



**This is a self-archived version of an original article. This version may differ from the original in pagination and typographic details.**

**Author(s):** Korhonen, Vesa; Rautopuro, Juhani

**Title:** Identifying Problematic Study Progression and “At-Risk” Students in Higher Education in Finland

**Year:** 2019

**Version:** Accepted version (Final draft)

**Copyright:** © 2018 Scandinavian Journal of Educational Research

**Rights:** In Copyright

**Rights url:** <http://rightsstatements.org/page/InC/1.0/?language=en>

**Please cite the original version:**

Korhonen, V., & Rautopuro, J. (2019). Identifying Problematic Study Progression and “At-Risk” Students in Higher Education in Finland. *Scandinavian Journal of Educational Research*, 63(7), 1056-1069. <https://doi.org/10.1080/00313831.2018.1476407>

## **Identifying problematic study progression and ‘at-risk’ students in higher education in Finland**

Vesa Korhonen<sup>1</sup>

*School of Education,  
University of Tampere,  
FI-33014 University of Tampere,  
Finland.  
Tel: +358 40 1901465  
E-mail: vesa.a.korhonen@uta.fi*

Juhani Rautopuro

*Finnish Institute for Educational Research,  
University of Jyväskylä,  
P.O.Box 35,  
FI-40014 University of Jyväskylä,  
Finland.  
Tel: +358 40 8054936  
E-mail: juhani.rautopuro@jyu.fi*

---

<sup>1</sup> Corresponding author

# **Identifying problematic study progression and ‘at-risk’ students in higher education in Finland**

Vesa Korhonen & Juhani Rautopuro

## **Abstract**

Finland offers a specific example of a country with a broad enrolment in higher education, where the educational starting age is relatively high and where studies may last considerably longer than in most other European countries. This study attempted to identify at-risk students in Finnish universities with the greatest probability of non-completion of studies. This probability is by far the highest in the fields of information technology and information sciences and, in specific cases, in the fields of mathematics and science and economics and management. The situation of at-risk students is best described in terms of the scant use of time for present studies, uncertainty regarding their study field choices and their general intention to withdraw from their studies. An analysis of qualitative case study interviews revealed six general student types, each representing different meanings of studying for slowly advancing at-risk students.

**Keywords:** university students; problematic progression of studies; at-risk students; non-completion of studies, dropout risk

## **Introduction**

Dropouts, withdrawals and students ‘at-risk’ have become topics of discussion alongside the expansion and massification of higher education (e.g. Scott, 1995; Davies & Elias, 2003; Ulriksen et al. 2010; Pengfei & Maloney, 2015). With widening levels of diversity in the student population, there seems to be a growing risk of problematic progression and non-completion of studies. According to studies conducted by the Organisation for Economic Co-operation and Development (OECD, 2013), slightly less than one-third of higher education students drop out of their studies before completing their first degree. This is an average figure for all OECD countries and all disciplinary fields; however, there is considerable variation between the various countries and the different scientific fields compared by the OECD. Among European countries, Denmark and France have the highest completion rates in tertiary education (both about 80%), while Hungary and Sweden have the lowest completion rates (53% both). Finland is ranked above the OECD average, with a completion rate of 76% (see also European Commission, 2015).

Therefore, the higher education dropout rate is not the biggest problem at the university level in Finland, which enjoys wide enrolment in university education, a relatively high educational starting age and a potentially longer period of study (Kivinen & Nurmi, 2014). Students in Finland often experience slower study progress than they intend, and study times are considerably longer than in most other European countries (EuroStudent IV–V, 2011; 2015). In comparison with other European countries, the time-to-degree orientation in Finland is characterised by an emphasis on higher education policy initiatives seeking to improve study success (European Commission, 2015). One reason for the long study times is that, traditionally, in Finland, the master's degree was considered the basic degree – bachelor's degrees are uncommon. This is largely because there are only a few academic fields in Finland in which a bachelor's degree provides adequate qualifications for employment (Merenluoto & Lindberg, 2012). Another reason is that participation in the labour market is tied to student status; in other words, working while studying is quite common in Finland (Kivinen & Nurmi, 2008; Merenluoto & Lindberg, 2012). This has become a common necessity for financing studies, as there is a low level of general public financial aid. The average university student in Finland typically spends about one-third (31%) of his/her study time in full-time or part-time work (Kivinen & Nurmi, 2008). Only in the Netherlands do university students still have a significantly higher share of working (47%) during their study time. Working while studying has led to a situation in which part-time studying among Finnish university students is more common than in other countries. According to the REFLEX project data, which cover nine European countries, 40% of Finnish graduates engage in part-time study at the end phase of their degree, which is clearly higher than in any of the countries compared (Kivinen & Nurmi, 2008). However, the prevalence of part-time study is incompatible with the fact that the Finnish higher education system does not officially grant part-time student status. The structure of studies in long degree programmes (covering bachelor's and master's degrees) in different disciplines is planned, more or less, for full-time studies.

Some previous follow-up studies have been conducted on the study situations and non-completion risks of Finnish university students prior to the 2005 Bologna reform (e.g. Rautopuro & Väistönen, 2001; Pajala & Lempinen, 2001; Mäkinen et al., 2004). According to previous research, non-completion risks are more likely to affect males than females. For example, in data covering different student cohorts in Finish universities, dropouts are more typically males than females (Pajala & Lempinen 2001). The basic trend seems to be that when students' starting age begins to rise, the risks of non-completion and dropout also rise.

In particular, the risk of non-completion of mature students has generally been found to be greater than those of younger students (Pajala & Lempinen, 2001). Regarding study areas in which the risk of non-completion is most common, previous studies have highlighted, in particular, humanities and natural sciences (Pajala & Lempinen, 2001; Mäkinen et al., 2004). Noteworthy, however, there is also university-specific variation in the risk of non-completion (e.g. Rautopuro & Väisänen, 2001). It has also been observed that most dropouts leave their study programme or university during the first year of study (e.g. Rautopuro & Väisänen, 2001; Pajala & Lempinen, 2001).

