, non-continuance, non-completion, whereas their positive counterparts are: persistence, continuance, completion etc. From an institutional and governmental perspective student attrition rate is a commonly applied term, whereas retention and graduation rate often indicate the positive outcomes (Jones, 2008: 1).

University dropout can be more or less voluntary in character as seen from the individual student’s perspective. A student can drop out of his/her university study due to failure to meet the academic standards and demands within university in which case dropout should be viewed as involuntary. On the other hand, a student can decide to drop out of his/her university study for reasons more voluntary in character, for instance, in pursuit of another subject of study and/or another university, in which case the dropout is better described as a student transfer within the system of higher education (or alternatively, a student transfer to a lower educational level). Furthermore, a student can drop out of the system of higher education due to external circumstances, for instance with regard to financial difficulties or family related or personal problems or, perhaps, due to a favourable business cycle. In the case of financial difficulties, family related or personal problems, even though the decision to leave might have been taken partly reluctantly by the student, the decision has not been controlled by the university authorities and can, therefore, be said to be more voluntary in character after all. As will become evident further below, the distinction between different types of dropout behaviour (voluntary withdrawal and involuntary dropout leading subsequently to either formal dropout of, or transfer within, the system of higher education) must be taken very seriously as they are often the result of different preceding processes that have been at work both prior to and within university.

A specific case of university dropout can also be characterised on the institutional level at which it occurs, that is from either a course/subject of study, a department, a faculty, a university or the entire system of higher education. Dropout is further dependent upon the perspective from which it is evaluated. In the case of, for example, a direct student transfer from one subject of study to another within the same faculty and university, the student might not actually view him-/herself as having dropped out, and formally speaking (s)he has not dropped out of that specific faculty or university, only from that specific subject of study. A dropout from the system of higher education altogether is, to the contrary, a dropout as viewed by all institutional levels within the system of higher education and most likely also by the student him-/herself.

University dropout can be characterised on a number of other parameters as well. These include the timing of dropout (early vs. late dropout) and whether the specific case of dropout has

happened with or without the student having first acquired useful skills to be used as transfer of credits to another (related) subject of study or to be used subsequently on the job market.

As such, university dropout would benefit from being referred to as dropout phenomena at universities.

Consequences of university dropout

When university dropout occurs it has consequences at different societal levels – both society in a broader sense (cf. e.g. Bound & Turner, 2011: 574), the university and the different institutional levels within as well as the individual student are affected (cf. e.g. Ulriksen, 2010: 210).

At the individual student level dropout (at least concerning an involuntary case of dropout) is likely to be associated with emotions of personal inadequacy/self-doubts/not belonging (cf. e.g. Edwards & Cangemi, 1990). Furthermore, a dropout, whether it concerns a formal dropout or a student transfer, is inevitably synonymous with a waste of personal resources, time and money (less so, though, if the dropout has happened with the student having acquired useful skills to be used as transfer of credits to another related subject of study or to be used subsequently on the job market).

At university level the consequences of dropout can roughly be divided into an economic and an academic part. The introduction of performance-based university funding schemes in many countries within the past decade (see below) makes dropout, including student transfer, purely negative in an economic sense for the affected university. Furthermore, within a university pedagogical perspective where one goal is to get as many students to complete their studies as successfully as possible, dropout must inevitably be viewed negatively. From the point of view of the academia dropout can, however, have both undesirable and desirable consequences. Dropout is undesirable to the extent that dropout means the loss of valuable academic input from the students who dropped out (Larsen, 2000: 13). If dropout equals a situation where the academically most foreign students leave university, dropout could be seen as desirable from the internal logic of the academic field because this is a way of preserving and reproducing the dominant culture within the academic field (Bourdieu, 1990, 1998) and upholding the academic standards as well.

At societal level university dropout has socio-economic consequences because the supply of university graduates affects both the returns to education as well as overall economic growth (Bound & Turner, 2011: 574). As stated above, even dropout in the form of a student transfer represents additional/extraordinary time consumption within the educational system on the aggregate level. Moreover, every specific case of dropout represents significant opportunity costs because it means a missed opportunity for another potential student to complete that certain university study (at least if access restrictions are present). Also, within a Danish context calculations from the Ministry of Finance have shown that people without a degree in higher education, despite the fact that they use less time in the educational system, on average spend eight years less on the labor market, because they more often struggle with unemployment and more frequently end up on early retirement or welfare benefits (Larsen, 2000: 13).

The political and economic context of university dropout

Just as well as the negative consequences of university dropout are experienced at both a broader societal level and at university institutional levels, initiatives have been put into place in both arenas to try to counteract some of the negative consequences.

At governmental/societal level this has been witnessed by an increase in the economic incentives put on universities to raise graduation rates. Funding allocation requirements, for instance, in the form of value added grants to universities, have increasingly made universities within many European countries partly economically dependent on the graduation rates and graduation time of its students (cf. e.g. Gaebel et al., 2012: 9-10, 23, 25; Troelsen, 2011: 37). These efforts can also be viewed as part of wider 'New Public Management' trends in public policy making, governance and management containing new requirements for transparency and accountability in relation to issues such as quality-assurance, effectiveness and evidence-based policy making (Gaebel et al., 2012: 8; El-Khawas, 2006; Sporn, 2006; Keller, 2006).

To counter the economic consequences of such public policy making, individual universities and national bodies within many European countries have started to introduce data based information management instruments with the aim of 'tracking' students throughout the university lifecycle (Gaebel et al., 2012).¹ On the one hand the 'tracking' process is supposed to give the university authorities useful new insights which can be used to improve the university experience concerning, for example, teaching and learning of their future students. In addition, the tracking process is in many cases initiated to help reduce dropout rates at the level of the individual university (Ibid.: 10-11, 36-38) to the benefit of both the university, thus, dampening the negative economic consequences of the funding allocation initiatives (Ibid.: 36, 51) and to the benefit of society as a whole.

To better understand these trends in public policy making one must further recognise and understand the broader economic and political context that have surrounded the system of higher education within the past decades.

A national public policy focus on 'widening access to higher education' has been witnessed in quite a few European countries over the past few decades (cf. e.g. Gaebel et al., 2012: 6, 8, 15; Jones, 2008: 1; Trow, 2006). The OECD-report *'Education at a Glance 2012'* reports on a marked expansion of the European system of higher education on the basis of a comparison of entry rates into tertiary-type A and B education between 1995 and 2009 (OECD, 2012: 31; 349). The implementation of the 'widening access to higher education' paradigm has not, however, occurred without costs to the universities by increasing the challenges of university dropout and to academia (Enders, 2006). This is due to the fact that giving access to university to a wider group of young people, including new 'university foreign' students, unavoidably means giving access to university to groups of young people with inferior skills and competencies or otherwise disadvantaged students as compared to the 'traditional' university student. More students also mean more competition within the academic field other things being equal. The situation following the 'widening access to higher education' paradigm can, thus, be described as a situation in which more open access structures to university give rise to greater possibilities for (negative)

self-selection into university studies. Hence, more instances occur of what Ulrich Heublein et al. (2003: 142) have termed 'delayed selection', that is, dropout due to non-identification with the subject or university setting or due to a lack of study skills. What has been a goal from a national policy perspective is, therefore, not necessarily desirable from an institutional/academic perspective.

Moreover, the present financial crisis faced more or less severely by most European countries has within the past few years lead to policies of increased self-financing in the form of user charges and increased tuition fees within the system of higher education. Such trends can be recognised as a consequence of the growing mismatch between resources needed for the greater number of enrolments into higher education due to the implementation of the 'widening access to higher education' paradigm and the public or private resources available to fund this growth (Hauptman, 2006). The consequences of such financial trends are inevitably to change the incentive structures on the part of the individual student with obvious effects on the dropout rate by increasing it at the aggregate level.

The aims of the systematic review

As evident from the above, dropout from university studies indeed comprises a number of complex phenomena with serious complex consequences and profound political attention. Further analysis of the field is, therefore, warranted. Such an analysis is offered here as a systematic review which gives answers based on the best possible evidence found in the research field comprised by the three review questions to be addressed.

The aims of this systematic review can, thus, be summarised like this:

Which answers can be offered from research in relation to the following questions:

What is dropout from university studies?

Why do such dropout phenomena occur at universities?

What can be done by the universities to prevent or reduce such dropout phenomena?

Dropout phenomena at universities - the theoretical framework

Potentially there are various factors available to explain dropout from university studies such as a student's socio-demographic background, academic competencies, motivations for studying, social and academic integration at university and living conditions, just to mention a few. Despite the many factors often suggested and examined as potential contributors to or direct determinants of university dropout, the research field may be characterised by the lack of a rich theoretical tradition, not least within a European setting. Much previous European based empirical research on university dropout has been data driven more than theory driven, hence lacking a solid theoretical foundation (Larsen, 2000: 14-15). The theory driven part of the European empirical research has primarily built upon American and other international theoretical foundations.

The American professor in sociology Vincent Tinto's social-anthropological approach to American college student dropout which focuses on the longitudinal and multifactorial *process* leading to dropout is still almost paradigmatic within the research field of university dropout in the U.S. as well as within a broader international research setting (Tinto, 1975, 1987, 1993, 1998). His '*Student Integration Model*' as first described in his seminal article from 1975 (Ibid., 1975) regards a student's social and academic integration in college to be crucial factors within the process leading the individual student to drop out or not.

According to Tinto the process possibly leading to university dropout can be described the following way: upon entry into university each student possesses some attributes with regard to family background, personal characteristics and prior schooling which all together result in the individual student possessing certain abilities/skills and prerequisites for studying. These attributes are, directly and/or indirectly, assumed to shape the student's initial intentions, educational goals and institutional commitments upon university enrolment. When entering university the initial educational goals and institutional commitments held by each student are then met by the student's institutional experiences within university which in themselves are divided into two distinct, but interwoven, systems – an academic and a social system. Whereas the academic system is comprised of the academic performance of the student within university and his/her interactions with the faculty/staff, the social system is comprised of the extracurricular activities held by the student as well as his/her peer group interactions. The student's institutional experiences are then supposed to lead the student to develop and uphold a certain level of academic and social integration at university. The extent of academic and social integration held by each student are then subsequently perceived to lead the student to either engage further in his/her university studies and, thus, to strengthen his/her educational goals and institutional commitments or, alternatively, to make the student be less engaged in his/her university studies and, thus, to weaken his/her educational goals and institutional commitments. These later held educational goals and institutional commitments are, lastly, thought to lead the student to the 'decision' of either staying or leaving the university institution (making a so-called 'institutional departure') or the system of higher education altogether (making a so-called 'system departure').

Hence, Tinto's model emphasises the process based interactions between the individual student attributes and the institutional structures within university. Tinto acknowledges that factors external to university might play a certain role for dropout as well, but their effects are merely treated indirectly as being observable through changes in the student's educational goals and institutional commitments.

Tinto makes clear that it is essential to distinguish between different types of dropout behaviour such as involuntary dropout (i.e. dropout due to academic failure) and voluntary withdrawal and subsequently between more permanent/formal dropout from the system of higher education and student transfer to another subject of study or institution within the system of higher education, because these different types of dropout behaviour are thought not only to involve different persons, but also to be the results of different interactive processes within university. For example, involuntary dropout is assumed to be more the result of a lack of academic integration, whereas voluntary withdrawal is thought to be more sensitive to a lack of social integration. The 'stock' of educational goals and institutional commitments and their interrelationship as held by the individual student is thought to serve as a further distinction mark between involuntary dropouts and voluntary withdrawals as well as between formal dropouts and transfer students as subgroups of involuntary dropouts and voluntary withdrawals. As written in 1975, Tinto believes that past empirical research have mostly ignored/failed to recognise this distinction between different dropout behaviours when analysing university dropout with detrimental consequences for the study findings and, as such, for the decisions taken by university authorities and/or politicians on the basis of the study findings.

Tinto's model of college student dropout has later served as inspiration for and has been refined by Ulrich Heublein et al. (2003, 2010) to work in a European university context (cf. Figure 1 below). Like Tinto, Heublein et al. include both pre-university and within-university factors in their theoretical model. More explicitly than was the case for Tinto, Heublein et al. point at specific factors that influence dropout and are at work during the course of study, but which are external to the university setting. These external factors comprise the student's financial situation, including whether or not (s)he has a (study relevant) job, the student's living conditions, including family and housing situation, advice/support from friends/family and other opportunities for counseling as well as the student's own future plans.

These models function as the theoretical frame of the review questions '*What is dropout from university studies?*' and '*Why do such dropout phenomena occur at universities?*' and they indirectly inform the review question '*What can be done by the universities to prevent or reduce such dropout phenomena?*', because answers to the first question serve as a good basis for the design of interventions aimed at effectively reducing dropout. Since the studies that focus on '*What can be done by the universities to prevent or reduce such dropout phenomena?*' are found to take their point of departure in elements of the theoretical models mentioned above, these models will serve as theoretical basis for those studies as well.

