



Secondary school students' engagement profiles and their relationship with academic adjustment and achievement in university



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ARTICLE INFO

Article history:

Received 3 February 2016

Received in revised form 25 November 2016

Accepted 5 January 2017

Available online xxxx

Keywords:

Student engagement

University preparedness

Academic adjustment

Achievement

Latent profile analysis

ABSTRACT

The ability to distinguish secondary school students according to characteristics that contribute to success in university represents important knowledge in the research areas of university preparedness and student success in higher education. This study identified five secondary school student profiles, derived from three dimensions of student engagement: behavioural engagement, cognitive engagement, and intellectual engagement. Students in different profiles differed in their success in university, measured by grade point average and number of attained credits, and in how well they had transitioned to university, measured by academic adjustment. Intellectually highly disengaged students (7%) and students with low behavioural and cognitive engagement (14%) were least successful in university. Students with the highest behavioural and cognitive engagement scores in secondary school performed best in university. These results point to the importance of both behavioural and cognitive engagement. Raising these factors in secondary school students could contribute to better preparation for university education.

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1. Introduction

To lower university dropout rates, secondary school graduates need to be well-prepared for university education. Since most research on achievement in higher education uses samples of university students it is not very clear what attributes that students already possess in secondary education contribute to success in university. Therefore, in this study we examined the relationship between students' attributes, in this case engagement characteristics, in grade 12 of secondary education and their achievement and adjustment one year later in the first semester of university education.

The transition from secondary school to university is critical; many students drop out or switch majors during or after the first year of university. Dropping out has negative financial and emotional consequences, as well as repercussions for labour market positions. Switching educational majors may seem less problematic, but for many students, this shift means it will take them longer to graduate, which could have significant cost implications. Furthermore, the chances of university success appear dependent mainly on the transition from secondary to higher education (Baker, 2004). The better a student is prepared to take this leap, the less likely he or she will stumble over the challenges of a new study and life environment. In the Netherlands, the secondary education system is highly differentiated. The

students who showed the most potential in primary school (as measured by a test and judged by the teachers) can attend the highest level of secondary education: pre-university education. Graduating from pre-university education after six years grants students access to university education. In 2014, 80% of pre-university graduates continued their education in university (CBS [Centraal Bureau voor de Statistiek], 2016).

What student characteristics in secondary school may affect their success in university? Academic achievement can be explained by cognitive (i.e. intelligence) and non-cognitive factors. A broad, non-cognitive factor is student engagement. Broadly, student engagement refers to students' involvement in and commitment to school (Landis & Reschly, 2013). Involvement refers to active participation in academic as well as extracurricular activities. Commitment can be interpreted as commitment to educational goals and learning (Christenson, Reschly, & Wylie, 2012). Student engagement has received much attention in research and practice due to its proven connection to dropout. Lately, the concept has been turned around: instead of focusing on low engagement leading to dropout, an increasing number of researchers are emphasizing the importance of high engagement for successful high school completion. As a consequence of this turnaround, engagement research increasingly focused on all students, instead of primarily on the ones that are at risk to dropout. The attractiveness of studying engagement as a useful factor in school improvement lies in the fact that it is an alterable variable, in contrast to (relatively) fixed variables such as socioeconomic status and intelligence (Landis & Reschly, 2013). As Zyngier (2008) pointed out, "While this disengagement

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might be seen as a problem of the individual student in terms of dropping out or problematic behaviour at school, it can also more appropriately be seen in terms of the school failing to enable the student to achieve their potential" (p. 1767). Originally, student engagement was divided into two elements, following the Participation-Identification (PI) Model introduced by Finn (1989). Participation referred to behavioural engagement and identification involved affective engagement. A decade later, with more researchers entering the field of engagement research, a compartmentalization into three aspects became more popular. The construct was divided into a behavioural, a cognitive, and an affective (sometimes referred to as psychological or emotional) aspect. According to Fredricks, Blumenfeld, and Paris (2004), behavioural engagement consists of indicators such as positive conduct and rule following including attendance, involvement in learning including time on task and asking questions, and wider participation in extracurricular activities. Briefly, behavioural engagement can thus be described as the time and effort students devote to academic work. Cognitive engagement goes deeper than behavioural engagement and can be defined by "the student's psychological investment in and effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote" (Newmann, Wehlage, & Lamborn, 1992, p. 12). Cognitive engagement thus refers to internal behaviours, such as the quality of processing learning content. Comparing behavioural and cognitive engagement, the former is focused on 'basic' behavioural effort, whereas the latter focuses on mental effort. Examples of variables that are often seen as aspects of cognitive engagement are self-regulation and the use of learning strategies (Fredricks et al., 2004). Affective engagement is constructed from perceived relationships with teachers, perceived support from peers and perceived support from family. Many researchers describe this component as sense of belonging (Landis & Reschly, 2013). Although not part of the three original aspects of engagement, another engagement dimension that can be thought of as relevant for students in the highest levels of education is intellectual engagement. Ackerman, Kanfer, and Goff (1995), p. 276 defined intellectual engagement as "a personality construct that represents an individual's aversion or attraction to tasks that are intellectually taxing and is thus related to acculturative and purposeful development and expression of certain intellectual abilities". Broadly speaking, intellectual engagement thus refers to individual differences in the tendency to engage in intellectual activities. In this study we will focus on behavioural, cognitive, and intellectual engagement.