Students in Finnish universities have been studying in accordance with the Bologna Process reform since the autumn of 2005. In the Bologna guidelines, the ideal completion time for a master's degree is set at five years, while the maximum time is restricted to seven years, although this can be extended if there is justifiable reason. Despite the reforms enshrined in the Bologna Process, it has been observed that the new study structures are not working in Finland as expected and that they do not shorten study times (Siekkinen & Rautopuro, 2012). Creating an overall picture is problematic because previous research has been fragmented and limited to certain disciplines, student cohorts or single institutions. Longitudinal studies that consider study paths from several years or for entire studies are particularly rare. In addition, institutions of higher education have so far lacked appropriate tools for monitoring and evaluating their students' risk of non-completion or for further developing practices aimed at supporting these 'at-risk' students. The aim of this study, therefore, is to reduce these knowledge gaps.

Potential 'at-risk' students in Finnish universities are examined from the perspective of slow progression and probable non-completion of studies. In particular, the aim is to look at the post-Bologna reform situation. The study was conducted in two distinct phases from 2010 to 2012. The first phase was primarily quantitative, utilising student registers from four research-intensive universities in Finland. The second phase was two-fold and included quantitative questionnaires for slowly progressing students in two universities and qualitative interviews for selected participants representing the slowly progressing students at these two universities. The aim in relation to these different phases was to obtain comprehensive and diverse information about the slow progression of studies and probable non-completion of university education in Finland following the Bologna reform.

Our main research questions for the two interconnected research phases were as follows:

1. What is the nature of problematic study progressions leading to the probability of non-completion of studies, and what factors might predict the increased risk of dropout (phase one: student register data)?
2. What main features characterise problematic study trajectories leading to the non-completion of studies, and what are the starting points and experiences of the ‘at risk’ students who are on these problematic study trajectories (phase two: questionnaire and student interview data)?

### **Conceptual and theoretical framework for identifying the ‘at-risk’ students**

There is no concise definition of the term ‘at-risk’ in higher education research. Generally, the term ‘at-risk’ is referred to in the literature as incomplete academic learning competences, the differences in students’ background characteristics when attending university or the drift into a situation where there is an increased risk of non-completion of studies (Yorke, 1998; 2002; Hewitt, 2002; Quinn et al., 2005). When background characteristics are highlighted, different minority and underrepresented groups in higher education are often discussed, such as ethnic minorities, those of low socioeconomic status and disabled students (Heisserer & Parette, 2002; Quinn et al., 2005; Rodgers, 2013; Thurnborg et al., 2013). Our definition of ‘at-risk’ is a student’s increased risk of non-completion and dropout from studies. We see that being in an ‘at-risk’ position results from the problematic progression of studies, where the commitment towards the studies has become difficult and complicated. This may lead to the experience of failure in academic education (Peelo & Wareham, 2002).

The increased risk of non-completion or dropout in higher education can be further examined on three levels, namely the education system, the institutions and the students themselves (Yorke, 1998; 2002). The overall picture of dropout risks in higher education looks very different from each of the different levels. From the education system standpoint, when studies are prolonged and the higher education system is unable to produce sufficient qualifications and fulfil the degree criteria, the pressures on system effectiveness and the shortening of study times become stronger. From the institutions’ point of view, slowly progressing or non-studying students will take space and resources from those who are motivated to study. Those completely interrupting their studies may be seen as wasted talents or resources. From the students’ perspective, dropout from higher education has both positive

and negative effects. It is not necessarily a problem; it can also be a self-motivated selection and the correction of an incorrect choice. However, it may be the case that the withdrawal from education is also related to other issues, such as changes in life situations and welfare problems, which may cause difficulties in carrying out the studies. Generally, it seems that student departure is a greater problem for institutions than it is for society or the individual (Hovdhaugen, 2009).

The institutional learning context at university covers course guidelines, teaching approaches, assessments, university regulations and also, implicitly, the pre-enrolment characteristics of the students (Robinson, 2006; 2009). Students who have the strongest and most suitable sociocultural capital generated by their home backgrounds socialise better and are more likely to succeed in university education. Students' background characteristics have been proven to largely explain, for instance, the raised risk of non-completion and dropouts (Hovdhaugen, 2009). In a comparison of eleven countries, Thomas and Quinn (2007) demonstrated that the high educational background of students' parents is one of the most important explanatory factors for university enrolment and study success.

When more closely evaluating non-completion risks in higher education, it is noteworthy that a departure from education is not necessarily final. There are many reasons why students leave a certain education programme or institution. Therefore, departures from a single institution can be roughly divided into two main groups: (i) students transferring between institutions, study fields or educational sectors (transfer), and (ii) students completely interrupting their degree-oriented studies (dropout) (Hovdhaugen & Aamodt, 2009). Previous studies have shown that there are several reasons for leaving higher education. The reasons affecting non-completion can be divided into reasons inside or outside the university/institution and personal reasons (Yorke, 1998; 2002). The reasons for departure that higher education institutions cannot greatly affect are connected to the background characteristics of the students, the economic situation, labour market structures and personal reasons. Personal reasons may cover, for example, a lack of appropriate academic skills (e.g. linguistic or mathematical skills) and the wrong choice of study field (Yorke, 1998; 2002; Davies & Elias, 2003; Lau, 2003). Conversely, higher education institutions can influence reasons that involve student experiences of the learning environment, teaching quality and study guidance within the institution (Yorke, 2002).

## **Methodology**

### *Research design with a combined research approach*

Slowly progressing and non-studying students were chosen as a target group in the national Campus Conexus project in 2009–2012, where the goal was to identify the risks of educational exclusion and dropout in higher education in Finland after the Bologna reform (Rautopuro & Korhonen, 2011; Siekkinen & Rautopuro, 2012). This study was conducted as part of the project in two distinct phases, using a combined research design methodology (Niglas, 2004; Gorard & Taylor, 2004). We prefer to use the term ‘combined methods’ instead of ‘mixed-methods’ (Tashakkori & Teddlie, 2003), ‘multi-method’ or ‘integrated research’ (Creswell, 2003). By this, we stress the bridging of the gap between quantitative and qualitative approaches and the importance of finding an appropriate way of obtaining information for each research question and phase in the wider research process. Therefore, our study is merely explorative research than confirmative based on a prior hypothesis.

