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Are leavers different from stayers?

Dropout and students’ perceptions of the teaching–learning environment

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ABSTRACT
Dropout causes are varied, as is the way in which they are researched. In this paper, we study the correlation between student perceptions of the teaching–learning environment and dropping out by investigating the interaction between students and the teaching–learning environment before the students make the decision to stay or leave. Survey data from 4,339 students at a major research-intensive Danish university combined with administrative data were analysed, and the results point to two main differences between stayers and leavers. First, students who later decided to leave university found their courses to be less interesting and less relevant compared to the experience of the students staying, and second, students with a high academic self-efficacy belief are less at risk of dropping out of their university studies. A methodological strength of the study is that student perceptions were measured when the students were all still enrolled. This reduces the risk of the leavers’ perception being affected by their decision to leave.

Keywords
student retention, teaching–learning environments, interest, self-efficacy beliefs, methodological design
INTRODUCTION

Dropping out of university is considered a problem not only for the student and the university, but also for society. Students who drop out may to some extent experience it as a defeat, which may be detrimental to subsequent educational decisions and achievements. The institution loses a student, which is both an academic and economic loss. For society, funding higher education institutions and in some (particularly European) countries also supporting the students through grants, dropout students will be considered a cost. Hence, learning more about the causes of dropping out is important and widely researched (Aljohani, 2016; Harvey, Drew, & Smith, 2006; Larsen, Kornbeck, Kristensen, Larsen, & Sommersel, 2013; OECD, 2010; Pascarella & Terenzini, 2005; Tinto, 2006).

There is not just one factor that is the cause of students’ decision to drop out; dropping out is a complex phenomenon with many different and interrelated causes. From the large body of research on dropout causes, two kinds of factors seem to emerge: factors that are linked to the students’ backgrounds and experiences prior to entering university, and factors that are more directly linked to the university environment and, as such, something the university should be able to influence and change. Examples of factors prior to university correlating with dropping out are the gender and sociodemographic background of the student, especially the educational background of the parents (Arulampalam, Naylor, & Smith, 2004; Johnes & McNabb, 2004; Lassibille & Gómez, 2009; Ortiz & Dehon, 2013). Factors related to the university environment are more blurred. Many research studies point to the lack of academic integration as a cause for dropping out (Hovdhaugen & Aamodt, 2009; Loyens, Rikers, & Schmidt, 2007). Fewer studies point to the lack of social integration (that is, a sense of not fitting in or not belonging) as a cause (Bradley, 2017; Hausmann, Schofield, & Woods, 2007). Lack of motivation and declining interest are also mentioned as possible causes for dropping out (Van Bragt, Bakx, Teune, Bergen, & Croon, 2011; Yorke & Longden, 2008).

An additional aspect related to the university environments is the context of the national systems. Higher education systems vary across countries in terms of structure, regulations and funding of institutions and for students’ living expenses. International comparisons of dropout and completion rates show substantial differences across countries suggesting that factors at system level affect the students’ chances of completing a higher-education programme. For instance, Troelsen and Laursen (2014) suggest that the Danish system of study grants means that financial concerns have very little importance in the decisions of Danish students to leave their studies compared with other countries.

However, Thomas and Hovdhaugen (2014) caution against relying too much on comparisons of dropout and completion rates across countries, inter alia, because the way the data is collected, and the definitions used vary quite a lot. Also, they warn against drawing conclusions based on one variable (e.g., tuition fees or not) since two countries being similar on one variable can have different completion rates. Still, they argue that it is worthwhile, albeit immensely complex, to try finding a way of comparing systems in a robust way. Furthermore, there are similarities in the findings of studies carried out in different national contexts suggesting that some factors are of relevance across systems. This means that transferring results concerning factors correlating with students dropping out from one national higher-education system to another is relevant, but should be done with due
reflections as to differences between the systems that could influence the factors in question.

