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Development of a Comprehensive Framework of Excellence in Higher Education

Ph.D. Thesis

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Study Specialization: Educational Psychology

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ABSTRACT: Excellent students have usually been defined in terms of high academic achievement, which, however, could be associated with undesirable motivational and behavioural correlates. Working on the assumption that excellence in higher education is a precursor of occupational excellence, which integrates high-quality work with ethical behaviour, excellence in university settings should be reconsidered. This thesis was underpinned by two research questions: Who is really an excellent university student? How to identify an excellent university student? In this respect, we conducted four intermediate studies that together build a comprehensive conceptual and methodological framework of excellence in higher education. The first study aimed to establish an empirically-based conceptualization of an excellent university student. The results of an investigation between university students and teachers showed that excellence in higher education is an interaction between educational excellence, which refers to students who are deeply knowledgeable, engaged, and able to turn their knowledge and skills into actions and desirable high-quality outcomes, and personal excellence that concerns prosocial, moral, and self-reflective behaviour of students. In the second study, we aimed to find, whether the core excellent students' attribute of genuine study motivation, conceptualized as mastery goal orientation along with deep approach to learning, is indicated or contradicted by students' grade point average (GPA). The results revealed that GPA neither indicates, nor contradicts the attribute

of genuine study motivation. In the third study, we designed and implemented the procedure of excellent students' identification based on a multisource assessment that involved teacher nomination/assessment, academic achievement assessment, and peer assessment. The implementation of this methodology resulted in a final sample of 10 excellent individuals meeting all the conceptually-derived criteria of excellence. The fourth study aimed to evaluate the implemented methodology in terms of its discriminating ability to differentiate between excellent and non-excellent students. In this respect, we achieved satisfactory results. After reviewing the results generated by the implementation and evaluation of the proposed methodology, we suggest a basic guideline on how to define and identify excellent university students in more general settings.

NÁZEV:	**Vysokoškolská excelence: Vývoj uceleného rámce**
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ANOTACE: Za vynikající studenty jsou obvykle považováni studenti dosahující vysokého akademického výkonu, který ale může být spojen s nežádoucí motivací a vzorci chování. Vyjdeme-li z předpokladu, že vysokoškolská excelence je předstupněm profesní excelence, která v sobě spojuje práci vysoké kvality s etickým chováním, je potřeba začít o excelenci ve vysokoškolském prostředí uvažovat jiným způsobem. Tato disertační práce si klade dvě výzkumné otázky: Kdo je doopravdy vynikající vysokoškolský student a jak jej identifikovat? V tomto ohledu jsme realizovali čtyři dílčí studie, které tvoří ucelený konceptuální a metodologický rámec vysokoškolské excelence. První studie si klade za cíl ustanovit konceptualizaci vynikajícího vysokoškolského studenta založenou na empirických datech. Výsledky šetření provedeného mezi univerzitními studenty a vyučujícími ukázaly, že vysokoškolská excelence je kombinací akademické excelence a osobnostní excelence. Akademickou excelenci zosobňují takoví studenti, kteří mají hluboké znalosti, jsou angažovaní a schopní přenést své znalosti a dovednosti do praxe a přetvořit je ve výsledky vysoké kvality. Naopak osobnostní excelence se vztahuje k prosociálnímu, morálnímu, a sebe-reflektivnímu chování studentů. Druhá studie si klade za cíl zjistit, zda klíčový atribut vynikajícího vysokoškolského studenta, autentická studijní motivace, konceptualizovaná jako cílová orientace na mistrovství spolu s hlubokým přístupem k učení, koreluje s celkovým studijním průměrem. Výsledky této studie ukázaly, že studijní průměr není ani indikátorem autentické studijní motivace, ale ani ji nevyvrací. V rámci třetí studie byl navrhnut a

realizován postup identifikace konkrétních vysokoškolských studentů založený na vícezdrojovém hodnocení (učitelská nominace a hodnocení, hodnocení akademického výkonu a studentské hodnocení), což vyústilo ve výběr vzorku deseti vynikajících studentů, kteří odpovídali všem konceptuálním kritériím excelence. Čtvrtá studie si kladla za cíl zhodnotit navrženou metodologii s ohledem na to, do jaké míry rozlišuje mezi vynikajícími a nevynikajícími studenty. V tomto ohledu bylo dosaženo uspokojivých výsledků. Poté, co byly posouzeny výsledky získané realizací a evaluací navržené metodologie, mohla být poskytnuta základní doporučení k tomu, jak definovat a identifikovat vynikající vysokoškolské studenty napříč univerzitami.

KLÍČOVÁ SLOVA: vysokoškolská excelence, akademický výkon, osobnostní excelence, excelentní vysokoškolští studenti, vícezdrojové hodnocení

Content

Introduction

Since ancient times, individuals excelling in any field of human endeavour have been the subject of broad fascination and admiration, serving as role models and inspiring others to reach their own highest potential. Naturally, excellent individuals also generate considerable interest in researchers who have devoted special attention to studying, understanding, and explaining excellence in the hope of determining excellence-related qualities that can be cultivated in those who aspire to excel in their field of specialization. Such kind of interest has been evoked also by the author of this thesis, who has been particularly interested in excellent individuals who find themselves in the final stage of formal education, and, at the same time, in the very beginning stage of their unfolding career path: university students.

Individual-level excellence, as perceived by the author of this thesis, is the culmination and realization of individual potential to its full extent, which manifests itself in a unique and individual-specific way by extraordinary doing and thinking. Universities as higher educational institutions are in a singular position in that they specifically focus on people who show high individual potential in terms of high-level skills, abilities, motivation, and engagement. In our view, such individuals are perfectly predisposed to achieve challenging goals, to help promote the growth of communities, organizations, and the whole society, and, just as importantly, to live through a fulfilling and meaningful life if they manage to fulfil the potential they possess – if they achieve excellence. Thus, universities, or more specifically, university leaders, teachers, and counsellors, should aim to cultivate excellence in higher education, which, as we believe, is naturally transformed into occupational excellence and citizenship excellence after students enter the post-university life. Yet, to find out which qualities constitute excellence in higher education, and which paths lead to it, it is necessary first to study excellence; more specifically, to learn about it directly from excellent university students.

The initial and ultimate objective of the author's research endeavour was to investigate and to bring into the spotlight the individual cases of excellent university students who have the capability to inspire and motivate others to become their best. However, she very soon encountered the conceptual-methodological difficulty concerning the operationalization of the construct under investigation. Plainly speaking, the most burning issue was the following unanswered question. Who an excellent student really is and how exactly should they be identified? Reviewing the existing empirical literature on the topic of individual-level academic excellence, we found that excellent students have usually been operationalized through high academic achievement. On the one hand, there is evidence that high academic achievement at the university could be translated into desirable career outcomes, such as job performance, earnings, or work engagement (e.g. French et al., 2014; Kool et al., 2017; Lyons & Bandura, 2017). On the other hand, several undesirable motivational and behavioural correlates of academic achievement have been identified, such as learning out of the desire to outperform others or higher tendency to cheat (e.g. Van Yperen et al., 2011; Yaniv et al., 2017). Working on the assumption that excellence in higher education could be perceived as a precursor of occupational excellence, which has been defined as a fusion of high-quality work with ethical and social responsibility (Gardner et al., 2001), it is inconceivable to define excellent individuals solely in terms of achievement. Although ethical and social responsibility are essential attributes of each professional, mainly in helping professions, such as teaching, the personal qualities of a moral and virtuous character are decisive for the overall quality of services provided by those professionals. Thus, we believe that to enhance the predictive validity of the construct of excellence in higher education, it is necessary to take into account the aspects of ethics, morality, and virtuousness.

Moreover, an in-depth examination of the nature of the construct excellence raised further conceptual and methodological issues that were not adequately addressed by current

educational psychological research. Finally, we came to the conclusion that research on excellence in higher education is in a need of a sustainable, transparent, and methodologically sound approach to define and identify excellent university students, which, in turn, is a necessary prerequisite for conducting research involving a sample of excellent university students. Thus, we aimed to revise the way of defining and identifying excellent university students in that we developed a new conceptual and methodological framework of excellence in higher education. The framework has been developed in the setting of Faculty of Education at the University of South Bohemia (FE USB) in České Budějovice in the Czech Republic. Although the framework has primarily served us to establish a sample of excellent university students at the FE USB to be further investigated (the results of this follow-up investigation largely exceed the scope of this thesis; thus, they are not part of the thesis), based on the results of the implementation and evaluation of the framework, we are able to provide a widely-usable scheme for defining and identifying excellent university students that could be used across higher educational institutions.

As already briefly mentioned, the research was underpinned by two basic research questions. *Who is really an excellent university student? How to identify an excellent university student?* To find sufficient answers to these questions, we conducted four intermediate studies that together build a comprehensive framework of excellence in higher education. The first study aimed to establish an empirically-based conceptualization of an excellent university student. The results of an extensive investigation between students and teaching staff members at the FE USB showed that the social construct of a prototypical excellent university student, relevant to the academic community at the FE USB, is characterized by 10 essential behavioural attributes and an underlying motivational attribute of genuine study motivation. The purpose of the second study was to provide evidence that would reliably guide our future methodological choices in the process of building a

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comprehensive framework of excellence in higher education. More specifically, we aimed to find if the underlying attribute of an excellent university student, genuine study motivation, was indicated or contradicted by students' grade point average (GPA). Since the results revealed that in the FE USB settings, GPA neither indicates nor contradicts the attribute of genuine study motivation, we decided to use it as an adjunctive contextually relevant indicator of excellence in higher education. In the third study, we designed and implemented the procedure of excellent students' identification. By employing contextually relevant indicators of excellence in higher education, namely a) a subjective assessment measure consisting of a 10-item rating scale of an excellent student's essential attributes and b) objective assessment measures that include specific academic achievement indicators, we performed a multisource assessment procedure involving teacher nomination/assessment, academic achievement assessment, and peer assessment that together covered various views and aspects of excellence. The implementation of this methodology resulted in a final sample of 10 excellent individuals meeting all the conceptually-derived criteria of excellence. The fourth study aimed to evaluate the implemented methodology in terms of its discriminating ability to differentiate between excellent and non-excellent students. In this respect, we again performed the multisource assessment procedure on a sample of 10 randomly selected non-nominated individuals that involved academic achievement assessment, teacher assessment, and peer assessment. The final output of this thesis, based on reviewing the results generated by the implementation and evaluation of the proposed methodology, involves a basic guideline on how to define and identify excellent university students in more general settings. The research presented in this thesis was undertaken in accordance with the tenets of the Declaration of Helsinki and was approved by the FE USB Ethics Committee (the approval is available in Appendix A). All participants signed informed consent statements before participating in the study.

The research is introduced by six main chapters reviewing the current state of theoretical and empirical knowledge related to the topic of this thesis. The first chapter familiarizes the reader with the general conceptual and methodological issues in research dealing with the specific group of constructs that describe the results of personal productivity, of which the construct of excellence is part. Chapters two and three review the conceptual underpinnings of the construct of excellence in a general and in a more specific way with emphasis on excellence in educational domain. Chapter four presents the current state of empirical research on the topic of excellence in higher education. Chapters five and six point out the issues related to the current approach of dealing with the construct of excellence in higher education. More specifically, chapter five provides an overview of empirical knowledge on the undesirable motivational and behavioural correlates of academic achievement and chapter six addresses conceptual and methodological requirements for adequate dealing with the construct of excellence.

Several parts of this thesis were partially taken from journal articles written by the author of this thesis in collaboration with other co-authors. Chapter 1 and subchapter 6.2 are based on a journal article by Mašková and Kučera (2021) published in Psychological Reports; subchapter 5.1 and Study II are based on a journal article by Mašková and Nohavová (2019) published in Grant Journal.

1. Productivity-Focused Terminology in Educational Psychological Research

In modern societies, personal productivity and efficiency are probably among the most valued attributes of an individual. Consequently, an increasing amount of social science research has focused on the constructs representing the transformation of an individual's qualities and effort into high-level outcomes (e.g. Araújo et al., 2017; Young & Reinkensmeyer, 2014). Besides the construct of excellence, which is of primary interest of this thesis, such productivity-focused constructs as (individual-level) performance,

achievement, and success are among the most appealing objects of interest in psychological research, including research in educational psychology. However, apart from their widespread popularity among both researchers and practitioners, a commonly shared feature of the productivity and effectivity describing constructs is that they have often been used in a way that creates confusion (e.g. York et al., 2015; Yusuf, 2002). In this respect, the most burning issues are probably a lack of consistency in how the constructs referred to with the particular terms have been operationalized in various research studies and a lack of distinguishing among constructs referred to with different terms (e.g. Fan & Chen, 2001; York et al., 2015; Yusuf, 2002). Thus, despite the numerous findings of studies focused on searching predictors of these constructs, little is understood about what was really being predicted (Murphy, 1990). Regarding the use of productivity-related terminology in the domain of education, for example, York et al. (2015) revealed that researchers claiming to focus on *academic success* actually examined only a narrow part of the broadly and comprehensively defined construct, whereby its true meaning has been distorted in the empirical literature. Fan and Chen (2001), on the other hand, issued a call for a more appropriate way of dealing with the construct of *academic achievement* that was based on the fundamental differences in operational definitions of academic achievement across studies, which in turn led to inconsistent findings on correlations between academic achievement and other variables. Additionally, Yusuf (2002) criticized the interchangeable use of the terms academic achievement and *academic performance*, although the terms are distinguishable and need to be distinguished to prevent any confusion. In fact, not only have the terms academic performance and academic achievement been confounded in the literature, but all three terms referring to the key constructs in educational psychology – academic performance, academic achievement, and academic success – have been used interchangeably even within the same studies (e.g. Karbach et al., 2013; Putwain et al., 2013).

A comprehensive study by Mašková and Kučera (2021) confirmed that in educational psychological research, the empirical way of dealing with productivity-focused constructs referred to with the terms performance, achievement, and success has been highly problematic. First, a lack of empirical distinguishability between the constructs was observed, since the constructs overlapped strongly in the way their meaning has been established for measurement purposes. The overlap of the constructs was caused mainly by the excessive use of universal educational indicators, namely, grades and grade point average (GPA) that together accounted for 74%, 51%, and 40% of all observed indicators of academic performance, academic achievement, and academic success, respectively. The overuse of grades and GPA was thus defined as the main culprit of the blurred empirical distinction between the constructs. Next, the indicators used to operationally define academic performance, academic achievement, and academic success were employed in an unclear way without paying attention to the respective conceptual definitions and frameworks underlying these constructs. As a result, each of the constructs displayed a poor empirical – conceptual definitions fit. Most pronouncedly, the multidimensional nature of the constructs was largely disregarded, as research studies tended to rely solely on a single indicator or indicators of a similar type, instead of combining several indicator types to reflect the manifold nature of the respective construct.

Needless to say that such an ambiguous and improper manner of using productivity-focused terminology is inevitably linked to the incomprehensible meaning of the central constructs of psychological research. Neglecting the nature and conceptual underpinnings of the constructs thus results in impaired soundness of research studies that may yield incomparable findings and conclusions.

2. Conceptual Underpinnings of Excellence

As suggested in the previous chapter, like other productivity-focused constructs, the construct of excellence also tends to suffer from ambiguity and inconsistency in the manner of how has it has been dealt with. Although the term excellence has recently become a ubiquitous buzzword in social science and beyond, it is often used broadly to refer to any field-specific desired outcomes (Bruno-Jofré & Hills, 2011; Brusoni et al., 2014). Thus, despite its growing appeal, excellence has been documented as an ambiguous (Bruno-Jofré & Hills, 2011) or even as an empty and worthless concept (Moore et al., 2017). To unravel the real meaning behind the term, it is necessary to first review its conceptual underpinnings.

Excellence is generally defined as "outstanding merit or quality" ("Excellence", n. d.); the corresponding adjective excellent as "extremely good, of very high quality" (Summers, 2003, p. 350). The specific understanding of excellence at an individual level, however, diverges into distinct viewpoints along a continuum with technical goodness (being "good at" or "doing well") (Franks, 1996) at one end, and non-instrumental moral goodness (doing good) (Adams, 2006) at the other. The first perspective acknowledges a person's excellence through the resulting product they created (Norton, 1980 as cited in Franks, 1996). Put differently, excellence equals outstanding performance and individuals are considered excellent when they reach a certain level of a key performance indicator (e.g. Brusoni et al., 2014; Van den Brink & Benschop, 2012). The opposite view is in accordance with the original understanding of the term and has its roots in the ethical theory of the Ancient Greeks. From this historical perspective, excellence, referred to as *Arete*, had to do with values and ideals rather than performance, since it was the feature of the noble and good human and related to quality of character (Jahanbegloo, 2014). In this respect, Havard (2007, p. 14) defines "the content of character" as a virtue; more specifically, as the set of classical human virtues, such as magnanimity, humility, prudence, courage, self-control, or justice.