The combined use of quantitative and qualitative techniques offers a dynamic option for expanding the scope and improving the analytic power of studies (Sandelowski, 2000). The combined methodology was utilised so that the results of the previous phase guided the acquisition of respondents/interviewees for the next phase. In the first phase, the student registers of four Finnish universities were utilised (the University of Helsinki (UH), the University of Jyväskylä (JYU), the University of Tampere (UTA), and Tampere University of Technology (TUT)). The University of Helsinki, University of Jyväskylä and University of Tampere are multidisciplinary research universities, and Tampere University of Technology is a technical research university. In this phase, the acquired information was objective and quantitative in nature and gave an overall picture of the extent the non-completion risk in higher education in Finland.

In the second phase of the data collection, a questionnaire was sent to those students who were identified in the previous phase as being on a problematic study trajectory leading more likely to non-completion of studies. The questionnaire mainly consisted of structured items supplemented with some open-ended questions. In addition to the common background variables (e.g. gender, age, socio-economic background), the items measured, for example, students’ life situations and health and well-being resources, study experiences, visions of meaning of the studies and expectations of the future. Previous studies and their validated items and scales were also utilised (e.g. MED NORD scale for measuring possible

problems in self-regulation and self-management of studies; Lonka et al., 2008). Moreover, qualitative case study information was collected from selected questionnaire respondents with thematic interviews in order to more closely examine the experiences and aspirations of the at-risk students on a problematic study trajectory. The main criteria for selecting participants in the interviews were the principles of obtaining a representative sample from the different ‘at-risk’ age groups, the group experiencing uncertainty with regard to study field choice and the group otherwise non-prioritising current studies. Both the questionnaire and interview development were completed as a team, including the authors and researchers who had previously worked on the Campus Conexus project in the four above-mentioned universities.

#### *Target group and the various phases of data collection*

The first phase of data collection took place in 2010, and the target group was further limited to those students who had enrolled in the autumn of 2005 or later (after the Bologna Process reform) at the four selected universities. The termination point for the data collection was the end of 2009. Student register data consisted of study credit and yearly enrolment information and available basic background information of students (study field, gender, age). Based on the student register data, those most likely to be on a problematic study trajectory seemed to be those students whose current pace of studies would not reach even the lower university degree (Bachelor’s level) within seven years (Rautopuro & Korhonen, 2011). Seven years is the maximum study time defined in the Bologna process. The normative duration for a Bachelor’s degree is three years. Therefore, this kind of slow progression (or sometimes complete non-study) implies that these students were at risk of dropping out from university based on the current progress of their studies.

According to their study achievements, the students were classified into the following five categories:

1. No achievement at all (NAAA; 0 study points were registered)
2. Presumably not even a Bachelor’s degree in seven years (PNEB)
3. Conceivable Bachelor’s degree in seven years (CBD)
4. Plausible Bachelor’s degree, conceivable Master’s degree in seven years (PBDC)
5. Plausible Master’s degree in seven years (PMD)

The above-mentioned categories were constructed by dividing the earned study credits by the number of semesters the students had been present at the university. For example, the second

category (PNEB) consisted of those students who had completed, on average, only 11 study credits per semester.

**Table 1. The overall picture of study progression at the four universities.**

	<b>Jyväskylä (JYU)</b>  (n = 4,775)	<b>Helsinki (UH)</b>  (n = 9,090 )	<b>Tampere (UTA)</b>  (n = 3,577)	<b>Tampere (TUT)</b>  (n = 2,717)
NAAA	195 (4.1%)	334 (3.7%)	286 (8.0%)	40 (1.5%)
PNEB	480 (10.1%)	906 (10.0%)	579 (16.2%)	344 (12.7%)
CBD	129 (2.7%)	265 (2.9%)	130 (3.6%)	93 (3.4%)
PBDC	916 (19.2%)	2,092 (23.0%)	710 (19.8%)	664 (24.4%)
PMD	3,055 (64.0%)	5,493 (60.4%)	2,967 (52.3%)	1,576 (58.0%)
Percentage of students graduating with a Master's degree within seven years (2001–2002)	61%	57%	61%	41 %

On average, the first two progression categories (Table 1) are most likely to lead to the non-completion of studies (on the basis of the same pace of progression). Therefore, these two categories to a certain extent represent ‘impossible study paths’ and an increased risk of educational exclusion and dropout. These slowly progressing (or non-studying) students made up 14–24% of the students at the four compared universities.

Next, in the second phase of data collection in 2011, we concentrated especially on those students who concretely seemed to be on a problematic study trajectory leading to non-completion (the first two categorical groups in the first phase: NAAA and PNEB). For this purpose, a special questionnaire for ‘slowly progressing students’ was designed. Slowly progressing (or non-studying students) were sought for an online and supplementary postal questionnaire, primarily from the two project universities, the Universities of Tampere and Jyväskylä. Despite several reminder rounds, the overall response rate was quite low (ca. 25

%), and only 231 responses were received. The respondents were from all disciplines, with the largest groups from social sciences and economics (21.6%) and humanities (21.2%). Thus, slowly progressing respondents mainly represented the general study fields. In this article, we present only those selected descriptive results from the questionnaire that help the reader to understand the situation of slow study progress, and which further guided the selection of interviewees.

The second phase of data collection continued with a case study approach (Yin, 2009) and student interviews for the different identified groups with problematic study progressions in 2011–2012. The selection was done among the respondents of the questionnaire for ‘slowly progressing students’. Thus, the logic behind the selection of interviewees followed a purposeful sampling technique. By interviewing a total of 36 students at the Universities of Tampere and Jyväskylä, it was possible to take a deeper look at the real-life situations of slowly progressing or non-studying students. In the semi-structured thematic interviews, discussions were conducted through various themes such as situation and progress in studies, personal engagement, academic engagement, social engagement, experiences and needs of guidance, and the future intention to continue studies.

### *Data analysis*

The quantitative part of the data was analysed using various statistical methods. In addition to common descriptive methods, some more sophisticated methods were used. In particular, the risk of dropout was modelled using binary logistic regression analysis (e.g. Hosmer & Lemeshow, 2000). The logistic regression analysis in the first phase of the study was based on information collected from the student register. The risk of non-completion of studies (NAAA & PNEB) was used as a binary response variable in the model. On the basis of previous studies, gender, fields of study, starting age of study and duration of study were used as explanatory variables. The model allowed an investigation of the risk of non-completion in different categories of the explanatory variables as well as the interaction effects of these variables.