MODEL OF THE DROPOUT PROCESS

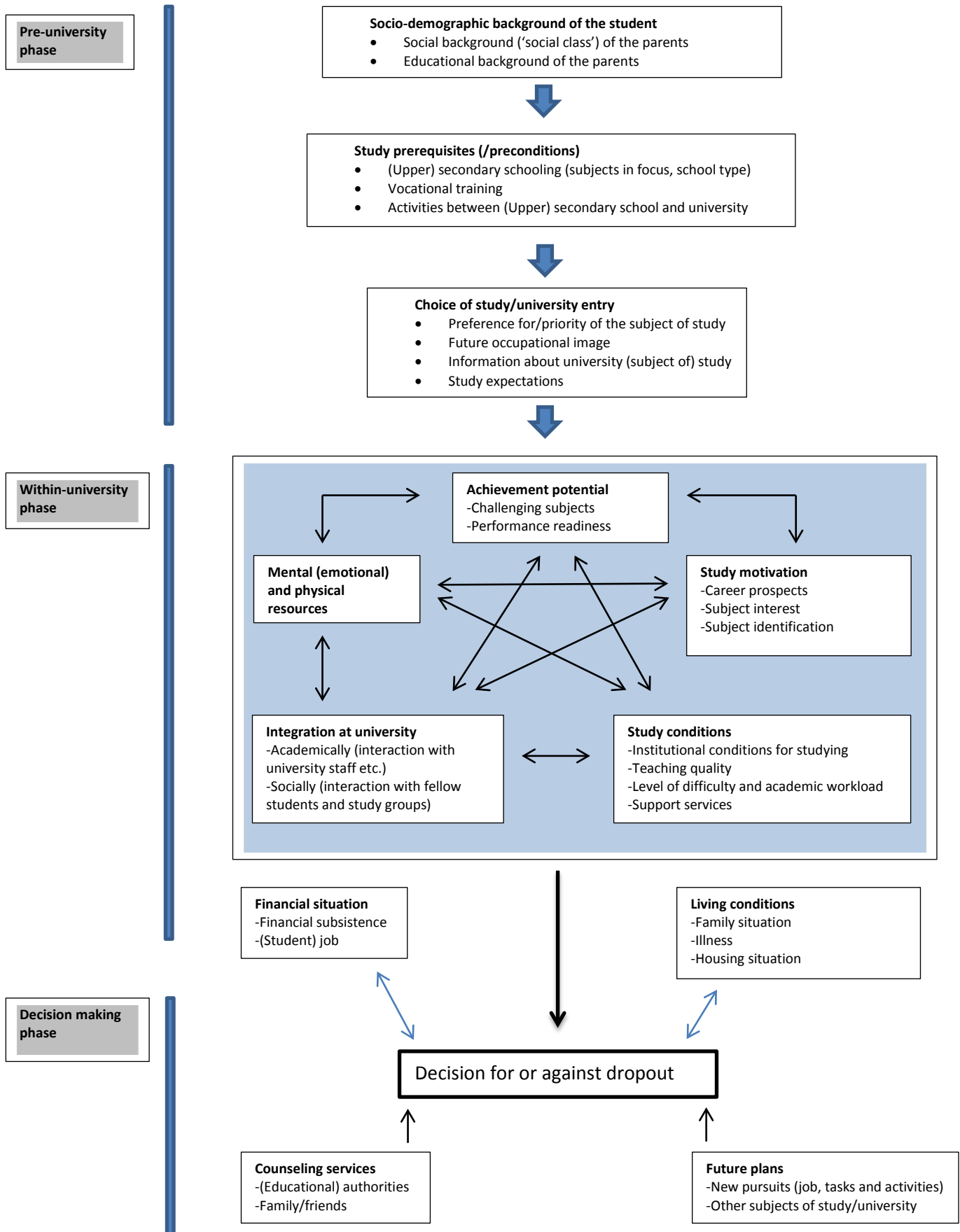


Figure 5.2.1 Model of the dropout process. Source: Heublein, 2010: 14 (our translation from German)

Methods of the systematic review

Scope of the systematic review

The present systematic review provides answers to the three questions:

What is dropout from university studies?

Why do such dropout phenomena occur at universities?

What can be done by the universities to prevent or reduce such dropout phenomena?

The questions have been subjected to the following conceptualisations and delimitations:

Dropout: Withdrawal from a university degree program before it has been completed. Included in this notion is also dropout from single courses of study within a given university degree program.

Temporary withdrawals due to illness, pregnancy etc. are not considered to be cases of dropout. A student's intention to withdraw, for instance, as stated in a survey, is not considered to qualify as dropout either. Only actual dropout (of whatever type and for whatever reason) from a university degree program will be taken into consideration as dropout when seeking answers to the review questions. The phenomenon 'change of study' where a student has enrolled in one subject of study and after a shorter or longer period of time changes/transfers to another subject of study or to another institution, must be taken into consideration as well when analysing dropout phenomena at universities. The dropout concept furthermore presupposes that the student has actually been active in his/her university study.

Dropout could be based on the student being either:

- Pushed out by features within the chosen university degree program and their relations to the student's interests and competencies (dropout), or
- Pulled out by features outside the chosen study program, for instance, on the job market or in another line of study and their relations to the student's interests and competencies (optout).

Dropout is, however, not necessarily associated with student external phenomena (within or outside the chosen university degree program) only. The role played by the student himself/herself in this must also be taken into consideration.

In order to be relevant for this systematic review, studies to be included must investigate possible determinants of the dropout phenomena analysed or investigate the possible effects of programs/interventions directly aimed at preventing or reducing dropout. In the first case, studies which only give information on university degree program completion are not relevant. In the second case, studies must investigate programs/interventions directed at all students or at-risk (for dropout) students. For these studies the completion rate could comprise a relevant evaluation measure of effect.

University: This term is understood as a public or private institution which does research and offers degree programs with public accreditation at bachelor, master and doctoral level. Hence, several institutions of tertiary education are not within the scope of the present systematic review (e.g. Community Colleges, Teacher Training Colleges in some countries, etc.).

Student: This term means a full-time student at a university institution. Both students with special needs and students without such needs are within the scope of the systematic review. Ph.D.-students and students who study abroad are not. Studies which only address such groups of students are, therefore, excluded from the systematic review. During the screening process the scope was narrowed further down to exclude studies which investigate distance learning students only.

Dropout determinants: Factors which have been demonstrated through a relevant research design and methods of analysis to determine, more or less directly, occurrences of dropout phenomena at universities.

Dropout interventions: Measures applied at universities to prevent or reduce dropout phenomena.

Effects: That something has an effect means that a causal relation exists, i.e. if one knows that B follows from A, one can state that A is the cause of B. In the systematic review the following effects will be considered when programs/interventions directed at preventing or reducing dropout are researched:

- Students' completion rate of studies or programs
- Students' retention rate of studies or programs

Delimitations in time, geography, language and research:

As a consequence of recruitment to universities being much broader today than 20 years ago as well as globalisation processes having intensified the competition substantially among universities when it comes to recruitment, the scope of the review has been delimited to research published 2000-ff. Geographically the scope has ultimately been set like this: studies conducted within a European context, that is, EU member states, Norway and Switzerland. The language universe consists of studies reported in English, German, French and the Scandinavian (Danish, Swedish and Norwegian) languages.

Studies which have not applied a research design and methods of analysis adequate for the investigation and documentation of determinants of dropout or dropout preventing or reducing effects have been excluded. Such research includes studies which apply a purely qualitative design as well as studies which analyse data for one group only with regard to the outcome in question (dropout). That is, studies which analyse data for dropouts only excluding persisters without at the same time distinguishing between different types of dropout behaviour.

These concepts and delimitations all served as relevance criteria for inclusion/exclusion of studies during the subsequent screening process, see below (the full list of inclusion/exclusion criteria can be found in Chapter 2 of the technical report).

Searching, screening and quality appraisal

The work of finding the relevant research to be included in the systematic review and the subsequent analytic work was done systematically and transparently on the basis of the concept note of Danish Clearinghouse for Educational Research, which can be found at the following webpage:

<http://edu.au.dk/en/research/research-areas/danish-clearinghouse-for-educational-research/>

Once having made the conceptual choices and set the scope for the systematic review as described above, the next step was to determine the universe to search within and the search profiles to apply to search for relevant studies. The search universe consisted of 18 international databases, two webpages of major research players in the field and three key journals in the field. Search profiles were set up so that, in principle, all research on dropout from university studies as defined and scoped above was found (the list of databases and the search profiles used can be found in Chapter 2 and Appendix 1, respectively, of the technical report). The searches yielded 6,207 different references. These were then screened for relevance according to the explicit criteria set up for inclusion/exclusion of studies in relation to the scope of the systematic review. Next, all studies which were found relevant to be included in the research mapping were checked for relevant references and the members of the review group were urged to supply extra relevant references throughout the whole process. In the end, only 62 studies were found relevant to be included in the subsequent research mapping, because they satisfied all the relevant criteria for non-exclusion. These 62 studies were subsequently assessed for quality. This resulted in 44 studies being available for the synthesis of study findings, because these studies were all assigned an overall weight of evidence of either medium or high.

Method of the synthesis

The present synthesis consists of a so-called 'narrative synthesis' (Gough et al., 2012; Popay et al., 2006). This is a consequence of the 44 studies available for the synthesis being very heterogeneous when it comes to both the definition/operationalisation of the dropout phenomena investigated, the possible determinants of dropout investigated or programmes/interventions directly aimed at preventing or reducing dropout as well as the designs and methods of analysis applied across the studies. The foundations for working within an aggregative mode of synthesis are, therefore, not fulfilled and a meta-analysis has not been undertaken. Although not working within an aggregative mode of synthesis, the aim of a narrative synthesis is still to combine the findings across the studies available in a systematic way and to analyse how differences between the studies might possibly be explored and explained by working on a higher level than the individual study (for the specific elements in the narrative synthesis, see Section 5.1 of the technical report).

The narrative synthesis

44 studies form the basis of the synthesis

The 44 studies available for the synthesis of study findings were found to be so because they were both relevant, that is, they dealt with the questions to be addressed in the systematic review and reliable in that they had been assessed to give trustworthy answers to the review questions posed.

A number of issues regarding the 44 studies available for the synthesis ought to be mentioned before reading the synthesis to put the findings into perspective. First, the 44 studies are markedly skewed towards addressing the review question *'Why do such dropout phenomena occur at universities?'* at the expense of the other review questions, especially the question *'What can be done by the universities to prevent or reduce such dropout phenomena?'* That is, nearly all of the studies available for the synthesis investigate possible determinants of dropout from university studies, while only three studies have investigated the possible effects of programmes/interventions directly aimed at preventing or reducing dropout. One study has been found to address both issues. At first sight the basis for obtaining solid evidence on the review question *'Why do such dropout phenomena occur at universities?'* by synthesising the findings of the 42 studies, thus, seems to be pretty good, whereas the basis for obtaining solid evidence on the review question *'What can be done by the universities to prevent or reduce such dropout phenomena?'* is far from being optimal.

Second, a skewness in the focus of empirical investigation is found among the 42 studies addressing the review question *'Why do such dropout phenomena occur at universities?'* in favour of investigating the possible effect on dropout of hard facts about each student such as the sociodemographic background of the student, the student's age, gender and (upper) secondary school achievement. These can be regarded as so-called university non-malleable and pre-university malleable factors, because they contain aspects not directly in the hands of university authorities and/or politicians to control or, at best, to control only to a lesser extent by authorities at lower educational levels. This focus comes at the expense of an extensive investigation on the possible effect on dropout of 'softer' aspects such as the student's study approach, motivations for studying, study effort and satisfaction with studying, all of which can be included under the so-called university malleable factors, that is, factors which are capable of being altered or controlled by university authorities and/or politicians more directly and to a greater extent. This skewness in the focus of empirical investigation is considered to be partly a consequence of one of the characteristics pertaining to the research field of university dropout in general, namely the extensive use of individual level university administrative data and national register data in the quantitative analyses on dropout which almost purely contain hard facts about each student on mostly university non-malleable and pre-university malleable factors. Another reason for the skewness could simply be the fact that university malleable factors quite simply are harder to measure both validly and/or reliably because often times there are more ways to measure such factors. For example, measuring a student's social integration and motivations for studying is not as straightforward a task as measuring a student's age, gender, (upper) secondary school marks,

etc., wherefore more resources must be put into measuring such factors. Yet, even if they *are* measured, the findings obtained should be considered less certain because of the ambiguity of the concepts. As a consequence of the more sporadic focus on university malleable factors, it will be more difficult to obtain the pedagogic perspective when addressing the review questions than it will be to obtain its sociological counterpart.

Another issue concerns the overall study designs applied across the 44 studies. The most frequently applied design is a cross-sectional design. This is not regarded as the optimal choice for neither addressing questions concerning determinants of dropout within a process-based perspective or effects of programmes/interventions directly aimed at preventing/reducing dropout, nor aspects related to the question of what is dropout from university studies including what happens to dropouts after dropout. In somewhat relation to this, the methods of analysis applied across the 44 studies demonstrate a striking lack of process based analytic approaches such as path analysis.

Also, none of the studies available for the synthesis has analysed dropout phenomena across national borders. All studies are, therefore, country-specific. Furthermore, some of the specific aspects investigated are investigated rather country-specifically.

These issues serve to put the synthesis findings in the following section into perspective and are all contained in the robustness analysis of the synthesis which is presented in Section 5.4 of the technical report. They will be touched upon again in relation to the conclusion and the recommendations for policy, practice and research that are posed on the basis of the findings of this systematic review.

Evidence on *'What is dropout from university studies?'*

In the following sections some studies are referred to as *core studies*. It became clear during the synthesis process that it is essential to distinguish between different types of dropout behaviour when investigating dropout phenomena at universities. Whereas most of the studies available for this synthesis unfortunately have been found not to make such an analytic distinction, a smaller number of studies have been identified to do so. Five studies have been found to compare the possible determinants of dropout directly across persisters, involuntary dropouts and voluntary withdrawals or, alternatively, directly across persisters, transfer students and formal dropouts in their quantitative analyses by the means of e.g. a 'competing risk'-framework. Of these five studies, four of them have additionally been assessed in the research mapping to be broadly generalisable and given an overall 'high' weight of evidence. These four studies thus comprise a relatively greater complexity, and their findings are therefore considered to contain a greater validity and precision than the findings of the other studies available for this synthesis, while at the same time being broadly generalisable. These four studies are given a special role in the synthesis in that their findings will be highlighted and used to inform the findings of the other studies in case they are divergent.

Different processes leading to different types of dropout behaviour

Evidence on whether or not different processes lead to different types of dropout behaviour can be obtained from studies that can compare the possible determinants of dropout directly across different types of dropout behaviour within their quantitative analyses. In other words, this section will juxtapose and synthesise evidence from the core studies to find out if there is empirical evidence within a European context that different within-university processes lead to different types of dropout. Thus, this section will seek to give a more cohesive profile of those students who involuntarily drop out (i.e. due to academic failure) or voluntarily withdraw and subsequently either transfer or formally drop out of higher education, respectively.

The question is, is there empirical evidence for the above propositions within a European context? As stated above merely a handful of the studies available for the synthesis has been identified as being core studies. One core study compares the possible determinants of dropout directly across persisters, involuntary dropouts and voluntary withdrawals whereas the other three core studies compare the possible determinants of dropout directly across persisters, transfer students and formal dropouts. The evidence base on this matter is, therefore, rather small. In addition, among these four core studies only one of them investigates aspects of academic and social integration within university, see below. The same study further investigates the relationship between aspects of the individual student's stock of educational goals and dropout. None of the other core studies investigate the relationship between dropout and the individual student's academic integration, social integration or stock of educational goals and institutional commitment.

