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University teacher judgments in problem-based learning: Their accuracy and reasoning

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HIGHLIGHTS

- University teachers rated the chance of success of university students.
- Chance ratings of success were predictive of actual academic success.
- University teachers were more accurate in predicting success than failure.
- University teacher judgments were often based on non-cognitive characteristics.
- Unsuccessful university students received relatively more negative statements.

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ABSTRACT

This study investigated the accuracy of 14 university teachers' judgments. Early in the first year, university teachers rated the chance each university student in their group would successfully complete their first year as well as the entire bachelor's program. Results show that university teachers' chance ratings were predictive of actual academic success. However, they were more accurate in predicting success than failure. Moreover, results revealed that university teachers mostly built upon their observations of university students' engagement and motivation, instead of students' cognitive ability in their judgments. Unsuccessful university students received relatively more negatively framed statements than successful students did.

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1. Introduction

Preventing dropout and study delays are major concerns in higher education. According to the Organization for Economic Co-Operation and Development (OECD, 2013), around 30% of students who enter a higher education program leave without a degree. Dropout rates in the Netherlands are similar to the OECD average (OECD, 2013; Educational Inspectorate, 2013). However, not only dropout is a concern, many students experience study delays longer than one year. In the Netherlands, only 26.40% of university students obtain their bachelor's degree on time (i.e., within 3 years), and 48.60% of university students graduate with a one-year delay (Educational Inspectorate, 2013). Study delays and dropout can be both time-consuming and costly for students, as

well as for institutes of higher education. For example, in several European countries, the amount of funding universities receive from the government depends on the number of students who graduate (De Koning, Loyens, Rikers, Smeets, & Van der Molen, 2014; Hovdhaugen, 2009).

A majority of university students who leave higher education without any degree do so during or immediately after their first bachelor's year (Tinto, 1993, 1998). It is therefore important to target dropout at an early stage of university students' academic careers. In this study, we aim to investigate whether university teachers can identify first-year university students at risk of dropout or delays during the bachelor's program and which student characteristics university teachers perceive as important for academic success.

2. The accuracy of teacher judgments

Teachers judge students' performance or behavior (Südkamp,

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Kaiser, & Möller, 2012) for diverse purposes, such as formal assessment, referral decisions (e.g., remedial teaching or acceleration), and instructional decisions (e.g., selection of tasks, determining difficulty levels, and organization of learning; Abidin & Robinson, 2002; Begeny, Eckert, Montarello, & Storie, 2008; Eckert, Dunn, Codding, Begeny, & Kleinmann, 2006; Gerber & Semmel, 1984; Südkamp et al., 2012). It therefore is important to judge students in an accurate way.

Judgment accuracy is typically defined as the correlation between teacher judgments of students' academic achievement and students' actual academic achievement, such as on standardized tests (e.g., Südkamp et al., 2012). Jussim (1989, 1991) further argued that only when teacher judgments predict student behavior or achievement, without causing it, one can speak of accuracy. Accurate judgments are based on relevant background information, such as students' ability. However, according to Jussim's (1991) reflection-construction model teacher judgments could be inaccurate when instigated by expectancy effects and perceptual bias. An example of teacher expectancy effects are self-fulfilling prophecies, where teacher judgments about students will change student behavior so that the initial teacher expectation is confirmed. Perceptual bias takes place when teachers interpret students' performance in ways that are consistent with their initial beliefs or ideas about a student's capabilities and competencies regardless of any independent, objective assessment of students' capabilities and competencies (like with standardized tests). Such perceptual biases can be instigated by stereotypical beliefs (e.g., social economic status, ethnicity, culture, gender) teachers believe are associated with students' study performance.