In the second phase of the study, the questionnaire for ‘slowly progressing students’ was conducted in order to provide complementary information on the identified ‘at-risk’ students’ study situations. The selected categorical variables (such as gender, education/study field, withdrawal intentions and certainty of study field choice of ‘slowly progressing students’) were investigated with distributions, correlation tables, cross tabulations and chi-

square tests (Argyrous, 1997). Here, only the most important results of the ‘at-risk’ students’ situations are reported.

The findings of these statistical analyses should mainly be perceived as describing the internal interrelationships of the phenomenon under investigation, not as generalisations to the broader population.

The qualitative part of the study (the second phase) is based on student interviews and a case study approach (Yin, 2009). In the interviews, our aim was to understand and interpret the key features of the life worlds of the interviewees (Kvale, 1996). The findings were validated with the information collected from the open questions in the ‘slowly progressing students’ questionnaire. The case study interviews were conducted as thematic interviews, but the interviewees were free to spontaneously express their subjective experiences and perceptions in their own words, in the order of their choosing and on their own terms (Cohen et al., 2011). Qualitative thematic content analysis was utilised to analyse the transcribed interviews (Miles & Hubermann, 1999). The key phase of the thematic analysis was the identification of the students’ different perceptions and how they perceived the meaning of studies as an aspect of their life world. These perceptions formed the two main themes in the analysis (‘relationship towards studies’ and ‘completion intentions’), which further formed two experience dimensions that enabled us to interpret and identify the six different student types presented in the results. These student types represent how the meaning of studies is constructed in light of the situations of the different ‘at-risk’ students. They represent so-called ‘ideal types’, describing composite cases embodying the key attributes of a set of similar cases (McLeod, 2011).

### *Ethical considerations*

Our aim is to present the results of a follow-up study on Finnish university students’ chances of belonging to the so-called ‘at-risk’ group because of unexpectedly slow progress in studies, which place them in a problematic study situation. In such a study, there is a risk of being labelled a bad or failing student. Consequently, we follow Gorard and Taylor (2004, 3), who highlight that the principles of combined methods involve choosing the method that is most indicative of the need of the investigation rather than the personal preferences of the researcher. As such, we have aimed to use each data type and method in this study in a deliberate and neutral way so as to reduce the possibility of a stigmatising tone in the study.

Ethical guidelines are very important for the target institutions and participants in this highly sensitive research area (see Cohen et al., 2011, 170–172). During the various stages of the empirical data collection, we addressed key ethical issues, namely consent, confidentiality and anonymity (e.g. Buchanan & Hvizdak, 2009). Every participant in the empirical data collection phases voluntarily consented to participation, and they were informed about the purpose of the study and that the use of the data and their responses would not affect any of the services they receive. Student register data from different universities were acquired through a research permission procedure. Confidentiality and anonymity were emphasised by protecting the privacy of the participants and ensuring the anonymous use of data in the different phases of the analysis and reporting. However, some concerns may arise about security and privacy for online survey respondents (see Buchanan & Hvizdak, 2009), so we also offered the alternative of returning responses by postal mail because of the low response rate in the original online questionnaire round for slowly progressing students.

## Results

### *Research question 1: Problematic study progression and possible predictors*

The risk of non-completion of studies was modelled using binary logistic regression analysis based on the collected student register data. When looking more closely at the results, it is good to keep in mind that a Master's degree in Finland requires 300 ECTS credits, whereas a Bachelor's degree requires 180 ECTS credits. In order to obtain a Master's degree in the ideal time according to the Bologna Process (five years), a student must complete an average of 30 ECTS credits per semester. Graduation within the maximum seven-year study time in Finland requires, on average, 21 study credits per semester. On the basis of the achievements collected from study registers, the potential risk of exclusion from university studies could be estimated based on the probability of achieving a Bachelor's or Master's degrees within five and seven years.

The group 'at-risk of dropout' is comprised of those students who would be unable to achieve even a Bachelor's degree in seven years if their pace of study remained at the current level. The independent variables in this model included the student's field, gender, duration of studies and age when beginning studies. The final model for the one selected university, the University of Jyväskylä, included the main effects and interaction terms

constructed using the backward Wald method (see Table 2). A similar analysis was carried out using the data collected from the University of Tampere. The results were quite similar, although some differences existed.

**Table 2. Model predicting non-completion of studies (classification rate 87.4%).**

<b>Dependent variable:</b> <b>Risk of dropout (No/Yes)</b>	Coefficient	Standard error	p-value	Odds ratio
<b>Field</b> Ref: Humanities			<0.01	
Information technology (ICT)	0.57	0.24	<0.05	1.77
Education	-1.06	0.31	<0.01	0.35
Sport and health sciences	-0.14	0.21	N.S	0.87
Mathematics and Science	0.43	0.18	<0.05	1.40
Economics	-0.73	0.30	<0.05	0.48
Social sciences	-0.42	0.25	N.S	0.66
<b>Starting age</b> Ref: 20 years or younger			<0.01	
21–24 years	0.94	0.15	<0.01	2.57
25–30 years	2.34	0.18	<0.01	10.40
31 years or older	3.23	0.22	<0.01	25.18
<b>Duration of studies</b> Ref: First year			<0.01	
Max. 2 years	-0.44	0.12	<0.01	0.64
Max. 3 years	-0.83	0.14	<0.01	0.44
Max. 4 years	-1.03	0.16	<0.01	0.36
Fifth year under way	-0.94	0.19	<0.01	0.39

<b>Sex* Field</b> <b>(0 = male, 1 = female)</b> <b>(Interaction effect)</b>			<0.01	
Sex * ICT	-0.97	0.42	<0.05	0.38
Sex * Education	1.29	0.57	<0.05	3.63
Sex * Sport and health sciences	-0.50	0.29	N.S	0.61
<b>Field * Starting age</b> <b>(Interaction effect)</b>			<0.01	
ICT* (21–24 years)	-1.01	0.36	<0.01	0.36
ICT* (31 years or older)	-1.54	0.69	<0.05	0.21
Education * (21–24 years)	-1.26	0.43	<0.01	0.28
Education * (25–30 years)	-1.31	0.53	<0.01	0.27
Education * (31 years or older)	-1.69	0.68	<0.01	0.18
Sport and health * (21–24 years)	-0.92	0.44	<0.05	0.40
Mathematics and Science * (21–24 years)	-1.26	0.33	<0.01	0.28
Mathematics and Science * (25–30 years)	-0.89	0.38	<0.05	0.41
Mathematics and Science * (31 years or older)	-2.14	0.56	<0.01	0.12
<b>Intercept</b>	-1.48	0.08	<0.01	0.23