As mentioned previously, the various factors interact and it is this intersection rather than the individual factors that may cause students to decide to leave. Therefore, even though statistical analyses have found that the grade-point average from high school affects a student’s relative risk of dropping out more than does the educational level of the parents, which in turn has a stronger effect than the student’s gender (Ulriksen, Madsen & Holmegaard, 2015) the decisions and trajectories of the students are not caused by these traits alone. The factors interact with each other, which can be seen in the different hazard ratios in simple analyses compared to multiple analyses (ibid.). Although particular traits of students may suggest an increased risk of dropping out, focusing on these traits and ignoring the wider context of students’ experiences will obscure the processes of students’ deciding to stay or to leave (Holmegaard, Ulriksen, & Madsen, 2014).

Research on dropout causes is carried out using varied methodological approaches. One distinction is between quantitative studies analysing a larger number of students based on surveys and/or existing administrative data and, on the other hand, qualitative studies usually analysing a more limited number of students based on various qualitative methods such as interviews or observations. In most cases, quantitative as well as qualitative studies are undertaken with informants who have left their study programme and are asked to look back and in retrospect explain their decision to dropout. However, the way particular experiences are perceived and understood may change as the position from which the experiences are looked at changes (Bruner, 1990; Holmegaard, Ulriksen, & Madsen, 2015). This means that the way students perceive the teaching–learning environment may appear different to them before and after they made the decision to leave their programme. When they fill out a survey or respond in an interview about why they decided to leave their study programme, their responses may not reflect the way they experienced it while in the programme. In a minority of research studies, researchers follow informants through their study programme, investigating their considerations and experiences as they happen. Furthermore, there are variations in the research on dropout causes regarding the type of informants. Some research deals only with information from students who drop out, while other studies gather information from a total population of both students who stay and students who leave.

In this article, we report on a quantitative study of active students regarding their perceptions of the teaching–learning environment with the aim of comparing stayers and leavers. Investigating the interaction between students and the teaching–learning environment before they make the decision to stay or leave will help us understand in more detail how the teaching–learning environment influences the decision to drop out.

BACKGROUND
Theories of dropping out
Vincent Tinto’s model of student departure (Tinto, 1975) describes dropping out as a process occurring over time. The student enters the study programme with certain expectations and abilities, encounters the structure and organization of the study programme and
engages with the academic and social environment there. This meeting between the student and study programme results in some degree of social and academic integration, which in turn leads the student either to engage further or to decide to leave the study programme.

Even though Tinto’s integrative model is predominant (Braxton & Hirschy, 2004) and has been ascribed an almost paradigmatic stature (Braxton, Milem, & Sullivan, 2000), several other theories on dropping out are suggested. The financial theories explain dropping out by exploring the relation between a student’s investment in and completion of his or her study programme (e.g. John, Cabrera, Nora, & Asker, 2000). The psychological theories point to dropout causes in students’ previous study behaviour, perceptions of and attitudes towards studying (e.g. Bean & Eaton, 2000). The organizational theories look at participation, communication and membership of academic communities to explain dropping out (e.g. Metzner & Bean, 1987), and the sociological theories focus on concepts such as structure and agency in the student’s decision to leave (e.g. Ahmed, Kloot, & Collier-Reed, 2015). A growing body of research focuses on student identity (Ulriksen, Madsen, & Holmegaard, 2010). This relates to the students’ sociodemographic background as well as to what future identities the students can imagine. This group of theories combines a sociological and psychological approach.

Taken together, the many theories and perspectives draw a picture of dropping out as a multifaceted and complex phenomenon, where various factors such as students’ personal backgrounds, their expectations concerning their study programme and future career and the level of academic and social integration with the institution play a role in students’ decisions to leave their study programme, often in combination with each other. Subsequently, recent research concludes that dropout causes should be searched for in the complex relation between student and institution rather than only being seen as a student deficit (Tinto & Pusser, 2006; Ulriksen et al., 2010).

At the heart of the complex relation between student and institution lies the teaching–learning environment and how it is perceived by the students. This is particularly the case at non-residential universities, where the social and academic interaction is mainly linked to classroom activities (Tinto, 1998). The next section will focus on what we know about the relation between the teaching–learning environment and dropout causes.