The core studies show that differences in university dropout behaviour can be lead back to pre-university factors such as academic achievement in (upper) secondary school and to factors operating even prior to that, namely to the student's socio-demographic background as well as to personal characteristics of the student such as age. As is the case for prior academic achievement, a significantly negative effect of the student's socio-demographic background (especially the parents' educational attainment) is found upon the risk of formal dropout – the better the achievement in (upper) secondary school and the higher educational attainment of the parents, the lower the risk of formal dropout. These issues play a weaker role among transfer students, if one at all. Concerning student age, there is, again, evidence that age has no statistically significant effect on making a transfer or, alternatively, that higher age leads to a lower likelihood of student transfer, whereas the opposite is found to hold among formal dropouts, that is, higher age leads to a higher risk of dropout, other things being equal.

The figure below serves as a rough summary of the findings from the core studies put together. Despite the lack of empirical investigation of a possible effect of academic integration within university on different types of dropout behaviour, when looked at more broadly, that is, when including a student's prior academic achievement, a student's personal characteristics as well a student's socio-demographic background, there is evidence of transfer students being an academically/socio-economically more resourceful group of students than formal dropouts, not significantly different from persisters, or alternatively, even more resourceful than persisters, whereas formal dropouts seem to be significantly less academically/socio-economically resourceful than both persisters and transfer students. The few within-university findings

concerning students' motivations and educational goals indicate that transfer students seem to be more sensitive than formal dropouts to factors not directly related to academic achievement, but to factors more related to the content of the study and its possibilities as well as to the student's motivations for studying.

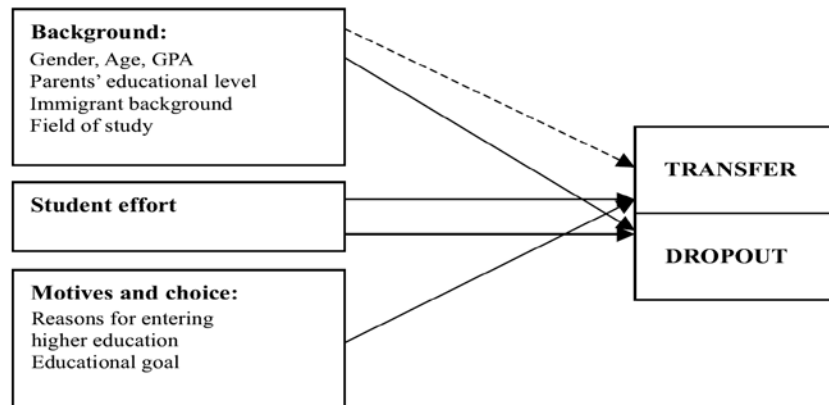


Figure 5.3.2.1 How different variable sets affect transfer and dropout respectively
The figure is obtained from Hovdhaugen (2009).

One must bear in mind the small evidence base on which the above evidence is obtained. That being said, the results obtained in the core studies do show that it is crucial to distinguish between different types of dropout behaviour, because each type of behaviour has different determinants. The core studies are thus very valuable, because they are able to redress some of the results obtained from the other non-core studies.

The timing of dropout

Another way to approach the question 'What is dropout from university studies?' is to dissect university dropout by the timing of dropout. The first, and firm, point to make in relation to timing of dropout (without distinguishing between different types of dropout behaviour) is that university dropout primarily happens during the first semesters/first year of study. Some studies further state that first-year dropout is different from later dropout. Since first-year dropout is found to be both more comprehensive than and different from later dropout, quite a few of the studies available for this synthesis actually restrict their analyses to comprise first-year students only.

A few studies investigate the dropout timing of transfer students separately. They all indicate, through the use of simple percentages/frequency tables and without making further analyses of why this is so, that student transfer in general happens early in the course of study. A couple of studies furthermore indicate that student transfer, relatively speaking, happens earlier than formal dropout in that the distribution of student transfer is steeper downward sloping throughout the course of study than is the distribution of formal dropout. One core study finds that from year 4 of study and later years of study the transfer rate is vanishingly small, whereas the dropout rate for other reasons of dropout than transfer is relatively higher. For both types of dropout behaviour it still applies, though, that first year dropout/transfer is by far the greatest. Unfortunately, few of the studies that investigate more than just first-year students have

investigated dropout through the use of discrete time survival analyses and have subsequently presented their analysis results in such a way that the possible time-varying effect on dropout of the different factors can be obtained. These studies are able to qualify an answer to the question of what university dropout is by explicitly taking on a time-varying perspective in their quantitative analyses.

Those studies which have analysed the possible determinants of university dropout within a time-varying perspective have, thus, predominantly found evidence for pre-university academic achievement influencing the risk of dropout more strongly in the first stages of study compared to later stages, whereas conditions external to university have been found to be more salient for later dropout. Unfortunately, the time-varying analyses lack the investigation of various within-university factors, therefore, no evidence is available on whether the effect on dropout of such within-university factors varies over the course of study as was found for different aspects of pre-university academic achievement.

What happens to dropouts after dropout?

It is relevant to investigate possible evidence on what happens to dropouts after dropout, comprising the important aspect of whether the dropouts have acquired useful skills before leaving their university subject of study to be used subsequently on the job market. This might include students who formally drop out of higher education because they are being directly recruited into the job market before graduation, and as such forming a special type of formal dropout behaviour. In this case the consequences of dropout might well be considered to be less harmful, at least from the perspective of this specific group of dropouts.

A number of studies (apart from the core studies) present simple descriptive statistics of how large a percentage of the dropouts is actually transfer students and, in a few cases, how large a percentage of these transfer students has transferred to another subject of study within higher education and how many have started another type of education at a lower level measured some time after their dropout. In most cases, such statistics are presented without the studies having directly compared e.g. transfer students and formal dropouts in their quantitative analyses on determinants of dropout. An often made point in these studies is merely that because a (varying) percentage of the dropouts are actually found to be transfer students, the dropout problem is often less of an economic and societal problem than first assumed.

Unfortunately, only a minor part of the studies available for the synthesis addresses more thoroughly the question of what actually happens to dropouts after dropping out as a kind of post-university student 'tracking'. Common to these studies is that their analyses build upon thorough questionnaire surveys. Naturally, questions concerning the occupational whereabouts of dropouts after dropout and related issues cannot be obtained from university administrative records. That these statistics/analyses build upon questionnaire surveys of precarious issues such as occupational activity, occupational position and income, for which the answers are often difficult to verify, should serve as a note of caution of these studies findings. Hence, in addition to the investigation of how large a percentage of the dropouts transfer to another subject of study/education a while after having dropped out, some of these studies look into the

occupational activity of the (formal) dropouts some time after dropout. Again, this is done by the means of simple descriptive statistics e.g. by looking at how large a percentage of the dropouts are employed at the time of measurement often compared to the situation among graduates.

In sum, the studies that investigate this aspect tell the story that from the dropouts' own perspective (or, to a lesser extent, the system of higher education) dropping out from higher education should in many cases not be seen as an unconditional defeat. Firstly, this is because an often times not inconsiderable share of dropouts transfer to another subject of study within higher education directly or a while after they have dropped out. Secondly, this is because the employment rate of the dropouts is often quite high and not necessarily much worse than among the graduates. In other words, problems of unemployment among dropouts are not particularly pronounced. However, when one looks deeper into the occupational profile concerning issues such as the occupational level/position of the dropouts, their working hours, income and whether they make good use of the skills they have obtained in their university subject of study before dropping out, the picture is less positive compared to the graduates. Although the evidence is not entirely unequivocal, there is a tendency that dropouts lag behind the group of graduates on these issues.

Besides the evidence base being small, another significant problem with the evidence concerning the above-mentioned issues is the fact that all of these studies build upon cross-sectional questionnaire surveys; that is, they only measure the occupational aspects once and often quite shortly after exmatriculation. As such, evidence on the possible time-varying effects of these aspects and the long term implications of dropout is missing.

Evidence on 'Why do such dropout phenomena occur at universities?' including evidence on 'What can be done by the universities to prevent or reduce such dropout phenomena?'

This section contains the evidence obtained from the 44 studies available for the synthesis concerning the two review questions '*Why do such dropout phenomena occur at universities?*' (42 studies available) and '*What can be done by the universities to prevent or reduce such dropout phenomena?*' (Three studies are available, i.e. one study addresses both review questions). Evidence on '*Why do such dropout phenomena occur at universities?*' is divided into nine overall categories beginning with the university malleable factors. Next, the pre-university malleable factors are presented and lastly the non-malleable factors. Because the European based intervention studies concerning '*What can be done by the universities to prevent or reduce such dropout phenomena?*' are very few and sporadic, evidence on the third review question is included in the guiding 'story' on '*Why do such dropout phenomena occur at universities?*' where it best fits in.

Study conditions at university

Crucial among university malleable factors is the overall category termed 'Study conditions at university'. This is because it should be almost purely within the reach of the given university authorities and/or politicians to alter/change the study conditions, if they are thought to be non-

optimal concerning, for instance, issues related to dropout. Similar to, or even more so than, other university malleable factors, 'Study conditions at university' comprise a huge amount of features which in themselves can be defined, operationalised and analysed in various ways, as will become evident in this section. Therefore, the chance that more studies investigate, operationalise and analyse each of these features in the exact same way is minimal, which will to some extent naturally complicate a synthesis of the findings within this overall category.

Of the 42 studies available for investigating '*Why do such dropout phenomena occur at universities?*', 22 studies include one or more aspects within this category in their quantitative analyses. Of these, eight studies find purely significant results for influence of this overall category on dropout, whereas three studies have obtained insignificant results only and 11 studies have obtained mixed results dependent upon what aspect of the overall category has been evaluated. One additional study reports on an intervention where an alternative educational approach is applied.

Institutional resources

As mentioned, this overall category covers a huge amount of features. On this basis, it is not surprising that most of the specific aspects of the overall category have been investigated by no more than a handful of studies. That being said, there seems to be an overweight of findings linking various institutional resources to dropout. This focus on institutional resources has mostly been investigated within a British context. Such institutional resources include, amongst other things, number of students in lectures, number/composition of the student body (e.g. percentage of research graduates), percentage of staff with a professorship or percentage of staff doing research, staff-student ratio, percentage of university income from research grants, academic expenditure per student, library expenditure per student, staff salaries, etc. The evidence is mixed and in some studies the results vary by gender or by type of dropout behaviour. Some findings indicate no significant relationship, whereas others indicate that more resources spent are reflected in a significantly lower dropout risk. The studies that investigate the number of students in lectures find, for instance, that this feature is significantly related to a higher dropout risk when that number is perceived to be too high/unsatisfactory by the students themselves. A couple of studies investigate and find that higher student and teacher expenditures are significantly related to a lower dropout risk. Furthermore, being a research intensive institution appears to give rise to a significantly lower dropout risk as well, at least when it comes to involuntary dropout (that is, dropout due to academic failure). Apart from one study's findings, the evidence is overwhelmingly in favour of an increasing amount of institutional resources leading to a lower dropout risk.

Study content, study structure/organization of exams

Other aspects of this overall category, such as the effect of the study content (curriculum), the study structure and the organization of exams, have been investigated mostly within a German context through the use of questionnaire surveys. One Austrian and one German study do to a certain extent investigate similar features. They obtain concurrent results when it comes to measuring a possible effect on dropout of satisfaction with/approval of the content of the study and the organization of lectures/exams. None of these features are found to exert a statistically

significant influence on dropout. Another German study finds that a satisfactory academic workload and a satisfactory difficulty level in the subject of study lowers the risk of dropout significantly.

Additionally, an experimental study finds that changing the way the curriculum is taught and the way it is assessed in a practical chemistry course at a Spanish university directly affects the students in terms of passing their exams or dropping out. In regard to the third review question, this study shows that a teaching and examination method that demands more active students and which makes a connection to students' previous knowledge on the subject content seems to motivate them and result in a higher percentage of students passing examinations and fewer dropouts from the course.

Learning environment and learning quality

Two Danish studies both operate with a broad factor termed 'the academic environment'. This is an overall measure consisting of a greater number of items measuring features such as satisfaction with the physical conditions at university, the teaching and the curriculum. Included herein are, thus, also matters of study content. Neither of these two studies finds this overall measure to have a direct significant effect on the dropout risk. However, the academic environment seems to have an indirect effect through other factors such as motivations for studying.

Related aspects of this overall category concern the learning environment, teaching quality and the reputation of the institution. Again, the evidence base is quite small and evidence on the effect on dropout of such features is mainly possible to establish within a British context. Three British studies point at a positive relationship between 'teaching quality assessment' (TQA) score and 'research assessment exercise' (RAE) score (i.e. a proxy for the quality of research at each university) on the one hand and a significantly lower dropout risk on the other. For involuntary dropouts the RAE score has the same direction, but does not prove to be statistically significant, however. Another British study measures teaching quality through a question about satisfaction with the teaching quality. The study finds that the significant relationship between a higher learning quality and a lower dropout risk only applies to 'pre-92' universities. Within a Dutch context one study finds that among medical students satisfaction with elements of the learning environment does not turn out to be a significant predictor of dropout.

In a UK study the risk of dropout is found to be significantly lower among highly ranked students within highly ranked universities compared to other universities. That is, it seems to lower the dropout risk to be an elite student at an elite university compared to being an elite student at a non-elite university. A factor analysis in one of the core studies which compares formal dropouts and transfer students on their own stated reasons for dropout and transfer, respectively, shows that for both groups the factor with the greatest explanatory power is the learning environment. For formal dropouts it includes statements about unsatisfactory teaching/teachers and tutoring and bad learning environment. For transfer students it includes, among other things, statements such as perception of better teachers in and better reputation of the new institution. The findings from this factor analysis supports findings from another factor analysis comparing dropouts (no distinction made between different types of dropouts) and persisters. The most important factor

for dropout is the perception and experience of educational and organizational aspects of the institution. The learning environment is also of great importance for persisters, however. Among persisters, the second most important factor is found to be perception and experience of the learning environment quality.

Support and counseling services

No clear pattern arises for the effect of support and counseling services. Four studies have investigated this aspect. Since there are various ways of measuring satisfaction with support and counseling services, it is of less surprise that the evidence is mixed.