On the basis of the logistic regression (Table 2) we can see that the risk of non-completion has a statistically significant association with students' field, age when starting studies and the duration of the studies. When examining the logistic regression coefficients and odd ratios of the model, we can see that the risk of non-completion is statistically significantly higher in the information technology (odds ratio 1.77) and mathematics and sciences fields (odds ratio 1.40). The reference field is humanities. On the

other hand, the risk of non-completion is smaller for education and economics: the odds ratio of 0.35 for education means that the odds ratio for non-completion in the humanities is 2.9 times greater than that in education. As in previous studies (Pajala & Lempinen, 2001; Mäkinen et al., 2004), humanities and natural sciences were proven to be the fields where non-committed students belonging to the at-risk group are likely to abandon their studies in Finnish universities.

Moreover, gender has a statistically significant effect along with the field of study when considering the interaction terms of the model. In ICT more than one out of three male students (35.2 %) were at risk of not achieving even a Bachelor's degree in seven years. For females, the corresponding percentage was significantly lower (26.6 %). In education the situation was opposite. Female students (11.2 %) had a slightly higher risk of dropout than did males (8.9 %).

In addition, it is noteworthy that the student's age when starting studies had a major effect. Those who began their studies at a mature age had a significantly higher risk of non-completion compared to students who started their studies almost immediately after their matriculation exam (20 years or younger). For example, those who started their studies at the age of 31 or later had a 25-times higher risk of non-completion compared to the youngest age group. When examining the interaction effect, the age when starting studies and the field of study, it seems quite obvious that in information technology, education, and mathematics and science, starting a degree at a mature age predicts a higher risk of non-completion. In other fields, the association is not so straightforward. The model seems to bring forth statistically significant predictors for the risk of dropping out of /stopping university studies (Siekkinen & Rautopuro, 2012).

The interaction effect between field of study and starting age shows that the risk of non-completion of studies is in general higher for students starting their studies at an older age. In ICT, for example, less than one out of five (17.0 %) students who started their studies when they were 20 years of age or less were in the 'at-risk' group. Comparably, more than one out four (26.7 %) students who started their studies when they were 21–24 years of age were at risk. Moreover, nearly three out of four (73.2 %) students who were at least 31 years old when they started their studies were 'at-risk' students. The situation was quite similar in other fields of study, although the percentages of non-completion were not as high.

The corresponding analysis with the University of Tampere student register data showed similar results. The classification rate of the regression model was 77 %. At the

University of Tampere, the risk of non-completion was statistically significantly higher for information technology students (odds ratio 2.4) and economics and management students (odds ratio 1.4) than in the reference field of humanities. On the other hand, the risk of non-completion was considerably smaller for medical students. The student's age when beginning studies predicted non-completion in a very similar way to the model of Jyväskylä. The only clear difference was that the greatest risk for non-completion was for students whose age when starting was 25–30 years.

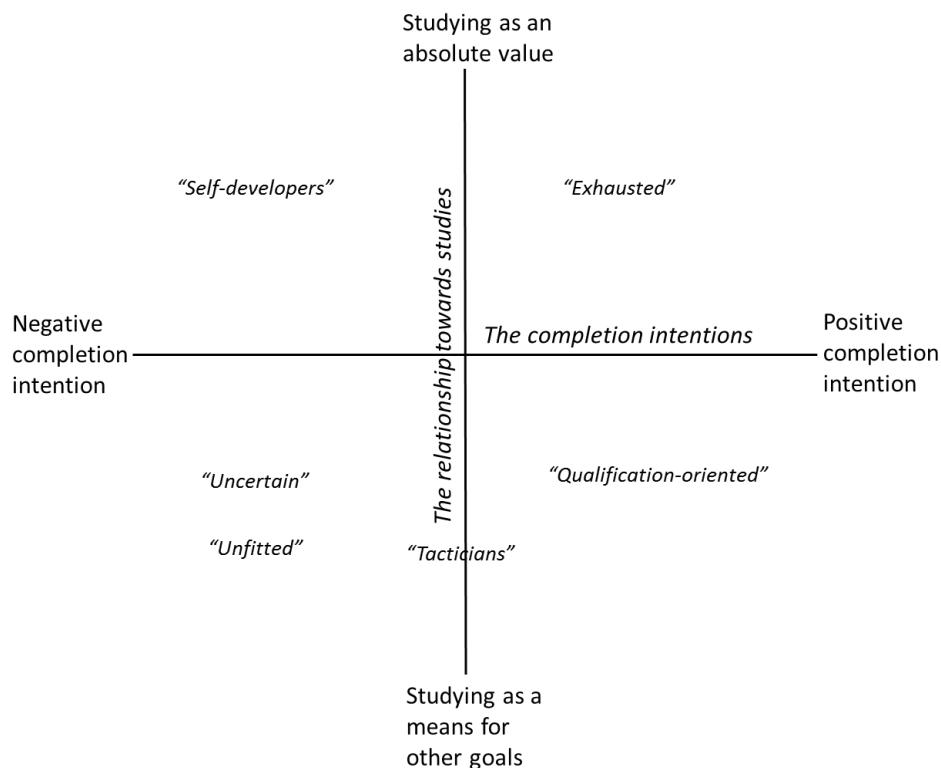
*Research question 2: Problematic study trajectories and meaning of studies for 'at-risk' students*

In the second phase of data collection, the questionnaire for 'slowly progressing students' provided complementary information on the 'at-risk' students' situations. For example, the time used weekly for study varied greatly among the slowly progressing students. The weekly median time for studying as full-time students was 30 hours, but for those who work full-time, the time was only one hour. Therefore, when the non-prioritisation of studies was obvious (voluntarily or not), it affected time spent on studies. This was reflected in the correlations between the non-prioritisation of studies and limited time spent on studies. However, the direction of causality cannot be concluded firmly based on the collected data.