Teaching–learning environment and dropping out

The persistence of students is a two-way process consisting of students’ engagement in the programme and the possibilities for engagement offered by the programme. Most students begin their study programme with an initial interest (Jensen & Henriksen, 2015), and their motivation and this initial interest are continuously negotiated all through the first year of studying. Holmegaard et al. (2014) describe this as the expectancy-experience gap and point to the curriculum as crucial in the process of minimizing the gap concerning content, pacing, sequencing and teaching and learning activities (Ulriksen, Holmegaard, & Madsen, 2017).

Also, teaching quality, lack of contact with academic staff and inadequate academic progress are mentioned as causes for withdrawal (Hovdhaugen & Aamodt, 2009; Kim & Lund-
berg, 2016; Yorke & Longden, 2008). Students’ engagement in their study programme can be measured as study effort. Study effort in terms of student preparation for class and active participation in class is vital; the higher the degree of activity, the lower the probability of dropping out or transferring to other fields of study (Hovdhaugen, 2009).

Students’ active involvement in their studies can be encouraged by the teaching–learning environment offered by the programme. Teaching–learning environments demanding and fostering high degrees of activity or student effort reduce the risk of student departure (Braxton et al., 2000; Zepke, Leach, & Prebble, 2006). In general, teaching–learning environments which strive to meet the basic psychological needs of students in terms of relatedness, competence and autonomy will influence students’ motivation to succeed (Copeland & Levesque-Bristol, 2011). Even more specific directions can be given as to which learning activities ensure the greatest student success in terms of retention. Howles (2009) found that activities including collaborative quizzes, case studies, on-paper programming activities, reflection papers, peer reviews of class notes, think–pair–share activities, code walkthroughs or small group projects had a positive effect on student retention.

Many of these activities are based on students being members of learning communities which, in general, have become recognised as positively related to not only student learning but also student persistence (Kuh, 2008). In general, concerning teaching–learning environments it seems that having high-quality curricula, teachers and teaching, student supervision, as well as a positive social climate at the institution is important for preventing students from dropping out (Hovdhaugen & Aamodt, 2009).

In the encounter between the student and the study programme and hence the student’s perception of the teaching–learning environment, the academic self-efficacy of the student becomes important. Self-efficacy is defined as the belief in one’s competence to successfully execute a course of action necessary to reach desired outcomes (Bandura, 1993). Strong self-efficacy beliefs will make the students more persistent and more inclined to engage rather than to avoid challenging tasks (Zimmerman, 1995). According to Bandura, the most influential source for an individual’s self-efficacy is performance accomplishment “because it is based on personal mastery experiences” (Bandura, 1977, 195). Another, but weaker, way of affecting self-efficacy beliefs is through what Bandura calls verbal persuasion. This refers to persuading the individuals into believing in their capability to accomplish a particular task. This source has a stronger potential if it is combined with corrective performance. Bandura notes that individuals who “are provided with provisional aids for effective action are likely to mobilize greater effort than those who receive only the performance aids” (Bandura, 1977: 198).

In an educational context, this could mean that providing students with not only instructions or guidance for how to solve a problem, but also with appreciative and encouraging feedback could increase the chance of the students completing the task.

Academic self-efficacy beliefs have to do with how the students evaluate their own competences to meet the requirements of their study programmes, but also whether the study programmes provide the feedback necessary for the students to evaluate their competences. Academic self-efficacy is known to be a predictor of student success and intention to stay (Willcoxson, Cotter, & Joy, 2011; Zajacova, Lynch, & Espenshade, 2005). Here is a link to Tinto’s classic concept of academic integration (Tinto, 1975, 1993) that has two sides...
to it. One is the student’s perception of whether the study is right for him or her, e.g., whether it is experienced as interesting. The other is whether the student is able to meet the requirements of the study programme. The academic integration is related to students’ sense of interest and relevance as well as to their beliefs concerning whether they can fulfil the programme expectations.