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Thus, contrary to the technical performance-based view of excellence, personal excellence is the attribute of a person striving to grow in virtue (Havard, 2007).

The most comprehensive conceptualization of excellence integrates the duality of doing well and doing good in a single framework (Solomon, 1992). This notion adopted across domains acknowledges that excellence is a synergy of *professional* or *performance excellence* (observable, measurable outcomes) and *personal excellence* (personal qualities or virtues), and they are conceptualized as co-existing entities (e.g. Jaeger, 2018; Miller & Kerr, 2002; Sonnentag, 1995). This thesis strongly advocates this holistic approach, since it promotes the idea of maximizing human potential to its fullest extent. We argue that the emphasis on both facets of excellence is particularly important when conceptualizing excellence in higher education and that it should be in line with the core mission of higher education institutions: to help individuals fulfil their potential by fostering both intellectual and personal and moral growth (Gardner, 2015; Hoff, 2009). Furthermore, excellence in higher education goes beyond the academic world, since it also represents what students take with them after leaving it and are expected to become excellent professionals, parents, and citizens (Gardner, 2015). Given that excellence in the workplace entails high-quality work with ethical and social responsibility at its centre (Gardner et al., 2001), it can be assumed that excellence in higher education, which could be perceived as a precursor of occupational excellence, cannot only pertain to high-quality academic work but also to the development of personality and character (Hoff, 2009). In this respect, we believe that promoting a complex view of excellence not only has a positive value for an individual, but also positively affects an individual's environment and the whole of society.

3. Holistic Conceptual Frameworks of Academic Excellence

In the educational domain, one of the most complex conceptual frameworks of excellence that focuses on higher education was developed by Parkash and Waks (1985, as

cited in Bruno-Jofré & Hills, 2011) who highlighted four complementary conceptions of excellence: technical, rational, personal, and social. These are hierarchically organized in such a way that each successive conception is more inclusive of educational values than the preceding one. The technical view conceives excellence as proficiency in problem solving based on a collection of acquired skills, competencies, or techniques manifested in exemplary academic achievement. From the perspective of the rational view, excellence is perceived as an adventure of the mind in terms of high-order imaginative thinking and behaviour, inventiveness, and creative problem solving. The personal view, on the other hand, embraces the quest for authenticity and self-actualization, and excellence is expressed by an autonomous process of personal development. Finally, the social view of excellence emphasizes social responsibility toward the community in that it couples individual self-actualization with the individual's contribution to the common good.

Although this four-faceted conceptualization of excellence is the most elaborated, both the technical and personal dimensions are involved in the conceptualizations of academic excellence suggested by other authors. The technical facet of excellence, equivalent to individual expertness, comprises the knowledge and strategies that are needed to address specific tasks, and it manifests itself in high academic achievement (Ferrari, 2002; Li, 2004). The non-technical personal facet, on the other hand, prevents the reduction of excellence to merely a matter of technical expertness and emphasizes the importance of the values, skills, and outcomes that people need to function well in a particular community (Ferrari, 2002). Hence, an integral part of being academically excellent is outstanding academic achievement coupled with personal qualities that have been conceptualized as a) being a good person (Ferrari, 2002) or possessing high moral and virtuous character (Li, 2004), b) showing personal mastery including the desire for self-improvement, curiosity, and willingness to work

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hard to fulfil this curiosity (Erez, 2004), and c) having good work habits in terms of neatness, persistence, efficient time use, and self-discipline (Franks, 1996).

The concept of an excellent university student is closely interrelated with that of an ideal university student. The main difference between these two constructs is that the features of an excellent university student can be embodied by a real person. In contrast, an ideal student constitutes the aspirations and imaginations of desirable student characteristics that may not exist, particularly in one individual (Wong et al., 2021). Nevertheless, the notion of the ideal university student offers a multidimensional conceptualization of what is valued in a university student, and despite it being more complex and demanding, it may resemble that of an excellent university student to a high extent. In this respect, Llamas (2006) presented the 14 characteristics of the ideal student that include good grades and personal qualities, such as reflectiveness and supportiveness towards peers, but also the education-related qualities of engagement, interest, and taking responsibility for their own learning. Likewise, Wong et al. (2021) provided an eight-dimensional model of the ideal student encompassing the facets of diligence and engagement, organisation and discipline, reflection and innovation, positive and confident outlook, supportive of others, academic skills, employability skills, and intelligence and strategic approach.

4. The Current Research Approach to Individual-Level Excellence in Higher Education

Recently, a growing number of higher educational research studies have been dedicated to individual-level excellence. These studies typically draw research samples from individuals considered excellent that are subsequently investigated and compared to non-excellent individuals in order to explain the factors affecting the development of excellence in higher education (e.g. Baniaga et al., 2018; Monteiro et al., 2014) or the factors that influence it (e.g. López et al., 2013; Saidi et al., 2015).

When reviewing the approaches adopted by the most recent research in higher education, several criteria have been used to define excellent students. Excellent students achieve high grades (e.g. Mirghani et al., 2015; Monteiro et al., 2014) exceeding a set cut-off point of the grade point average (GPA) (e.g. Al Shawwa et al., 2015; Saidi et al., 2015), or they are enrolled in an honours degree program designed for high-achieving students (e.g. Baniaga et al., 2018; Shonfeld & Ronen, 2015). Additionally, the samples of excellent students were constituted also of those scoring high (exceeding a set cut-off point) on admission examinations (e.g. Kass & Miller, 2018; López et al., 2013) or national standardized examinations (e.g. Fuster de Hernàndez, 2020).

The above-described approaches suggest that current higher education research favours the unidimensional technical view of excellence that equals excellence with high achievement. From the standpoint of the present study, defining excellent university students solely via the above-mentioned academic achievement indicators is problematic in several ways. Importantly, performance excellence defined through academic achievement indicators may directly contradict a student's personal excellence. In extreme cases, unconditional reliance on performance-related indicators may actually result in individuals displaying poor behavioural and motivational patterns. Moreover, several methodological pitfalls arise from the current practice of higher educational excellence operationalization.

5. The Negative Side of High Academic Achievement

5. 1 Academic Achievement and Student Motivation and Learning

The way of how excellence in educational psychology is usually defined implies that speaking about excellent students it is typically meant high achieving students, most probably students with high grades. However, the questions arise as to whether the students with the best grades are really the best, what grades reveal about the students, and what the motivation leading to the high grades is. For example, according to Bain (2012), who defined "best

university students" according to whether they adopted the *deep learning approach* (explained below) instead of their grades, grades "say little about who you are, what you are likely to do in life, how creative you are likely to be, or about how much you understand" (p. 10). Indeed, a matter of concern may be that the motivation of highly achieving students does not necessarily derive from genuine interest in the study material but tends to be fuelled by the external pressure to stand out (Luthar & Kumar, 2018). As a consequence, high achieving students may be more interested in obtaining a high GPA, high class ranks, and awards than in true learning (Geddes, 2011). Among the most prominent theories related to motivation and learning that focus on whether a student focuses on mastering a task, desires to acquire new skills, and intents to form a personal understanding of the topic studied, are the *achievement goal theory* and the theory of *student approaches to learning*. From the perspective of this thesis, it is particularly interesting to review the interconnectedness of achievement goal orientations and student approaches to learning with academic achievement defined in terms of grades or GPA.

5.1.1 Achievement Goal Orientations

The achievement goal theory, introduced in Dweck's (1986) seminal work and based on the social-cognitive approach to motivation, has become a prominent theory of motivation in the past three decades. Much of the research conducted in this area highlights the effects of a particular class of goals involved in achievement motivation. These goals are called *mastery* (also known as learning or task-oriented) goals and *performance* (also called ability or ego-oriented) goals. Mastery goals have been linked to an individual's belief that competence is malleable; in contrast, performance goals have been associated with an individual's belief that competence is fixed (Dweck, 1986; Dweck & Leggett, 1988; Senko et al., 2013). The performance goal construct has been further divided into two different forms of regulation: approach and avoidance. Accordingly, the proposed achievement goal framework

incorporates *mastery*, *performance-approach*, and *performance-avoidance goals* (Elliot & Harackiewicz, 1996; Elliot & Church, 1997). Individuals adopting mastery goal orientation (MGO) focus on the task at hand, want to learn and understand the material, strive to increase their skills, define success in relation to the task, and measure progress in self-referential terms. By contrast, individuals with performance-approach goal orientation (PAPGO) focus on achievement by applying only little effort and demonstrate the core desire to gain favourable judgment of their own competence. Individuals adopting performance-avoidance goal orientation (PAVGO) strive to avoid demonstrating their lack of ability and receiving unfavourable judgment of their competence. In contrast to mastery-oriented individuals, individuals with PAPGO and PAVGO tend to focus their attention on the self and define their success in relation to others (Dweck & Leggett, 1998; Elliot & Harackiewicz, 1996; Kaplan et al., 2012; Midgley et al., 2000).

5.1.2 Student Approaches to Learning

The concept of approaches to learning was originally introduced by Marton and Säljö (1976) who identified two qualitatively different levels of processing information among university students. In their experiment, students were asked to read a text, and to be ready to answer questions on it afterward. The results showed that the students who used *surface*-level processing concentrated on rote memorization, whereas those who adopted *deep*-level processing concentrated on the meaning and significance of the text. Biggs (1987) further defined students' approaches to learning as a combination of the motives for learning and the accompanying strategies needed to master a task. Along with the two original approaches, a third approach, called *achieving* (or *strategic*) approach, was also identified. These approaches are fairly consistent and may persist over longer periods of time (Kember & Leung, 1998; Lonka et al., 2004). The deep learning approach comprises a deep motive and a deep strategy. The deep motive pertains to an intrinsic interest in what is being learned, as

well as striving to understand the material and develop competence in specific academic subjects. Using a deep strategy involves searching for meaning, inter-relating new information with previous relevant knowledge and everyday experience, and looking for patterns and underlying principles. In the context of the achieving approach, achieving motive refers to ego and self-esteem enhancement through competition, and striving to obtain the highest possible grades whether or not the material is interesting. The achieving strategy includes organizing students' time and distributing their efforts most efficiently, completing all suggested readings, using previous exam papers to predict questions, and being aware of marking scheme cues: in other words, they behave as "model students". Regarding the surface approach, the surface motive is merely to cope with the course requirements as the students try to balance between failing and working more than necessary. Additionally, the surface strategy consists of memorizing the essential information needed for assessments. Students employing this strategy focus on discrete elements without integration, have difficulty in making sense of new ideas, and fail to distinguish principles from examples (Biggs, 1987; Entwistle et al., 2001; Kember & Leung, 1998).

5.1.3. Interrelatedness of Achievement Goal Orientations, Student Approaches to Learning, and GPA

Both the mastery goal orientation and the deep learning approach have been directly linked to intrinsic motivation, or interest in and enjoyment of an activity for its own sake (Deci & Ryan, 1985; Entwistle, 1988). Several studies have also demonstrated the interrelatedness between achievement goal orientations and student approaches to learning. While MGO and deep processing show a positive mutual association (Ames & Archer, 1988; Dupeyrat & Marine, 2005; Elliot & McGregor, 2001), both PAPGO and PAVGO have been linked to surface cognitive processes (Al-Emadi, 2001, Elliot & McGregor, 2001; Greene & Miller, 1996). Only few studies have shown the relatedness of PAPGO and deep processing

(Archer, 1994; Wolters et al., 1996), and the connection of MGO and surface processing (Al-Emadi, 2001).

The investigation of the relationship among GPA, achievement goal orientations, and student approaches to learning in higher education has provided inconsistent results. Although PAVGO is often negatively related to academic achievement, both PAPGO and MGO have been positively linked to academic achievement in several studies (Richardson et al., 2012). Specifically in a Czech student sample, MGO was found to be the strongest predictor of GPA among other achievement goal orientations (Kožený & Tišanská, 2010). However, in some other studies, mastery goals evidenced no reliable effect on grades (e.g. Durik et al., 2009; Elliot & McGregor, 2001; Harackiewicz et al., 1997). Moreover, a comprehensive meta-analysis performed by Linnenbrink-Garcia et al. (2008) confirmed mastery goals to be a weaker predictor of academic achievement in terms of course grades, compared with performance-achievement goals. Generally, it seems that high achievers usually pursue performance-competitive goals, which means that they are primarily motivated by the desire to outperform their peers (Senko, 2019; Senko & Miles, 2008). On the contrary, the students who tend to display a genuine interest in the course material and strive to develop knowledge and skills are the lower achieving mastery-oriented individuals (Elliot & Harackiewicz, 1996; Senko & Miles, 2008).

Regarding student approaches to learning, some studies have found the deep learning approach positively associated with GPA (Kožený & Tišanská, 2010; Tarabashkina & Lietz, 2011; Zeegers, 2001), yet several other studies have found that deep learning strategies failed to predict GPA (Al-Emadi, 2001; Campbell & Cabrera, 2014; Elliot et al., 1999). In the light of the inconsistent findings, the well-known experimental evidence by Halloun and Hestenes (1985) who showed that grades per se may be in contradiction with the real understanding of the material learned brings little surprise. It is thus possible that the main distinction among

students achieving high/low grades and GPAs may be plainly their memorization abilities (Halloun & Hestenes, 1985).

5.2 Academic Achievement and Academic Dishonesty

Excellence, by its nature, is an inherently positive construct (Gardner, 2015). Likewise, high academic achievement has commonly been perceived as a surrogate of highly desirable and positive outcomes, linked, for instance, to job performance, work engagement, or earnings (e.g. French et al., 2014; Kool et al., 2017; Lyons & Bandura, 2017). Nevertheless, there are less-considered negative aspects related to high academic achievement that go beyond the disputable motivation discussed above. The matter of concern is especially the potential link between academic achievement and academic dishonesty. While traditional evidence based on self-reported survey data suggests that students with a higher GPA cheat less (e.g. Cuadrado et al., 2019; Whitley, 1998), there is some reliable evidence based on actual or experimentally-driven behaviour showing that high achievers behave in a dishonest way just as much as low achievers (e.g. Gupta et al., 2010; Williamson & Assadi, 2005). Moreover, when bonus points were offered to the 10 students who scored the highest in an examination, the high achieving students, in terms of all GPA, high-school matriculation average grades, and psychometric exam scores, were more likely to cheat during the examination compared to their lower achieving counterparts (Yaniv et al., 2017). Albeit limited, this evidence convincingly shows that the above-mentioned motivation of high achievers could possibly mediate the link between academic achievement and increased academic dishonesty under competitive conditions, since the desire to do better than others significantly increased the likelihood of cheating (Van Yperen et al., 2011). An additional disturbing point brings the discrepancy between high achievers' actual and self-reported dishonest behaviour. This conflicting evidence may be easily interpreted in the light of West et al.'s (2004) findings of an inverse relationship between actual and self-reported cheating

(those who cheated more were also more likely to be dishonest in self-reports about their cheating). The lowered self-reported cheating in high achievers contradicted by their equal or higher tendency toward actual cheating confirms that highly achieving students tend to be increasingly dishonest, at least in that they pretend to behave in a more favourable way than they really do.

In fact, dishonest behaviour may be directly promoted by the high value placed on high academic achievement. More specifically, grade pressure was identified as one of the strongest factors contributing to cheating or plagiarism in the university setting (Love & Simmons, 1998; Ma et al., 2013). According to Ma et al. (2013), excessive pressure can directly force students to cheat, as can be fittingly described by a student's statement: "Sometimes there is so much pressure to be the best and excel in college so you don't let down your parents and yourself, you feel pressured to cheat when you know you are not ready for an exam. … If my college wasn't so damn overbearing, stressful, and competitive, I wouldn't need to cheat." Performance pressure can also be detrimental to students' well-being and healthy personal development. The elevated levels of stress resulting from the high and ongoing pressure to achieve can make high-achieving students a particularly vulnerable group that may be prone to psychological health issues, such as depression and anxiety, or to the misuse of drugs and alcohol (Luthar & Kumar, 2018).

