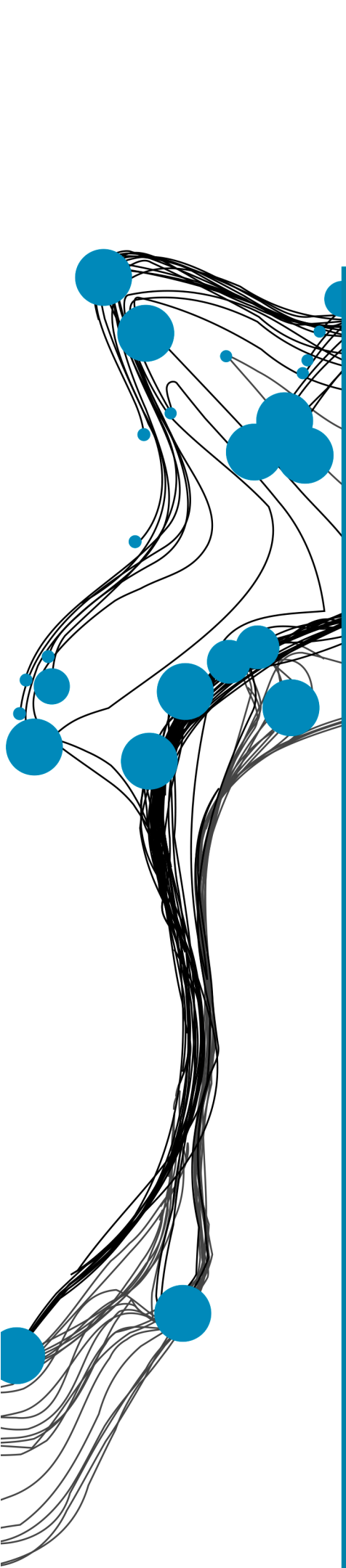

MASTER THESIS

How to motivate Dutch higher education students for personal development in order to reach their maximum potential?

An online experiment on best possible selves, the interpersonal and intrapersonal approach, and the moderating effect of competitiveness.

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Enjoy reading my master thesis!

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Summary

The present study investigated how students can be activated and motivated to reach their maximum potential by testing the influence of best possible self (BPS) exercises, and by exploring which approach (interpersonal or intrapersonal) works best for the BPS exercises with competitiveness as moderator variable. Several types of motivation were assessed that represent the motivation for personal development: intrinsic motivation, extrinsic motivation, and study motivation. Three conditions were developed:

1) Control condition (interpersonal approach without BPS exercise)
2) Interpersonal BPS condition (interpersonal approach with BPS exercise)
3) Intrapersonal BPS condition (intrapersonal approach with BPS exercise)

The conditions were classified into two groups:

1) Control versus interpersonal BPS
2) Interpersonal BPS versus intrapersonal BPS

The first group investigated the effect of a BPS exercise on motivation. The second group examined the effect of the different approaches within a BPS exercise with the moderating effect of competitiveness. Based on data from a sample of highly educated students in the Netherlands (N = 182) who were randomly assigned to one of the three conditions, the analyses revealed that BPS exercises do not influence motivation for personal development and study motivation. Moreover, the intrapersonal approach does not increase motivation for personal development, study motivation, and intrinsic motivation. At the same time, the interpersonal approach does not increase extrinsic motivation. Furthermore, for students with a low competitive attitude, the intrapersonal approach did not increase motivation for personal development, and intrinsic motivation. Additionally, for students with a highly competitive attitude, the interpersonal approach did not increase extrinsic motivation. Contrary to expectations, if an effect has been found in this study, this effect is mainly caused by the interpersonal rather than the intrapersonal approach. The findings imply that an inclusive approach to students requires further research to create relevant interventions for the practical setting.

Keywords: talent development, best possible selves, BPS, interpersonal approach, intrapersonal approach, intrinsic motivation, extrinsic motivation, study motivation, personal development motivation, competitiveness, inclusive approach, higher education, Netherlands

Abbreviations

- BPS = Best Possible Selves
- SDT = Self-Determination Theory
- HCA = Hypercompetitive Attitude
- PDCA = Personal Development Competition Attitude
- AMS = Academic Motivation Scale
- SACQ = Student Adjustment to College Questionnaire
- STEM = Science, Technology, Engineering and Mathematics
- BMS = Behavioural, Management and Social sciences

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Introduction

Talent development in and outside education has received more attention in the past twenty years than ever before (Span, 2001; Tannenbaum, 2000). The reason for this awareness is twofold: the increasing attention for the development of the individual student, and on the other hand the needs of society. The current knowledge society and economy have a strong interest in the maximum potential of the cognitive talents (Persson, 2014). Acknowledgement of student diversity is another factor that is involved in the growing demand for talents (Seifert & Sutton, 2019). This leads to a greater need for customized and flexible learning and development pathways for students.