AIM OF STUDY
The present study adds to the current research literature in two ways. Firstly, it analyses data on students’ perceptions of the teaching–learning environment that was collected while the students were still active students. This data was merged with administrative data on the students’ statuses. This enabled us to compare stayers with leavers based on their responses when they were all still stayers, thus avoiding the bias caused by the students’ retrospectively recalling their perception of the teaching–learning environment. Secondly, the data covers an entire student population (first to fifth year). Previous research has shown that first-year students are the group at greatest risk of dropping out of higher education (DesJardins, & Moye, 2000; Harvey, 2006; Ulriksen et al., 2010), and consequently, much research has focused on first-year students. The present study offers the opportunity to learn more about dropout causes among students who have survived the first year at university. The following research questions are posed:

1. To what extent is the probability of dropping out correlated with students’ perceptions of the teaching–learning environment?
2. To what extent is the probability of dropping out correlated with students’ academic self-efficacy beliefs?

DATA AND METHODOLOGY
Participants
Data was collected in March 2014 as part of a larger triennial survey at a social science faculty encompassing various programmes within the social sciences (e.g. political science, business administration, law, economics, and psychology). The faculty is part of a large, research-intensive Danish university. With a response rate of 34 %, the sample consisted of 4,339 cases. The mean age was 24 (SD = 3.8, range 18 to 57), 54 % were women (46 % men), and 61 % were bachelor’s students, while the remaining 39 % were master’s students. Compared to the student cohort, females and young students were slightly overrepresented in the sample.

Instruments
Analyses were carried out on a dataset combining survey data and administrative data. Survey data was based on two sections from the Learn questionnaire (Parpala & Lindblom-Ylänne, 2012): one section addressing students’ perceptions of the teaching–learning envi-
ronment, and one section measuring students’ academic self-efficacy beliefs. The first section measuring perceptions of the teaching–learning environment consists of six scales labelled (i) interest and relevance, (ii) constructive feedback, (iii) peer support, (iv) staff enthusiasm and support, (v) teaching for understanding, and (vi) constructive alignment. The second section consists of one scale measuring students’ academic self-efficacy beliefs. The Learn questionnaire was validated by Parpala, Lindblom-Ylänne, Komulainen, and Entwistle (2013). The translated version of Learn applied in this study has been validated as well (Herrmann, Bager-Elsborg, & Parpala, 2016). For example, Herrmann, Bager-Elsborg, and Parpala (2016) provided evidence of the Learn instrument’s factorial validity (by applying confirmatory and exploratory factor analysis), convergent validity (by demonstrating correlations between scales that according to prior research were expected to correlate), and predictive validity (by demonstrating the correlation between scales and students’ academic achievement).

Administrative data was collected from the university’s study administrative system in September 2014, five months after the collection of the survey data. This included information about students’ university grade point average (UGPA) as well as data about dropout. Within the research on dropout, the concept has been given various definitions (Troelsen & Laursen, 2014). In this study, dropout was defined as the student leaving the study programme at which he or she was enrolled at the time when being asked to participate in the survey. Some of the students may at a later point enter another (or, indeed, the same) study programme and complete a degree. Thus, we study programme dropout and not institution or system dropout. This is because our interests concern whether the students leaving a study programme differ from students staying in terms of experiences of the programme, self-efficacy beliefs etc. The focus is on the students’ relation to the programme – not on the achievements of the individual students.

Statistical analysis

Binary logistic regression was chosen because it extends ordinary linear regression to the situation where the dependent variable is dichotomous (Orme & Combs-Orme, 2009).

RESULTS

Prior to binary logistic regression, the properties of the six variables reflecting students’ perceptions of the teaching–learning environment and the one variable reflecting students’ academic self-efficacy beliefs were examined (see Table 1). The variables’ distributional properties were satisfactory as no sign of extreme skewness was found (skewness > 3). Internal reliability as measured by Cronbach’s alpha was also satisfactory, although the alpha statistic for the peer support variable was below the recommended limit (α > .7) (Tabachnick & Fidell, 2009).
Table 1 Descriptive statistics.