Peer effects

Three studies address the issue of peer effects. Two of these address *gender* peer effects, and *ability-related* peer-effects is further investigated in one study. The findings from this small group of studies are mixed, however, judging by this small evidence base, male students appear to be more sensitive to different kinds of peer effects than female students.

Subject of study

Twelve studies analyse whether there are significant differences in dropout risk between different subjects of study or faculties within specific universities or between different universities (i.e. medical schools). Nine of these 12 studies find that there are significant differences in the dropout risk between most of the investigated subjects of study/faculties. For the three studies that do not find significant differences, this actually only concerns part of the population under investigation.

Among the nine studies that find significant differences in dropout risk between different subjects of study/faculties, the overall picture is somewhat mixed regarding from which subject(s) of study/faculty(ies) the students are especially prone to drop out. After all, there seems to be an indication that the risk of dropout is particularly high within the hard sciences.

That no specific subject of study/faculty is consistently found to be more or less prone to dropout, besides the above indication that dropout is particularly high within the hard sciences, should be seen as a consequence of more factors: a variable measured at the level of the specific subject of study/faculty is naturally dependent upon several other things besides the particular features (i.e. the structure, academic content and demands, etc.) of each of the specific subjects of study/faculties under investigation. These other things include the composition of the student body, the teaching quality, etc. of each of the investigated specific subjects of study/faculties

Hence, it is almost impossible to disentangle whether the factors responsible for the differences in dropout risk between different subjects of study/faculties are factors pertaining to differences related to the subjects/faculties themselves or to other less university malleable factors such as, for instance the different composition of the student body across different subjects of study/faculties. Moreover, differences in dropout risk between various subjects of study/faculties are sensitive to specific contexts. Because most of the 12 studies in question are conducted within a country-specific university institution (together, however, covering a number of European countries), the chance that specific contextual factors have been influential on the findings of each study is not negligible.

In sum, the evidence of a possible effect of study conditions at university on dropout is at best blurred. The evidence suggests most firmly that university controlled issues, have the potential to lower the risk of dropout, other things being equal. Besides the huge amount of features included under the heading of 'Study conditions at university' which in themselves are defined, operationalised and analysed in various ways and few of them are investigated by more than a handful of studies, the mixed evidence is furthermore considered to be a consequence of the contextual narrowness of the studies available for the synthesis.

Academic integration at university

Academic integration at university comprises another aspect of the university malleable factors. However, because this overall category covers features that are influenced by personal traits and dispositions, it is not solely open to influence from university authorities and/or politicians.

Of the 42 studies investigating '*Why do such dropout phenomena occur at universities?*', 12 studies include one or more aspects of this overall category in their quantitative analyses. Eleven studies obtain significant findings for influence of this overall category on dropout, whereas four studies obtain insignificant findings. Hence, three studies have obtained both significant and insignificant findings dependent upon what aspect of the overall category has been evaluated.

Objective features of academic integration

Eight studies can be included in the category of objective features of academic integration investigating the possible effect on dropout of the student's achieved marks/exam results, including possible failed exams, and the amount of ECTS points earned. There is firm evidence of a strong and positive influence on the risk of dropout of the objective measures of academic integration. That is, all eight studies find that the better the academic performance, e.g. the higher the student marks, the lower the risk of dropout, although one study obtains mixed findings on these objective features.

Subjective features of academic integration

Another seven studies can be included in the category of subjective features of academic integration investigating the possible effect on dropout of the student's self-perceived academic progress at university and own evaluation of academic integration at university including own perception of interaction with faculty/staff. That is, three studies are included in both categories. There is also solid evidence of a significant relationship between academic integration, when measured in subjective terms, and dropout. Only one of the seven studies does not find such a relationship to be significant, the study measures academic integration as perception of interactions with faculty/staff. This study also finds that the higher the self-perceived inability to learn, the more time is invested in self-study, and, since the path analysis also shows that more self-study time leads to a significantly lower risk of dropout, indirectly self-ability to learn can even be said to have an indirectly negative effect on the risk of dropout. Of the remaining six studies, five of these indicate that a higher self-perceived ability leads to a significantly lower risk of dropout or vice versa. For example, one of the core studies finds that among formal dropouts, the factor of second most importance for dropout is 'problems related to meeting the academic

standards at university', whereas this factor is not found to be of importance among transfer students.

There is, thus, strong evidence that it matters quite a bit how the individual student performs academically at university. The better the actual academic performance and progress is, the lower is the risk of dropout. The same is true when one looks at how the individual student believes (s)he performs; that is, there is also quite solid evidence that a higher self-perceived academic performance leads to a lower dropout risk.

Social integration at university

This overall category also belongs to the university malleable factors where personal traits or personal dispositions might exert a certain influence. Hence, some of the aspects underlying this overall category are not entirely changeable as a direct result of university interventions or policies.

A little more than a handful of the 42 available studies, that is, seven studies, investigate social integration in one way or another. An obvious reason for the lack of an extensive evidence base on social integration is the fact that social integration, somewhat in contrast to (the objective aspect of) academic integration, cannot easily be evaluated via the typical data included in university administrative records. To investigate this concept, data must be obtained by the means of more subjective types of data among current students and dropouts. In accordance with this, all seven studies obtain their data on social integration from questionnaire surveys.

Among the seven studies, only one of them obtains results that link social integration directly and statistically significantly to dropout. Moreover, one of the core studies finds that the learning environment, which includes an aspect of social well-being (operationalised via the question 'did not feel socially suited to university'), is the most important factor among both formal dropouts and transfer students for their decision to drop out or transfer to another study, respectively. This also indicates that social integration seems to matter to some degree. Five studies obtain insignificant findings of social integration as operationalised in different ways. Some of these studies create indices on the basis of a number of items in the questionnaire survey to measure social integration as a integration with fellow students and integration with academic staff/teachers either separately or collectively in combination with measures of satisfaction with social activities in connection to the subject of study, satisfaction with opportunities for physical interaction with fellow students, having done teamwork with fellow students etc.. Others operationalise social integration in a way which can be grouped under the heading 'feeling at ease at the university'/'perception of the study environment'.. One of these five studies does find an indirect effect of social integration on dropout through motivation, via a path analysis.

A somewhat related aspect of social integration at university can, however, be studied by looking into the students' housing situation. If taking living on campus into account when studying social integration at university four more studies become interesting as they investigate the possible effect on dropout of living on or off campus. The four studies are all conducted in a British context and they all show that living on campus reduces the risk of dropout. As one study finds, it is crucial for the students to build peer support networks, not only academically but also socially. Students

living in university accommodation do have more contact with peers and are proved to be significantly better retained than those who do not. These findings are supported by the other studies showing that relative to a student living on campus, the dropout probability is slightly higher for students living together with their parents and even a bit higher for students living off-campus.

Evidence on an effect on dropout of social integration at university, thus, both rests upon a weak evidence base and the evidence itself is not clear. More studies find social integration to be insignificant upon the dropout risk, than the number of studies which find that a higher level of social integration lowers the risk of dropout. In addition to the small number of studies having investigated social integration, all of these studies, except for one, are all small-scale studies conducted within a narrow context, wherefore their generalisability has been judged to be low.

Personal efforts and motivations for studying

Among the university malleable factors an important one has to do with personal efforts and motivation for studying, because it is a potential means for reducing university dropout (Tinto, 1975). Again, the aspects underlying this overall category comprise certain elements of personal traits and dispositions and are, therefore, not entirely malleable on the part of university authorities and/or politicians.

Nineteen of the 42 studies investigate this overall category. Almost all of these studies obtain significant findings for the influence of this overall category on dropout, whereas eight studies obtain insignificant findings. This means that, apart from one, all the studies that have investigated this overall category have obtained significant findings, and seven of the studies have obtained both significant and insignificant findings dependent upon what aspect of the overall category has been evaluated.

Motivation

Ten studies investigate motivation as a possible determinant of dropout from university. One study finds that intrinsic motivation significantly reduces dropout, but the same study does not find extrinsic motivation, e.g. job expectations on the basis of attained competencies or exams, to influence dropout significantly. Another study also investigates extrinsic aspects of motivation. Via factor analyses it is investigated which factors are most important for dropouts and persisters, respectively, when both groups are asked what caused them to either dropout or persist. Among dropouts, the factor termed 'loss of interest in future occupation', an aspect of extrinsic motivation, is the third most important factor for dropping out. Among persisters, however, the factor termed 'future occupational identity', another extrinsic aspect of motivation, is the next most important factor for staying within the chosen subject of study. Thus, even though extrinsic motivation seems to be important, it is less applicable for distinguishing between dropouts and persisters. According to a third study it cannot be proven statistically that students with clear professional aims drop out less than those without.

The finding that more intrinsic motivation leads to a lower risk of dropout is supported by another study which also explicitly investigates intrinsic motivation and finds that it reduces the risk of

dropout. These findings are supported by yet another study which finds that interest in the subject of study significantly lowers the risk of dropout. A fourth study does not find intrinsic motivation to be significantly related to dropout, though. One of the core studies can be used to put some of the above findings into perspective. The study finds that so-called 'career orientation', an aspect of extrinsic motivation, as well as 'interest orientation', an aspect of intrinsic motivation, both significantly reduce the likelihood of student transfer, whereas these factors do not significantly influence the risk of formal dropout. 'Uncertain orientation' does not significantly influence either the likelihood of student transfer or the risk of formal dropout. Furthermore, students with clear educational goals are found to be significantly less likely to make a transfer, whereas this feature is of much less importance among formal dropouts.

Three other studies do not directly distinguish between the extrinsic and intrinsic aspects of motivation, but merely measure the possible effect of dropout on a single motivation variable or index. One study simply measures motivation through the item 'general study motivation'. Here, motivation is found to be significantly higher among persisters than among dropouts. Another study finds, through path-analysis, that a higher motivation to learn measured through eight items (one being 'I easily find the motivation to study') has an indirect and hampering effect on dropout through self-study time, but an insignificant indirect effect on dropout through observed learning activities. A third study also finds via a path analysis an indirect hampering effect of motivation on dropout. Motivation in this study is encapsulated by nine items in a questionnaire which evaluate students' opinions on personally rewarding aspects of the study and the effort students are prepared to give. In most instances, higher motivation results in a significantly lower risk of dropout. Especially intrinsic motivation seems to have a significant effect on lowering dropout and especially on lowering the likelihood of making a transfer. Not surprisingly, no studies find higher motivation to be related to a *higher* dropout risk.

As a related aspect of motivations for studying, six studies investigate the possible influence on dropout of preference for the subject of study, that is, whether the subject of study in which the student is enrolled is the student's most favoured subject of study or not ('subject preference', for short), and whether this affects the risk of dropout. The evidence is clear. Apart from one study that do not find study preference to be significantly related to dropout risk, the other five studies find that a higher subject preference significantly reduces the dropout risk.

A few other studies, including two of the above-mentioned, consider related aspects of motivation. These are quite specific aspects investigated by one study only, wherefore a synthesis of their findings has not been possible to create.

Personal effort

Concerning student effort – ten studies investigate aspects of this factor. There is unambiguous evidence that more student effort in the form of self-study time during the semester or before exams, attendance at/participation in lectures or number of ECTS point planned to be obtained during a semester results in a lower dropout risk. That is, nine out of these ten studies find that the a high degree of planned self-study time, attendance at/participation in lectures and ECTS points planned to obtain significantly lowers the risk of dropout. One of the core studies shows

that student effort has a similar impact on transfer students and formal dropout – it lowers the risk of both student transfer and formal dropout. Only one study finds such activities (i.e. number of hours devoted to private study/self-study, number of teaching hours at university and number of assignments handed in) to be insignificantly related to dropout. When this study looks at English ‘pre-92’ universities alone, there is even found to be a statistically positive relationship between teaching hours at university and dropout, meaning that more teaching hours at university leads to a *higher* dropout risk. The author himself finds this result to be rather surprising.

In summary, all of the above-mentioned studies have investigated directly or indirectly one or more aspects of motivations for studying and the impact of personal effort in relation to risk of dropout from university. Even though operationalisations of the different aspects are diverse, the picture is quite clear- the more (intrinsic) motivation and personal effort put into studying, the lower the risk of dropout, other things being equal. These findings are supported by earlier research and dropout theory (e.g. Hackman and Dysinger (1970) in Tinto, 1975) which argue that there is a direct relationship between the level of a student’s commitment to the goal of completion and university persistence.

Pre-university institutional procedures

In contrast to the so far investigated overall categories, the factors contained within this overall category operate just prior to university entrance. It includes actions on the part of university authorities and/or politicians like setting up admission requirements and experimenting with different admission types as well as making various information services about university/the specific subjects of study available to future university students. As such, this overall category includes pre-university malleable factors. Less so than the latter overall categories investigated (academic and social integration at university as well as personal efforts and motivations for studying) is this overall category subject to the influence of personal traits and dispositions. The potential for university authorities and/or politicians to take action is, as a point of departure, thus, greater. Whether there is evidence that such institutional procedures/set up significantly reduce university dropout is another question, one which is investigated below.

Eight of the 42 studies investigating ‘*Why do such dropout phenomena occur at universities?*’ address one or more aspects of this overall category as a possible influence on university dropout in their quantitative analyses. Of these, four studies obtain significant results for influence of this overall category on dropout and another six studies obtain insignificant results, this means two studies obtain both significant and insignificant results dependent upon the specific aspect of the overall category in question. In addition, one study addresses ‘*What can be done be the universities to prevent or reduce such dropout phenomena?*’.