Before 1990, talent development within higher education presented a hidden problem; the belief that gifted students were able to develop their full potential without guidance and opportunities (Gross, 2000; Mönks & Mason, 2000). Gifted students are referred to as giftedness in IQ test scores of 120 or higher (Subotnik et al., 2011). However, intelligence is not the only determinant of success. Personality traits such as perseverance, being able to problematize and being able to think creatively and originally are success determinants as well (Oden, 1968; Reis & Renzulli, 1984; Terman, 1961). The gifted students were not challenged or motivated to push the limits. Nowadays, various educational activities within higher education in the Netherlands focus on recognizing and developing talents of students. Current educational activities have two focuses: honours programs (top 10%) and gifted students (IQ > 120) (Ministerie van Onderwijs, Cultuur & Wetenschap, 2015). Honours programs have the general characteristic of offering challenge and reinforcement alongside the regular program for students who perform within the 'top 10%'. However, this educational activity does not offer possibilities to every individual student (Pilot & Peeters, 2004; Ruiter, 2004). Honours programs imply that the remaining 90% of students will not be facilitated to develop their potential outside the curriculum, although, there is a high probability that talented students are hidden within these 90% (van Gerven, 2004). Consequently, the current educational activities (honours programs and focus on gifted students) only give opportunities for students who already perform well. Students who perform below this level are denied the possibility to challenge and develop themselves. Simultaneously, students are insufficiently motivated; they spend little time studying and at the same time are not challenged enough to get the best out of themselves (Ministerie van Onderwijs, Cultuur & Wetenschap, 2015). Educational institutions pay insufficient attention to talent and talent development (Ministerie van Onderwijs, Cultuur & Wetenschap, 2015). As a result, education is still little differentiated and not enough educational programs support the development of talent for all students. Based on the current activities for talent development in higher education in the Netherlands, it is imperative to explore additional practical opportunities to enable

students to reach the maximum potential. According to the Dutch Ministry of Education (2019), one of the basic conditions of motivation 'feeling of competence' is violated for Dutch higher educated students. The strong focus on exams and results within the Dutch education is a significant factor for this violation. Dutch students relate their success and development primarily to obtaining good grades. This demonstrates that students are mainly extrinsically motivated (Legault, 2016). Lectures are also designed accordingly; lessons are not very interesting and challenging and a clear learning objective is often lacking. The feeling of competence requires more stimulation to provide Dutch students with greater motivation for personal development and also for their studies.

Since 1990, researchers suggested the use of educational models with inclusive factors and practices for all kind of students, not only the gifted individuals (Renzulli, 2005). The paradigm shift from gifted education towards talent development suggests an inclusive and socially equitable approach that encompasses a more pluralist and developmental view of students' potential. This can be seen as an encouraging alternative to the gifted students' paradigm (Lee & Olszewski-Kubilius, 2015; Treffinger & Feldhusen, 1996). An inclusive and socially equitable method to activate students and stimulate talent development is the best possible self exercise. The best possible self (BPS) is an activity that involves a writing intervention in which participants write about themselves in the future. During the exercise, the participants imagine that everything has worked in the best possible way (Loveday et al., 2016). In order to motivate students, the instructions of the BPS can have a different focus: interpersonal approach and intrapersonal approach. The concept of intrapersonal approach focuses on performing consistently at one's personal best. Contrarily, the concept of interpersonal approach focuses on performing better than others (Nijs et al., 2014). The focus of both approaches will be applied during the BPS exercise. Student diversity has increased and as a result, students can respond differently to methods that stimulate talent development through differences in personal characteristics, among other things (Seifert & Sutton, 2019). Competitiveness is described as an individual's value, characteristics or motive (Grum & Grum, 2015). Since competitiveness is considered to be an aspect of the affective construct of the model from Nijs et al., (2014), it is expected that competitiveness can influence the effect of the interpersonal and intrapersonal approach. Therefore, competitiveness is included as a moderating variable in this research. In the theoretical framework, the concepts will be described in more detail.