<table>
<thead>
<tr>
<th>Label</th>
<th>Sample item / explanation</th>
<th># items</th>
<th>Range</th>
<th>M</th>
<th>SD</th>
<th>Skewness</th>
<th>α</th>
</tr>
</thead>
<tbody>
<tr>
<td>Survey data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest and relevance</td>
<td>'I find most of what I have learned in courses really interesting.'</td>
<td>3</td>
<td>1–5</td>
<td>3.95</td>
<td>0.64</td>
<td>-0.86</td>
<td>.722</td>
</tr>
<tr>
<td>Constructive feedback</td>
<td>'The feedback I get regarding my work helps me to improve my ways of learning and studying.'</td>
<td>4</td>
<td>1–5</td>
<td>3.34</td>
<td>0.87</td>
<td>-0.51</td>
<td>.810</td>
</tr>
<tr>
<td>Staff enthusiasm and support</td>
<td>'Teachers try to share their enthusiasm about the subject with us.'</td>
<td>4</td>
<td>1–5</td>
<td>3.67</td>
<td>0.70</td>
<td>-0.57</td>
<td>.751</td>
</tr>
<tr>
<td>Peer support</td>
<td>'I can receive help and support from my fellow students when I need it.'</td>
<td>3</td>
<td>1–5</td>
<td>4.19</td>
<td>0.63</td>
<td>-0.97</td>
<td>.657</td>
</tr>
<tr>
<td>Alignment</td>
<td>'It is clear to me what I am expected to learn in courses.'</td>
<td>4</td>
<td>1–5</td>
<td>3.65</td>
<td>0.70</td>
<td>-0.73</td>
<td>.774</td>
</tr>
<tr>
<td>Teaching for understanding</td>
<td>'The teaching helps me to think about the evidence underpinning different scientific views.'</td>
<td>3</td>
<td>1–5</td>
<td>3.73</td>
<td>0.76</td>
<td>-0.51</td>
<td>.719</td>
</tr>
<tr>
<td>Academic efficacy</td>
<td>'I expect to do well in my studies.'</td>
<td>5</td>
<td>1–5</td>
<td>4.10</td>
<td>0.64</td>
<td>-0.86</td>
<td>.830</td>
</tr>
<tr>
<td>Administration data</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male (female is reference)</td>
<td>–</td>
<td>0–1</td>
<td>.46</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Age</td>
<td>Age in years</td>
<td>–</td>
<td>18–57</td>
<td>23.9</td>
<td>3.75</td>
<td>3.42</td>
<td>–</td>
</tr>
<tr>
<td>Study year</td>
<td>Level of study</td>
<td>–</td>
<td>Categorical</td>
<td>–</td>
<td>–</td>
<td></td>
<td></td>
</tr>
<tr>
<td>UGPA</td>
<td>GPA from end-semester examinations at university</td>
<td>–</td>
<td>3–12</td>
<td>7.2</td>
<td>1.9</td>
<td>-0.884</td>
<td>–</td>
</tr>
<tr>
<td>Dropout</td>
<td>Termination of studies without authorised reason</td>
<td>0–1</td>
<td>.037</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

Binary logistic regression was performed on a sample of 4,247 students. As predictors, the model included students’ perceptions of the teaching–learning environment and their academic self-efficacy beliefs. Age, gender, study year and UGPA were included as control variables. The model (see Table 2) showed a negative and statistically significant relation between dropping out and the interest and relevance variable. Likewise, a negative and statistically significant relation was found between dropping out and the academic self-efficacy beliefs variable. On the other hand, no statistically significant relationship was found between dropping out and variables describing perceptions of constructive feedback, peer support, constructive alignment, staff enthusiasm and support, and teaching for understanding. Concerning control variables, dropping out was more likely for men (compared
to women) and first-year students (compared to students at higher levels). The odds ratios describe the magnitude of effect sizes; for example, the odds of dropping out for men were 1.5 times higher than the odds of dropping out for women. The odds of dropping out were three times higher (.251\textsuperscript{−1}−1) for first-year students in comparison with students in their second year. Finally, the odds of dropping out decreased with higher UGPA.

Table 2 Parameter estimates from binary logistic regression with dropout as a function of students’ perception of the teaching–learning environment, students’ academic self-efficacy beliefs and control variables.