Admission requirements /admission types

A potential instrument to be used by university authorities and/or politicians in relation to affecting university dropout has to do with setting up admission quotas (numerus clausus) and other admission requirements and/or experimenting with different admission types for entering university. Five studies, including one core study investigate such aspects. Four studies directly investigate the effect of different admission types on dropout. Two of these studies’ findings

indicate that compared to other admission types, admission via a 'non-grade based test' seems to lower the risk of dropout. This relationship is, however, only significant within one of the three faculties investigated, that is, namely within the Faculty of Humanities and not within the Faculty of Software Engineering nor within the Faculty of Economic Sciences. The third study does not find the relationship between admission type and dropout to be statistically significant when exclusively analysed among Dutch medical students as they found no statistically significant difference in the risk of dropout between medical students having been admitted on the basis of a favourable grade point average obtained in upper secondary school, having been selected by a local procedure at the university under investigation or having been selected by a national weighted lottery. The effect on dropout of the Dutch admission types into medical school is further investigated through an intervention where medical students who had been admitted by selection and medical students who had been admitted by weighted lottery were compared to each other. In this study, pre-admission variables did not differ between the two groups. The relative risk of dropping out of medical school was lower for the selected students than for the lottery-admitted controls. The researchers conclude that this controlled study shows that assessing applicants' non-cognitive and cognitive skills makes it possible to select students who will be less prone to drop out than students admitted simply by lottery. Moreover, another study obtains insignificant results for a variable termed 'school admission policy' on dropout. The same study which found the admission type to be significantly related to dropout among Danish medical students, does not find that the admission test score in itself is significantly related to dropout for this same group of students. This is in contrast to one of the core studies that finds the admission test score in the 'pre-university exam' when analysed for a broader group of UK university students in itself to exert a significant influence on dropout – the higher the score, the lower the risk of dropout. This relationship is found to apply for both transfer students and formal dropouts.

Information services prior to university application

The two studies which in their quantitative analyses investigate the possible effect on dropout of one or more measures of information made available prior to university application and entrance, also obtain mixed results. One of the studies finds that information prior to university application/entrance does not have an independent direct effect on dropout. This is in contrast to the other study where information about study demands is found to exert a statistically significant influence on dropout – the more informed the student felt concerning the study content prior to university entrance, the less the risk of dropout, other things being equal. The relationship between information acquired on learning and working methods at university and information acquired about future job perspectives associated with the specific subject of study, respectively, and dropout is, however, found to be statistically insignificant in that same study.

In summary, this overall category includes important aspects of university institutional procedures/set up in relation to the application process into university. Unfortunately, the evidence base is both weak (i.e. it is very small and most of the studies are quite narrow in context) and the evidence itself is mixed for an effect of such pre-university institutional procedures on the risk of dropout.

Prior schooling/prior academic achievement

This category belongs to the pre-university malleable factors, because lower level educational authorities and/or politicians have some influence on this factor through (upper) secondary school policies. Similar to most of the other overall categories, this category also contains certain personal elements, for instance personal abilities, which reduce the outside influences somewhat.

A great amount, 28 of the 42 studies available for investigating '*Why do such dropout phenomena occur at universities?*', investigate one or more aspects which can be included under the heading of 'Prior schooling/prior academic achievement'. This is the overall category which has been studied most extensively.

(Upper) secondary school achievement

Prior schooling/prior academic achievement primarily refers to the type of upper secondary schooling and achievement in upper secondary school, as this is the educational level that the overwhelming part of the studies is concerned with. With achievement is first of all meant (upper) secondary school marks/grade point average, because this is the aspect of achievement that is investigated most extensively (and easily).

About half, (i.e. 22 of the 42 studies available for the synthesis) have investigated the possible effect on university dropout of (upper) secondary school marks. The pattern obtained on the basis of the juxtaposition and synthesis of the 22 studies is clear – the higher the (upper) secondary school marks, the lower the risk of dropout at university. Fourteen of the 22 studies find that higher (upper) secondary school marks significantly lower the risk of dropout. Two studies, however, find the opposite to be true, namely, that higher (upper) secondary school marks significantly increase the risk of dropout. Five studies obtain more mixed results concerning (upper) secondary school marks. Two of the five studies analyse medical students only and three of them distinguish between transfer students and formal dropouts (two of them being core studies). The relationship found above (i.e. that higher (upper) secondary school marks significantly lower the risk of dropout) is in the latter three studies found to apply to formal dropouts only, whereas this relationship is not statistically significant among transfer students. One of these three studies further observes that the group of transfer students has upper secondary school marks above the mean of all students in the analysis (transfer students, formal dropouts and persisters analysed together), whereas formal dropouts have upper secondary school marks below the mean. Only one study obtains purely insignificant results for an effect of (upper) secondary school marks on university dropout.

(Upper) secondary school subject focus

Special attention has been given to the subject mathematics in (upper) secondary school, that is, either to the student's achievement in mathematics or his/her focus on mathematics. Eight studies have included mathematics in (upper) secondary school as a specific variable in their analysis of university dropout. Five of these studies find that having done well in mathematics in (upper) secondary school or having a strong mathematical profile, leads to a significantly lower risk of dropout, other things being equal. Three studies find that mathematical achievement in

(upper) secondary school does not relate significantly to dropout risk at university. Of these three studies two of them focus exclusively on medical students.

(Upper) secondary school type

Seventeen studies include (upper) secondary school type as a higher-level variable in their analysis of university dropout. A juxtaposition and synthesis of the results is not straightforward when it comes to establishing evidence of an effect of (upper) secondary school type on dropout. This is a direct consequence of the fact that (upper) secondary school types are difficult to compare across European countries because of the differences across educational systems even within the European context. This concerns for instance the types of (upper) secondary school available across European countries, the share of/accessibility of private (upper) secondary schools, the composition of the student body within the different types of (upper) secondary school, etc. The evidence of an effect on university dropout is, therefore, not surprisingly blurred for this aspect of prior schooling.

Other aspects of this overall category have been investigated so sporadically that a juxtaposition and synthesis of their possible effect on dropout cannot be established.

In summary, there is solid evidence that prior academic achievement, when operationalised as (upper) secondary school marks/grade point average, is a strong predictor of formal dropout from university, that is, the lower the (upper) secondary school marks, the higher the risk of formal dropout from university. As such, the effect of academic achievement on dropout does not only pertain to academic achievement within university, but can be traced back to academic achievement in prior schooling as well. The juxtaposition and synthesis of the findings concerning (upper) secondary school marks have further shown that transfer students and formal dropouts ought to be considered separately when analysing the factors influencing university dropout. In contrast to formal dropouts, (upper) secondary school marks were found to be insignificantly or, at most, less strongly related to the likelihood of student transfer in all three studies which distinguish between transfer students and formal dropouts. When taking action/making policies with the aim of reducing university dropout, it is thus important to acknowledge that poor (upper) secondary school marks cannot be used to track down students at risk of making a transfer, however, they are a powerful predictor of students at risk of making a formal dropout.

[Personal characteristics of the student](#)

This overall category is considered to belong to the university non-malleable factors. It is, however, still interesting and important to make an assessment of the evidence of an effect of aspects underlying this overall category on university dropout, because such an exercise will give an idea of the framework conditions under which university authorities and/or politicians are able to navigate in the first place. This overall category can be divided into two parts – the student's personal background characteristics and his/her personal traits/dispositions. The latter is more prone to outside influences than former. That being said, examples actually exist that university authorities and/or politicians have acted by the means of legislation/economic and academic incentives to try to, and succeeded in, influencing personal characteristics of the student body, such as, the gender composition and the mean age at university enrolment as well as personal

behaviour related to the number of gap years taken between graduation from upper secondary school and university enrolment (consult Section 5.3.3.7 of the technical report). Besides reducing the socio-economic loss to society by getting university students to graduate and enter the labour market at an earlier age, it will become clear below whether adjusting/lowering the mean age at university enrolment and the number of gap years as well as whether changing the gender composition of the student body are sound ways of reducing university dropout.

Personal background characteristics (age and gender)

Age

Of the 42 studies investigating ‘*Why do such dropout phenomena occur at universities?*’ 19 studies include student age as a variable in the quantitative analyses, either measured as the age of the student when entering university or measured as the age of the student at the time of the data extraction for the specific analysis. Of the 19 studies, 15 obtain significant findings for an effect of student age on dropout. Eight studies obtain insignificant findings. That is, four studies obtain purely insignificant findings, while four other studies obtain both significant and insignificant findings. For two of these latter studies, the fact that both significant and insignificant findings are obtained can be lead back to the fact that the two studies distinguish between different types of dropout behaviour, see below.

Evidence is solid that student age matters for the risk of dropout, even after other factors have been taken into account in the quantitative analyses. As mentioned above, four of the 19 studies obtain purely insignificant findings for a possible effect of student age on dropout. The other 15 studies obtain significant findings (four of these studies for at least part of the population under investigation). Among these 15 studies, younger students are found to outperform older students when it comes to dropout, that is; relatively younger students are most frequently found to have a significantly lower risk of dropout compared to relatively older students. In four of these 15 studies is the primary finding the opposite, namely that a lower age leads to a higher risk of dropout, and in two of these four cases, this pertains to transfer students, see below.

Interestingly, the four studies (three of them being core studies) that differentiate between transfer students and formal dropouts all confirm that a relatively higher student age leads to a higher risk of dropout, but only among formal dropouts. Among transfer students two of the studies find the opposite relationship to be true; namely that a relatively higher student age leads to a lower likelihood of student transfer. The other two core studies find student age to be insignificant when it comes to the likelihood of student transfer.

Although the evidence seems to be quite clear that a relatively higher student age leads to a higher risk of formal dropout, the specific cut-off points made between the age groupings in each study are not without importance for the findings obtained. A few of those studies which specifically include an age group of 30 years and above find a more curvilinear relationship between student age and dropout; students at the age of 30 and above, like the relatively youngest age groups, have a lower dropout risk than students in the middle and late twenties. Thus, a U-shaped relationship between student age and the risk of formal dropout seems to exist.

Gender

Twenty-three studies explicitly include gender as a variable in their quantitative analyses. Of these 23 studies 15 studies obtain significant results for an effect of gender on the risk of dropout, whereas 12 studies obtain insignificant results. That is, four studies obtain both significant and insignificant results. Of these four studies the results of two of them can be attributed to differences between transfer students and formal dropouts. One core study finds that only the risk for formal dropout is significantly higher among male students than among female students, whereas the likelihood of student transfer is not significantly different between male and female students. This is partly in line with another study which finds that among formal dropouts the risk of dropout is found to be significantly higher for male students than for female students. However, among transfer students the reverse is found to be true, namely that male students are found to have a significantly lower likelihood of student transfer.

Of the 15 studies with significant findings for gender, there is striking evidence of male students being more at risk of dropping out than female students, when other relevant variables have been taken into account. Put differently, of the 15 studies, 13 studies find that male students have a higher risk of dropout. This largely applies across the whole range of different subjects of study investigated. Interestingly, within a UK setting all studies with significant findings for gender find that male student are more prone to dropout than female students with the exception of students at Oxbridge universities, where male students are found to have a lower risk of dropout than female students.

In addition to the 23 studies investigating the effect of gender on dropout, four studies make separate dropout analyses for each gender. They thereby either explicitly or implicitly suggest that some of the factors which influence dropout are gender specific and thus treat gender as an interacting variable in the analyses.

Personal traits/dispositions

This section will give an appraisal of the evidence on the effect on dropout of a number of the student's personal traits/dispositions and personal behaviour related to learning and studying.

The effect of study approach and related aspects such as learning style, orientations on learning and study skills) on dropout is investigated by four studies. One study finds a statistically significant relationship between dropout and one specific type of study approach – persisters scored significantly higher on the measure called 'Meaningful Integrative Approach' (MIA) measured at the beginning of the course of study than did dropouts, but they did not score significantly different than dropouts on the measure called 'Superficial Approach' (SUA). This partly stands in contrast to another study by the same authors. The study finds no statistically significant effect on the risk of dropout of either study approach (MIA or SUA). This study further investigates the effect on dropout of different measures of so-called 'Orientations on learning'. Whether be an effect on dropout is found depends on what type of 'Orientations on learning' is considered. A higher score on the measure of 'Ambivalence and lack of regulation' increases the risk of dropout, whereas the score on the measure of 'Constructive self-regulation' and 'Reproductive external regulation' is not found to be significantly related to the risk of dropout.

The study also considers a couple of personal traits such as 'Conscientiousness', 'Agreeableness', 'Emotional stability' and 'Autonomy' on the risk of dropout. Only 'Conscientiousness' is found to be significantly related to dropout in that a higher score on this measure significantly lowers the risk of dropout. Also a third study obtain mixed results, finding that 'Observed learning activities' has a direct statistically significant effect on dropout, whereas measures of 'Knowledge construction', 'Cooperative learning', 'Self-regulated learning' and 'Authentic problems' are not directly related to dropout. Indirectly, however, the measure of 'Knowledge construction' has an influence on dropout through 'Observed learning activities'. The last study finds study skills to be insignificantly related to dropout via t-tests of possible differences between dropouts and persisters. From the above, no clear picture arises of an effect of such personal traits/dispositions and personal behaviour related to learning and studying on dropout.

One study further investigates the role of the student's emotional intelligence on different educational outcomes. This study separates and excludes transfer students from the analyses. The study finds, by simple comparison between formal dropouts and persisters, that students who progress to the second year of study score higher on the overall measure of EI as well as on each of the four separate aspects of EI investigated (i.e. 'Emotion Perception', 'Mood Regulation', 'Regulation of other's emotions' and 'Utilisation of emotions'). The same study subsequently evaluates upon the dropout/retention rate following an EI-intervention. . The researchers find that students who showed an increase in EI following the intervention are more likely to persist with their studies compared to those who did not show such an increase in EI following the intervention. However, the study shows that just being part of the intervention group was not sufficient to alter the prospects of dropout. Students with high emotional intelligence at baseline were equally likely to persist with their study regardless of taking part in the intervention or not. Those in the average emotional intelligence intervention group were found to be even more likely to drop out than their control group peers, who had only participated in a week-long summer course designed to introduce new students to university life before enrolling on their full time degree course.

Of the three studies that investigate the influence of gap years on dropout from university two of them find that not having started university on time or having delayed enrolment significantly increases the risk of dropout. In one of the studies this relationship is found to apply to students in university faculties only and not for students within higher technical schools. The authors explain that the insignificant finding among students in higher technical schools might possibly be a consequence of the fact that very few students (3%) within higher technical schools are delayers. Another article based on the same study is able to elaborate on the relationship between gap years and dropout. It finds that delayed enrolment significantly increases the risk of formal dropout only, whereas it actually significantly lowers the likelihood of student transfer. The other study that found a significant relationship between gap years and dropout analyses dropout within a survival analysis framework and is, thus, able to investigate the possible time-varying effect of gap years on university dropout. The study finds that the effect of not having started university on time diminishes over the course of study. In other words, it is found that gap years are more strongly related to dropout in the first semesters/years of study compared to later

semesters/years of study where the significant effect actually disappears. To the contrary, a third study finds that more gap years lower the risk of dropout.