The present study investigates how students can be activated and motivated to reach their maximum potential by testing the influence of (BPS) exercises, and by exploring which approach (interpersonal or intrapersonal) works best for the BPS exercises with competitiveness as moderator variable. The study assesses the effect on the different types of motivation that represent the motivation for personal development: intrinsic motivation, extrinsic motivation and study motivation. In order to investigate the central subjects, three conditions were developed:

1) Control condition (interpersonal approach without BPS exercise)
2) Interpersonal BPS condition (interpersonal approach with BPS exercise)
3) Intrapersonal BPS condition (intrapersonal approach with BPS exercise)

The control condition is considered and applied as the current and standard method of approaching students and stimulating talent development. The comparison is made with fellow students and the student is not activated to develop himself/herself. Subsequently, the conditions were classified into two groups:

1) Control versus interpersonal BPS
2) Interpersonal BPS versus intrapersonal BPS

The first group investigates the effect of a BPS exercise on motivation aiming to answer research question 1. The second group examines the effect of the different approaches within a BPS exercise with the moderating effect of competitiveness in an attempt to answer research questions 2 and 3. Based on the conditions and the subsequent groups, the following three research questions have been formulated: 1) *"To what extent does the BPS exercise in the interpersonal BPS condition, compared with the control condition, influence the motivation for personal development and study motivation of students in higher education in the Netherlands?"* 2) *"To what extent does the intrapersonal BPS condition, compared to the interpersonal BPS condition, influence the motivation for personal development of students in higher education in the Netherlands?"* and 3) *"How does the degree of competitiveness of Dutch higher education students influence motivation for personal development in the intrapersonal BPS condition compared with the interpersonal BPS condition?"* Research into potential influencing factors for stimulating talent development, such as BPS and interpersonal and intrapersonal approaches, on the motivation for personal development is considered important. As this can provide valuable input for higher education institutions in terms of practical interventions that are essential to give each individual student the opportunity to develop maximum potential.

Theoretical framework

This research focuses on various subjects that potentially contribute to the stimulation of talent development. The topics central to this research are extensively described in order to frame the structure of the research. The theoretical framework introduces aspects that are related to the research questions as described in the Introduction and starts with literature regarding talent development. Succeeding, a definition of an inclusive approach is given. This is complemented by the topic that is central in this research: the motivation for personal development of students. In addition, best possible self (BPS) is discussed in detail and how it is related to motivation. Followed by, the differences between the types of motivation and its effect. Subsequently, the differences and characteristics of the interpersonal approach and the intrapersonal approach are explained further. This chapter concludes with the moderator variable competitiveness.

Talent development

Our society defines talent as the exceptional individual, whose performance is tremendously remarkable compared to the rest of the population (Tannenbaum, 1986). According to Nijs, Gallardo-Gallardo, Dries, and Sels (2014), three literature streams can be used to define talent development: 1) the giftedness literature, 2) the vocational psychology literature, and 3) the positive psychology literature.

The giftedness literature categorizes students by the terms ‘giftedness’ and ‘talented’. Giftedness is defined as the ownership and use of exceptional natural abilities in at least one competence domain, that places the individual in the top 10% performers of the group (Gagné, 1998a, 2004). Talent is referred to as the outstanding proficiency of systematically developed abilities (competencies, knowledge and skills), in at least one field of human activity, to an extent that places the individual in the top 10% performers (Gagné, 2009). However, in practice, most educators interpret and use the terms giftedness and talent as synonyms. Professionals and scholars use two distinct views in the educational system; high potential or aptitudes on the one hand, and high achievement or excellence on the other hand (Gagné, 2009). An example to identify these concepts: an under-performing student with a high IQ score, significantly scores lower than his or her expected potential. The difference between the potential and the achievement depends on the point of view. In ideal situations, every student within higher education can consistently perform at the individuals best by engaging in activities the individual likes, finds important and want to invest energy in. The concepts that define giftedness and talent are, to a certain extent, synonymous with the concepts: aptitude versus achievement, potential versus performance, naturally developed versus systematically trained, or origin versus outcome (Gagné, 2009). In other