In conclusion, the existing findings linked to undesirable correlates of academic achievement are convincing enough to urge caution about how to define excellent university students. While the desire to meet the performance criteria of excellence may promote motivational and behavioural patterns that directly contradict the personal facet of excellence in higher education, it is essential to control for indicators of personal excellence when defining and identifying excellent university students.

6. Conceptual and Methodological Requirements for Researching Individual-Level Excellence

6.1 Respecting the Nature of Excellence

Research on individual-level excellence should match two of the most essential attributes of excellence: a) the attribute of context specificity (e.g. Ferrari, 2002; Terzi, 2020) and b) the attribute of diversity (Gardner, 2015; Terzi, 2020).

Excellence is a social construct made real through social processes and interactions (Terzi, 2020). By their definition, social constructs are complex, dynamic social realities that can be (re)interpreted and (re)shaped in different ways, and hence different populations and cultures may promote different meanings of excellence (Dries, 2011; Ferrari, 2002; Young & Collin, 2004). Thus, the relevance of the criteria employed to operationally define excellent individuals should closely match the perception of a prototypical excellent individual in the target population to enhance the ecological validity of a study. In other words, the fundamental task for research on individual-level excellence should be the rigorous conceptualization and operationalization of the phenomenon under investigation to ensure valid findings and meaningful conclusions (Dries, 2011; Heslin, 2005; Mašková & Kučera, 2021; Terzi, 2020).

In this respect, occupational research focusing on excellent professionals in various occupations gives an example of good practice in dealing with the construct of excellence. In this area, the selection of excellent individuals has been based mainly on evaluative judgements of a particular reference group in relation to its standards, such as nomination or recommendation by supervisors (e.g. Kallas, 2014; Hirsch & Segolsson, 2021), peers (e.g. Sonnentag, 1995; Collinson, 1999), or students (in the case of teachers) (e.g. Fichten et al., 2018). Thus, the methodologies of these studies reflect the context-dependent nature of

excellence, since they operationalize excellence in accordance with its socially-construed definition arising out of the communities which excellent individuals are members of.

The contextual relevance of criteria used to define and identify excellent university students in higher educational research is, however, unclear, since there is a lack of justification for the use of particular criteria in studies on individual-level excellence in higher education (e.g. Al Shawwa et al., 2015; Fuster de Hernàndez, 2020).

Second, the notion of academic excellence concerns student's heterogeneity in terms of diverse abilities, interests, dispositions, and ambitions and also acknowledges diverse paths to excellence, which makes it a plural rather than uniform concept (Terzi, 2020). In this respect, Gardner (2015, p. 127-128) noted that

> in the intellectual field alone, there are many kinds of excellence. There is the kind of intellectual activity that leads to a new theory, and the kind that leads to a new machine. There is the mind that finds its most effective expression in teaching and the mind that is most at home in research. There is the mind that works best in quantitative terms and the mind that luxuriates in poetic imagery.

From this perspective, Gardner (2015, p. 134) encouraged "to honour the many facets and depths and dimensions of human experience and to seek the many kinds of excellence of which the human spirit is capable".

The current research approach towards excellence in higher education, however, promotes a very narrow view of excellence that can be achieved only by those whose talents and interests match the one-sided criteria of excellence.

6.2 Selecting Adequate Indicators

As already briefly noted in the chapter devoted to the specific position of productivity-focused constructs in educational psychological research, operational definitions of such constructs tend to rely on universal indicators of educational outcomes, such as grades, GPA,

or test scores, which are typically used in isolation (see Mašková & Kučera, 2021). In this respect, the construct of excellence is of no exception (e.g. Mirghani et al., 2015; Monteiro et al., 2014; Saidi et al., 2015). Thus, the commonly used criteria of excellence in higher education are not reflective of other facets of excellence than the performance dimension (academic achievement). However, neither academic achievement has been adequately conceptually specified. More specifically, academic achievement can be viewed as complex cognitive performance that includes performance outcomes indicating the extent to which a person has achieved specific goals related to different areas of learning within intellectual domains taught at school, college, and university (Spinath, 2012; Steinmayr et al., 2015). Therefore, academic achievement should be considered a multifaceted construct, which may be indicated by many criteria representing intellectual endeavours. Among these indicators, general criteria may be present, such as procedural and declarative knowledge acquired in an educational system, curricular-based criteria, such as grades on achievement tests, or cumulative indicators, such as educational degrees and certificates (Steinmayr et al., 2015). Thus, to properly capture the phenomenon under investigation, which means capturing the various dimensions of academic achievement, it is advisable to combine several indicator types instead of relying on a single indicator or indicators of a similar type (Mašková & Kučera, 2021).

Moreover, universal indicators of educational outcomes, which are grades and GPA, seem to be problematic *per se*. These measures have been surrounded with long-standing controversy due to the lack of reliability and validity (see e.g. Bowers, 2011; Halloun & Hestenes, 1985; Young, 1990). Most strikingly, unlike test scores, which fairly represent academic knowledge, grades seem to contain additional unspecific components of the schooling process, such as behaviour, improvement, compliance, attitude, participation, or effort perceived by a teacher (Bowers, 2011; Mechtenberg, 2009). Taking into account that

teacher grading practices and standards vary widely and unpredictably, it is hard to infer what exactly the non-academic content of a grade is, to what extent a grade is based on the "other" components and to what extent it represents students' actual academic knowledge (Marzano, 2000). Despite their dubious predictive value, there is a tendency to use grades and GPA as universal indicators in educational research. Although the reason to overuse GPA may be, to some extent, convenience, as it is undoubtedly one of the most readily available data about student outcomes, this continuing routine could jeopardize the soundness of educational studies. Thus, in the case of grades and GPA, it is especially advisable to avoid its use in isolation and combine these indicators with additional indicators to achieve a conceptually and methodologically sound study design (Mašková & Kučera, 2021).

7. Purpose and Objectives of the Thesis

Traditionally, the purpose of higher education was to develop students who are knowledgeable, self-reliant, reflective, moral, tolerant, and able to recognize a good human being when they see one (James, 1906, as cited in Dalton & Crosby, 2007). Concern about character and responsibility in the context of excellence in higher education is important these days, and it is often highlighted in the philosophy of sustainable universities. Universities adopting a philosophy of (social) sustainability are committed to positively influencing the development of students and helping them become more ethical individuals who act in an honest and socially sustainable manner. This includes the promotion of a climate in which positive values, such as transparency, responsibility, fairness, equity, and ethical decision-making are appreciated (Cuadrado et al., 2019). However, when excellence in higher education is promoted by exemplifying students who reach the highest levels of academic achievement regardless of their moral integrity or the intrinsic value placed on learning and self-development, the significance of these values in students' learning and development is undermined.

An essential first step towards balancing the value of academic achievement with the ethical values linked to social sustainability is a reconsideration of excellence. In this respect, we argue that only students whose excellence is based on more stable grounds than on high grades alone have the potential to inspire and motivate others to become their best selves. Moreover, only those *truly excellent* individuals have the real potential to also excel later in life as professionals or citizens.

The main purpose of the thesis is to gain empirical evidence to answer the two basic research questions: *Who is really an excellent university student? How to identify an excellent university student?* In this respect, we aim to develop a complex conceptual and methodological framework of excellence in higher education. In general, we propose to overcome the conceptual and methodological pitfalls of existing approaches and to promote a sustainable and transparent view of excellence that recognizes both achievement and non-achievement students' characteristics. Furthermore, the newly established framework reflects the nature of excellence as a contextually dependent social construct and aims to appreciate the variability of individual student potentials that lead to different ways in which excellence manifests itself (Gardner, 2015; Terzi, 2020).

In this respect, we performed four intermediate investigations that together build a comprehensive framework of excellence in higher education. These studies were conducted in the setting of the Faculty of Education, University of South Bohemia in České Budějovice (FE USB). The FE USB could be categorized as a small institution with about 2200 students and 153 teaching staff, which specializes primarily in teacher education, but ensures also several non-pedagogical study programmes, such as psychology, geography, informatics, or linguistics.

Study I aims to establish an empirically-based conceptualization of an excellent university student. The resulting model of excellence in higher education, relevant to the

academic community at the FE USB, represents contextually relevant criteria for excellent students' identification in the settings of the FE USB. The aim of Study II is to find the interrelatedness of motivational variables and GPA. More specifically, it proves whether the underlying attribute of an excellent university student, genuine study motivation, is indicated or contradicted by students' grade point average. In Study III, we designed and implemented the procedure of excellent students' identification. From the conceptual standpoint, we built on the multifaceted perspective that integrates both performance and personal excellence. From the methodological perspective, we built on a multisource assessment method that enhances the validity of the results, since it requires that the same outcomes converge for a student to be considered excellent (Mathison, 1988). Study IV aims to evaluate the implemented methodology in terms of its discriminating ability to differentiate between excellent and non-excellent student samples. In this respect, we again performed the multisource assessment procedure on a sample of 10 randomly selected non-nominated students.

Study I

Although the empirical literature strongly favours the unidimensional conceptualization of excellence in higher education, several authors have suggested multidimensional conceptual frameworks that entail at least two dimensions of excellence: a performance and a personal dimension (Erez, 2004; Ferrari, 2002; Franks, 1996 Li, 2004). Nevertheless, excellence is a social construct; in other words, a complex and dynamic social reality that can be understood in different ways by different social groups and members of specific populations and cultures (Dries, 2011; Ferrari, 2002; Terzi, 2020; Young & Collin, 2004). To enhance the ecological validity of a research study focusing on excellent individuals, it is required to define them according to the perception of a prototypical excellent individual in the target population. Thus, although we expected that the

understanding of the construct of an excellent university student at the FE USB would be closely related to the two-dimensional conceptualization of excellence, we aimed to establish a specific conceptual model of excellence in higher education based on the perceptions of the academic community at the FE USB. To identify concrete excellent individuals in the FE USB settings, our aim was to further convert the model into a rating scale that would enable to collect contextually relevant data related to the procedure of excellent students' identification (Study III).

Method

Participants

A total of 185 individuals participated in this study, thereof 26 teaching staff members and 159 full-time students pursuing a bachelor's or master's degree courses of varying specializations including teacher education, psychology, informatics, and geography. Specifically, in the first phase of the study, 14 teaching staff members participated who were representatives of various departments at the FE USB. The first phase also included 107 student participants who were enrolled in an elective course in psychology designed for students of various study programs and study levels in the winter term 2018/2019. In the second phase, another group of teaching staff members representing various departments at the FE USB participated, which included 12 participants, and another group of 52 students who were recruited in the aforementioned elective course in Psychology in the summer term 2018/2019. Participants in the third phase were 40 teacher education students enrolled in another psychology-focused course in the summer term 2018/2019.

Procedure

In the first phase of the study, student participants were asked to write a short essay in answer to the questions: "In your opinion, who is an excellent university student? How do they typically behave and what attributes make them recognizable among other university

students?" Concurrently, interviews were conducted with teacher participants. The interviews began with the same above-mentioned questions and as the interviews continued, participants' responses prompted the interviewer to probe for a detailed description of the behavioural patterns and observable qualities of a prototypical excellent student. Records of the interviews typically lasting about 20 - 30 minutes were transcribed and further analysed, along with the content of the essays, which varied from a few sentences to several paragraphs. More specifically, all the textual material was analysed using a general inductive approach (Thomas, 2006). The text segments that described the attributes of an excellent student were identified and gathered into rudimentary categories that were continually revised and refined to reduce overlapping and redundancy. This strategy resulted in a provisional set of 26 data-driven attributes of the excellent student.

In the second phase, the above-mentioned set was presented to four focus groups of students and two focus groups of staff members at the FE USB in order to extract a sub-set of broadly agreed-upon attributes of the excellent student which could apply to different contexts (students vs. teaching staff, disciplines, study levels). More specifically, the ultimate aim of each focus group was to reach an agreement on a baseline set of observable qualities and behavioural attributes of the excellent student that pertain to students of any specialization or study level. By choosing the focus group technique, we were able to gain a realistic picture of the broadly shared significant attributes, and to explore their understanding in more depth. The participants in the focus groups were reminded that an excellent student is not the same as an ideal student, which tends to be an unrealistic concept; the attributes they needed to define had to be embodied by a real individual. Four student focus groups and two teacher focus groups were realized. The focus group size for students varied from 12 to 15 participants whereas the teacher focus groups comprised 5 and 7 teaching staff members. The duration of each focus group ranged from 80 to 120 minutes. Each focus group established the

essential attributes as a particular subset of several stand-alone provisional attributes, and their combinations were assembled into higher-order attributes agreed upon by all group members.

In the third final phase, the resulting list of 10 essential attributes of an excellent university student was converted into an evaluative instrument by adding a Likert-type scale and instructions to assess an individual's match with the 10 essential attributes. The suitability of the rating scale for the purposes of identifying excellent students was tested by administering it to participants involved in the third phase of the study with the instruction to assess a fellow student who they consider excellent according to the rating scale.

Results

Taking into account all the information collected during the first and second phase of the study, a final model of 10 essential attributes of the excellent student was developed, which was common to all focus groups. The attributes are readily observable, quantifiable, and generalizable to students in various contexts. Further, they are of equal importance, i.e. there is no hierarchy of more or less valued attributes. The resulting model labelled as the model of excellence in higher education divides the10 attributes into three overarching facets of expertness and achievement, proactive learning (educational excellence dimension), and being a good person (personal excellence dimension).

The pre-testing of the newly developed rating scale based on the model identified no problems concerning the clarity of the instructions, item formulation, or the feasibility of assessment. The model along with the instructions and the answering options is displayed in Table 1.

Table 1

The Model of Excellence in Higher Education

Excellence dimension/Facet/Item
Educational excellence
Expertness and achievement
1. They complete all study commitments and assignments in a high-quality way and on time
2. Their knowledge of their field of study is deep and complex
3. They can transfer their knowledge from theory into practice
Proactive learning
4. They are engaged in classes – they pay attention, participate in a meaningful way, and interact with the lecturer
5. They broaden their horizons beyond their field of study
6. They voluntarily attend extracurricular workshops and events
7. They engage in field of study-related activities in their leisure time
Personal excellence
Being a good person
8. They behave fairly and honestly
9. They are cooperative and helpful
10. They display critical self-reflection about their character and actions

Note. The instructions used for the assessment purposes were as follows: "Please assess the extent to which you believe a student's typical behaviour and displayed qualities match each of the 10 attributes. Please use the following scale for your assessment: 1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, 5 = strongly agree, 0 = I don't know/I'm unable to assess."

The focus group technique also revealed the underlying motivational attribute of *genuine study motivation* that was perceived as the core attribute upon which the 10 essential attributes were built. The quality of genuine study motivation implies that students are enthusiastic about their studies. Such students engage in schoolwork out of interest and out of the desire to master the learning material for their own personal development, rather than for the sole purpose of positive self-presentation in front of others. Further, they want to develop a real understanding of what they learn by thinking about the new knowledge acquired and by

interconnecting it with previous or simultaneous knowledge in other areas. As a result, the knowledge of these students is complex and deep, not just memorized without further understanding. Although genuine study motivation is hard to assess externally *per se*, and as such cannot be included into the developed rating scale, it is inherently expressed through the behaviours and qualities that are part of the list of an excellent student's essential attributes.

Additionally, the qualitative data obtained while establishing the model of the 10 essential attributes of an excellent university student revealed that GPA was considered a legitimate adjunctive criterion of excellence in higher education at the FE USB. The commonly perceived role of GPA in excellence-related assessment may be fittingly described by a teaching staff member's statement: "Grades aren't everything; however, a student with under-average grades definitely cannot be considered excellent."

Discussion

From the conceptual standpoint, the study contributes to the current understanding of the construct of individual-level excellence in higher education by providing an empirically based model of the essential attributes of an excellent university student. The established model supports the multidimensional conceptualisation of excellence in that it encompasses three main facets. The first facet of *expertness and achievement* matches the widely acknowledged technical dimension of excellence (e.g. Li, 2004; Parkash and Waks, 1985, as cited in Bruno-Jofré & Hills, 2011) and emphasizes primarily mastery of study-related knowledge and skills. The second facet of *proactive learning* refers to students' engagement in learning and enhancement of knowledge and experience by doing more than what is required. This facet is in line with other conceptualizations of academic excellence since it reflects the characteristics students need not only to pass an examination but mainly to take on responsibility for their own learning (Llamas, 2006), and to be curious and self-motivated (Erez, 2004). The third facet of *being a good person* represents the ethical aspect of

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excellence, which couples the attributes of morality and virtuousness (Ferrari, 2002; Li, 2004; Wong et al., 2021) and supportiveness towards peers (Llamas, 2006, Wong et al., 2021).