Withdrawal from current university studies or a complete stop /dropout was considered by a little less than half (45%) of the respondents. Of the information technology student respondents, a little less than half (44.8%) were at least quite uncertain of their field of study. The corresponding percentage for the social sciences and economics was 16%. In other disciplinary fields, the proportion was smaller. Uncertainty about the study field choice seemed to be very common for slowly progressing (and non-studying) students based on this questionnaire. Of the respondents, about one in four (25.3%) was either fully convinced they had made the wrong choice or at the very least were unsure of the appropriateness of that choice.

The interview results indicated different motives for dropping out or continuing to study in the current programme (Thunborg et al., 2013). Two main themes were identified from the interview accounts. Both of the themes formed experience dimensions, which to a certain extent have two extremes. 'The relationship towards studies' theme brings forth the value/importance of studies for the interviewees (studying as an absolute value) as opposed to studies being only a means to achieving other, more important goals in one's life and career

(studying as a means for other goals). On the other hand, the ‘completion intentions’ theme represents how the studies and degree completion are prioritised in the current situation. At one extreme, the completion of the degree has a central meaning for the student despite the current slow progress (positive completion intention), whereas at the other extreme, studies and degree completion are not currently at the heart of the student’s life and study situation (negative completion intention/probable withdrawal).



**Figure 1.** The four experience dimensions and the six student types representing ‘at-risk’ students.

The analysis of the qualitative interviews revealed six general student types, which represent the different meanings of studying for slowly advancing, at-risk students and show how these students position their studies in their present life and study situation. The two above-mentioned experience dimensions made it possible to outline a field representing the four dimensions and to place the identified student types upon it (Figure 1). The identified student types are described in more detail below.

‘Self-developers’ are often studying as a hobby and see their studies as one way to improve their knowledge and know-how. Studying itself is interesting for them, but their completion intention is most often negative. They are typically mature students and already have a university degree or other completed studies in their backgrounds. These students do not necessarily seek certificates from the university. Rather, they are lifelong learners.

I’m not maintaining my student status at the moment … it is there with other hobbies, there after family and work. (Interviewee 14: male, history student)

‘Qualification-oriented’ students are studying and self-managing their learning in a slow but goal-oriented manner. They have positive completion intentions, but studying is more often a means for other goals in life because a university degree offers better or new kinds of career opportunities and merits for the future. They are typically mature students with family or other commitments in life or they may have illnesses that disturb the smooth progression of their studies. In addition, periods of full-time work may interrupt their studies periodically.

It (studying) has a really important meaning for me and it feels really good that when I’m at home with the children, I have a place to study. And when you have this kind of phase in life, you can do something with your studies … when they (the children) go to pre-school and primary school, I’ll start to study more actively. (Interviewee 15: female, education student)

‘Uncertain’ students question their choice of study field and are looking for opportunities to change their subject or study programme. Their studies do not progress, and their completion intention is most often negative. That is, their current study field has lost its meaning, and they are uncertain about their future or the possible professional image of the present study programme. They may work or study more actively somewhere else. This might be a more common situation for younger students.

I did not regard it (computer science) as my own field. It was then, when I was able to start studying directly from upper secondary school – the whole world was open then and I did not know my field … and then when I got it (study place), I soon noticed that this was not my field… (Interviewee 1: male, information technology student)

‘Unfitted’ students are similar to ‘uncertain students’. They question their choice of study field or lack interest in its contents, but they also often consider the teaching arrangements unsuitable. In their opinion, university education does not correspond to their expectations. Their orientation is often practical and career-oriented.

When I arrived, I had considerably different ideas about university and freedom on the whole. It came as an unpleasant surprise that in my opinion university was not so free at all ... the university is a horribly stiff institution and it must change. (Interviewee 30: male, information technology student)

‘Tacticians’ tend to have very practical reasons for holding a place in a certain field of study at university. The current study field/place is mainly a means for reaching some other goals. They may hold several study rights for several institutions or study programmes at the same time. The study place is a kind of point of reference for them, and they may have intentions to start in the current field sometime in the near future. Therefore, the completion intention is not yet actualised.

But the idea is still to do a little more of it. At some point. But yes, I’ll first do a Master’s degree in psychology. (Interviewee 24: male, journalism student, also a simultaneous study place in psychology at another university)

‘Exhausted’ students suffer from high anxiety and a lack of resources for full-time study. Quite often, these students suffer from diverse problems, such as depression, stress or learning difficulties. They may have a positive completion intention and see studying as important, but their investment in studying is highly variable.

I would have got more done ... but probably it is a bit of a lack of determination and then, when there were these ... these mental health problems, so ... therefore they also influenced this; the resources were not so sufficient. (Interviewee 12: woman, political science student)

The description of student types shows how a slowly progressing (or non-studying) student’s study situation or relationship towards studies contributes to a problematic progression trajectory. There is a clear relation between the students’ commitment to higher education and their willingness to continue to study (Thurnborg et al., 2013).

## **Discussion**

The main aim was to be able to better identify ‘at-risk’ students who face a greater risk of non-completion of university education in Finland following the Bologna reform. Especially strong disciplinary differences in Finnish university education became obvious. In this study, information technology and mathematics and science fields related to natural sciences came out in the results, with the risk of non-completion remaining prevalent. As a new field, compared to previous studies, the economics and business field came to the fore. Information technology and information sciences are fields in which, based on the results, there is a greater risk of non-completion than in other fields. One likely reason for this is the strong push effect in Finland, where labour markets effectively employ students in the IT field, who, in most cases, will no longer return to their studies. In addition, mathematics and science students as well as economics and business students are potentially at greater risk of non-completion. The economics and business field is affected by the same types of employment-related push factors, but in the mathematics and science field, a different kind of push effect most likely explains the situation. In Finland, these latter fields of study are most often referred to as bridge areas towards the most desirable but difficult-to-access study fields, such as medical education.