words, talent development can be conceived as the progressive transformation of outstanding natural abilities (gifts) into outstanding knowledge and skills (talents) in a specific field. Nijs et al., (2014) established a definition and model (Figure 1) of talent development based on the three literature streams: "*Talent refers to systematically developed innate abilities of individuals that are deployed in activities they like, find important, and in which they want to invest energy. It enables individuals to perform excellently in one or more domains of human functioning, operationalized as performing better than other individuals of the same age or experience, or as performing consistently at their personal best".* A critical feature of talent development is the students' sense of personal responsibility for the development of talent (Subotnik et al., 2009; Subotnik & Jarvin, 2005). Therefore, talent development can be very broad. However, in this research the scope is limited to the development of competencies. It is crucial that students are willing to make an effort and create a mentality that sees the competencies as malleable (Dweck, 2008). Educational institutions need to reinforce the relevance of effort and practice in talent development, as well as facilitating students to envision their future regarding their study and future career (Olszewski-Kubilius et al., 2015).

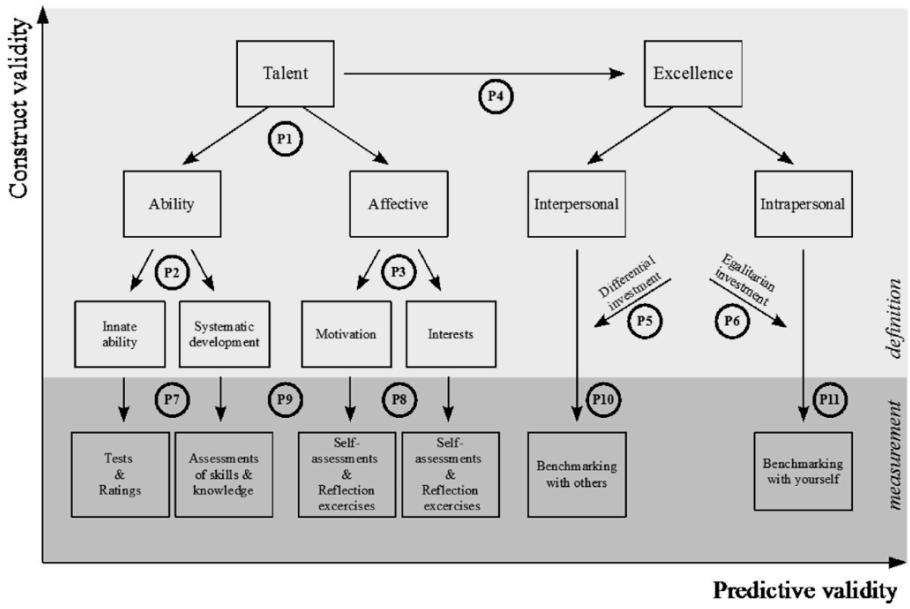

Figure 1. Conceptual model of the definition, operationalization and measurement of talent (Nijs et al., 2014, p. 3)

The definition of Nijs et al., (2014) will be used in this study. Nijs et al., (2014) defined talent based on abilities and affective components. In line with this definition, it is assumed that personality, motivation, interests, innate abilities and systematic development the crucial preconditions to excellent performance are.

Motivation for personal development

In order for talent development in education to flourish, students must be motivated to develop themselves. Noncognitive characteristics such as interpersonal abilities, motivation, self-concept, and persistence to overcome obstacles encountered during talent development are necessary for students (Tannenbaum, 1986, 2003). Several other researchers depict that motivation is key in achieving excellence by exerting a positive influence on the willingness, capacity and preference to engage in deliberate practice (Bailey & Morley, 2006; Ericsson et al., 1993; Feldhusen, 1994). Motivation is therefore considered to be an important feature of the noncognitive characteristics that is crucial to stimulate personal development of students. Schools are a primary and socializing influence on people's lives and, ultimately, on society (Deci et al., 1991). The ideal school system succeeds in stimulating a sincere enthusiasm and motivation for learning, performance and personal development (Deci et al., 1991). Motivation concerns the reason why people think and behave as they do. Being motivated means that the individual is driven to perform something. An individual who feels no impulse or inspiration to do something is labelled as unmotivated, while an individual who is energetic or activated to do something is labelled as motivated (Ryan & Deci, 2000). Most motivation theories consider motivation to be a unique phenomenon, ranging from very little motivation to a lot of motivation. At the same time, self-determination theory (SDT) indicates that motivation is hardly a single phenomenon, people have different types and sizes of motivation. Motivation thus varies in the level (i.e., how much motivation the individual has) and the orientation (i.e., what type of motivation) that refers to the underlying reasons and objectives to take action (Ryan & Deci, 2000). The motivation for personal development in this study measures three main types of motivation: intrinsic motivation (doing something because it is inherently interesting or fun), extrinsic motivation (doing something because it leads to separable results), and amotivation (little or no reason to do something in order to achieve a goal). Study motivation (doing something because it leads to a study goal) is a separate construct in this study. Research by Deci and Ryan (2000) has shown that the quality of experience and performance can vary widely when a person behaves for intrinsic versus extrinsic reasons. For example, a student may be highly motivated for homework out of curiosity and interest (intrinsic), or for the approval of the parent or teacher (extrinsic). As mentioned before, for talent development to be successful, students need to be motivated to develop themselves. In other words, they need to show motivation for personal development. In the next section, the concept of intrinsic motivation will be discussed, followed by the concept of extrinsic motivation, study motivation, and amotivation.