Generally, the model, which could be perceived as a conceptual model of excellence in higher education, corresponds with the general dualistic conceptualization of excellence formed by professional or performance excellence and personal excellence (e.g. Jaeger, 2018; Miller & Kerr, 2002). The facets of expertness and achievement and proactive learning in our model clearly represent the higher-order professional/performance excellence dimension, which could here be described as *educational excellence*. The being a good person facet, on the other hand, equates the personal excellence dimension. From the perspective of practical implications, the integrated model may be of great value for higher education institutions, as it provides a desirable but realistic conceptualization of the excellent university student. When applying this model, such institutions can more effectively promote and cultivate the qualities students need in their academic journeys.

Study II

The purpose of the second study was to provide evidence that would reliably direct our further methodological choices in the process of building the comprehensive framework of excellence in higher education.

Qualitative data obtained in Study I showed that GPA was considered a legitimate adjunctive criterion of excellence at the FE USB. Additionally, Mašková and Kučera (2021) revealed that GPA is one of the most widely used indicators of academic outcomes in educational psychological research. Thus, to achieve compatibility with previous research, we considered employing GPA as an auxiliary indicator of excellence in higher education. Nevertheless, the ambiguous link between GPA and students' motivational patterns (Senko & Miles, 2008) let us first examine the inter-relatedness of GPA and the core attribute of an excellent university student, *genuine study motivation*, before using GPA as a trustworthy

indicator of excellence in the FE USB setting. In this respect, the present study was directed by the following research question: *Does a high GPA indicate the presence of genuine study motivation attributed to excellent students?* To test this research question, the proposed central attribute was conceptualized as the *mastery goal orientation* together with the *deep learning approach.* The mastery goal orientation is students' ability to focus on mastering a task and their desire to acquire new skills (Elliot & Harackiewicz, 1996). The deep learning approach is students' intention to form a personal understanding of the topic studied, and it includes related learning processes such as integration, synthesis, and reflection (McCune & Entwistle, 2000; Laird et al., 2008). To gain more insight into the topic, the constructs of mastery goal orientation and deep learning approach were studied as part of a comprehensive theory; accordingly, this study focused on the investigation of the mutual relationships between GPA and two complex theories of academic motivation and learning – *achievement goal orientations* and *student approaches to learning* in a sample of students at the FE USB.

Method

Participants

The participants were 124 second-year full-time students of the bachelor degree program Specialization in Pedagogy at the FE USB. More specifically, the participants were enrolled on the compulsory psychological course designated for their year of study and study program. Out of a total of 159 students present, 35 submitted the survey uncompleted or only partially completed. Therefore, these students were excluded from the study (78% response rate). We chose to standardize the sample to students of the identical year of study and study program to prevent any unexpected effects[1].

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[1] We were aware of the possible intervening effect of the phenomenon called *GPA inflation* in university students, i.e. an upward shift in GPA of students over an extended period of time without a corresponding increase in students' academic ability. Accordingly, GPA could exhibit an inconsistent pattern of development in time, typically a sharp decrease in the second semester followed by a steady increase during the later periods of study before repeated drop in the final term. Differences in life-cycle of GPA have been observed among students of distinct academic programs in US universities (Grove & Wasserman, 2004). Although evidence of

Procedure

During the final session of the course, participants were asked to complete a paper-pencil survey containing the measures of the achievement goal orientations and the approaches to learning. Further, the request to indicate their cumulative GPA was part of the survey. For this purpose, participants were informed about the survey already in the pre-final session of the course, and were instructed on how to find the cumulative GPA in the university's student record system. They were asked to find the data themselves and bring it to the final session of the course. Participants were also informed that the survey was focused on their attitudes toward their studies at the FE USB. Furthermore, the researchers reassured the participants that it was anonymous, and that no personal identification was required. After the participants completed the survey, they placed it in a sealed box designated for the anonymous collection of the surveys.

Measures

The cumulative GPA[2], based on the grades of three previous terms, was self-reported by the participants as there was no possibility for the researchers to obtain the data through university records. "Personal Achievement Goal Orientations" student scales in the revised version from the Patterns of Adaptive Learning Scales developed by Midgley et al. (2000) were used to measure achievement goal orientations. MGO and PAPGO were measured with five items, and PAVGO with four items. The shortened 18-item "Study Process Questionnaire" (SPQ) was used to assess approaches to learning (Fox et al., 2001). The

GPA inflation has not yet been investigated in the Czech Republic, any possible unexpected trends in GPA development in time could not be ruled out. To prevent biased results, we opted for participants of the same year of study and study program. An additional reason, besides possible differences in life-cycle of GPA, for building the research sample of students enrolled in the same study program, were comparable admission requirements. For instance, applicants for the study program of Psychology at the Faculty of Education, USB, undergo much stricter admission procedures than students of Specialization in Pedagogy. These differences may in turn lead to differential standards in grading. Due to the gradual drop out of students in every year of study, the second-year students were chosen as a compromise between a high overall number of students enrolled in the study program and the relatively high amount of grades included in the cumulative GPA compared to first-year students. The number of re-attending older students is negligible for this particular course.

[2] According to the Czech university grading system, the best grade is 1 (= A), the worst is 4 (= F). Hence, the higher absolute value of GPA indicates poorer performance.

shortened SPQ comprises six subscales with three items each: surface strategy & surface motive; achievement strategy & achievement motive; and deep strategy & deep motive. All 32 items were answered on a five-point Likert-type scale ranging from 1 = "Fully disagree" to 5 = "Fully agree". Prior to the administration, the items were translated and stylistically adapted into the Czech language.

Results

Statistical analyses were performed using the JASP software. Firstly, internal consistency reliability was estimated. All calculated Cronbach alpha coefficients indicated at least an acceptable internal consistency (Hair et al., 2006). Further tests for the assessment of normality indicated that the variables surface approach (SA) and mastery goal orientation (MGO) slightly deviated from the normal distribution. All other variables conformed to the normal distribution. As the suitability of the variables SA and MGO to apply parametric testing was disputable, parametric Pearson r and non-parametric Spearman´s ρ were computed for all correlated variables. As both coefficients yielded very similar results, only the r correlation results are reported in Table 2, along with the means, standard deviations, and alpha coefficients for all the variables analysed.

The associations among GPA and other variables were found non-significant at an alpha level of .05. A weak negative relationship, but non-significant, was detected between GPA and the achieving approach (AA) ($r = -.16$), and MGO ($r = -.13$). Further correlational analyses showed several associations among variables significant at an alpha level of .05. In this respect, a strong positive association was found between PAPGO and PAVGO ($r = .62$); PAVGO was also weakly associated with MGO ($r = .20$). MGO was weakly negatively related to SA ($r = -.18$). The direction of other associations among achievement goal orientations and approaches to learning was positive. A strong association was found between MGO and the deep approach (DA) ($r = .61$). The relationship between MGO and AA ($r = .29$)

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was weak to moderate. PAPGO was moderately linked to AA ($r = .54$). PAVGO was weakly

to moderately associated with AA ($r = .31$), and SA ($r = .29$). The relationship between

PAVGO and DA was rather weak ($r = .23$).

Table 2

Means, Standard Deviations, and Correlations (Pearsons r)

Variable	M	SD	GPA	MGO	PAPGO	PAVGO	SA	AA	DA
GPA	2.13	.54							
MGO	3.59	.70	− .13	(.79)					
PAPGO	2.43	.84	− .03	.17	(.86)				
PAVGO	3.26	.91	− .02	.20*	.62***	(.74)			
SA	3.42	.66	.08	− .18*	.14	.29***	(.63)		
AA	2.62	.86	− .16	.29**	.54***	.31***	.10	(.79)	
DA	3.40	.70	− .09	.61***	.16	.23**	− .12	.21*	(0.70)

Note. n = 124; The numbers in parentheses are coefficient alphas. GPA = grade point average; MGO = mastery

goal orientation; PAPGO = performance-approach goal orientation, PAVGO = performance-avoidance goal

orientation; SA = surface approach, AA = achieving approach; DA = deep approach

* $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

This study examined the relation of GPA to achievement goal orientations and

approaches to learning in a sample of students at FE USB. Regarding the achievement goal

orientations, we found GPA to be reversely linked to MGO, yet this relationship was weak (r

$= -.13$) and non-significant. The observed lack of connection between PAVGO and GPA ($r =$

-.02) may be interpreted as a rather unusual finding since previous research has consistently

pointed out the negative effects of PAVGO on academic achievement (Richardson et al.,

2012). Not less surprising is the virtual absence of association between GPA and PAPGO ($r =$

- .03). Although the null relationship was uncommonly confirmed in the students of a large

US university (Lee et al., 2003), this finding is also contradictory to the majority of published

literature. Nevertheless, similar evidence, unexpected and rare in the context of Western research, has been already proved by research conducted in Asia (King, 2015, 2016). Collectivism, a common feature of Asian cultures, may actually moderate the effects of performance orientations (both PAVGO and PAPGO) on academic outcomes. For collectivistic cultures, individuals are more relational and deeply connected to significant others, contrary to distinctiveness from significant others more typical for individualistic Western countries. Therefore, failure means unfulfillment of significant others' social expectations, and can lead to a "loss of face", since academic achievement is perceived as a social duty. As a result, in collectivist settings, concentrating on fitting in with others is likely to make performance-avoidance goals more common, whereas performance-approach goals may be less emphasized (King, 2015, 2016). Accordingly, PAPGO was found to be only a very weak predictor of GPA in Philippine students. On the other hand, PAVGO was surprisingly associated with GPA in a positive direction (King, 2015). It was as well associated with positive outcomes such as higher levels of cognitive and metacognitive strategy use, intrinsic motivation, or engagement (King, 2016).

Although the Czech cultural background is not expected to promote a collectivistic approach in general, the very specific social environment of the particular institution probably does. The Faculty of Education at the USB could be classified as a rather small institution. It is not unusual that no more than only one dozen students might be enrolled on a particular course on the Specialization in Pedagogy study program. Consequently, a feeling of deeper relatedness to teachers and fellow students, and commitment to studies could easily arise in students. As a result, failure could probably jeopardize participants' perceived role as students in a more prominent way than in the anonymous environment of a large institution. As the present study found no evidence for the inhibiting effect of PAVGO on GPA, it could be presumed that performance-avoidance may be seen as more normative in the specific

conditions of the FE USB. Possibly, the lack of a confirmed association between PAPGO and

GPA may also be explained in terms of the specific social environment at the particular

institution. The "family-like" environment may include both the teachers' attitudes and the

specific social dynamics of small groups of students where mastery precedes competitiveness.

Thus, the emphasis on fitting in, as well as the focus on group cohesion and concordance in

mutual relationships, may minimize the salience of performance-approach goals.

Regarding the association between GPA and student approaches to learning, we found

a weak reverse relationship, yet non-significant on an alpha level of .05, between GPA and

the achieving approach ($r = -.16$). The deep approach also tended to be reversely associated

with GPA ($r = -.09$), while the surface approach was likely to be positively associated with

GPA ($r = .08$). However, these associations were very weak and non-significant.

The results of our study regarding the mutual relationships between achievement goal

orientations and approaches to learning are mostly in accordance with previous findings. The

only exception is the positive association between PAVGO and the deep approach ($r = .23$).

This result is contradictory to previous findings, as a negative relationship between PAVGO

and the deep approach has been typically reported (e.g. Elliot & McGregor, 2001). This

seemingly anomalous finding was probably mediated by the also unusual inter-correlatedness

of MGO and PAVGO (King, 2016). In this context, it is worth mentioning the resemblances

with the Asian research findings and possible causes of these resemblances discussed in the

previous paragraph (King, 2015, 2016).

Regarding the associations between GPA and the selected motivational variables, our

study yielded statistically non-significant results with a p value larger than a conventional

alpha level of .05. A p-value is a probability that the observed effect occurred by chance. It is

worth to remind here that statistical significance is not equivalent to substantial or scientific

significance. It provides no information about the magnitude or importance of the underlying

phenomenon. Moreover, p values are considered to be confounded because of their dependence on sample size (Sullivan & Feinn, 2012). In this context, we should admit that our sample size could be considered inadequately small. Consequently, it is likely that the p values were negatively impacted by this small sample size. Although statistically non-significant, the results of this study suggest that in our student sample, higher (better) GPA corresponded to higher orientation towards MGO and the deep learning approach, as GPA tended to be reversely linked to MGO and to the deep learning approach. With respect to the research question, it can be acknowledged that GPA indicated, at least weakly, the *genuine study motivation*. On the contrary, the variables that were not in accordance with the excellent student construct (such as surface approach, PAPGO, and PAVGO) tended to be distinct from GPA. In this context, the only seemingly controversial finding was the association between GPA and the achieving approach. The achieving approach comprises the achieving motive and the achieving strategy. The latter is fully compatible with the model of excellence in higher addition as one of its aspects is to fulfil study requirements on time and at a high-quality level (see Study I). The accompanying achieving motive refers to enthusiasm, the will to succeed, and the intention of obtaining the highest possible grades through competition (Biggs, 1987). Whereas the deep approach and the surface approach are clearly linked to intrinsic motivation and extrinsic motivation respectively, the achieving approach is associated mainly with the need for achievement and vocational motivation (Entwistle, 1988). From this point of view, this motivational pattern does not directly mirror the *genuine study motivation* attribute. On the other hand, as the achieving approach often occurred in conjunction with the deep approach ($r = .21$ in our sample), a composite deep-achieving approach was considered as academically desirable (Biggs, 1987). Therefore, these findings reveal that the model of the "pragmatic" student adopting the achieving approach does not contradict the construct of an excellent university student.

The most pronounced limitation of this study may be the rather small study sample, which in turn might have negatively impacted the level of statistical significance of our results. Next, due to the specificity of the sample, the generalization of our findings should be limited to students of similar study years and study programs, and particularly to institutions of similar characteristics. In general, statistically non-significant results yielded by the present study, should be interpreted cautiously until corroborated by further research.

Despite the statistical non-significance of our results, practical implications of the study can be drawn in order to conduct further research. From the findings of the present study, it can be concluded that the motivational correlates of GPA may support the construct of excellent students to a very limited extent. In this respect, the use of GPA as the sole indicator of academic excellence at the FE USB cannot be recommended due to a weak and non-significant association with *genuine study motivation*. Nonetheless, GPA could still be used as an auxiliary indicator in a multi-criterial approach towards excellent students' identification at the FE USB.

Study III

In this study, our aim was to design and pilot a procedure of excellent students' identification and to evaluate the study results and data generated during the implementation of the procedure. In this respect, we designed a multisource assessment method that enhances the validity of the results, since it requires that the same outcomes converge for a student to be considered excellent (Mathison, 1988). More specifically, we relied on teacher nomination and assessment, academic achievement assessment, and peer assessment that together covered various views and aspects of excellence. This study built on the results of Study I and Study II in that contextually relevant measures at the FE USB were employed in the excellent students' identification procedure.

Method

Participants

Three groups of participants took part in the study: members of the teaching staff (teachers), students nominated as excellent by teachers (nominees), and nominees' fellow students (peers).

With respect to participating teachers, only holders of a Ph.D. degree who were primary faculty members at the FE USB participated in the study. External teaching staff and lecturers without a Ph.D. degree were excluded since these teachers may have limited contact with students. 106 teachers fitting the above-mentioned criteria were invited to participate via a paper form delivered to them by assistants of their respective departments; thereof 53 (50%) were both willing and able to participate (i.e. they knew at least one student who they considered excellent).

All participating nominees were full-time students at the FE USB pursuing a bachelor's or master's degree. Part-time students and students pursuing doctoral degrees were excluded from the study. Out of the 80 nominees who were invited to participate personally or by e-mail, 60 (75%) actually participated; thereof 49 were once nominees and 11 were multiple nominees (nominated by more than one teacher). Out of the 60 participating nominees, 16 were classified as the most eligible nominees (based on the criteria mentioned in the Procedure section), and 13 of the most eligible nominees actually participated (3 once nominees and 10 multiple nominees).

A peer was considered a fellow student enrolled in the same study program and in the same year of study as the most eligible nominee. The peer shared most of the classes with the nominee, and thus was expected to know the nominee well. To select the most suitable peers, the list of each of the nominees' peers was displayed in the university system, and four peers were selected randomly from the list and contacted via e-mail. If one or more peers refused to

participate, another peer was randomly selected and asked to participate until four peers for each of the 13 most eligible nominees agreed to participate. Totally, 79 peers were invited to participate, thereof 52 (66%) actually participated.