<table>
<thead>
<tr>
<th></th>
<th>Logit (SE)</th>
<th>Odds ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>0.532</td>
<td></td>
</tr>
<tr>
<td>Perception of teaching–learning environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest and relevance</td>
<td>–0.586**</td>
<td>0.557</td>
</tr>
<tr>
<td>Peer support</td>
<td>0.076 (n.s.)</td>
<td>1.079</td>
</tr>
<tr>
<td>Staff enthusiasm and support</td>
<td>–0.118 (n.s.)</td>
<td>0.888</td>
</tr>
<tr>
<td>Teaching for understanding</td>
<td>0.107 (n.s.)</td>
<td>1.113</td>
</tr>
<tr>
<td>Constructive alignment</td>
<td>0.029 (n.s.)</td>
<td>1.029</td>
</tr>
<tr>
<td>Constructive feedback</td>
<td>0.212 (n.s.)</td>
<td>1.236</td>
</tr>
<tr>
<td>Academic self-efficacy</td>
<td>–0.357*</td>
<td>0.700</td>
</tr>
<tr>
<td>Student background</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.399*</td>
<td>1.49</td>
</tr>
<tr>
<td>Female</td>
<td>(reference)</td>
<td></td>
</tr>
<tr>
<td>Age (in years)</td>
<td>0.049*</td>
<td>1.05</td>
</tr>
<tr>
<td>Study year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First year (bachelor level)</td>
<td>(reference)</td>
<td></td>
</tr>
<tr>
<td>Second year (bachelor level)</td>
<td>–1.381***</td>
<td>0.251</td>
</tr>
<tr>
<td>Third year (bachelor level)</td>
<td>–1.896***</td>
<td>0.150</td>
</tr>
<tr>
<td>Fourth year (graduate level)</td>
<td>–1.152***</td>
<td>0.316</td>
</tr>
<tr>
<td>Fifth year (graduate level)</td>
<td>–2.480***</td>
<td>0.084</td>
</tr>
<tr>
<td>University GPA</td>
<td>–0.266***</td>
<td>0.767</td>
</tr>
<tr>
<td>N (ndropout)</td>
<td>4,247 (130)</td>
<td></td>
</tr>
</tbody>
</table>

Note: Dependent variable is dropout with 1 meaning students having chosen to abort their studies, and 0 meaning students still being active or having graduated from their programmes as expected.

* *p < .05, ** p < .01, ***p < .001
Figures one through three visualise the study’s key findings by means of predicted probabilities. The vertical axis shows the predicted probability of dropping out based on scores on a given variable (the horizontal axis). For example, Figure 1 shows that the probability of dropping out decreases with high scores on the interest and relevance variable; that is, students who found their courses to be interesting and relevant were less likely to drop out five months after the survey was conducted.

Figure 1 Predicted probability of dropout as a function of students’ perception of interest and relevance (shown for first year and second year students respectively).

Notes: Graphs are based on the statistical model reported in Table 2. The vertical axis shows the predicted probability of dropout. The horizontal axis shows the score on the variable going from 1 (lowest) through 5 (highest).

Notes: Additional independent variables are kept at their mean: constructive feedback \((M = 3.34)\), staff enthusiasm and support \((M = 3.67)\), peer support \((M = 4.19)\), alignment \((M = 3.65)\), teaching for understanding \((M = 3.73)\), academic efficacy \((M = 4.10)\), gender (female), age \((M = 23.9)\), UGPA \((M = 7.2)\).

Likewise, Figure 2 shows that the predicted probability of dropping out decreased with higher student scores on the academic self-efficacy beliefs variable. Figures 1 and 2 also visualise the role of educational level. The solid and dashed lines indicate that the predicted probability of dropping out is higher for first-year students compared to students in their second year.
Figure 2 Predicted probability of dropout as a function of students’ efficacy in their academic abilities (shown for first year and second year students respectively)

Notes: Graphs are based on the statistical model reported in Table 2. The vertical axis shows the predicted probability of dropout. The horizontal axis shows the score on the variable going from 1 (lowest) through 5 (highest).