Intrinsic motivation

The most essential distinction is between intrinsic motivation and extrinsic motivation (Ryan & Deci, 2000). According to Legault (2016), intrinsic motivation refers to the involvement in behaviour that is naturally satisfying or pleasurable. Intrinsic motivation is not instrumental, in other words: intrinsically motivated action does not depend on any outcome that can be separated from the behaviour itself. For example, a child who can play outside, run, jump, is doing so because it is fun and intrinsically satisfying for the child. People are by nature active, curious and playful beings, and are willing to learn and explore. Intrinsic motivation is considered to be a natural element of the human being, which is why people will actively strive to perform activities they find interesting or enjoyable. According to Ryan and Deci (2000), intrinsic motivation is an important phenomenon for education - a natural source of learning and performance that can be stimulated or undermined by parents and teachers. It is important to focus on the factors that stimulate rather than undermine intrinsic motivation, since intrinsic motivation results in high-quality learning activity and creativity (Ryan & Stiller, 1991). Multiple studies have shown that positive feedback on performance improves intrinsic motivation (e.g. (Deci, 1971; Harackiewicz, 1979) while negative feedback on performance reduces it (Deci & Cascio, 1972). Positive feedback (a verbal compliment) tends to stimulate the perception of personal effectiveness and strengthen intrinsic motivation.

Extrinsic motivation

According to Legault (2016), extrinsic motivation conflicts with intrinsic motivation, and refers to the behaviour that is fundamentally dependent on achieving a result that can be separated from the action itself. In other words, extrinsic motivation is instrumental in nature. The activity is carried out in order to achieve a different result (e.g., performing better than others). Extrinsic motivation is a multidimensional concept and varies from completely external (e.g. doing the dishes for a fee) to completely internal (e.g. recycling because one wants to see oneself as an environmentally conscious citizen). Extrinsic motivators are useful to promote action for non-intrinsic actions, despite intrinsic motivation being considered the most optimal form of motivation due to its various benefits. In other words, encouraging people to display (socially desirable) behaviour is at odds with maintaining and promoting individual autonomy and intrinsic motivation. According to Kohn (1999), extrinsic motivators have a substantial expense for learning and developing autonomy and self-supporting behaviour. After all, external stimuli and rewards reduce the chance of people developing out of genuine interest and self-generated motivation. A meta-analysis confirmed that extrinsic rewards undermine intrinsic motivation for an activity (Deci et al., 1999). Since extrinsic rewards tend to shift the individual's reasons for

performing the behaviour from internal (e.g.; interest, pleasure) to external (e.g.: receiving reward), thereby changing the source of motivation and the locus of causality for the activity.

Overall, the social environment determines through controlling behavioural strategies, external constraints, enhancements, and punishments whether the motivation will be less intrinsic and more extrinsically oriented. Proven examples that reduce intrinsic motivation and increase extrinsic motivation are threats in the form of punishment (Deci & Cascio, 1972), deadlines (Amabile et al., 1976), and monitoring (Plant & Ryan, 1985). On the contrary, feelings of choice, acknowledgement of feelings, opportunities for self-direction, and positive feedback were found to increase intrinsic motivation as a result of expanded feeling of autonomy (Deci & Ryan, 1985). Motivation can occur when a student wants to learn a new set of skills because the student understands the value, or because learning these skills can yield a good grade. The degree of motivation does not necessarily vary, but the nature and focus of the motivation shown differs (Ryan & Deci, 2000). Extrinsic rewards and intrinsic rewards are motivating factors to stimulate talent development. However, a balance is crucial to make sure students are not guided by parental expectation or external affirmation (Csikszentmihalyi et al., 1997). Table 1 presents to what extent intrinsic and extrinsic motivation can be promoted in a practical setting.