Measures

Subjective Assessment Measures: A Rating Scale. For the purposes of student assessment, we employed a rating scale based on an empirically-driven model of excellence in higher education (for a detailed description of the development of the model and the rating scale see Study I). Since the model and the respective rating scale corresponded with the perception of the prototype of an excellent university student in the academic community of the FE USB (i.e. they are contextually-relevant), the use of this instrument for the purposes of identifying excellent students in the setting of the FE USB enhances the ecological validity of the study.

Objective Assessment Measures: Academic Achievement Indicators. Academic achievement, which is an integral part of excellence in higher education (Ferrari, 2002; Li, 2004; Llamas, 2006), was partially covered by the items of the rating scale. Nevertheless, to validate the accuracy of the subjective ratings, we also assessed the objective indicators of academic achievement: cumulative GPA and four types of alternative academic achievement indicators. These were established according to their contextual relevance to the research setting.

GPA. To establish whether GPA is a suitable indicator of excellence in higher education in the setting of the FE USB, we first examined the link between GPA and the underlying attribute of an excellent student: *genuine study motivation* (see Study II). The results of Study II revealed that although in the FE USB setting GPA cannot be considered an indicator of genuine study motivation, it does not contradict the underlying motivational

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attribute. These findings allowed us to conclude that the use of cumulative GPA as an auxiliary criterion of excellence in higher education was acceptable.

On the basis of the evidence mentioned above, we set the GPA cut-off threshold that a student would need to pass to be considered excellent. This cut-off value should distinguish between above-average and under-average students in terms of grades. Whereas the first can be conceptually considered excellent, the latter cannot. Since we revealed that the mean value of cumulative GPA in a sample of second-year students was 2.13 (see Study II), we set the GPA cut-off value to 2.0 after taking into consideration the effect of *GPA inflation*. It refers to an upward shift in university students' GPA over an extended period of time without a corresponding increase in their academic ability. Consequently, GPA could exhibit an inconsistent pattern of development over time, typically a sharp decrease in the second semester followed by a steady increase during the later periods of study before a repeated drop in the final term (Grove & Wasserman, 2004). Thus, we expect that second-year students who participated in Study II may exhibit a worse GPA compared to students of other years of study. Consequently, the observed mean GPA was rounded to a higher GPA threshold value.

Other Academic Achievement Indicators. Although in recent educational psychological research, GPA has typically been used as the sole indicator of academic achievement, academic achievement should be measured more accurately by using multiple indicators covering various facets of the multidimensional construct (Mašková & Kučera, 2021; Newmann & Archbald, 1992). Moreover, taking into account the assumed potential of excellence in higher education to be transformed into occupational excellence, we perceive other academic achievement indicators to have a higher predictive value than GPA. While GPA refers primarily to student learning outcomes and is thus confined to only academic and theoretical knowledge and skills, other academic achievement indicators are linked to a wider variety of knowledge and skills that could be more easily transferred to the post-university

early career outcomes. Thus, besides GPA, we considered other significant indicators of academic achievement of contextual relevance for our research setting: a) significant achievement in a subject-related contest or student competition (e.g. The Outstanding Thesis Award), b) membership of academic organizations/societies (e.g. University Senate), c) a leadership role in extracurricular activities (e.g. Biology Olympiad organizing committee member), and d) significant achievement in research (e.g. authorship of a peer reviewed publication) (Benbow, 1992; Kuncel et al., 2001; Mould & DeLoach, 2017). According to the set eligibility threshold, a student had to comply with at least one of the above-mentioned indicators to be considered excellent.

An overview of all data collected and assessed is displayed in Table 3.

Procedure

Teacher Nomination & Assessment. Since we considered teachers the most qualified source for student evaluation, the initial step that aimed to narrow the pool of potential participants to the most eligible candidates was the list of excellent students nominated by the teachers. The teaching staff members were given a form that asked them to nominate up to three students they considered excellent according to their own criteria of excellence and to assess them on the rating scale of the excellent student's essential attributes (further referred to as the rating scale). To ensure anonymity of the responses, no personal identification was required when submitting the forms.

Table 3

An Overview of All Assessment-Related Data of Nominees ($N_{nominees} = 60$)

Source	Category	Variable/Item	Scale of measurement
		Subjective data	
Teacher-report	Expertness and achievement	1. They complete all study commitments and assignments in a high-quality way and on time	1 = strongly disagree
		2. Their knowledge of their field of study is deep and complex	2 = disagree
		3. They can transfer their knowledge from theory into practice	3 = neutral
		4. They are engaged in classes – they pay attention, participate in a meaningful way, and interact with the lecturer	4 = agree
	Proactive learning	5. They broaden their horizons beyond their field of study	5 = strongly agree
		6. They voluntarily attend extracurricular workshops and events	
		7. They engage in field of study-related activities in their leisure time	0 = I don't know/I'm unable to assess
Peer-report	Being a good person	8. They behave fairly and honestly	
		9. They are cooperative and helpful	
		10. They display critical self-reflection about their character and actions	
		Objective data	
Student's records	Cumulative GPA	Cumulative GPA score	≥ 2.0 = under-average < 2.0 = above-average
	Other academic achievement indicators	A. Significant achievement in a subject-related contest or student competition	0 = no comply 1 = comply
		B. Membership of academic organizations/societies	
		C. A leadership role in extracurricular activities	
		D. Significant achievement in research	

Note. Subjective data are based on the 10-item three-faceted model of excellence in higher education converted into a rating scale.

Eligibility Criteria. To ensure that teachers' own criteria of excellence corresponded with the perception of the prototypical excellent university student at the FE USB, we set an initial eligibility threshold: a nominee should score at least "something between" on each of the rating scale's items. Therefore, a nominee scoring "disagree" or "fully disagree" on any of the rating scale's items in the teacher assessment phase would not be further considered an eligible candidate for the study. In sum, 80 students were nominated, thereof 15 by more than one teacher. All nominees passed the initial eligibility threshold.

Academic Achievement Assessment. Subsequently, data on academic achievement was obtained from the 60 participating nominees, and it was assessed against the predetermined academic achievement criteria. More specifically, the nominees completed a survey that asked them to provide basic demographic characteristics, academic achievements indicators (cumulative GPA and data on the other four academic achievement indicators), and to complete a set of psychological questionnaires. Only academic achievement indicators were relevant for the present study and for this thesis in general. The obtained academic achievement data were verified to the highest possible degree by consulting external sources, such as university records.

Eligibility Criteria. The GPA cut-off threshold was passed by 34 once nominees and 10 multiple nominees. Thereof, 18 once nominees and all 10 multiple nominees complied with one other academic achievement indicator. Additionally, six once nominees and seven multiple nominees complied with more than one other academic achievement indicator.

To enhance the validity of our results and to make the subsequent step (peer assessment) more manageable, we further narrowed the pool of candidates to a) multiple nominees who passed the academic achievement thresholds and b) once nominees who passed the GPA eligibility threshold and complied with more than one other academic achievement

indicator. These most eligible candidates signed an additional informed consent involving agreement with peer assessment.

Peer Assessment. Given that peers see their student colleagues from a different perspective than teachers, they can provide some unique information that is not included in teacher assessment. Moreover, peers are likely to know the nominees longer (from the beginning of their studies) and to observe them on more occasions and in less formal settings than teachers, who, on the other hand, tend to meet them on limited occasions (mainly in classes of short-term courses). These conditions allow peers to make a more accurate judgement (Funder, 2012). Hence, peer assessment was an essential part of the identification process. Since four peer assessors are able to achieve satisfactory inter-rater reliability (Conway & Huffcutt, 1997), we asked four suitable peers to assess the respective candidate on the rating scale via an online form. The participants (peers) were ensured of the confidentiality of the data and they submitted their responses anonymously without personal identification.

Eligibility Criteria. For each candidate, the ratings were first assessed separately to determine the extent to which the candidates match the attributes and to exclude candidates that clearly mismatch any of the attributes. Although several studies suggest that the rater–ratee interpersonal relationship has only a minimal effect on peer assessment accuracy in higher education (e.g. Azarnoosh, 2013; Magin, 2001), the severity bias deriving from negative interpersonal affects could still influence individual ratings (Taggar & Brown, 2006). Thus, when setting the baseline eligibility threshold for peer assessment, we paid attention primarily to inter-rater agreement which is associated with enhanced validity (Conway & Huffcutt, 1997). The eligibility threshold was set as follows: an inter-agreement occurs when a nominee scores at least "something between" on each of the rating scale items according to at least three peer assessors. On the contrary, should a nominee score "disagree" or "fully

disagree" on a single item according to two or more assessors, this nominee would no longer be considered an eligible candidate for the study. The evaluation of the individual peer assessments revealed that seven multiple nominees and all three once nominees satisfied the eligibility threshold. In contrast, three multiple nominees were excluded as they were assigned ratings of "somewhat disagree" or "fully disagree" on the same item by more than one peer assessor. For the three excluded candidates, it applied to items 2, 4, and 10, respectively (see Table 1 for item wording).

The second eligibility threshold related to composite scores based on all teacher and peer rating scores that were used to calculate an individual's mean score for each of the three scales (expertness and achievement, proactive learning, and being a good person). To ensure that a candidate matches each of the three facets of excellence, we established that their composite mean score for each scale should equal or be higher than 4.0. All 10 remaining candidates passed this threshold.

The procedure and eligibility criteria are displayed graphically in a flowchart (see Figure 1).

Results

The final sample that represented the results of the pilot implementation of the new framework included only those students who met all eligibility criteria ($N_{excellent} = 10$). The excellent student sample included two males and eight females; their age ranged from 20 to 28 years (mean age: 24.2 years). All excellent students were enrolled in teacher education study programmes, which is the specialization of the FE USB. All nominees (with the exception of one student who was pursuing a bachelor's degree) were studying on a master's programme. A detailed overview of their background-, study-, and assessment-related data is presented in the Appendix Table (Appendix B), where they are listed according to the number of nominations.

Figure 1

The Procedure of Excellent Students' Identification

① Teacher nomination & assessment

Students considered excellent nominated and assessed on a rating scale by teachers
$N_{teachers} = 53$

Assessed for eligibility – eligibility criterion EC1
$N_{once-nominees} = 56 + N_{multiple-nominees} = 15 \rightarrow N_{nominees} = 80$

Declined to participate
$N(D)_{once-nominees} = 15$
$N(D)_{multiple-nominees} = 4$

② ③ Academic achievement assessment

Students provided data on academic achievement

Assessed for eligibility – criteria EC2 & EC3
$N_{once-nominees} = 49 + N_{multiple-nominees} = 11 \rightarrow N_{nominees} = 60$

Excluded for EC2
$N(E)_{once-nominees} = 15$
$N(E)_{multiple-nominees} = 1$

Excluded for EC3
$N(E)_{once-nominees} = 16$

④ Narrowing the pool of nominees

Selection of the most eligible candidates – criterion EC4
$N_{once-nominees} = 24 + N_{multiple-nominees} = 10 \rightarrow N_{nominees} = 34$

Excluded for EC4
$N(E)_{once-nominees} = 18$

Declined to participate
$N(D)_{once-nominees} = 3$

⑤ ⑥ Peer assessment

Students assessed on a rating scale by peers
$N_{peers} = 52$

Assessed for eligibility – criteria EC5 & EC6
$N_{once-nominees} = 3 + N_{multiple-nominees} = 10 \rightarrow N_{nominees} = 13$

Excluded for EC5
$N(E)_{multiple-nominees} = 3$

The final sample
$N_{once-nominees} = 3 + N_{multiple-nominees} = 7 \rightarrow N_{excellent} = 10$

No.	Data derived from	Eligibility criterion
1	Teacher assessment	A nominee scoring at least "something between" on each of the rating scale's items.
2	Academic achievement assessment	A nominee's GPA < 2.0.
3	Academic achievement assessment	Complying with at least one other academic achievement indicators.
4	Teacher assessment & academic achievement assessment	A nominee belonging to a group of a) multiple nominees who passed the academic achievement thresholds or b) once nominees who passed the GPA eligibility threshold and complied with more than one other academic achievement indicator. *Note.* The criterion set for narrowing the pool of nominees to the most eligible candidates.
5	Peer assessment	A nominee scoring at least "something between" on each of the rating scale's items according to at least three peer assessors.
6	Teacher assessment & peer assessment	A nominee's composite mean score ≥ 4.0.

The highest number of nominations in the sample, which exceeded the modus number of two nominations, was reached by student "A", who was nominated six times. Student "A" displayed also a very high absolute value of GPA = 1.08, which nearly corresponds to straight A's, and complied with three out of the four other achievement indicators. Likewise, her composite mean scores were the highest on all three scales compared to other excellent students. The highest absolute value of GPA = 1.0, which corresponds to straight A's, showed student "B", who, on the other side, complied with a single other academic achievement indicator. In contrast, student "I" who was derived from the group of once nominees, was unique in that she complied with all four alternative academic achievement indicators.

Table 4 presents the individual rankings based on the composite mean scores on the scales of expertness and achievement, proactive learning, and being a good person, along with the respective number of nominations and objective academic achievement indicators. The ranking based on expertness and achievement scores showed that the most highly ranked students were those with the highest number of teacher nominations exceeding the modus of two nominations. Likewise, with exception of student "C" who displayed the lowest GPA in the sample, the nominees who ranked highest were also those with the highest absolute value of GPA. Proactive learning scores, on the other hand, tended to be associated with the number of other academic achievement indicators a student complied with. Additionally, compared to students who ranked lower, the most highly ranked students had gained significant achievement in a subject-related contest or student competition and were members of academic organizations/societies. Regarding scores on the being a good person scale, the highest rank was achieved by students "A" with the higher number of nominations and "I" who complied with all other academic achievement indicators. For the remaining students, there was no clear pattern of association between scores on being a good person and objective study-related characteristics.

Table 4

Individual Rankings Based on Composite Scores on the Scales of Expertness and Achievement, Proactive Learning, and Being a Good Person Along with the Respective Number of Nominations and Objective Academic Achievement Indicators ($N_{excellent} = 10$)
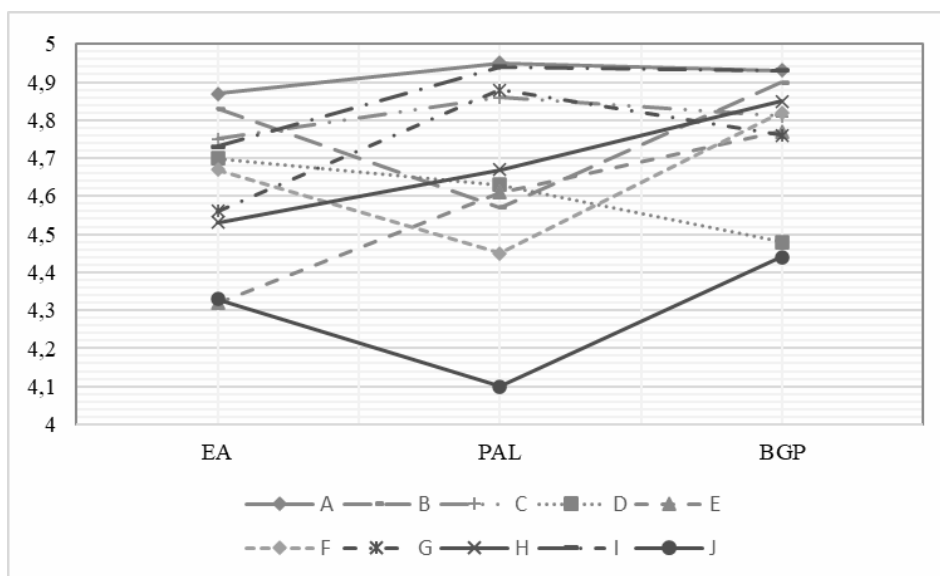
Expertness and achievement					Proactive learning					Being a good person				
Student	Score	No. of nom.	GPA	Other AA indicators	Student	Score	No. of nom.	GPA	Other AA indicators	Student	Score	No. of nom.	GPA	Other AA indicators
A	4.87	6	1.08	A B C	A	4.95	6	1.08	A B C	A	4.93	6	1.08	A B C
B	4.83	3	1.00	C	I	4.94	1	1.20	A B C D	I	4.93	1	1.20	A B C D
C	4.75	3	1.71	A B C	G	4.88	2	1.24	A B C	B	4.90	3	1.00	C
I	4.73	1	1.20	A B C D	C	4.86	3	1.71	A B C	H	4.85	1	1.47	A C D
D	4.70	2	1.06	B C	H	4.67	1	1.47	A C D	F	4.82	2	1.53	C
F	4.67	2	1.53	C	D	4.63	2	1.06	B C	C	4.81	3	1.71	A B C
G	4.56	2	1.24	A B C	E	4.61	2	1.50	D	E	4.77	2	1.50	D
H	4.53	1	1.47	A C D	B	4.57	3	1.00	C	G	4.76	2	1.24	A B C
J	4.33	1	1.30	C D	F	4.45	2	1.53	C	D	4.48	2	1.06	B C
E	4.32	2	1.50	D	J	4.10	1	1.30	C D	J	4.44	1	1.30	C D

Figure 2 displays the inter- and intra-individual variabilities in the individual composite mean scores on expertness and achievement, proactive learning, and being a good person. The individual profiles based on the scores of the three scales tend to have non-flat and individually-unique shapes indicating that 1) the scales adequately represent the essential attributes of a prototypical excellent student as a multifaceted rather than unidimensional construct, and 2) individuals differ in terms of achieving the highest/lowest scores on distinct scales in a unique way.