In summary, the evidence base is relatively large and the evidence rather clear concerning the effect of student age and gender on university dropout – relatively younger students have a significantly lower risk of dropout than relatively older students, other things being equal. Furthermore, male students have been found to have a significantly higher dropout risk than female students across most subjects of study and within many different contextual settings. Why this is so is less clear, though. The core studies also indicate that it is, again, important to distinguish between transfer students and formal dropouts. The relationship between higher student age and higher risk of dropout is significant for formal dropouts only. For transfer students the relationship between student age and likelihood of student transfer is either not significant, or the opposite is true, namely, that a higher student age leads to a significantly lower likelihood of student transfer. This has also been found in relation to gap years – delayed enrolment significantly increases the risk of formal dropout, whereas it lowers the likelihood of student transfer. Data on personal characteristics, such as student age and gender, are both more available for analysis and also more easily measured than most other factors, which might contribute to the relatively clear evidence when it comes to their effect on university dropout. Concerning the possible effect of a student's personal traits/dispositions and personal behaviour related to learning and studying (e.g. study approach/learning style/orientations on learning/study skills and emotional intelligence), the evidence base is correspondingly smaller and the evidence more blurred.

Socio-demographic background (social heritage) of the student

Although not the focus of this synthesis because a student's socio-demographic background is neither a pre-university nor a university malleable factor, it is still interesting and important to make an assessment of the evidence of this overall category on the risk of dropout from university. As was the case concerning a student's personal characteristics, such an exercise will give an idea of the framework conditions under which university authorities and/or politicians are able to navigate in the first place.

Of the 42 studies investigating *'Why do such dropout phenomena occur at universities?'*, 16 studies include in their quantitative analyses a variable measuring parents' educational attainment and nine studies include a variable measuring parents' occupational level ('social class'). Three of these studies, thus, investigate both features. While the studies investigating the effect on dropout of parents' educational attainment come from a wide range of European countries, the overwhelming part of the studies investigating the effect of parents' occupational level (social class) has been conducted within a British context. This is partly a result of the less difficult accessibility of such information in the UK compared to many other European countries.

Parental educational attainment

Although the 16 studies investigating parents' educational attainment apply different operationalisations of this variable, there is evidence that students whose parents' (one or both) have attained a degree at a higher educational level have a significantly lower risk of dropout when compared to students whose parents' (one or both) have attained a degree at a lower educational level as their highest educational degree. At first glance, six studies find that higher educational attainment of the parents leads to a significantly lower dropout risk. The dropout reducing effect is especially strong among students that have a parent with a degree in higher education. Seven studies obtain mixed results and three studies obtain purely insignificant results. Among the seven studies four of them are able to distinguish between transfer students and formal dropouts and two of these are core studies. When looking at formal dropouts it applies that higher educational attainment of the parents in three out of these four cases leads to a significantly lower dropout risk, which is in line with the above-mentioned five studies that did not distinguish between these two groups of dropouts. The same three studies find the effect of parents' educational attainment to be insignificantly related to the likelihood of student transfer. In the last of these four studies, the effect of parents' educational attainment is found to be insignificant for formal dropouts, but even positive for transfer students; that is, parents' educational attainment *increases* the likelihood of student transfer. Thus, there is firm evidence of a statistically significant effect of parents' educational attainment on the risk of formal dropout, whereas this issue plays a much weaker role among transfer students or the relationship being even reversed.

Parental occupational level

Concerning the effect of parents' occupational level (social class), the findings suggest a similar but slightly less firm pattern. Of the nine studies investigating this feature, three studies find a purely statistically significant effect of parents' occupational level on the risk of dropout – the higher the occupational level, the lower the dropout risk - one study obtains purely insignificant findings and five studies obtain mixed findings. It is interesting to observe that two of the five studies which obtain mixed findings plus the one study that only obtains insignificant findings all concentrate their analyses on medical students alone. Among medical students, parents' occupational level (social class), or alternatively having a doctor parent or not, does not have a consistently statistically significant impact on the risk of dropout. One core study finds that parents' occupational level only matters in relation to student transfer; thus, students are found to have a significantly lower likelihood of student transfer if they have a doctor parent. The insignificant effect on dropout of socio-demographic background among medical students is also true for the one study that investigates the influence of parents' educational attainment among medical students.

In all, there is firm evidence that students' socio-demographic background operationalised as parents' educational attainment or occupational level has a statistically significant influence on university dropout when looking at formal dropout. Put differently, the higher the educational attainment or occupational level of the parents', the lower the risk of formal dropout, other things being equal. This applies even after a number of other intermediate factors such as students' prior

academic achievement, motivations for studying etc., have been included in the quantitative analyses and despite the observation that there is a certain positive self-selection of young people into university making university students a more homogeneous group than pupils at lower levels of education. Two interesting observations are able to further clarify this picture. First, the juxtaposition and synthesis of the study findings have shown that it is, once more, important to distinguish between transfer students and formal dropouts when one wants to say something about the effect of parents' educational attainment on the risk of dropout. This factor is a strong statistically negative predictor of the risk of formal dropout whereas it is, at best, a very weak statistically positive predictor of the likelihood of student transfer. It is therefore important to recognise transfer students and formal dropouts as two distinct groups of dropouts. Second, the juxtaposition and synthesis of the findings have also given rise to the observation that, among medical students, the relationship between a student's socio-demographic background and formal dropout is weaker and, in fact, predominantly insignificant. At first glance, this could indicate that medical students are the only group of students that stand out with regard to a (missing) effect of a student's socio-demographic background on dropout. This might, however, be a consequence of the fact that medical students are the only group of students that has been studied distinctively in more of the available studies (i.e. in five studies). The missing effect of socio-demographic background among medical students might also be a result of the positive self-selection mechanisms into university operating especially strongly when it comes to medical school. In other words, because medical students make up a particularly homogeneous and resourceful group of students concerning their socio-demographic background this background will play a less important role concerning dropout from medical school compared to other subjects of study.

Conditions external to university

The overall category 'Conditions external to university' deals with matters related to student life and situation beyond the university/outside the university campus. As such, this overall category constitutes another university non-malleable factor. In all, 14 studies have been found to investigate one or more aspects of conditions external to university. In this section, evidence on the possible effect on university dropout of two aspects of this overall category (i.e. the student's financial situation, whether or not the student holds a (study relevant) job or not) will be sought synthesised.

Financial situation

A student's financial situation can be affected from the outside both positively by financial support such as scholarships, student loans or contributions from parents/family or negatively in terms of admissions fees. In all, ten studies look deeper into the student's financial situation as a possible determinant of university dropout.

One study looks at the influence of financial situation on university dropout in the UK. It finds that the likelihood of course transfer is lower among non-UK fee paying students as compared to UK fee paying students. Non-UK fee paying students pay a much higher fee than UK students. However, when it comes to formal dropout, the variable is insignificant, that is, being a non-UK fee paying student as compared to a UK fee paying student does not increase the risk of formal

dropout correspondingly. In a second UK study the researchers find that among male students the dropout risk is lower for non-UK fee paying students. This is not the case regarding female students for whom the dropout risk is not significantly different between non-UK fee paying students and UK fee paying students. In two other studies the researchers find that in the UK overseas students are more prone to drop out compared to UK students, unless they are self-funded, in which case they drop out less likely than UK students.

Another study finds that financial hardship is the factor exerting the strongest influence on dropout in terms of enhanced dropout risk. It has a strong influence on the correlation between academic performance, academic commitment and dropout. In yet another study the effect of a student's household economic situation on dropout is investigated. The researchers find that students in the highest household income class, compared to the lowest household income class, have a *higher* risk of dropping out.

The effect of different types of financial aid given to students is also studied and one German study compares the dropout risk between students that receive either federal financial support, parental or other private support, scholarships or no financial aid. The main source of student aid in Germany is based on the 'Federal Education and Training Assistance Act' (BAfoeG), which is an act giving children from low income families better possibilities for pursuing a degree in higher education according to their abilities. The findings obtained show that students who are financially supported by the BAfoeG are less likely to drop out compared to students that do not receive any financial support. Students that receive private aid are also less likely to drop out, however not to the same extent as students being federally supported via the BAfoeG. Financial support in terms of scholarships is, however, not found to be significantly related to dropout.

Two articles based on the same study investigate the effect of receiving state grants on dropout. In one of the articles, the researchers find that state grants reduce the risk of dropout without distinguishing between different types of dropout behavior.. Financial support has the greatest effect in the first years of the course of study, and the researchers conclude that giving financial support to a larger group of students for a shorter period is more effective than supporting fewer students throughout their entire course of study. In the other article where the researchers distinguish between formal dropouts and transfer students, the researchers conclude that state financial grants decreases the risk of formal dropout from university, however, that it increases the likelihood of student transfer.

Two more studies address the students' financial situation and both conclude that it is not of major importance for the risk of dropping out from university. The first study finds that financial satisfaction during the study is insignificant for dropout and this finding is supported by the other study that concludes that the student's total income and the feeling of being under financial pressure does not have any significant effect on the student's risk of dropout from university.

In all, the synthesis of the findings concerning a possible effect on dropout of the students' financial situation gives a diverse impression as the findings are mixed. It is, therefore, not possible to draw a clear overall conclusion.

Student job

Somewhat surprisingly, not many studies investigate the effect of having a job alongside studying, in fact only two studies analyse this aspect as a potential determinant of university dropout. The findings of the first study show that working 20 hours per week or more largely increases the risk of dropout. The second study, to the contrary, obtains insignificant findings for hours spent on work alongside studying. Neither of the two studies report on whether they distinguish between study relevant jobs and jobs less relevant for the study concerned. This is inexpedient as one would assume that the effect on dropout of work alongside studying depends upon whether or not it is a study relevant job. Due to the lack of such a distinction and the negligible evidence base, it is not possible to establish any real evidence for an effect of this aspect on university dropout.

Other aspects of this overall category have been investigated so sporadically that a juxtaposition and synthesis of their possible effect on dropout cannot be established.

Conclusion

This concluding section contains a short summary of the most important of the synthesis findings as they have been presented above. It further puts the synthesis findings into perspective, first, in relation to earlier non-European research on dropout from higher education and, second, in relation to the robustness assessment (consult Section 5.4 of the technical report).

The evidence obtained on the three review questions can be summarised as follows:

- *'What is dropout from university studies?'* – First of all the core studies provide clear evidence that different factors are involved concerning the different types of dropout behaviour. In other words, it is essential to distinguish between voluntary dropout (often) leading to transfer to another subject of study/institution within higher education and involuntary dropout which (often) leads to formal dropout from higher education altogether. Formal dropout is largely predicted by pre-university factors such as a student's socio-demographic/socio-economic background and prior academic achievement (the group of formal dropouts being less resourceful on both matters compared to both the group of persisters and the group of transfer students). The likelihood that a student will transfer to another subject of study/institution within the system of higher education is more affected by within-university factors such as the student's motivations for studying and his/her educational goals (these might very well have been formed prior to university enrolment, but are still university malleable to some extent). Transfer students are found to be more like persisters when it comes to socio-demographic/socio-economic and pre-university academic resources, or even more resourceful than persisters on these matters.

As to the issue of the timing of dropout, firm evidence is obtained that first-year dropout is both different from and (much) more extensive than later dropout, which is why a larger number of studies have concentrated their dropout analyses on first-year students only. There is also some evidence that student transfer in general happens earlier in the course of study than other types of dropout. Few studies have been able to analyse the possible determinants of university dropout within a time-varying perspective and the evidence is less firm. There is,

however, an indication that the influence on dropout of pre-university factors, such as achievement and academic focus in (upper) secondary school, diminishes throughout the course of study, whereas conditions external to university have been found to be more salient for later dropout than for early dropout. Unfortunately, the time-varying analyses lack investigation of various within-university factors. No evidence is therefore available on whether the effect on dropout of such within-university factors varies over the course of study as well.

The relatively small evidence base on what happens to dropouts after dropout indicates that the problem of unemployment is not much more salient among (formal) dropouts than it is among graduates. Detrimental effects of (formal) dropout compared to graduating first become visible when one investigates some further occupational aspects such as the subsequent occupational level/position of the dropouts, their income, whether they in their current job make greater or lesser use of the skills they had obtained prior to dropout. Even then, the evidence that graduates do better than (formal) dropouts is not unequivocal.

- *'Why do such dropout phenomena occur at universities?'* – Although the majority of the 44 studies available for the synthesis do not analyse university dropout directly within a process-based perspective, there is still convincing evidence that dropout from universities comprises a multifaceted and complex phenomenon, or rather phenomena, with factors at different stages – both prior to university and within university – affecting the risk of dropout. Being partly a consequence of the applied study designs and/or the data made available for analysis, the evidence base is greater and the evidence itself strongest in relation to effects on dropout due to a student's sociodemographic background, including his/her parents' educational level and occupational status, a student's personal characteristics, such as age and gender, and his/her (upper) secondary school academic focus and achievement. On the basis of the resources invested in most European countries to even out socio-economic inequalities in educational outcomes during primary and secondary school, it is a little surprising to observe that especially the parents' educational level still has been found to affect the individual risk of (formal) dropout from university, even after a number of intermediate factors have been taken into account. This has been found to apply across most subjects of study (medical students being found to constitute an exception). Another clear finding is that the risk of dropout is greater among male students across almost all of the investigated subjects of study. Evidence on the sources of this gender pattern is not available in the 44 studies, though. The evidence of an effect from within-university factors on the risk of dropout is, generally speaking, less convincing/more blurred. Though, other things being equal, investing in institutional resources on a number of different parameters seems to work as a sound way to reduce the risk of dropout, at least within the British context where it has almost solely been investigated. Improving a student's academic integration at university in terms of his/her academic achievement and progress seems to be another sound way to reduce the risk of dropout and increasing his/her intrinsic motivations for studying and for making greater academic efforts yet two others. However, as mentioned above, issues concerning motivations for studying/educational goals have been found to be better predictors of making a transfer than to formally drop out of the system of higher education altogether.