Table 1

Definitions and differences for intrinsic and extrinsic motivation (Locke & Schattke, 2018)

Variable	**Intrinsic motivation**	**Extrinsic motivation**
Short definition	Liking or wanting an activity for its own sake	Doing something to get some future value
Core aspect	Enjoyment	Outcomes
Related goals	Finding pleasure in the experience	Attaining valued outcomes
Lotus of incentive	Inside the activity, in the pursuit of action	Outside the activity, in the consequences
Affective reaction	Happiness during the pursuit of action	Satisfaction with outcome
Example: learning a foreign language	Enjoying learning: having fun at expressing oneself differently	Learning for a new job: relating better to others, learning for a study program

Study motivation

Motivation cause individuals to strive towards goals, which can only be reached by acting accordingly (Atkinson & Birch, 1974). The motivation to study in higher education drives students to attend the daily lectures to prepare for an exam or an assignment (Dibbelt & Kuhl, 1994; Wright & Brehm, 1989). By participating in lectures, students get closer to the goal of completing their studies. Study motivation is not the only motive for student behaviour. Among other motives that require a student's

attention, social motives also play an important role. In essence, the life of a student is a compromise between studying and social commitment (Atkinson & Birch, 1974). The perceived attractiveness of a certain alternative may change depending on the context. For example, the study motivation may decrease at some point when a friend is around or may increase as a deadline approaches (Ainslie, 1992). The study motivation is considered to be a general mechanism and is used in this study in addition to personal development motivation, intrinsic motivation and extrinsic motivation.

Amotivation

Amotivation is a state of motivation in which an individual possesses little or no reason (motives) to invest in learning or achieving a goal, and literally stands for "without motivation" (Legault et al., 2006). Previous research into the construct amotivation conceptualized it as a one-dimensional phenomenon that reflects the absence of any intentions towards action (Pelletier et al., 2001; Vallerand et al., 1997). A student has no reason to act – not for intrinsic motivated reasons nor extrinsic motivated reasons. The individual acts without reasons or intentions. For example, “I go to school, but I do not know why”. Or the individual decides not to take any action at all. For example, "I do not see why I have to take part in the lesson" (Pelletier et al., 1999). Measuring amotivation offers a more comprehensive understanding of personal development motivation as items are reversed compared to intrinsic and extrinsic motivation.

In order to successfully stimulate talent development among individual students, motivation for personal development is considered to be essential. The motivation for personal development in this study is composed of the three main types of motivation: intrinsic motivation, extrinsic motivation, amotivation. Study motivation is used as a separate construct in this study.

Best possible selves

Motivation is essential to stimulate talent development in education (Ministerie van Onderwijs, Cultuur en Wetenschap, 2019). One way to motivate students is to focus on the future with best possible selves. Best possible selves (also called possible selves and future selves) are cognitive representations and ideas of who individuals believe they might become, who they would like to become, and who they are afraid of becoming; the cognitive components of their hopes, fears, goals and threats (Markus & Nurius, 1986). Best possible selves are important, due to their function as incentives for future behaviour and serve as the cognitive bridge between the individual in the present and the future. Best possible selves connect the motives, goals, and behaviour of the individual to achieve the intended goals. As a result, the motivation to realize that vision increases (Loveday et al., 2016). Connecting talent development to a purpose in the future makes personal development relevant to students and encourages students to actively engage.

The best possible self (BPS) exercise is a writing intervention in which participants write about themselves in the future, with the perception that everything has been worked out as well as possible (Loveday et al., 2016). The BPS exercise is developed by Laura King (2001). The instructions used for the original intervention are: *"Think about your life in the future. Imagine that everything went as well as possible. You have worked hard and managed to achieve all your life goals. Think of this as the realization of all your life dreams. Now write about what you have imagined"* (King, 2001, p. 801). Best possible selves provide a basis for understanding the connection between the self-concept and motivation (Markus & Nurius, 1986). The goal setting theory indicates that the divergence between the current self and desired future self stimulate according behaviour (Locke, 1991). Individuals continuously compare their current self to their ideal self, and hence strive to minimize the discrepancies between both images of their selves (Carver & Scheier, 1990, 2001a, 2012; Higgins, 1987, 1989). Best possible selves give the individual possibilities to focus on specific, task-oriented thoughts and feelings and to stimulate action (Inglehart et al., 1989). The ongoing pursuit of reaching a desired future image of an individual is the foundation of the individual's personal development. Best possible selves can be seen as abstract goals at a higher level that stimulates motivation (Markus & Ruvolo, 1989).