The results also confirmed findings in international studies showing that science, technology, engineering and mathematics (the so-called STEM fields) present a greater risk of dropout (Ulriksen et al., 2010). In addition, the dropout problem has been shown to exist in the economics and business field (e.g. Bennett, 2010), a trend highlighted now in the Finnish university education system. It appears that differences between faculties and study fields in Finland become clearer after the third year when comparing the student cohorts and the accumulation of study credits. According to the regression model, first-year students are generally at the greatest risk of non-completion. This finding is also in line with the results of previous studies in the Finnish context (Rautopuro & Väisänen, 2001; Pajala & Lempinen, 2001). Students who interrupt their studies at the very beginning of their educational process may often experience uncertainty regarding whether they are in the right study field (Siekkinen & Rautopuro, 2012). Moreover, the students’ starting age plays an important role. Students starting their studies at the age of 25 or later are more vulnerable compared with

those starting at a younger age. Particularly in the field of information technology, the risk of non-completion affects more males than females, but different disciplinary fields also show different variation patterns between genders.

The identified student types in the qualitative interviews provided further experiential information on how scant use of time for studying, uncertainty and withdrawal intentions are connected to the problematic situation of a slow learning pathway. These student types are representative of ideal types in the qualitative analysis (McLeod, 2011), so they are not necessarily generalisable to individual interviewees as such. However, on the basis of the interviews, it seems that some of the slowly progressing students have purposefully chosen their awkward positions (self-developer and tactician student types) and that they do not currently aspire to completing their studies. Some of them have more or less drifted into this position, tried to hang on and continued to aspire to degree completion (qualification-oriented and exhausted student types). Finally, some students try to move away from this position (uncertain and unfitted student types). For the uncertain or unfitted student types, withdrawal from the current study programme can mean a positive correction between a wrong choice or a difficult study situation. Therefore, the qualitative interview results generated some concrete evidence regarding the potential positive meanings that non-completion and withdrawal may have for individuals. On the basis of the interviews, it seems that self-developer and qualification-oriented student types are more often mature, whereas the correspondingly uncertain and tactician student types are typically younger. It was not possible to connect the exhausted student type to a particular group. Conversely, unfitted or tactician student types were scarcely found in the interviews and were quite marginal among the interviewed population.

The study includes some limitations concerning the two phases of data collection. With the analysis of the student register data, we could not ascertain what proportion of the slowly progressing or non-studying students have already moved to work or changed institutions, and we could not determine how many are experiencing problems in terms of completing their studies. However, we were able to identify which groups should receive heightened attention from the institutions. As mentioned earlier, there were some problems with reaching slowly progressing and non-studied students and getting them to respond to the online questionnaire in the second phase of the data collection. The target-group respondents' contact information was not always up-to-date, or their email addresses were not in the right format, which meant that messages were blocked by e-mail filters. The response rate was low, and the share of females was overrepresented in the sample (68.8%), even though the

register data showed the slow-progressing majority to be males. Thus, the second-stage data sets (questionnaire, interviews) mainly constituted selected samples. Nevertheless, the data from the second phase provide an opportunity to understand and describe the situations of slowly progressing or non-studied students, especially through the interviews.

Increased institutional responsibility may be seen as a general requirement for study success and for avoiding the risk of non-completion. In addition, the monitoring of students provides a foundation for institutional action (European Commission, 2015).

Recommendations based on the findings include better identification of the motives and starting points of enrolling students, their reasons for their study choices and directions as well as the development of guidance and counselling for all students from their first year and beyond (Korhonen, 2012). Attention should be directed to students' study plans and career decisions at different key phases of their studies. By developing flexible forms of teaching arrangements and offering optional pathways within study programmes for unexceptionally progressing students, universities could better engage slowly progressing students in academic teaching–learning communities and reduce unnecessary withdrawal intentions. In addition, increasing bachelor's degree valuations in Finland and encouraging students who start and progress slowly into these lower degree programmes could be a realistic alternative for many students navigating the current Bologna Process-based degree structure.

## Acknowledgements

This work was supported by the European Social Fund under grant number 702959.

## References

- Argyrous, G. (1997). *Statistics for Social Research*. London: Macmillan.
- Bennett, R. (2010). Determinants of Undergraduate Student Drop Out Rates in a University Business Studies Department. *Journal of Further and Higher Education*, 27(2), 123-141.
- Buchanan, E.A. & Hvizdak, E.E. (2009). Online Survey Tools: Ethical and Methodological Concerns of Human Research Ethics Committees. *Journal of Empirical Research on Human Research Ethics*, 4(2), 37-48.
- Cohen, L., Manion, L. & Morrison, K. (2011). *Research methods in education*. 6th ed. London: Routledge.

- Creswell, J.W. (2003). *Research Design: qualitative, quantitative and mixed method approaches*. Thousand Oaks, CA: Sage.
- Davies, R. & Elias, P. (2003). *Dropping out: A Study of Early Leavers From Higher Education*. Research Report 386. London Department for Education and Skills.
- European Commission (2015). *Dropout and Completion in Higher Education in Europe*. Main Report. [http://supporthere.org/sites/default/files/dropout-completion-he\\_en.pdf](http://supporthere.org/sites/default/files/dropout-completion-he_en.pdf)
- EuroStudent IV. (2011). *Social and Economic Conditions of Student Life in Europe*. Synopsis of Indicators. [http://www.eurostudent.eu/download\\_files/documents/EIV\\_Synopsis\\_of\\_Indicators.pdf](http://www.eurostudent.eu/download_files/documents/EIV_Synopsis_of_Indicators.pdf).
- EuroStudent V. (2015). *Social and Economic Conditions of Student Life in Europe*. Synopsis of Indicators. [http://www.eurostudent.eu/download\\_files/documents/EVSynopsisofIndicators.pdf](http://www.eurostudent.eu/download_files/documents/EVSynopsisofIndicators.pdf).
- Gorard, S. & Taylor, C. (2004). *Combining Methods in Educational and Social Research*. Maidenhead: Open University Press.
- Heisserer, D. L. & Parette, P. (2002). Advising at-risk students in college and university settings. *College Student Journal*, 36(1), 69-84.
- Hewitt, K.A. (2002). *Factors associated with academic performance and retention of academically "at-risk" freshman student-athletes*. PhD Dissertation. Washington State University. College of Education.
- Hosmer, D.W. & Lemeshow, S. (2000). *Applied Logistic Regression*. New York: John Wiley and Sons
- Hovdhaugen, E. (2009). Transfer and dropout: different forms of student departure in Norway. *Studies in Higher Education*, 34(1), 1-17.
- Hovdhaugen, E. & Aamodt, P.O. (2009). Learning Environment: Relevant or Not to Students' Decision to Leave University? *Quality in Higher Education*, 15(2), 177-189.
- Kivinen, O. & Nurmi, J. (2008). *Työ, koulutus ja osaaminen. (Work, education and competences)*. Research Unit for the Sociology of Education. University of Turku.
- Kivinen, O. & Nurmi, J. (2014). Labour Market Relevance of European University Education. From Enrolment to Professional Employment in 12 Countries. *European Journal of Education*, 49, 558–574. doi:10.1111/ejed.12095
- Korhonen, V. (2012). Towards inclusive higher education? In S. Stoltz & P. Gonon (Eds.), *Challenges and Reforms in Vocational Education - Aspects of Inclusion and Exclusion* (pp. 297–320). Bern: Peter Lang.
- Kvale, S. (1996). *Inter Views: an introduction to qualitative research interviewing*. Thousand Oaks, CA: Sage.
- Lau, L.K. (2003). Institutional factors affecting student retention. *Education*, 124(1), 126-136.