- *'What can be done by the universities to prevent or reduce such dropout phenomena?'* – This review question has hardly been touched upon across the studies available for the synthesis, European based evidence on this matter, therefore, can hardly be summarised. Addressing this review question is, however, also a question of addressing the review question *'Why do such dropout phenomena occur at universities?'*, because programmes/interventions carried out with the aim of directly preventing or reducing dropout from universities must, to be successful, build upon knowledge about why dropout occurs in the first place.

It is striking how similar the synthesis findings are to those obtained by Tinto almost 40 years ago within a U.S. college context as presented in his seminal article from 1975 *'Dropout from higher education - a theoretical synthesis of recent research'*. The findings of the present synthesis can, thus, to a large extent be understood within the existing theoretical frameworks developed by Tinto and refined by Heublein et al. With this systematic review the prevailing theories concerning dropout from universities are now systematically grounded.

The synthesis findings must additionally be put into perspective on the basis of the robustness analysis as presented in Section 5.4 of the technical report. This is because the robustness assessment has a bearing on the trustworthiness of the conclusions drawn. The robustness analysis has first and foremost shown that the study designs and methods of analysis applied in the 44 studies are in several cases not optimal for analysing dropout from universities within a process based perspective. Furthermore, the often rather small evidence base on which the synthesis findings have been constructed combined with the observation that the available studies often rest upon a narrow context and the fact that the specific aspects investigated are, at times, rather country specific all suggest that the synthesis findings should not always be taken to be universally applicable within the European scope of this systematic review. Still, because dropout phenomena, in line with most other educational issues, represent complex problems, the context becomes central and important for a deeper understanding of the phenomena which should be to the benefit of those studies that have analysed university dropout within specific contexts. That being said, when the synthesis findings are evaluated on the basis of the methods applied in the completion of the synthesis itself and, before that, the methods applied in the completion of the research mapping, the synthesis findings are considered to be fairly robust and, as such, the conclusions drawn upon them considered to be correspondingly trustworthy.

Recommendations for research, policy and practice

The findings and conclusions of this systematic review will hopefully inspire and be applied by politicians, practitioners and researchers working within the field of higher education, and especially with dropout from universities, in diverse ways and with a focus on the different aspects and parts of the review. In this respect, politicians, practitioners and researchers are encouraged to bear the robustness assessment in mind as all synthesis findings and conclusions drawn upon them are to be seen in the light of this analysis. The findings and conclusions of this systematic review further form the foundation for a number of recommendations aimed at policy, practice and research concerning dropout from university studies. On the basis of the limitations/shortcomings which have been found in the 44 studies available for the synthesis in relation to addressing the three review questions, the following recommendations mainly revolve around the question *'On the basis of the narrative synthesis what issues are we not able to say anything about/do we only have little or insecure knowledge about concerning dropout from university studies?'*

Research

- *Opportunities in applying a clearer concept of dropout from universities*

Researchers conducting future research on dropout from universities are urged to be aware of the necessity of distinguishing between different types of dropout behaviour and incorporate this distinction into their data analyses.

During the coding of the studies included in the research mapping it became evident that the definition and operationalisation of dropout from university studies in many cases tend to be vague and indistinct. The core studies have shown it to be essential to distinguish between different types of dropout behaviour in order to precisely answer the review question *'Why do such dropout phenomena occur at universities?'* and the related question *'What can be done be the universities to prevent or reduce such dropout phenomena?'*. This is because the occurrence of an involuntary dropout likely followed by a formal dropout from higher education is not (necessarily) based on the same prerequisites and conditions as a voluntary dropout in the form of, for instance, a student transfer to another study programme within higher education. In other words, answers to the question of why dropout occurs might be fundamentally different as to whether a student drops out of the system of higher education altogether or merely drops out from his/her study programme to continue the same study programme at another university for, say, geographical reasons. Furthermore, a formal dropout from the system of higher education and a student transfer to another study programme within higher education might obviously have different academic and economic consequences for the student. In those cases where all data or part of the data for such dropout analyses are obtained from student level administrative data recorded by the universities, this calls for an availability of such data at the universities in the first place, see recommendations for policy and practice below.

- *Opportunities in conducting more intervention studies*

A second recommendation for future research obviously revolves around the issue of a current lack of knowledge on the possible effects of interventions aimed at preventing or reducing dropout from European universities. More European based intervention studies are clearly needed to obtain solid European based knowledge about what can be done by the universities to prevent or reduce such dropout phenomena, since such studies are almost non-existent within the European context. At present one can only speculate whether this lack of intervention studies is perhaps due to the nature of the interventions done; they are too few or too short-lived or too formal and theory-based to lend themselves to research?

- *Opportunities in applying more suitable study designs, methods of analysis and data*

Moreover, some recommendations concerning the study designs, methods of analysis and the data applied in the research field as comprised by the review questions should be put forward. Knowledge/understanding of what dropout from university studies is, why such dropout phenomena occur and what can be done by the universities to prevent or reduce such dropout phenomena would benefit from a greater use of cohort/longitudinal studies which investigate the possible determinants of dropout within a process-based and time-varying perspective and from a greater use of experimental designs in relation to studying interventions or, alternatively, by the use of instrumental variable regressions in the absence of experimental designs. Furthermore, to prevent the observed skewness in focus towards pre-university and/or university non-malleable factors the research field would benefit from future research focusing more on within-university and/or university malleable factors, for instance, by conducting more longitudinal surveys and, if possible, coupled with university administrative and other register based data. As Tinto points out in one of his a more recent papers, one could also imagine university malleable factors to comprise the effects of classroom practice, including varying student assessment practices upon student learning and persistence and the impact of institutional investment in faculty and staff development programs on those outcomes (Tinto, 2006-2007: 7). Such factors can also be investigated quantitatively in relation to dropout.

- *Opportunities in conducting transnational studies*

A final recommendation for future research concerns a dissemination of the conduct of transnational studies, for instance, in the form of transnational questionnaire surveys on dropout from university studies. As earlier mentioned, there were found to be no transnational studies, hence, potential effects on dropout due to national level systemic characteristics of the system of higher education have not been investigated, but have had to be taken for granted in each of the nationally based studies. Even without transnational research on dropout, in a country like Germany, for example, it might be possible to conduct a survey across the Bundesländer in order to investigate the potential effects on dropout of regional (local) differences in institutional characteristics of the system of higher education.

Policy and practice

- *Opportunities in strengthening the availability of data for student tracking*

In relation to what was recommended for future research concerned with dropout from university studies, university authorities are encouraged to strengthen the availability of relevant student level administrative data including data on the individual reasons for why a student leaves his/her subject of study before it has been completed (e.g. due to academic dismissal vs. other more voluntary circumstances) and, if possible, also make available data on whether or not (s)he subsequently transfers to another subject of study and/or institution within or at a lower level than higher education.

In relation to improving the possibilities for tracking students who transfer to another subject of study and/or institution, university authorities and/or politicians are urged to improve such opportunities by introducing unique student codes across universities within the same country. Such unique student codes which should apply as a minimum across different institutions of higher education within the same country could also serve to alleviate the problem of a lack/shortage of studies investigating the potential effects on dropout of systemic characteristics of the system of higher education, at least at the regional (local) level.

University authorities are furthermore encouraged to be aware of the possibilities for obtaining valuable knowledge about the individual level consequences for students who drop out of the system of higher education altogether by tracking such students by the means of conducting more post-exmatriculation follow up-surveys.

- *Opportunities in conducting early interventions and other university malleable instruments*

On the basis of the synthesis findings some more substantial recommendations for university authorities and/or politicians concerned with the problem of dropout from universities studies can further be given. According to the synthesis findings, university authorities should first of all realise that most energy must be put into setting up dropout reducing precautions/measures during the early phases of the course of study, because this is where the issues of both dropout and student transfer are most pertinent.

Secondly, they should understand that what influences the risk of dropout while students are at university and, as such, what they can do to prevent or reduce dropout, is to a certain extent constrained by pre-university factors such as the socio-demographic background characteristics of the student intake and the prior academic achievements of the students. This applies even in spite of certain selection processes having already been at work at the time of university application and university entrance. As such, university authorities and/or politicians should realise that they do not have unsuspected power to influence dropout by merely changing factors at work within university, because, for example, the parents' educational level, the gender and age of the student as well as the student's prior academic achievement also play important roles in the multifactorial web of determinants which in the end leads a student to drop out from university or not. Trying to recruit academically more able students still seems to be the best a university can do to reduce dropout. In relation hereto, increasing university enrolment rates (without making adjustments

that would increase the quality of education) by simply increasing the enrolment rates in upper secondary school does not automatically lead to a higher number of graduates since such an operation would almost certainly lead to increased formal dropout rates.

University authorities and/or politicians should further be aware that they are given more room for influencing the likelihood of a student making a transfer to another subject of study/institution, since student transfer has been found to be more sensitive to aspects having a greater potential of being stimulated after university entrance such as a student's motivations for studying and/or his/her educational goals. Put differently, most transfer students do not transfer due to academic difficulties in their current subject of study or due to inadequate academic prerequisites for studying in general. Rather, they transfer due to having been placed in the wrong study environment or having been placed in the wrong subject of study to begin with, thereby, lowering their motivations for studying and increasing their likelihood of making of transfer. Hence, university authorities and/or politicians could potentially reduce transfer rates, at least by a certain amount, by making available the necessary information services at the time of application to university to prevent some otherwise well-qualified student in making the wrong choice of study in the first place.

For some aspects underlying the within-university and/or university malleable factors the evidence base is, after all, relatively solid and the evidence clear (or, as a matter of fact, only just relatively less inconclusive than some of the other university malleable factors) that they lower the risk of dropout from university studies more or less directly. University authorities and/or politicians should realise that investing in institutional resources on a number of different parameters, improving a student's academic integration at university in terms of his/her academic achievement and progress, increasing his/her motivations for studying and encouraging a student to make greater academic efforts all have the potential to lower dropout rates. This is because they have all been found to lower the individual student's risk of dropout from university studies, other things being equal. On the basis of the evidence obtained from a somewhat smaller evidence base of mainly British origin, another sound recommendation seems to be to try to enhance the quality of teaching, as it appears that a higher teaching quality assessment lowers the student's risk of dropout.

Danish Clearinghouse

Danish Clearinghouse for Educational Research was founded in 2006 because from a political and research related point of view there was and still is a will to strengthen the applicability of educational research. This is done by exploiting already existing research by the means of further analysing and synthesizing the results of this research. Danish Clearinghouse helps provide politicians and practitioners' access to reliable and informed knowledge about education, learning and teaching that can be used in educational practice and the political decision-making process related to this.

In addition, Danish Clearinghouse helps provide research environments with a greater and more reliable overview of the existing research. The aim is to make the current best knowledge available to politicians, practitioners, and researchers.

Danish Clearinghouse is a center that illuminates practice-oriented, political, or research policy problems by examining the existing primary research.

The center has six basic activities:

Collection. Danish Clearinghouse systematically collects information on all the research that can, in principle, illuminate a specific "review" question.

Construction of a database. Danish Clearinghouse collects, classifies and stores information on research over a long period of time in a database. Users thereby gain overall access to and a systematic overview of research that would otherwise be diffuse.

Quality assessment. Danish Clearinghouse assesses research for quality and thus stands as a guarantor for the quality of the research that is included in the answer to a review problem.

Extraction and comparison. Danish Clearinghouse extracts the most important data from each individual research report and gathers it in one document, thereby increasing the clarity and transparency of information for the user.

Synthesis. The individual research conclusions are developed into a general conclusion, recommendation, model or similar result that incorporates and cuts across the individual studies.

Distribution. Danish Clearinghouse actively strives to disseminate relevant knowledge about national and international research results.

Each of these six activities can be an independent product; however, the sequence of steps cannot be skipped, for example, by going directly from collection to synthesis. Instead, it is possible to stop the process after any one of the six steps: If the process is continued all the way to synthesis, it corresponds to carrying out a so-called systematic review. This report on dropout from university studies is an example of such a systematic review.

The systematic review process

On the one hand, a systematic review provides insight into how prior research has handled a given problem and, on the other hand, collects all the knowledge available from existing research results at the time of data extraction.

The work that leads to a systematic review begins with the clarification of the question(s) to be answered. A search strategy, classification criteria, data extraction and synthesis method are subsequently worked out.

The next step is to find researchers to form part of the review group all of whom are experts in the research field comprising precisely the question(s) to be addressed in the systematic review. Then, the search for studies commences and, when it is completed, the screening of the studies begins to determine whether they are relevant to the review question(s) or not.

Together with Danish Clearinghouse for Educational Research, the members of review group assess the results of the relevant research and classify the studies according to research quality; data is extracted from the studies and on that basis a synthesis of results is prepared. The review process leads to a written report prepared in collaboration between the review group and Danish Clearinghouse and forms the basis of subsequent communication actions.

Read more at <http://edu.au.dk/en/research/research-areas/danish-clearinghouse-for-educational-research/>

References for the 44 studies available for the synthesis

Listed below are all references to the 44 studies available for the synthesis, that is, studies which in the research mapping were assigned an overall weight of evidence of medium or high.

Albrecht, A., & Nordmeier, V. (2001). Ursachen des Studienabbruchs in Physik. Eine explorative Studie. *Die hochschule*, 2.

Araque, F., Róldan, C., & Salguero, A. (2009). Factors influencing university drop out rates. *Computers & Education*, 53, 563–574.

Argentin, G., & Triventi, M. (2011). Social inequality in higher education and labour market in a period of institutional reforms: Italy, 1992–2007. *Higher Education*, 61(3), 309–323.

[†] Arulampalam, W., Naylor, R.A., & Smith, J. P. (2004). A hazard model of the probability of medical school drop-out in the UK. *Journal of the Royal Statistical Society: Series A*, 167(1), 157–178.

Arulampalam, W., Naylor, R.A., & Smith, J. P. (2001). A hazard model of the probability of medical school dropout in the United Kingdom. IZA Discussion Paper, 133. (Secondary reference to Arulampalam, W., Naylor, R.A., & Smith, J. P. (2004))

Arulampalam, W., Naylor, R. A., & Smith, J. P. (2005). Effects of in-class variation and student rank on the probability of withdrawal: cross-section and time-series analysis for UK university students. *Economics of Education Review*, 24, 251–262.

Arulampalam, W., Naylor, R. A., & Smith, J. P. (2007). Dropping out of medical school in the UK: Explaining the changes over ten years. *Medical Education*, 41, 385–394.