Previous research consistently showed positive relationships between engagement factors and learning outcomes (Klem & Connell, 2004). Especially in the last decades many studies on student engagement have been performed. Some notable outcomes include that engagement deteriorates over the years (Schlechty, 2002) and that girls are more highly engaged than boys (Goodenow, 1992; Yazzie-Mintz, 2007). Yazzie-Mintz's (2007) large-scale study of data on >80,000 high school students in the United States found that 72% of students indicated that they were engaged in school, leaving many students disengaged. To conclude, Willms (2003) made a crucial note by stating that engagement does not predict academic success for each and every student, since OECD research showed that many disengaged students still perform well academically. However, also disengaged but well-performing students are at risk to experience a difficult transition to higher education: whereas their intelligence may have made it possible for them to obtain sufficient grades during high school, this may not be the case anymore in higher education, where the demands are higher.

A typology of secondary school students, based on dimensions of engagement, might provide a rough view of which groups of students seem more or less prepared for university. Methods such as cluster analysis, or the increasingly popular latent class analysis (for categorical data) or latent profile analysis (for continuous data), provide the tools to make such a typology. These methods are person-centered approaches, and differ from variable-centered approaches, such as correlational analysis. The

benefit of a person-centered approach is that it is able to shed more light on combinations of characteristics within the individual (a 'profile') by examining which different profiles can be found based on a number of indicator variables. Consequently, analyses can be performed to investigate how these different profiles are related to other variables. What we were interested in here is to investigate which different engagement profiles could be distinguished in high school students and how these profiles were related to the same students' success later on when they were studying at university. Therefore, we sought to relate the engagement profiles as formed in the last grade of secondary education to academic adjustment and achievement in university.

1.1. Profile indicators in secondary education: three dimensions of student engagement

What causes students to do well in education? Von Stumm, Hell, and Chamorro-Premuzic (2011) identified three pillars of academic performance: intelligence, effort, and intellectual curiosity. Thus, there is a difference between a student's maximum and typical performance, such that the former is indicated by the student's ability, but the latter reflects non-cognitive factors, such as curiosity and effort. If we restrict the range of intelligence, effort and curiosity become more important for explaining academic performance (Chamorro-Premuzic & Furnham, 2003). Students in a differentiated school system - such as pre-university students in Dutch secondary education, to which students are admitted on the basis of their abilities - likely do not differ much in maximum performance, but their typical performance varies greatly, which can be explained by differences in their effort and curiosity. In this study, we used engagement as an overarching concept that encompasses both effort and curiosity aspects. Following the dimensions of engagement as discussed above, effort can be categorised as behavioural engagement when it is conceptualised as 'simple' behavioural effort, such as attending class and completing assignments. Effort in the sense of mental effort, like the use of learning strategies, can be considered cognitive engagement. Last, curiosity can be viewed a form of intellectual engagement. Below we will discuss these three dimensions in more detail and elaborate on the constructs that were used in this study.

1.1.1. Behavioural engagement

Behavioural engagement consists of several indicators, including effort, attendance, time on task, and persistence (Fredricks et al., 2004). Research confirmed that this type of engagement predicts academic achievement (Chase, Hilliard, Geldhof, Warren, & Lerner, 2014; Dotterer & Lowe, 2011).

1.1.2. Cognitive engagement

Whereas behavioural engagement refers more or less to the quantity of students' engagement in school work, cognitive engagement focuses on the quality (Davis, Summers, & Miller, 2012). Learning strategies or approaches describe how students learn; they also provide good indicators of the quality of students' engagement while learning, i.e. how much mental effort a student devotes to learning activities. Greene and Miller (1996) distinguished shallow cognitive engagement, such as surface learning, and meaningful cognitive engagement, such as a deep learning approach and self-regulated learning. Research specifically highlights the importance of meaningful cognitive engagement explaining achievement, specifically in the form of self-regulated strategies and a deep learning approach (Richardson, Abraham, & Bond, 2012). The use of metacognitive and self-regulated learning approaches is important in university education, where less external regulation exists. Metacognition makes a unique contribution to explaining academic achievement (e.g. Veenman, Kok, & Blöte, 2005), and research on time management - an important element of self-regulated learning - revealed its consistent relationship with academic achievement (Britton & Tesser, 1991; Macan, Shahani, Dipboye, & Phillips, 1990). In contrast with studies of these self-regulated learning strategies, research into

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