Notes: Additional independent variables are kept at their mean: interest and relevance \((M = 3.95)\), constructive feedback \((M = 3.34)\), staff enthusiasm and support \((M = 3.67)\), peer support \((M = 4.19)\), alignment \((M = 3.65)\), teaching for understanding \((M = 3.73)\), gender \((\text{female})\), age \((M = 23.9)\), UGPA \((M = 7.2)\).

Finally, Figure 3 shows the predicted probability of dropping out as a function of the students’ academic achievement measured as UGPA. The descending curve illustrates a negative relationship in which the probability of dropping out decreases with higher grades meaning that students with higher grades are less likely to drop out.
Figure 3 Predicted probability of dropout as a function of students’ university grade point average (shown for first year and second year students respectively).

Notes: Graphs are based on the statistical model reported in Table 2. The vertical axis shows the predicted probability of dropout. The horizontal axis shows the score on the variable going from 1 (lowest) through 5 (highest).

Notes: Additional independent variables are kept at their mean: interest and relevance \(M = 3.95\), constructive feedback \(M = 3.34\), staff enthusiasm and support \(M = 3.67\), peer support \(M = 4.19\), alignment \(M = 3.65\), teaching for understanding \(M = 3.73\), academic efficacy \(M = 4.10\), gender (female), age \(M = 23.9\).

DISCUSSION

Methodological contributions

The first key contribution of this study is of a methodological nature. Because the survey data was collected before the decision to leave university had been made, the students’ responses concerning how they perceived different aspects of their teaching–learning environment were not given in retrospect at a time when they had already left the programme. Hence, the responses provide an opportunity to compare the perceptions of the teaching–learning environment of stayers and leavers at a time when they were all active students, thus reducing the risk of the leavers’ perceptions of their experiences being affected by their decision to leave (Holmegaard et al., 2015).

This means that when we find that leavers tend to perceive the study activities as less interesting or relevant than stayers do, this reflects a difference in the experience as it was perceived while both groups were still studying. Likewise, the lower academic self-efficacy beliefs of the leavers are not perceived in retrospect after having left but rather while still being active students. This offers the opportunity for a clearer comparison of the perception of the teaching–learning environment.
A second methodological point is that the survey includes students at all levels – from the first year in the bachelor’s programme to the final year in the master’s programme. We found that even among the late leavers, the majority of students leaving their study programme do so during their first year of study, and the proportion of study leavers decreases during the second and third years of the bachelor’s programme. It is noteworthy that the characteristics of late leavers (the students deciding to leave after the first one and a half semesters) to a large extent are similar to those found in the research of students leaving in general. This means that the students who stay during the first six months of university still struggle with the expectancy-experience gap (Holmegaard et al., 2014) and even though they have found a way to cope with it during their first year of study, negotiations continue and stayers can still become leavers.

Effect of the teaching–learning environment

The analysis found a statistically significant correlation concerning the risk of leaving university in relation to two elements connected with the teaching–learning environment: the perceived interest and relevance and the academic self-efficacy beliefs. These will be discussed separately and subsequently related to each other.

Interest and relevance

We found that the students who later decided to leave university found their courses to be less interesting and less relevant compared to the experience of the students staying. Here, it is of particular importance that the survey was completed while the leavers were still enrolled as students. It means that there is a significant difference in the perception of interest and relevance between those who became stayers and those who became leavers when they were all still active students.

Interest does not exist inherently in the student. It develops through the encounter between the student and the teaching–learning environment. Therefore, relevance is related to interest in the sense that the extent to which the student experiences the study activities as relevant will affect the way the interest develops. The survey questions feeding into the item of relevance and interest are explicitly concerned with seeing the relevance, finding the course content interesting and enjoying participating in the courses (Herrmann, Bager-Elsborg, & McCune, 2017). This kind of sense-making is, in essence, an active process in which students balance and negotiate what they encounter with what they bring with them in terms of prior knowledge and expectations (Ulriksen et al., 2017). The fact that students who perceive their university study to be less relevant and interesting are found to be more at risk of dropping out first and foremost calls for looking into the encounter between the students and the teaching–learning environment and what makes some students succeed better in closing the expectancy-experience gap manifested in their perception of relevance and interest.
Academic self-efficacy beliefs
The second factor that showed a significant difference between stayers and leavers concerns the academic self-efficacy of the students. Students with a high academic self-efficacy belief are less at risk of dropping out of their university studies. As previously mentioned, self-efficacy beliefs have persistently been found to be related to academic achievement.