Figure 2

A Line Graph on the Individual Composite Scores on Expertness and Achievement, Proactive Learning, and Being a Good Person Scales ($N_{excellent}$ = 10)

Note. EA = Expertness and achievement scale; PAL = Proactive learning scale; BGP = Being a good person scale.

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Discussion

This study presents results of the implementation of a new comprehensive methodological approach to identifying excellent university students, which is based on a multisource assessment of multiple contextually relevant criteria of excellence. The methodology is based on the model of excellence in higher education (see Study I) converted into a rating scale and supplied with objective academic achievement indicators. In sum, the excellent students' identification procedure was based on both objective academic achievement data and subjective teacher- and peer-level data on the three facets of expertness and achievement, proactive learning, and being a good person. Both types of data were further assessed against the set criteria of excellence. The eligibility criteria enabled us to select a final sample that reliably met all the conceptually derived criteria of excellence. At the same time, the criteria were flexible enough to maintain diversity in the sample, since we acknowledge that the way in which a student excels is individual, unique, and non-standardizable. As a result, the students involved in the final sample were excellent in their unique ways and, with the exception of the student "A" who manifested excellence in every aspect, their greatest strengths lay in various areas. Hence, whereas the usual research approach promotes a narrow uniform view on excellence, the present framework advances the plural conception of excellence (Gardner, 2015; Terzi, 2020).

The data generated by implementing the framework at the FE USB provides evidence of the need to 1) use multiple sources in students' assessment and to 2) apply a multifaceted approach to excellence. First, the teacher and peer assessment discrepancies resulting in the exclusion of three of the most eligible candidates highlighted the importance of relying on more than one source in the subjective assessment of a student to ensure the validity of the results. Such a discrepancy implies that the teacher's view may be biased due to the limited exposure to only a narrow portion of a student's behaviour and/or qualities. For example, high

engagement in classes may be limited only to a teacher's classes/subjects, and the qualities of a good person may apply to a teacher-student interaction but not to a student-student interaction. Thus, to gain a holistic picture of a student's behaviour and qualities displayed in various situational contexts, both teacher and peer assessment are required as each source can provide important and unique information.

Second, we found that both subjective and objective data on academic achievement were an integral part of the developed framework. In this respect, although the facet of expertness and achievement was likely to be associated with GPA, GPA tended to be an unreliable indicator of mastery of knowledge. Evidence for this argument can be found in student "C" who ranked highly in expertness and achievement despite showing the lowest GPA from the excellent study sample. This argument is supported also by the case of one of the most eligible candidates who was rated low on one of the scale items although they passed the GPA threshold. Further, the fact that several nominees did not pass the GPA threshold shows that teacher assessment alone is not a sufficient indicator of academic achievement unless corroborated by other objective measures. Thus, by combining the subjective assessment of *educational excellence*-related attributes with objective academic achievement assessment, it is possible to reliably identify educationally excellent students. From the perspective of *personal excellence* assessment, we may conclude that the being a good person scale was an irreplaceable part of the identification method, since it was independent of *educational excellence*-related data. Supported by the ultimate exclusion of another eligible candidate who was rated low on the being-a good-person item, we argue that GPA or any academic achievement measure *per se* cannot guarantee that high-achieving students also display a moral and virtuous character. In conclusion, it is necessary to assess both dimensions of excellence in higher education simultaneously, since only such students could be considered *truly excellent* who embody both *educational* and *personal excellence*.

Study IV

A final step in developing the comprehensive framework of excellence in higher education was to evaluate the extent to which the set criteria of excellence differentiate between the excellent student sample and a non-excellent student sample. Additionally, we were interested in obtaining further evidence on the interplay of various indicators of excellence in higher education, as this evidence could help us to gain a more complete understanding of the indicators' interactions and possible interchangeabilities. To fulfil the purpose of this study, the multisource assessment procedure was performed on a sample of 10 randomly selected non-nominated students at the FE USB. Data of the non-excellent student sample were scrutinized and compared with data on the excellent student sample obtained in Study III.

Method

Participants

Three groups of participants were involved: Non-excellent (randomly selected non-nominated) students, teaching staff members, and non-excellent students' fellow students.

Non-nominated student sample included 10 full-time students at the FE USB (3 males and 7 females) pursuing either bachelor's or master's degree courses focused on teacher education. Their age ranged from 21 to 28 years (mean age: 23.9 years). Participating students were randomly selected from the list of all students at FE USB accessible from the university database. Since the excellent student sample in Study III consisted of students enrolled in the Teacher Education study program, we confined the list of students at FE USB to only all full-time students enrolled in Teacher Education to ensure comparability of the two samples. Only non-nominated students could be included in the sample; if a randomly selected student was one of the 80 students nominated as excellent in Study III, this student was excluded. The selected students were contacted via university e-mail and offered participation in the study.

They were informed that the researchers were interested in their "study habits and attitudes" and offered a monetary reward (400Kč = approximately €15) for their participation, which included completion of a survey, an interview (not covered in this thesis), and their consent to a teacher and peer assessment that would concern the students' "common study-related behaviour". If a selected student declined to participate, another student was selected and addressed until 10 students participated. Totally, 42 students were addressed, which means that the participation rate was about 24%.

Teacher participants were selected after consulting the course schedule of participating students for the actual term, as well as for previous terms, which was accessible through the university database. For each student, two suitable teachers were selected who taught the student most recently and/or in more than one course during the student's studies, and thus they were supposed to know the student well. Additionally, one teacher was selected per each of the three excellent students, which were nominated and assessed by only one teacher (see Study III). The teachers were contacted by university e-mail. In sum, 16 teachers out of 18 addressed teachers actually participated; thereof, three teachers were able to assess more than one student.

Participating fellow students (peers) were selected and addressed in the same way as described in Study III. To select the most suitable peers who were supposed to know the student well, the list of each of the student's fellow students enrolled in the same study program and in the same year of study was displayed in the university system, and four peers were selected randomly from the list and contacted by e-mail. If a selected peer refused to participate, another peer was randomly selected and asked to participate until four peers for each of the 10 students participated. Totally, 110 peers were invited to participate, of which 40 (36%) actually participated.

Procedure

The randomly selected non-nominated students were asked to complete a survey that asked them to provide basic demographic characteristics, academic achievements indicators (cumulative GPA and data on the other four academic achievement indicators), and to complete a set of psychological questionnaires. Only the academic achievement indicators were relevant for the present study and for this thesis in general. Like in Study III, the self-reported academic achievement data were verified to the highest possible degree by consulting external sources, such as university records.

Teacher participants were asked to assess a student on a rating scale based on Study I, which was accessible through an online form. Since Conway and Huffcutt (1997) suggested that at least two supervisor assessors (in the case of students these are teachers) are required to reach sufficient inter-rater reliability, each of the randomly selected non-nominated students was assessed by two teachers. Additionally, three teachers were asked to assess the three excellent students derived from the group of once nominees (students H, I, and J), for whom only one teacher rating was available after performing Study III. As a result, each non-nominated student was assessed by two teachers, and each excellent student has been assessed by at least two teachers. With regard to peer assessment, we again followed the suggestion by Conway and Huffcutt (1997) to use four peer assessors to achieve satisfactory inter-rater reliability. Thus, we asked four suitable peers to assess the student on the rating scale through an online form. The maintenance of participants' confidentiality was guaranteed in the same way as in Study III – the participating peers were ensured about the confidentiality of the data and they submitted their responses anonymously without personal identification.

Results

We were primarily interested in how the excellent students and the randomly selected non-nominated students differed in terms of academic achievement indicators and scores on

the three subscales (expertness and achievement, proactive learning, and being a good person) of the rating scale based on the model of excellence in higher education. Thus, for the 10 randomly selected non-nominated students, we calculated the composite mean scores per item by summing all awarded teacher and peer scores and dividing them by a number of assessors who awarded a valid score; subsequently, the composite mean scores per scale were calculated by averaging the composite scores per respective items. The data concerning the excellent student sample were taken from Study III. For the three once nominated excellent students, the teacher ratings were added to the pool of the ratings obtained in Study III and the composite scores were recalculated. Table 5 displays the overview of the excellent students' (students' A – J) and the randomly selected students' (students' K – T) academic achievement data and composite mean scores for the expertness and achievement, proactive learning, and being a good person scale.

Differences in the mean values of expertness and achievement, proactive learning, and being a good person between the two samples were statistically tested using the non-parametric Mann-Whitney U test for independent samples. The results revealed that the differences between the two groups were statistically significant for the scores on the scales of expertness and achievement ($U = 9.50$, $p = .001$, $\eta^2 = .47$) and proactive learning ($U = 21.00$, $p < .05$, $\eta^2 = .24$). The difference between the scores on the scale of being a good person in the two groups was not statistically significant ($U = 25.00$, $p > .05$, $\eta^2 = .18$). The results are displayed in Table 6.

Table 5

Excellent and Non-Excellent Students' Basic Background Characteristics, Academic

Achievement Data, and Composite Mean Scores for the Expertness and Achievement,

Proactive Learning, and Being a Good Person Scale

Student	Gender	Age	Study program	Year of study	GPA	Other AA indicators	Expertness and achievement	Proactive learning	Being a good person
						Excellent Students			
A	F	23	TTUSS	1	1.08	A B C	4.87	4.95	4.93
B	M	24	TTUSS	1	1.00	C	4.83	4.57	4.90
C	M	24	TTUSS	1	1.71	A B C	4.75	4.86	4.81
D	F	28	TTUSS	2	1.06	B C	4.70	4.63	4.48
E	F	25	TTUSS	2	1.50	D	4.32	4.61	4.77
F	F	24	TTUSS	2	1.53	C	4.67	4.45	4.82
G	F	25	TTLSS	2	1.24	A B C	4.56	4.88	4.76
H	F	24	TTLSS	1	1.47	A C D	4.62	4.73	4.88
I	F	25	TTPS	5	1.20	A B C D	4.67	4.89	4.93
J	F	20	SE	2	1.30	C D	4.37	4.13	4.42
						Non-Excellent Students			
K	F	24	SE	2	2.32	-	4.09	4.18	4.26
L	M	24	TTLSS	1	2.95	-	4.14	4.56	4.81
M	F	22	SE	4	2.48	-	3.94	4.08	4.61
N	M	24	TTLSS	2	1.79	C	4.37	4.50	4.11
O	F	26	TTUSS	1	1.70	C	4.08	4.32	4.02
P	F	24	TTUSS	2	1.61	-	4.61	4.91	4.94
Q	M	28	TTLSS	1	3.04	-	4.40	4.23	4.72
R	F	23	TTLSS	1	1.77	-	4.30	3.94	4.18
S	F	23	TTPS	4	1.48	-	4.60	4.64	4.84
T	F	21	SE	2	1.72	-	4.17	4.11	4.42

Note. Gender: F = female, M = male; TTUSS = Teacher training for upper secondary schools (a two-year follow-up Master's degree program); TTLSS = Teacher training for lower secondary schools (a two-year follow-up master's degree program); TTPS = Teacher training for primary schools (a five-year integrated master's degree program); SE = Specialization in Education (a three-year bachelor's degree program designed to be followed by the Master's teacher training study program); GPA = cumulative grade point average; Other AA indicators = Other academic achievement indicators: A = significant achievement in a subject-related contest or student competition, B = membership of academic organizations/societies, C = a leadership role in extracurricular activities, D = significant achievement in research

Table 6

Mann-Whitney U Test Results for Excellent and Non-Excellent Student Samples'
Mean Scores of Expertness and Achievement, Proactive Learning, and Being a Good
Person Scale

Subscale	Excellent		Non-excellent		U	p	η^2
	M	SD	M	SD			
Expertness and achievement	4.64	.18	4.27	.23	9.50	.001	.47
Proactive learning	4.67	.25	4.35	.30	21.00	.029	.24
Being a good person	4.77	.18	4.49	.36	25.00	.063	.18

Note. n excellent = 10, *n* non-excellent = 10. *U* = Mann Whitney U test statistics; η^2 =eta squared (an effect size measure).

When considering individual-level differences in terms of academic achievement indicators, it is apparent that six randomly selected students would meet the GPA cut-off threshold (GPA < 2.0). Nevertheless, only two of these students, namely students "N" and "O", would also meet the criteria of complying with at least one of other academic achievement indicators. Interestingly, these students displayed the lowest scores on the being a good person scale. When evaluating these students' individual ratings assessed by peer and teacher assessors, it is apparent that student "N" was assigned ratings of "somewhat disagree" on the same item (item 10 that belongs to the being a good person scale) by one teacher assessor and one peer assessor. In this respect, he clearly contradicts the eligibility criteria set for excellent students' selection presented in Study III. Student "O" was awarded "somewhat disagree" on item 9 by one teacher assessor, which would also make her unsuitable for selection into the excellent student sample.

Regarding individual-level composite mean scores on the three scales, we can observe that student "P" and student "S" displayed rather high scores on all the three scales compared to the rest of non-nominated students. In this respect, their profiles clearly resemble those of

excellent students. It is striking that student "P" and student "S" had also the highest GPAs from the non-nominated student sample. Nevertheless, both students failed to comply with at least one other academic achievement indicator. Thus, since they contradict the multidimensional academic achievement criteria, they would also be unsuitable for selection into the excellent student sample.

Finally, the specific cases of students "L" and "Q" also deserve attention. Whereas these students display the lowest GPAs in the entire sample, their composite mean scores on the being a good person scales are rather high (they exceed the average score of being-a-good-person in the excellent student sample).

Discussion

This study aimed to evaluate the framework of excellence in higher education, which was designed with the support of Study I and Study II and implemented in Study III. The evaluation concerned primarily the discriminating ability of the newly designed methodology to differentiate between excellent and non-excellent (randomly selected non-nominated) student samples. In this respect, we achieved satisfactory results.

From the perspective of the set criteria of excellence, the results indicate that the established criteria can reliably distinguish between the two samples in that, on average, the profiles of excellent students and their randomly selected counterparts notably differed. From the perspective of the designed procedure, this study raised at least one significant point. More specifically, none of the randomly selected students was part of the initial sampling frame for excellent students' selection (that is, has been nominated as excellent by teachers) and none of them also met the complete set of criteria of excellence in higher education. It implies that the chance of "missing" a student, who could be considered excellent, although not nominated by any teacher, seems to be very low. Thus, the initial pool of nominees from which the excellent student sample was further drawn is likely to include at least the vast

majority of *truly excellent* individuals. Nomination of a student by one or more teachers, although not a sufficient condition, could generally be considered a reliable preliminary step in the process of excellent students' identification.

This study also furthers our conceptual understanding of the inter-relatedness (or the lack of inter-relatedness) of various aspects of excellence in higher education. In this respect, the most significant finding of this study concerns the difference between the two samples in terms of *educational excellence* (represented by the scales of expertness and achievement and proactive learning) and the indifference of the samples in terms of *personal excellence* (represented by the scale of being a good person). In other words, whereas the excellent students displayed educational excellence, their personal excellence was not significantly higher than in randomly selected students. This finding confirms the conceptual distinction between the two dimensions of excellence (Miller & Kerr, 2002; Solomon, 1992) in that it implies that these dimensions are independent of each other, which was further illustrated by the cases of individual students. On the one hand, we observed that students "N" and "O", who fulfilled the academic achievement aspect in that they displayed a rather high GPA along with a record of significant other academic achievements, displayed the lowest scores on the being a good person scale. On the other hand, students "L" and "Q", who displayed poor academic achievement, scored highly on the being a good person scale. Clearly speaking, whereas students "N" and "O" could be considered educationally excellent, they could not be considered personally excellent. On the contrary, whereas the students "L" and "Q" could be considered personally excellent, they could not be considered educationally excellent. In conclusion, from the entire sample of 20 observed students, only the excellent student sample could be perceived as *truly excellent*, since they embodied the attributes of both educational and personal excellence.