Arulampalam, W., Naylor, R. A., & Smith, J. P. (2004). Factors affecting the probability of first-year medical student dropout in the UK: A logistic analysis for the entry cohorts of 1980-1992. Warwick Economic Research Papers, 618. (Secondary reference to Arulampalam, W., Naylor, R. A., & Smith, J. P. (2007))

Baars, G. J. A., Stegers-Jager, K. M., Stijnen, T., & Splijnter, T. A. W. (2009). A model to predict student failure in the first year medical curriculum. In: Baars, G. J. A. (ed.) *Factors related to student achievement in medical school*. Hague: Lemma.

Baars, G. J. A., Stegers-Jager, K. M., Stijnen, T., & Splijnter, T. A. W. (2009). Exploratory study to improve a model to predict student failure in the first-year medical curriculum. In: Baars, G. J. A. (ed.) *Factors related to student achievement in medical school*. Hague: Lemma. (Secondary reference to Baars, G. J. A., Stegers-Jager, K. M., Stijnen, T., & Splijnter, T. A. W. (2009))

Belloc, F., Maruotti, A., & Petrella, L. (2009). University drop-out: an Italian experience. *Higher Education*, 60(2), 127–138.

Bennett, R. (2003). Determinants of Undergraduate Student Drop Out Rates in a University Business Studies Department. *Journal of Further and Higher Education*, 27(2), 123-141.

- Bodin, R. M & Millet, M. (2011). L'université, un espace de regulation: L'abandon dans les 1ers cycle à l'aune de la socialisation universitaire. *Sociologie*, 3(2), 225-242.
- Di Pietro, G. (2004). The determinants of university dropout in Italy: A bivariate probit model with sample selection. *Applied Economics Letters*, 11, 187-191.
- Di Pietro, G., & Cutillo, A. (2008). Degree flexibility and university drop-out: The Italian experience. *Economics of Education Review*, 27(5), 546-555.
- Garcés, A., & Sánchez-Barba, L. F. (2011). An alternative educational approach for an Inorganic Chemistry laboratory course in Industrial and Chemical Engineering. *Chemistry Education Research and Practice*, 12(1), 101-113.
- Glaesser, J. (2006). Dropping out of further education: A fresh start? Findings from a German longitudinal study. *Journal of Vocational Education and Training*, 58(1), 83–97.
- Glocker, D. (2011). The effect of student aid on the duration of study. *Economics of Education Review*, 30, 177–190.
- Hailikari, T. K., & Nevgi, A. (2010). How to Diagnose At-risk Students in Chemistry: The case of prior knowledge assessment. *International Journal of Science Education*, 32 (15), 2079–2095.
- Heublein, U., Hutzsch, C., Schreiber, J., Sommer, D., & Besuch, G. (2010). Ursachen des Studienabbruchs in Bachelor- und in herkömmlichen Studiengängen: Ergebnisse einer Bundesweiten Befragung von Exmatrikulierten des Studienjahres 2007/2008. *HIS: Forum Hochschule*, 2. Berlin: HIS GmbH.
- Heublein, U., Spangenberg, H., & Sommer, D. (2003). Ursachen des Studienabbruchs: Analyse 2002. *Hochschulplanung*, 163. Hannover: HIS GmbH.
- Heublein, U. (2003). Ursachen des Studienabbruchs: Motive für Studienabbrecher. Leipzig: HIS GmbH. (Secondary reference to Heublein, U., Spangenberg, H., & Sommer, D. (2003))
- Hoff, J., & Demirtas, M. (2009). Frafald blandt etniske minoritetsstuderende på universitetsuddannelserne i Danmark. København: Forlaget Politiske Studier.
- ‡ Hovdhaugen, E., & Aamodt, P. O. (2009). Learning environment: Relevant or not to students' decision to leave university? *Quality in Higher Education*, 15(2), 177-789.
- ‡ Hovdhaugen, E. (2009). Transfer and dropout: Different forms of student departure in Norway. *Studies in Higher Education*, 34(1), 1-17. (Secondary reference to Hovdhaugen, E., & Aamodt, P. O. (2009))
- Hovdhaugen, E. (2011). Do structured study programmes lead to lower rates of dropout and student transfer from university? *Irish Educational Studies*, 30(2), 237-251.
- ‡ Johnes, G., & McNabb, R. (2004). Never Give Up the Good Times: Student Attrition in the UK. *Oxford Bulletin of Economics and Statistics*, 66(1), 23-47.

- Kinnunen, P., & Malmi, L. (2008). CS Minors in a CS1 Course. *ICER '08 Proceedings of the Fourth international Workshop on Computing Education Research*, September 6-7, 2008: Sydney, Australia, 79-90.
- Kolland, F. (2002). Studienabbruch: Zwischen Kontinuität und Krise. Eine empirische Untersuchung an Österreichs Universitäten. Braumüller.
- Lassibille, G., & Gómez, L. N. (2008). Why do higher education students drop out? Evidence from Spain. *Education Economics*, 16(1), 89-105.
- ⁸ Lassibille, G., & Gómez, L. N. (2009). Tracking Students' Progress through the Spanish University School Sector. *Higher Education*, 58, 821–839. (Secondary reference to Lassibille, G., & Gómez, L. N. (2008))
- Loyens, S. M. M., Rikers, R. M. J. P., & Schmidt, H. G. (2007). The impact of students' conceptions of constructivist assumptions on academic achievement and drop-out. *Studies in Higher Education*, 32(5), 581-602.
- May, S., & Bousted, M. (2004). Investigation of student retention through an analysis of the first-year experience of students at Kingston University. *Widening participation and lifelong learning*, 6(2), 42-48.
- Nelson, A. (2008). Looking into one's own practice: A Swedish study on gender in educational sciences. *Journal of Further and Higher Education*, 32(2), 139–149.
- O'Neill, L. D., Hartvigsen, J., Wallstedt, B., Korsholm, L., & Eika, B. (2011). Medical school dropout - testing at admission versus selection by highest grades as predictors. *Medical Education*, 45, 1111-1120.
- O'Neill, L. D., Wallstedt, B., Eika, B., & Hartvigsen, J. (2011). Factors associated with dropout in medical education: a literature review. *Medical Education*, 45, 440-454.
- Oosterbeek, H., & van Ewijk, R. (2010). Gender Peer Effects in University: Evidence from a Randomized Experiment. Tinbergen Institute Discussion Paper. TI 2010-113/3.
- Ortiz, E. A., & Dehon, C. (2011). The Roads to Success: Analyzing Dropout and Degree Completion at University. Brussels: ECARES Working paper.
- Pohlenz, P., Seyfried, M., & Tinsner, K. (2007). *Studienabbruch: Ursachen, Probleme, Begründungen*. VDM Verlag Dr. Müller.
- Pohlenz, P., & Tinsner, K. (2004). Bestimmungsgrößen des Studienabbruchs: eine empirische Untersuchung zu Ursachen und Verantwortlichkeiten. *Potsdamer Beiträge zur Lehrevaluation* | 1. (Secondary reference to Pohlenz, P., Seyfried, M., & Tinsner, K. (2007))
- Qualter, P., Whiteley, H., Morleya, A., & Dudiak, H. (2009). The role of Emotional Intelligence in the decision to persist with academic studies in HE. *Research in Post-Compulsory Education*, 14 (3), 219–231.

Smith, J., & Naylor, R. (2001). Dropping out of university: A statistical analysis of the probability of withdrawal for UK university students. *Journal of the Royal Statistical Society: Series A*, 164(2), 389-405.

Smith, J., & Naylor, R. (2001). Determinants of degree performance in UK universities: a statistical analysis of the 1993 student cohort. *Oxford Bulletin of Economics and Statistics*, 63(1), 29-60.

Soo, K. T. (2009). Estimating the Production Function of University Students. Lancaster University Management School Working Paper, 2009/018.

Studenterrådet ved Aarhus Universitet (2000). Frafald og studiemiljø. Århus: Studenterrådet ved Aarhus Universitet.

Suhre, C. J. M., Jansen, E. W. A., & Harskamp, E. G. (2007). Impact of degree program satisfaction on the persistence of college students. *Higher Education*, 54, 207–226.

Urlings-Strop, L. C., Stijnen, T., Themmen, A. P. N., & Splinter, T. A. W. (2009). Selection of medical students: a controlled experiment. *Medical Education*, 43, 175-183.

Van Bragt, C. A. C., Bakx, A. W. E. A., Bergen, T. C. M., & Croon, M. A. (2011). Why students withdraw or continue their educational careers: A closer look at differences in study approaches and personal reasons. *Journal of Vocational Education & Training*, 63(2), 217-233.

Van Bragt, C. A. C., Bakx, A. W. E. A., Bergen, T. C. M., & Croon, M. A. (2011). Looking for students' personal characteristics predicting study outcome. *Higher Education*, 61(1), 59-75.

Vignoles, A. F., & Powdthavee, N. (2009). The Socioeconomic Gap in University Dropouts. *The B.E. Journal of Economic Analysis & Policy*, 9(1), 1-15.

Zwick, M. (2009). Stuttgarter Abbrecherstudie 2009. Zufriedenheit mit dem Studium und Abbruchneigung bei Studierenden des BA-Studiengangs Sozialwissenschaften an der Universität Stuttgart. *Stuttgarter Beiträge zur Risiko- und Nachhaltigkeitsforschung*, 14, 1-55.

References for textual commentary

- Bound, J., & Turner, S. (2011). Chapter 8 - Dropouts and Diplomas: The Divergence in Collegiate Outcomes. In: *Hanushek, E. A., Machin, S., & Woessmann, L. (Eds.), Handbook of the Economics of Education*, Elsevier 2011(4), 573-613. Available at: <http://www.sciencedirect.com/science/article/pii/B9780444534446000080>
- Bourdieu, P. (1990). *Homo Academicus*. Cambridge: Polity Press.
- Bourdieu, P. (1998). *Practical Reason: On the Theory of Action*. Stanford: Stanford University Press.
- El-Khawas, E. (2006). Chapter 3 – Accountability and Quality Assurance: New Issues for Academic Inquiry. In: Forest, J. J. F., & Altbach, P. G. (Eds.), *International Handbook of Higher Education*. Springer, 23-37.
- Enders, J. (2006). Chapter 2 – The Academic Profession. In: Forest, J. J. F., & Altbach, P. G. (Eds.), *International Handbook of Higher Education*. Springer, 5-21.
- Gaebel, M., Hauschildt, K., Mühleck, K., & Smidt, H. (2012). Tracking Learners' and Graduates' Progression Paths. TRACKIT. EUA Publications 2012. Available at: <http://www.eua.be/eua-work-and-policy-area/building-the-european-higher-education-area/projects/tracking-learners-and-graduates-progression-paths.aspx>
- Gough, D., Oliver, S., & Thomas, J. (2012). *An introduction to Systematic Reviews*. London: Sage Publications.
- Heublein, U., Spangenberg, H., & Sommer, D. (2003). Ursachen des Studienabbruchs. Analyse 2002. Hochschulplanung Band 163. HIS GmbH Hannover 2003.
- Hovdhaugen, E. (2009). Transfer and dropout: Different forms of student departure in Norway. *Studies in Higher Education*, 34(1), 1-17.
- Jones, R. (2008). Student retention and success: a synthesis of research. London: Higher Education Academy. Available at: <http://www.heacademy.ac.uk>
- Keller, G. (2006). Chapter 12 – Higher Education Management: Challenges and Strategies. In: James J. F. Forest & Philip G. Altbach (Eds.), *International Handbook of Higher Education*. Springer, 229-242.
- Larsen, U. (2000). *Frafald og Studiemiljø*. Aarhus: Studenterrådet ved Aarhus Universitet.
- OECD (2012). *Education at a Glance 2012*. OECD Indicators. Paris: OECD.
- Popay, J., Roberts, H., Sowden, A., Petticrew, M., Arai, L., Rodgers, M., et al. (2006). *Guidance on the Conduct of Narrative Synthesis in Systematic Reviews*. ESRC Methods Programme.

- Sporn, B. (2006). Chapter 9 – Governance and Administration: Organizational and Structural Trends. In: Forest, J. J. F., & Altbach, P. G. (Eds.), *International Handbook of Higher Education*. Springer, 41-57.
- Tinto, V. (1975). Dropout from Higher Education: A theoretical synthesis of recent research. *Review of Educational Research*, 45(1), 89-125.
- Tinto, V. (1987). *Leaving College: Rethinking the causes and cures of student attrition*. Chicago: Chicago University Press.
- Tinto, V. (1993). *Leaving College: Rethinking the causes and cures of student attrition*. 2nd ed. Chicago: Chicago University Press.
- Tinto, V., Russo, P., & Kacel, S. (1994). Constructing educational communities: Increasing retention in challenging circumstances. *Community College Journal*, 64(4), 26-29.
- Tinto, V. (1998). Colleges as Communities: Taking Research on Student Persistence Seriously. *The Review of Higher Education*, 21(2), 167-177.
- Tinto, V. (2006-2007). Research and practice of student retention - what's next? *J. College Student Retention*, 8(1), 1-19.
- Troelsen, R. (2011). Frafald på de videregående uddannelser. Hvad ved vi om årsagerne? *Dansk Universitetspædagogisk Tidsskrift*, 10, 37-44.
- Trow, M. (2006). Chapter 13 – Reflections on the Transition from Elite to Mass to Universal Access: Forms and Phases of Higher Education in Modern Societies since WWII. In: Forest, J. J. F., & Altbach, P. G. (Eds.), *International Handbook of Higher Education*. Springer, 243-280.
- Ulriksen, L., Madsen, L. M., & Holmegaard, H. T. (2010). What do we know about explanations for drop out/opt out among young people from STM higher education programmes? *Studies in science education*, 46(2), 209-244.

ⁱ The European University Association (EUA) has recently published a first report '*Tracking Learners' and Graduates' Progression Paths. TRACKIT*' containing knowledge about 'student and graduate tracking' initiatives in 31 European countries (27 EU member states and four candidate and EEA countries) including a description of specific 'student tracking' processes obtained from site visits to 23 higher education Institutions and other relevant organizations within 11 European countries (Gaebel et al., 2012). For an overview of the various 'tracking' initiatives within each of the 31 European countries investigated, cf. *ibid*: 59-61; 62-95.