In the context of university students, the two sources of self-efficacy mentioned earlier (mastery experience and persuasion) combined with the correlation we found between perceived self-efficacy and the risk of not completing the programme point towards the feedback formats and the design of the curriculum as important aspects that might affect students’ self-efficacy beliefs.

The feedback formats are relevant because the implications of whether or not there are feedback opportunities that can help the students improve their work influence students’ sense of performance accomplishments.

The design of the curriculum is relevant because it concerns, inter alia, to what extent it takes the prior knowledge and experiences of the students into account and whether the sequencing of the courses or modules supports a gradual progression. If the design of the courses considers what the students learned in previous courses or at previous educational levels, it increases the probability that the students will experience a sense of being able to meet the standards, which, in turn, may influence the students’ perception of personal accomplishment and mastery.

Academic integration and its relation to interest and self-efficacy
Returning to Tinto’s concept of academic integration, our results point to interest and relevance and to self-efficacy as two key elements in academic integration. Interest and relevance relate to the identity component of academic integration, particularly the reflections and negotiations that students continuously engage in during their course of study about whether they have made the right choice of study programme or not. Self-efficacy beliefs relate to the component of academic integration that concerns the question of how well (or not) you live up to what is academically expected from you as a student during the course of study.

Academic integration plays a vital role in students’ decision to stay or leave, and institutions are able to enhance students’ perception of interest, relevance and self-efficacy through not only the design of the curriculum as noted above, but also through the delivery of the curriculum. Here, the implementation of student-centred learning in the teaching and learning activities comes into play. Student-centred learning is a standard for quality in higher education across Europe and implies teaching and learning activities that encourage students to take an active role in the learning process (Standards and Guidelines for Quality Assurance in the European Higher Education Area, 2015). Student-centred learning has a focus on involving the student as an autonomous participant in the teaching and learning activities and taking the diversity of the students into consideration. This is likely to be conducive to fostering interest, relevance and self-efficacy among students and thus enhance the academic integration.

It is worth noticing that we did not find any significant differences between stayers and leavers concerning their perceptions of pedagogical factors such as feedback, teaching or
alignment. Conversely, we would caution against letting this lead to the perception that the teaching and learning activities, the feedback offered to students or the alignment are irrelevant to student dropout rates. What it does mean is that rather than focusing on particular features of these pedagogical aspects, we should consider whether they affect the students’ sense of relevance and interest or their self-efficacy. The students’ perceptions of relevance, their experiences of interest and their self-efficacy beliefs are likely to be affected by the teaching and learning activities, the kind of feedback and whether the programme is designed in a coherent way. Hence, it is the teaching–learning environment in a broader sense rather than individual techniques or tools that should be the focus of attention.

LIMITATIONS
Although the described associations were all statistically significant and also of a significant magnitude, the model’s explanatory power was rather weak. This calls for caution when interpreting the findings from a probabilistic model such as the one in this paper. For example, undergraduate students are more likely to drop out than graduate students; however, the individual undergraduate student is still more likely to stay than to drop out.

CONCLUSION
Students’ perceptions of their teaching–learning environment are important when deciding whether to stay or leave their studies. A statistical model based on binary logistic regression has shown that the probability of dropout increases when students do not find courses interesting and relevant or when students question their ability to do well in their studies. However, more qualitative research is needed to explore the way the pedagogical aspects of the teaching and learning environment – such as feedback, teaching activities and alignment – are related to students’ interests and self-efficacy as a mediating factor in students’ decision on dropping out.

REFERENCES