The findings of Pham and Taylor (1999) suggest that stimulating a desired behaviour or situation influences the actual performance, and consequently psychological well-being. The behaviour and social skills are cognitively available to the person in question when the possible self has already been imagined in the actual situation (Carroll, 1978). The same result was found by Anderson (1983), and concluded that imagining the desired behaviour is necessary in order to achieve the possible self that ultimately leads to the actual behaviour. The positive effect on well-being is explained by the expectation value model of motivation (Carver & Scheier, 2001b). The model shows that experiencing steps towards an important goal increases positive emotions and promotes psychological well-being. Both physical steps towards the goal have a positive effect on well-being, although mental steps also give the desired effect (Carver & Scheier, 2001b). This also gives the individual the confidence that the goal is achievable for itself. As reported by Markus and Nurius (1986), the possible self has multiple types and vary in their degree of affective, cognitive and behavioural effects. The most important types are the feared self and the ideal self. The feared self is the bad version of a person and evoke fear when imagined as a possibility. The ideal self is an imaginary representation of what a person wishes to become. By imagining the possible self, people experience a positive affective state that is connected to the actual being of that imagined self. Imagining the feared possible self, involves matching emotions for danger. Both affective states provide guidance for the behaviour that embraces or avoids these images. This research aims to motivate students by stimulating ideal possible selves and avoiding feared possible selves. According to Markus and Nurius (1986) the best possible selves are the connection between the self-image and the motivation for changes

in the desired direction. In order to gain a good understanding of how a possible self can influence well-being, the individual needs to understand the meaning of "imagining a possible self". Imagining the possible self is described by Pham and Taylor (1999) as a mental simulation; a representation that imitates hypothetical or real events in an individual's brain.

Imagining the future is of great value since it has two crucial functions: motivation and evaluation (Loveday et al., 2016). Hence, best possible selves can play an important role in the stimulation of talent development by looking at the effect on motivation. Best possible selves can be performed in a scenario, a kind of visual experience that can be very affective (Layous et al., 2013). Scenarios of best possible selves can remain fairly broad and general, by instructing the student to imagine themselves in the future (without context). Adding a context (e.g., after graduation, ready to join the labour market) makes the best possible selves more concrete, allowing the student to more effectively connect a goal to the future self (Layous et al., 2013).

In order to answer research question 1, it is expected that motivation for personal development and study motivation of students will be higher for the interpersonal BPS than the control without BPS. This leads to the first hypothesis, H1: Motivation for personal development and study motivation of students will be higher for the interpersonal BPS than the control without BPS. In addition to best possible selves, there are other potential factors that influence the motivation for talent development. According to the model of Nijs et al., (2014) there are two forms of excellence: intrapersonal and interpersonal. Both forms of excellence can be applied to BPS and differ in terms of approach that is further explained in the section below. The first form of excellence discussed is the interpersonal approach followed by the intrapersonal approach.

Interpersonal approach

The main belief in the giftedness literature is that not all individuals can be talented, due to the assumption that talent depends on a genetic basis (Gagné, 1998, 1998). According to the majority in the giftedness literature, the motivation to engage in lifelong deliberate practice can differ between individuals (Ericsson et al., 1993). Based on this statement, giftedness researchers suggest that high-level performances are not feasible for everyone (Milgram & Hong, 1999). Therefore, the focus of the interpersonal approach is identifying the individuals who perform significantly better than other individuals of the same age or knowledge, as a result of presence of special talents (Brown, 2009; Heller & Hany, 2004; Mayer, 2005; Sternberg & Davidson, 2005).

In order to determine which individuals are outperforming others, measures with an underlying focus on interpersonal excellence are generally used (Nijs et al., 2014). Cut-off points are used to

determine which individuals are talented, either with a relative norm (percentage) or an absolute norm (fixed score) (Bélanger & Gagné, 2006; Jellinek et al., 2009). Individuals that perform within this 'range' are considered to possess rare abilities that facilitate performance that is not feasible for the majority of the population. Consequently, cut-off points are implemented to determine which students are high performers and therefore better than other students (Becker et al., 2009). Relative norms can also be used in terms of average scores among fellow students. Hence, a student's score is compared to the average score of their peers. In this way the individual student is benchmarked against the overall group of students. The concept of interpersonal excellence focusses on performing better than others, which results in delineate attention for high performers. This approach is still dominant in the talent development literature and practice of higher education (i.e. honours programs, excellence programs). However, Renzulli (2005) encourages a more 'inclusive' conception of talent, since everyone can engage in societal improvement and reach their maximum potential.