Studies that examined the magnitude of judgment accuracy, teacher expectation effects, and perceptual bias, concluded that self-fulfilling prophecy effects are often small and that teachers are mostly accurate in judging student performance (Jussim & Harber, 2005; Trouilloud, Sarrazin, Martinek, & Guillet, 2002). Moreover, two meta-analyses demonstrated that teacher judgments of students' performances are quite accurate (Hoge & Coladarci, 1989; Südkamp et al., 2012). For example, the meta-analysis by Südkamp et al. (2012) of research conducted from 1989 to 2009 resulted in a mean correlation of 0.63 (range $r = -0.03$ to $r = 0.84$) across 75 studies. Whereas studies in these meta-analyses predominately involved samples from kindergarten or elementary school, only a minority also considered secondary education. However, even less is known about the accuracy of teacher judgments in higher education settings. This is remarkable, given the high dropout rates in higher education and associated costs (OECD, 2013). Moreover, fundamental judgments university teachers make about the quality of student work are often subjective decisions, such as judging the extent to which an objective is met (Sadler, 2005). One reason for this knowledge gap, perhaps, might be the larger class sizes, making it more difficult to investigate teacher judgment accuracy.

Interestingly, the few studies that considered judgements in higher education reported mixed results. For example, Chamorro-Premuzic and Furnham (2003) demonstrated in one study that university teachers' exam predictions were related to university students' actual exam scores (explaining 6% of the variance), whereas in a second study no significant associations were found. Kaufman and Hansell (1997) and Whitfield and Xie (2002) found positive associations between university teacher ratings' of knowledge and students' actual exam scores. Nevertheless, teacher ratings could only explain little variance in actual exam scores (Kaufman & Hansell, 1997) and university teachers were likely to overestimate students' knowledge base, especially for students situated in the bottom 25% of the class (Whitfield & Xie, 2002).

Other studies were more positive about the accuracy of teacher judgments. Van de Watering and Claessens (2003) demonstrated that university teachers' classification of their first-year law students as barely, moderately, or highly competent corroborated with actual exam scores. Finally, Wijnia, Loyens, Derous, Koendjie, and Schmidt (2014) found that teacher judgments made early in the first bachelor's year were predictive of university students' academic success in that first bachelor's year as well as across the entire bachelor's program (explaining 10—22% of the variance). However, effects were not unequivocal: Results indicated that university teachers were better in predicting academic success than failure, which warrants further investigation. Interestingly, this asymmetrical effect is in line with studies conducted in primary and secondary education that indicated that primary and secondary teachers' judgment accuracy was higher for high-achieving students (e.g., Demaray & Elliott, 1998) and that teachers were better at predicting who would not develop learning difficulties than those who would develop learning difficulties (Flynn & Rahbar, 1998; Gijsel, Bosman, & Verhoeven, 2006; Taylor, Anselmo, Foreman, Schatschneider, & Angelopoulos, 2000).

3. How do teachers make their judgments?

To gain more insight into teacher judgment accuracy, it is important to learn more about the type of information teachers use when making judgments about students' performance and ability. Teachers may judge students' achievements on the basis of student characteristics other than ability, which may affect the overall accuracy of their judgments. For example, previous research revealed that 6th grade teachers' and university teachers' judgments of achievement were influenced by students' behavioral engagement in class (e.g., the number of questions a student asks in class, absenteeism in class; Chamorro-Premuzic & Furnham, 2003; Kaiser, Retelsdorf, Südkamp, & Möller, 2013). This was even the case in two experimental studies by Kaiser et al. (2013). In these experiments, teacher candidates participated in a computer simulation of a classroom situation in which they interacted with virtual elementary and secondary school students. These students had experimentally manipulated levels of achievement and engagement in terms of the proportion of correct answers and participation in class. Afterward, teacher candidates were asked to judge students' achievement and engagement. Although, in these simulations, the correlation between students' actual engagement and actual achievement was constrained to zero, results demonstrated that teachers inaccurately based part of their judgments of students' achievement levels on students' displayed behavioral engagement in class. Kaiser et al. (2013) suggested that teachers might have taken the collinearity of engagement and actual achievement into account when making their judgments. That is, teachers might assume that high engagement and high achievement go hand in hand.

If teacher judgments are indeed influenced by students' engagement because of its assumed relationship with achievement, it is possible that other non-intellectual factors play a role as well. Although little is known about how teachers' perceptions of student characteristics influence teacher judgments of students' achievement, there are some indications that teachers take perceptions of individual differences, such as assumed personality and motivation, into account when predicting students' final grades. For example, Doherty and Conolly (1985) demonstrated that primary school teacher judgments were influenced by pupils' perceived tidiness. Further, Urhahne (2015) found that secondary school students who were underestimated by their teachers were perceived as less motivated than overestimated students were.