We should also mention a limitation of this study related to the relatively low response rate of randomly selected students. Approximately, only one of four addressed students actually participated, which means that the study sample could hardly be considered representative of the non-nominated student population at FE USB. On the contrary, it is likely that the participants displayed above-average or at least average levels of overall study engagement and motivation that fuelled their interest in participating in the research study focused on "study habits and attitudes". Such students are also likely to consent to an external assessment of their "common study-related behaviour", since in this respect they could perceive that they have nothing to conceal. On the other hand, it is possible that students who know that their "common study-related behaviour" is somehow problematic and deviates from what the student believes is expected, would not be willing to participate in a study involving an external assessment. In sum, it is highly likely that our study involves a group of above-average or at least average students in terms of study attributes that determine both educational and personal facets of excellence, whose profiles resemble rather the excellent student than students on the opposite side of the continuum (some kind of "bad" students).

Paradoxically, this limitation, at the same time, confirms the discriminating ability of the evaluated methodology. Since the newly developed methodology seems to be sensitive enough to distinguish between excellent students and average/above-average students, it indicates that the methodology can reliably distinguish between excellent students and the whole population of non-excellent students at the FE USB including also under-average students.

General Discussion

This thesis was underpinned by two main research questions: *Who is really an excellent university student? How to identify an excellent university student?* The results of the four research studies performed at the FE USB have enabled us to answer these questions in a sufficient way.

With regard to the first research question, we may conclude that an excellent university student is an individual who embodies two distinct dimensions of excellence: the performance and the personal attribute of excellence. Specifically in the setting of the FE USB, the performance dimension of excellence, labelled *educational excellence*, includes the facet of expertness and achievement, which refers to academic achievement and mastery of study-related knowledge and skills, and the facet of proactive learning referring to students' engagement in learning and the enhancement of knowledge and experience by doing more than what is required. The dimension of *personal excellence* represents students' cooperativeness and helpfulness, as well as moral and self-reflected behaviour. The model of excellence in higher education also involves an underlying attribute of *genuine study motivation*, which indicates that an excellent university student adopts mastery-goal orientation and deep learning approach to learning. More specifically, they engage in schoolwork out of interest and out of the desire to master the learning material for their own personal development rather than for the sole purpose of positive self-presentation in front of others. Further, they want to develop a real understanding of what they learn by thinking about the new knowledge acquired and by interconnecting it with previous or simultaneous knowledge in other areas. As a result, the knowledge of an excellent university student is complex and deep, not just memorized without further understanding.

Generally, the results of this thesis support the multidimensionality of the construct of academic excellence, which, albeit it has been recognised in theoretical literature (e.g. Ferrari,

2002; Parkash & Waks, 1985, as cited in Bruno-Jofré & Hills, 2011), has been largely ignored in the empirical literature (e.g. Mirghani et al., 2015; Saidi et al., 2015). In other words, our empirically-based conceptualization of excellence in higher education clearly contradicts the unidimensional view favoured in current research, which equals excellence with high academic achievement. Although the present findings stem from a specific setting of a single higher educational institution, which means that they cannot be easily generalized cross-culturally, they present an important initial step toward reconsideration of excellence in higher education as a multifaceted phenomenon that goes beyond academic achievement alone.

Importantly, the conception of excellence in higher education as a fusion of performance and personal aspects is in line with the current understanding of excellence in the workplace (Gardner et al., 2001). Since we perceive excellence in higher education as a direct precursor of occupational excellence, we also believe that excellence in higher education should necessarily refer to high-quality academic work coupled with moral and virtuous character. The importance of the personal aspect of excellence in higher education, which has been so far neglected in empirical literature, even increases in the case of individuals aspiring to careers in helping professions, such as (prospective) teachers. Given that these individuals serve as role models that significantly influence the development of children and young people, the requirement of morality and virtuousness, albeit important in every occupational context, is an inseparable part of the teaching profession. Generally, since in the helping profession the absence of a personal aspect of excellence could have detrimental effects on the overall quality of service provided by such professionals, it definitely cannot be overlooked.

To provide a clear answer to the second research question, we developed, piloted, and evaluated a methodological framework that can offer a valid and transparent approach for identifying concrete excellent university students. The methodological framework was based

on the two-dimensional conception of excellence in higher education. Educational excellence was covered by subjective measures: scales of expertness and achievement and proactive learning, as well as objective measures: cumulative GPA and four alternative academic achievement criteria. Personal excellence, which could hardly be covered by objective indicators, was addressed by a subjective measure of being a good person scale. Next, we performed a multisource assessment procedure to identify students who fulfil the set contextually-relevant criteria of excellence. The process of excellent students' identification was initiated by teacher nominations and assessment and followed by academic achievement assessment and peer assessment. Finally, the multisource assessment procedure was repeated on a non-excellent student sample (non-nominated randomly selected students) to evaluate the discriminating ability of the developed methodological framework. Before providing readers with more specific guidelines on how to identify excellent university students, it is necessary to integrate and review the outputs generated by performing the intermediate studies.

First, the results consistently showed that the two dimensions of excellence are independent of each other and that the personal excellence aspect operationalized through scores on being a good person scale cannot be reliably predicted from indicators of educational excellence. Thus, students high in educational excellence can display low levels of personal excellence and vice versa.

In contrast, various indicators of educational excellence seem to be interrelated to a large extent. First, the scores on expertness and achievement tend to be closely linked to the absolute value of GPA, especially in terms of the highest GPA values fully or nearly corresponding to straight A's. Specifically, students displaying GPA of an absolute value of 1.20 and below displayed also the highest scores for expertness and achievement. In students displaying somewhat poorer GPA, but still exceeding the set cut-off threshold (an absolute value higher than 1.20 and lower than 2.00), the interrelatedness of the two indicators seems

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to be less straightforward. Although in the non-excellent sample, we observed an association between relatively high GPA and overall high scores on the scales, mere GPA exceeding the set cut-off threshold cannot guarantee that a student displays sufficient levels of either expertness and achievement or proactive learning. Furthermore, the highest scores for expertness and achievement displayed three students who were most frequently nominated (by six teachers and three teachers); however, this pattern did not apply to those nominated by two teachers. The scores on the scale of proactive learning, on the other hand, tended to be linked to both the quantity of alternative academic achievement indicators a student complied with and their quality – students who attained a significant achievement in a subject-related contest or student competition and who were members of academic organizations/societies tended to score the highest on the proactive learning scale. This evidence suggests that proactive learning scores and alternative academic achievement indicators might be interchangeable to some extent.

Taking into account the procedural aspects of the excellent students' identification, it seems that the initial step of collecting nominations plays the most central role in the process. The method of excellent individuals' identification by nominations, which is employed mainly in occupational research (e.g. Kallas, 2014; Hirsch & Segolsson, 2021; Sonnentag, 1995), could be considered conceptually and methodologically sound, since it reflects the context-dependent nature of excellence and enables to operationalize excellence in accordance with its socially-construed definition arising out of the communities that excellent individuals are members of. In this respect, our results confirmed that teacher nominators nominated exclusively students who, according to the nominators' assessment, complied with the 10 items representing the agreed-upon essential attributes of a prototypical excellent university student. Although this result is expected, it shows that nominees reliably represent the basic prototypical perception of excellence in higher education in a particular academic

community, at least from the nominators' perspective. Of course, the finer aspects of why a student was nominated as excellent beyond the basic commonly shared attributes would differ from nominator to nominator, as well as the value that individual nominators place on each of the attributes.

Nevertheless, based on our preliminary findings, we can speculate that the attributes related to personal excellence play the primary decisive role in whether a student will be nominated or not. The results of study IV showed the cases of two randomly selected students who displayed high levels of educational excellence, but were assigned unsatisfactory scores on the being-a-good-person items by teacher assessors. In this respect, it is worth highlighting that although the students' profiles in terms of academic achievement resembled those of the nominated students, they were not nominated. On the other hand, we observed in Study III that about one-fourth of nominees displayed a rather poor under-average GPA and more than one-half of nominees did not comply with any alternative academic achievement indicators. Thus, it is assumed that students' personal attributes play the initial deciding role in determining whether a student will be nominated or not. Only after they pass the nominators' implicit "personal excellence threshold", their educational excellence is further considered and the student can be nominated as excellent. On the other hand, if this assumption is correct, this aspect of implicit decision making primarily influenced by students' personal excellence attributes could also be the source of nomination bias in that highly cooperative, helpful, moral, and self-reflective students are likely to be nominated as excellent despite not reaching the sufficient level of educational excellence. Thus, it is clear that relying exclusively on nomination is not enough and it is necessary to control for objective indicators of educational excellence. It applies mainly to once nominees, since with the number of nominations a student is awarded, the likelihood of fulfilling the educational excellence criteria sharply increases.

Another central point raised by the findings presented in this thesis is the requirement of integrating the teacher and peer perspective to obtain a valid assessment of students' behavioural patterns and expressed qualities. Since the situational contexts in which students interact with teachers and peers may notably differ, teachers and peers can observe different behavioural patterns that a student exhibits in various contexts, making their combined perspectives more reliable.

The above-mentioned findings can be used to design a more parsimonious methodology for excellent students' identification than that presented in Study III. We work on the assumption that nominations are a reliable way to control at least for personal excellence qualities in that nominators do not nominate students who, in their view, violate the qualities of a good person. We also found that under specific circumstances, the objective academic achievement indicators are closely linked educational excellence qualities assessed subjectively by teachers and peers. Thus, if the procedure of excellent students' identification was initiated by teacher and peer nominations and followed by academic achievement assessment, the teacher and peer assessment phase (that is, the assessment of a nominee on a rating scale) would become redundant. Since multiple nominations seem to be the most reliable indicator of excellence in higher education, we assume that in multiple nominees who also display a high absolute value of GPA and comply with multiple academic achievement indicators, the overall criteria of excellence would most likely be fulfilled.

This simplified variant of excellent students' identification, nevertheless, comes from preliminary findings based on research performed at a single institution that involved a limited number of participants; thus, it should be employed with caution. Specifically, a cautious approach towards the procedure of peer nomination is also warranted. It is advisable to invite only a small group of peer nominators, since the invitation of the entire student community at an institution from which an excellent student sample should be drawn could

lead to a) undesirable competitive environment among students and b) unintentional familiarization of the later selected excellent student sample with the research interest, which would disallow researchers to make participants blind (to deliberately withhold key information from the participants until the investigation is finalized).

Guidelines for Implementation of the Framework in General Settings

We may conclude that the developed conceptual and methodological framework of excellence in higher education can be recommended as a valid approach to define and identify excellent university students. Although the framework has been developed in the specific settings of a particular institution, it is intended for a larger audience and wide use across higher educational institutions. To overcome the above-mentioned limitation, we present a brief step-by-step guideline on how to implement the framework in more general settings.

1. The initial step is to establish a set of contextually relevant criteria of excellence that cover various facets reflecting the perceptions of excellence in the respective academic community.

   1.1 The shared understanding of the social construct of an excellent university student in a particular academic community should be investigated. A set of items should be established that reflect the widely accepted essential attributes of an excellent student relevant for a particular academic community from which the excellent student sample is going to be drawn. To establish a contextually relevant model of an excellent student's essential attributes and to convert it into a rating scale for assessment purposes, follow the procedure described in Study I.

   1.2 The dimension of personal excellence should be covered by items reflecting the personal qualities and behaviour of a good person specific to a particular academic community.

1.3 The dimension of educational excellence should be covered by items reflecting the qualities of a "good student" along with multiple objective academic achievement indicators that are contextually relevant in a particular setting. We consider alternative academic achievement indicators to be more valid criteria of excellence in higher education than GPA. GPA should be used with caution and not in isolation. Further, the GPA cut-off value that distinguishes between excellent and non-excellent students should be precisely defined and either norm or criterion referenced.

2. The multisource assessment framework is based on evaluating subjective data derived from teacher and peer assessment, and objective data on academic achievement. To facilitate the manageability of the assessment procedure, follow the below-mentioned steps to obtain and evaluate the data in the recommended order.

2.1. First, confine the initial pool of eligible students by using teacher nominations. Teacher assessment is an integral part of this first step.

2.2. Obtain and assess nominees' academic achievement data. Confine the pool of nominees to the most eligible candidates.

2.3. Peer assessment is the last phase due to its many-sided nature. For each candidate, at least four suitable peers should be involved.

3. Each step involves evaluating the data against the set criteria – eligibility thresholds that ensure that the selected participants meet all the set criteria at least at the baseline. The eligibility thresholds set for the present thesis can all be followed with the exception of the GPA threshold, which is context-dependent. The thresholds may be based on the ratio between the number of eligible candidates and the required final sample size.

Additionally, we present the simplified variant of the methodological approach to excellent students' identification, based on the preliminary findings of the thesis, which is

considered a compromise between the maintenance of a conceptually and methodologically sound research design and a more feasible implementation.

1. Collect nominations of students considered excellent by suitable teacher and peer nominators. Peer nominators are representatives of various groups of students according to study program, year of study, etc., who tend to know their fellow students well. Avoid inviting the entire student community at a particular higher educational institution to the nomination phase of the excellent students' identification procedure.

2. Based on the overlap of peer and teacher nominations and the total number of nominations, select the most eligible nominees, obtain, and assess their data on GPA and contextually-relevant alternative academic achievement indicators.

3. An excellent student sample can be selected according to the desirable combination of the used indicators: high number of both teacher and peer nominations and/or very high GPA along with high number of other academic achievement indicators a student complies with (with a particular focus on significant achievements in a subject-related contest or student competition and a membership of academic organizations/societies).

Limitations

The main limitation of the new conceptual and methodological framework of excellence in higher education is that it was developed within the culturally and contextually specific setting of a single higher educational institution. This limitation applies particularly to the conceptual model of an excellent student's essential attributes. This model may clearly serve as a solid base for further research to build upon; nevertheless, it reflects the views of a specific academic community, which can differ cross-institutionally as well as cross-culturally. With respect to the methodological framework, the specific context of a small institution enables to assess students both conveniently and easily due to the smaller numbers

of nominees. Likewise, teacher nomination and assessment, and especially peer assessment, depend on the extent of familiarity with nominees, which is facilitated by the setting of an institution with smaller classes and groups of fellow students that tend to know each other well. We expect that implementing the framework in the settings of larger institutions will prove to be more challenging. Although the simplified version of the methodological approach could suit large institutions better, it is based on assumptions deriving from conducting research on a limited number of participants at a single higher educational institution. In general, the proposed framework is better suited for small-scale studies with a qualitative research design that requires only a relatively small sample of subjects.

Conclusion

This thesis has shown that excellence in higher education is a complex phenomenon that goes beyond academic achievement alone. More specifically, excellence in higher education could be perceived as an interaction between educational excellence, which refers to students who are deeply knowledgeable, engaged, and capable of turning their knowledge and skills into actions and desirable high-quality outcomes, and personal excellence that concerns students' prosocial, moral, and self-reflective behaviour. Although these two dimensions of excellence in higher education were shown to be independent of each other, they are co-existing entities that should occur simultaneously in an individual to consider them to be *truly excellent*. This conceptualization of excellence in higher education makes sense not only from the theoretical perspective, but mainly from the practical perspective. Only university students who demonstrate both educational and personal excellence have the potential to make a meaningful contribution to enhancing their communities, organizations, and the entire society, as well as inspire and motivate others to become their best. Since the higher education phase is a unique phase in which universities can intensively engage in supporting their students in developing desirable qualities and reaching their highest potential,

excellence should be nurtured and embraced in order to help students to become future excellent professionals and citizens.

We believe that this thesis has significantly advanced future research on individual-level excellence in higher education not only from the conceptual point of view but also from the methodological point of view in that we developed, implemented, and evaluated a new methodology that could be employed to sample excellent university students. In this respect, the present thesis makes an initial step towards searching for, identifying, and bringing into the spotlight individuals who are truly excellent. Thereby, a new and hopefully fruitful research area has been opened up. Educational psychological research will now be able to learn more about truly excellent university students, recognize their strengths, and the paths that led them to become excellent. Additionally, their post-university career journeys can be followed, and the assumed transformation from excellence in higher education into occupational excellence could be investigated more closely.