- Lonka, K., Sharai, P., Karlgren, K., Masiello, I., Nieminen, J., Birgegård, G. & Josephson, A. 2008. MED NORD – A tool for measuring medical students' well-being and study orientations. *Medical Teacher*, 30, 72–79.
- McLeod, J. (2011). *Qualitative Research in Counselling and Psychotherapy*. London: Sage Publications.
- Merenluoto, S. & Lindberg, M. (2012). The problems of prolonging studies and delaying. In S. Ahola & D.M. Hoffman (Eds.), *Higher Education Research in Finland* (pp. 131-146). Finnish Institute for Educational Research. University of Jyväskylä.
- Miles, M.B. & Hubermann, A.M. 1999. *Qualitative Data Analysis*. 2<sup>nd</sup> Edition. London: Sage.
- Mäkinen, J., Olkinuora, E. & Lonka, K. (2004). Students at risk: Students' general study orientations and abandoning /prolonging the course of the studies. *Higher Education*, 48, 173-188.
- Niglas, K. (2004). *The Combined Use of Qualitative and Quantitative Methods in Educational Research*. Academic dissertation. Tallinn Pedagogical University.
- OECD. (2013). *Education at a glance 2013*. OECD indicators. <http://dx.doi.org/10.1787/eag-2013-en>
- Pajala, S. & Lempinen, P. (2001). *Pitkä tie maisteriksi. (A long road to Masters' degree)*. Student Research Association, Otus 22/2001.
- Peelo, M. & Wareham, T. (eds.) (2002) *Failing Students in Higher Education*. Society for Research into Higher Education & Open University Press.
- Pengfei, J. & Maloney, T. (2015). Using predictive modelling to identify students at risk of poor university outcomes. *Higher Education*, 70(1), 127-149.
- Quinn, J., Thomas, L., Slack, K., Casey, L., Thexton, W. & Noble, J. (2005). *From life crisis to lifelong learning. Rethinking working-class 'dropout' from higher education*. York: The Joseph Rowntree Foundation.
- Rautopuro, J. & Korhonen, V. (2011). Yliopisto-opintojen keskeyttämiski ja opintoihin kiinnittymisen ongelmat. (Drop-out risk in university education and problems of engagement) In M. Mäkinen et al. (Eds.) *Korkeajännyksiä* (pp. 36-58). Tampere: Tampere University Press.
- Rautopuro, J. & Väistänen, P. (2001). *Experiencing studies at the University of Joensuu. Modelling a student cohort's satisfaction, study achievement and dropping out*. Research in Educational Sciences 7. Finnish Educational Research Association.
- Robinson, R. (2006). *Pathways in context: Background characteristics and demographics in student progression through higher education*. The University of Sydney.  
<http://ses.library.usyd.edu.au/handle/2123/4999>.
- Robinson, R. (2009). *Pathways through higher education. A study of students, contexts and choice*. Saarbrücken: VDM Verlag.
- Rodgers, T. (2013). Should high non-completion rates amongst ethnic minority students be seen as an ethnicity issue? *Higher Education*, 66(5), 535-550.

- Sandelowski, M. (2000). Combining Qualitative and Quantitative Sampling, Data Collection, and Analysis Techniques in Mixed-Method Studies. *Research in Nursing & Health*, 23(3), 246-255.
- Siekkinen, T. & Rautopuro, J. (2012). Kuilun partaalla? Koulutuksesta syrjäytymisvaarassa olevat korkeakouluopiskelijat. (Over the edge? Identifying students at risk of educational exclusion in higher education) In V.Korhonen & M.Mäkinen (Eds.) *Opiskelijat korkeakoulutuksen näyttämöillä* (pp. 15-38). School of Education. University of Tampere.
- Scott, P. (1995). *The meanings of mass higher education*. Buckingham: Open University Press.
- Tashakkori, A. & Teddlie, C. (Eds.) (2003). *Handbook of mixed methods in social and behavioural research*. Thousand Oaks, CA: Sage.
- Thomas S.L. & Quinn, J. (2007). *First generation entry into higher education: an international study*. Society for Research into Higher Education & Open University Press.
- Thunborg, C., Bron, A. & Edström, E. (2013). Motives, commitment and student identity in higher education – experiences of non-traditional students in Sweden. *Studies in the Education of Adults*, 45(2), 177-193.
- Ulriksen, L., Moller Madsen, L. & Holmegaard, T. (2010). What do we know about explanations for drop out/opt out among young people from STM education programmes? *Studies in Science Education*, 46(2), 209 – 244.
- Yin, R. K. (2009). Case study research: Design and methods (4th Ed.). Thousand Oaks, CA: Sage.
- Yorke, M. (1998). Non-completion of full-time and sandwich students in English higher education. *Higher Education*, 36, 181–94.
- Yorke, M. (2002). Academic Failure: a Retrospective View from Non-completing Students. In M. Peelo & T. Wareham (Eds.), *Failing Students in Higher Education* (pp. 29-44). Society for Research into Higher Education & Open University Press.