Shrnutí

Předmětem zájmu této disertační práce je problematika vysokoškolské excelence. Výzkumným záměrem je potom zodpovězení dvou výzkumných otázek, a to: Kdo je doopravdy vynikající vysokoškolský student a jak jej identifikovat? Aby mohly být tyto výzkumné otázky zodpovězeny, byly realizovány čtyři dílčí studie, které dohromady tvoří ucelený rámec vysokoškolské excelence.

Práce je uvedena šesti hlavními kapitolami, které shrnují dostupné teoretické a empirické poznatky k tématu této disertační práce. První kapitola seznamuje čtenáře s obecnými konceptuálními a metodologickými obtížemi ve výzkumu zaměřeném na specifickou skupinu konstruktů, které popisují přerod osobní produktivity jednotlivce ve významné výsledky, do které patří i konstrukt excelence. Druhá kapitola shrnuje konceptuální vymezení konstruktu excelence v obecné rovině, třetí kapitola to pak činí se specifickým zaměřením na excelenci v oblasti vzdělávání. Čtvrtá kapitola prezentuje současný stav empirického výzkumu v oblasti vysokoškolské excelence. Pátá a šestá kapitola poukazují na obtíže spojené se současným výzkumným přístupem k vysokoškolské excelenci. Konkrétně pátá kapitola poskytuje přehled empirických poznatků o nežádoucích korelátech akademického výkonu, a to zejména v oblasti studijní motivace a vzorců chování ve smyslu tendence k podvádění. Šestá kapitola se pak zabývá konceptuálními a metodologickými požadavky na adekvátní výzkumný přístup ke konstruktu vysokoškolské excelence.

První ze čtyř realizovaných dílčích studií si klade za cíl ustanovit konceptualizaci vynikajícího vysokoškolského studenta založenou na empirických datech. Výsledky šetření provedeného mezi univerzitními studenty a vyučujícími ukázaly, že vysokoškolská excelence je kombinací akademické excelence a osobnostní excelence. Konkrétně byl vytvořen model vysokoškolské excelence tvořený deseti základními atributy vynikajícího vysokoškolského studenta a podložený jádrovým atributem autentické studijní motivace. Tento model byl

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převeden na hodnotící škálu, která byla později využita jako měřící nástroj umožňující identifikaci konkrétních vynikajících vysokoškolských studentů. Druhá studie si klade za cíl zjistit, zda jádrový atribut vynikajícího vysokoškolského studenta, autentická studijní motivace, konceptualizovaná jako cílová orientace na mistrovství spolu s hlubokým přístupem k učení, koreluje s celkovým studijním průměrem. Výsledky této studie ukázaly, že studijní průměr není ani indikátorem autentické studijní motivace, ale ani ji nevyvrací. Toto výsledné zjištění pak bylo podkladem pro další metodologická rozhodnutí, konkrétně pro využití studijního průměru jako kontextuálně relevantního indikátoru vysokoškolské excelence.

V rámci třetí studie byl navrhnut a realizován postup identifikace konkrétních vysokoškolských studentů. V rámci navrženého postupu byly využity kontextuálně relevantní indikátory vysokoškolské excelence, a to zaprvé hodnotící nástroj deseti položkové škály základních atributů vynikajícího vysokoškolského studenta, určený pro subjektivní hodnocení studenta učiteli a spolužáky, zadruhé objektivní hodnocení akademického výkonu (studijní průměr a čtyři alternativní indikátory akademického výkonu). Procedura identifikace vynikajících vysokoškolských studentů byla založena na vícezdrojovém hodnocení (učitelská nominace a hodnocení, hodnocení akademického výkonu a studentské hodnocení), což vyústilo ve výběr finálního vzorku deseti vynikajících studentů, kteří odpovídali všem konceptuálním kritériím vysokoškolské excelence. Čtvrtá studie si kladla za cíl zhodnotit navrženou metodologii s ohledem na to, do jaké míry rozlišuje mezi vynikajícími a nevynikajícími studenty. V tomto ohledu bylo dosaženo uspokojivých výsledků. Poté, co byly posouzeny veškeré dílčí výsledky získané v průběhu implementace a evaluace navržené metodologie, mohla být poskytnuta základní doporučení k tomu, jak definovat a identifikovat vynikající vysokoškolské studenty napříč univerzitami.

Tato disertační práce dokládá, že vysokoškolská excelence je komplexním fenoménem, který nemůže být redukován na pouhý akademický výkon. Vysokoškolskou

excelenci je naopak potřeba vnímat jako souhru mezi akademickou a osobní excelencí. Akademickou excelenci zosobňují takoví studenti, kteří mají hluboké znalosti, jsou angažovaní a schopní přenést své znalosti a dovednosti do praxe a přetvořit je ve výsledky vysoké kvality. Naopak osobnostní excelence se vztahuje k prosociálnímu, morálnímu, a sebe-reflektivnímu chování studentů. Tyto dvě dimenze jsou konceptuálně odlišné a na sobě nezávislé. Nicméně aby mohl být studen považován za doopravdy vynikajícího, je nutné, aby v sobě snoubil kvality spojené jak s akademickou, tak s osobní excelencí. Představená dvoudimenzionální konceptualizace vysokoškolské excelence dává smysl nejen z teoretického hlediska, ale zejména z hlediska praktického. Jenom takoví studenti, kteří v sobě snoubí kvality akademické a osobní excelence mohou smysluplně přispět k rozvoji komunit, organizací a celé společnosti i inspirovat a motivovat druhé k tomu, aby zrealizovali svůj vlastní potenciál. Vzhledem k tomu, že období vysokoškolského vzdělávání představuje jedinečnou možnost podpořit studenty v rozvoji a plném využívání svých schopností a talentů, je potřeba stimulovat rozvoj vysokoškolské excelence a formovat jedince, kteří se později mohou stát excelentními profesionály i občany.

Tato disertační práce může významně ovlivnit budoucí výzkum zaměřený na vynikající vysokoškolské studenty, a to nejen z konceptuálního hlediska, ale také z hlediska metodologického, a to díky vývoji, implementaci a evaluaci nové metodologie využitelné pro identifikaci konkrétních vynikajících vysokoškolských studentů. Tato práce pokládá první stavební kámen v cestě za hledáním a objevováním *doopravdy vynikajících* jedinců, čímž otevírá zcela novou a podnětnou výzkumnou oblast. Pedagogicko-psychologický výzkum tak získává možnost dozvědět se více o takových studentech, identifikovat jejich silné stránky a způsoby, kterým dosahují excelence. Navíc bude možné sledovat i jejich kariérní dráhu po ukončení vysokoškolského vzdělávání a tím i předpokládaný přerod vysokoškolské excelence v excelenci profesní.

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Appendix A

The FE USB Ethics Committee Approval

Pedagogická fakulta
Faculty of Education

Jihočeská univerzita
v Českých Budějovicích
University of South Bohemia
in České Budějovice

Etická komise Pedagogické fakulty

Ethics Board of the Faculty of Education

Vyjádření Etické komise PF JU

Složení komise	
Předsedkyně:	PhDr. Renata Malátová, Ph.D., Katedra tělesné výchovy a sportu
Členové:	RNDr. Martina Hrušková, Ph.D., Katedra biologie
	MUDr. Ing. Bc. Markéta Kastnerová, Ph.D., Katedra výchovy ke zdraví
	PhDr. Dalibor Kučera, Ph.D., Katedra pedagogiky a psychologie
	Mgr. Marek Šebeš, Ph.D., Katedra společenských věd

Projekt s názvem: Prediktory úspěchu u vynikajících vysokoškolských studentů

byl Etickou komisí PF JU posouzen pod jednacím číslem: …EK003/2018……………………………

dne:……11. 1. 2019………………………….

Etická komise PF JU zhodnotila předložený projekt a **usnesla se, že způsob realizace posuzovaného projektu uvedený v žádosti nevykazuje rozpory** s platnými zásadami, předpisy a mezinárodními standardy pro provádění výzkumu zahrnujícího lidské účastníky, pročež vydává toto souhlasné vyjádření pro výzkum realizovaný v období od …23. 1. 2019……. do ……22. 1. 2024…………….

PhDr. Renata Malátová, Ph.D. v. r.
předseda Etické komise PF JU

Dne……23. 1. 2019………..

Appendix Table

The Final Sample's Background- and Study-Related Characteristics and Detailed Assessment-Related Data

Student	Gender	Age	Study program	Year of study	Number of nominations	GPA	Other academic achievement criteria	Assessor	Expertness & achievement			Proactive learning				Being a good person		
									Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
Student A	F	23	TTUSS	1	6	1.08	A B C	Teacher 1	5	5	0	5	5	5	5	5	5	4
								Teacher 2	5	5	5	5	5	5	5	5	0	0
								Teacher 3	5	5	5	5	5	5	5	5	5	5
								Teacher 4	5	5	5	4	5	5	5	5	5	5
								Teacher 5	5	5	5	5	5	5	5	5	0	5
								Teacher 6	5	5	0	5	0	5	5	0	5	5
								Peer 1	5	5	5	5	5	5	5	5	5	5
								Peer 2	4	4	0	4	5	5	5	0	4	4
								Peer 3	0	5	4	5	5	5	5	5	5	5
								Peer 4	5	5	5	5	5	5	5	5	5	5
								M Item	4.89	4.9	4.83	4.9	4.89	5	5	5	5	4.78
								M Scale	4.87			4.95				4.93		
Student B	M	24	TTUSS	1	3	1.00	C	Teacher 1	5	5	5	5	5	5	5	5	5	5
								Teacher 2	5	5	0	5	0	0	0	5	5	0
								Teacher 3	5	5	5	5	5	5	5	5	5	5
								Peer 1	5	5	5	5	5	5	5	5	5	5
								Peer 2	4	4	5	4	5	3	4	5	5	5
								Peer 3	0	5	4	5	4	4	4	5	5	5
								Peer 4	4	5	5	4	4	3	3	4	4	4
								M Item	4.67	4.83	4.83	4.86	4.8	4.29	4.33	4.86	4.86	4.83
								M Scale	4.78			4.57				4.85		
Student C	M	24	TTUSS	1	3	1.71	A B C	Teacher 1	5	5	5	5	5	5	5	5	5	5
								Teacher 2	5	5	5	5	5	5	5	5	5	5
								Teacher 3	5	5	4	5	4	4	5	5	5	5
								Peer 1	5	5	5	5	5	5	5	5	5	5
								Peer 2	4	4	4	4	4	4	5	5	5	4
								Peer 3	0	5	4	5	4	4	5	5	5	4
								Peer 4	5	5	5	5	5	5	5	4	4	4
								M Item	4.83	4.86	4.57	4.86	4.57	4.57	5	4.71	4.71	4.71
								M Scale	4.75			4.86				4.81		

	Gender	Age	Study program	Year of study	Number of nominations	GPA	Other academic achievement criteria	Assessor	Expertness & achievement				Proactive learning			Being a good person		
									Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
Student D	F	28	TTUSS	2	2	1.06	B C	Teacher 1	5	5	0	5	5	0	0	0	0	0
								Teacher 2	5	5	4	5	5	5	5	5	5	5
								Peer 1	5	4	5	5	4	4	4	4	0	5
								Peer 2	5	5	5	5	4	4	4	4	5	4
								Peer 3	5	5	5	5	0	5	0	5	4	5
								Peer 4	4	4	4	4	0	0	4	4	4	5
								M Item	4.83	4.67	4.6	4.83	4.5	4.5	4.67	4.6	4.25	4.6
								M Scale	4.7				4.625			4.48		
Student E	F	25	TTUSS	2	2	1.50	D	Teacher 1	4	5	5	5	5	3	5	5	5	5
								Teacher 2	5	5	0	5	5	5	5	5	0	5
								Peer 1	4	4	0	5	0	4	4	5	5	4
								Peer 2	0	5	5	5	0	0	4	4	4	4
								Peer 3	4	4	4	5	5	4	5	5	5	5
								Peer 4	4	4	3	4	5	0	0	5	5	5
								M Item	4.2	4.5	4.25	4.83	5	4	4.6	4.83	4.8	4.67
								M Scale	4.32				4.61			4.77		
Student F	F	24	TTUSS	2	2	1.53	C	Teacher 1	5	5	5	5	5	5	5	5	5	5
								Teacher 2	5	5	5	5	0	5	5	5	5	5
								Peer 1	5	3	5	5	2	4	5	5	5	4
								Peer 2	5	4	4	4	4	5	5	4	5	5
								Peer 3	5	4	5	5	0	5	5	5	5	4
								Peer 4	5	4	5	5	0	2	0	5	5	5
								M Item	5	4.17	4.83	4.83	3.67	4.5	4.8	4.83	5	4.67
								M Scale	4.67				4.45			4.82		

Gender	Age	Study program	Year of study	Number of nominations	GPA	Other academic achievement criteria	Assessor	Expertness & achievement				Proactive learning			Being a good person		
								Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10
Student G F	25	TTLSS	2	2	1.24	A B C	Teacher 1	5	5	5	5	5	5	5	5	5	5
							Teacher 2	4	5	5	5	5	5	5	5	5	5
							Peer 1	5	4	4	5	0	5	5	4	0	5
							Peer 2	0	4	4	5	0	5	0	4	4	0
							Peer 3	5	3	3	5	5	5	5	5	5	5
							Peer 4	0	5	5	4	4	4	4	5	0	5
							M Item	4.75	4.33	4.33	4.83	4.75	4.83	4.8	4.67	4.75	5
							M Scale		4.56				4.8			4.8	
Student H F	24	TTLSS	1	1	1.47	A C D	Teacher 1	5	0	5	5	0	5	5	5	0	5
							Peer 1	4	4	5	5	5	5	5	5	4	5
							Peer 2	4	4	5	4	0	5	3	5	4	4
							Peer 3	5	4	5	5	5	5	4	5	5	5
							Peer 4	5	4	5	5	4	5	4	5	5	5
							M Item	4.6	4	5	4.8	4.67	5	4.2	5	4.75	4.8
							M Scale		4.56				4.67			4.85	
Student I F	25	TTPS	5	1	1.20	A B C D	Teacher 1	5	4	5	5	5	5	5	5	5	5
							Peer 1	5	4	4	5	5	5	5	5	5	5
							Peer 2	5	4	5	5	5	5	4	5	5	5
							Peer 3	5	5	5	5	5	0	0	5	5	5
							Peer 4	5	4	4	5	5	5	5	5	5	4
							M Item	5	4.4	4.8	5	5	5	4.75	5	4.93	4.8
							M Scale		4.73				4.94			4.93	
Student J F	20	SE	2	1	1.30	C D	Teacher 1	5	4	4	5	4	5	5	5	0	5
							Peer 1	5	4	5	5	4	5	4	5	5	4
							Peer 2	4	4	3	3	0	0	4	3	0	0
							Peer 3	4	4	4	4	3	3	3	4	4	3
							Peer 4	5	5	5	5	4	3	4	5	5	5
							M Item	4.6	4.2	4.2	4.4	3.75	4.25	4	4.4	4.67	4.25
							M Scale		4.33				4.1			4.44	

Note. Gender: F = female, M = male; TTUSS = Teacher training for upper secondary schools (a two-year follow-up Master's degree program); TTLSS = Teacher training for lower secondary schools (a two-year follow-up master's degree program); TTPS = Teacher training for primary schools (a five-year integrated master's degree program); SE = Specialization in Education (a three-year bachelor's degree program designed to be followed by the Master's teacher training study program); GPA = cumulative grade point average; Other academic achievement criteria: A = significant achievement in a subject-related contest or student competition, B = membership of academic organizations/societies, C = a leadership role in extracurricular activities, D = significant achievement in research; Item 1 = They complete all study commitments and assignments in a high-quality way and on time; Item 2 = Their knowledge of their field of study is deep and complex; Item 3 = They can transfer their knowledge from theory into practice; Item 4 = They are engaged in classes – they pay attention, participate in a meaningful way, and interact with the lecturer; Item 5 = They broaden their horizons beyond their field of study; Item 6 = They voluntarily attend extracurricular workshops and events; Item 7 = They engage in field of study-related activities in their leisure time; Item 8 = They behave fairly and honestly; Item 9 = They are cooperative and helpful; Item 10 = They display critical self-reflection about their character and actions; M Item = a composite mean score per item calculated as a sum of all awarded teacher and peer scores divided by a number of assessors who awarded a valid score; M Scale = a composite mean score per scale calculated by averaging the composite scores per respective item.