Intrapersonal approach

The intrapersonal approach to students is a more inclusive approach to talent development. The main idea of the intrapersonal approach is that individual students must be provided with opportunities, resources, and encouragement to achieve his or her full potential by maximizing the involvement and motivation of the student (Nijs et al., 2014). The intrapersonal approach to talent is uncommon in the field of giftedness. However, it comes close to the approaches often used in positive psychology and vocational psychology (Nijs et al., 2014). Authors within the positive psychology state that innate abilities determine solely which set of strengths can be developed (Buckingham & Clifton, 2001). Determine the strengths of the individual in order to assign the individual in activities they feel passionate about. The concept "being passionate" in the intrapersonal approach is described as "the aptitude regarding an activity the individual likes, finds important and wants to invest energy in" (Vallerand et al., 2003). As a result, the individual is capable of consistently performing at its maximum potential (Csikszentmihalyi & Seligman, 2014). Supporters of this approach argue that the utilization of every individuals' strength is essential. Consequently, positive physical and psychological health outcomes can be generated, as well as the gap that can be closed between the knowledge economy and the growing demand for talented individuals (Wood et al., 2011). Positive psychologists advocate that measures of talent should be applied with the aim to gain insight into the talents every individual possesses, and in turn, create an environment in which the individual can perform at their personal best (Buckingham & Clifton, 2001). Intrapersonal measurements are designed to detect the talent of the individual to benchmark against their own (perception of) performance that leads to intrapersonal excellence (Taylor & Edge, 1997). An important element of talent development is the attitude towards challenging and competing situations, and the

ability to deal with setbacks and failures. Many gifted students are used to getting high grades without much effort and are therefore the best performers in their class. However, if gifted students experience rejection in their self-concept because other students are performing better since they move to higher levels of the school, they may encounter rejection in the self-concept with the result that they decline educational challenges in the future and lose motivation (Marsh & Hau, 2003). The intrapersonal approach provides room for coping with perceived setbacks and failures, since the student is benchmarking against his or her own performance instead of comparing with other students. In the current research, the effect of interpersonal approach versus intrapersonal approach regarding motivation for personal development will be explored. Both approaches to personal development (interpersonal and intrapersonal) will most likely have a different outcome concerning intrinsic as well as extrinsic motivation. On the basis of the literature, the interpersonal approach is expected to be more associated with extrinsic motivation. At the same time, it is expected that the intrapersonal approach will be more associated with intrinsic motivation.

In order to answer research question 2, it is expected that students who receive the intrapersonal BPS, are more motivated to develop themselves on a personal level than students who receive interpersonal BPS. As a means to answer research question 2, the following hypotheses have been formulated. H2: Motivation for personal development and study motivation of students will be higher for the intrapersonal BPS than for the intrapersonal BPS. H3: Intrinsic motivation of students will be higher for the intrapersonal BPS than for the intrapersonal BPS. H4: Extrinsic motivation of students will be higher for the intrapersonal BPS than for the intrapersonal BPS.

Competitiveness

Students may react differently to stimulations for talent development based on differences in personality characteristics (Seifert & Sutton, 2019). Several studies described that affective factors are vital for excellent performance (Bailey & Morley, 2006; Gagné, 2010; Robinson & Clinkenbeard, 1998). The giftedness literature, positive psychology literature and the professional psychology literature give attention to the affective component in the individual student in order to stimulate talent. Therefore, Nijs et al., (2014) included the affective component in their model for talent development. The factors ultimately responsible for the performance are the unique personal and behavioral dispositions that the individual brings to the actual performance (Gleeson, 1986). The affective component takes into account non-intellectual characteristics of the individual and how this can influence different performance.

Competitiveness as an affective component can determine the impact of best possible selves and approaches on motivation. In accordance with Grum and Grum (2015), competitiveness is described as a

mental system that can be interpreted in different ways: as a person's value, characteristic or motive. The concept of competitiveness, despite its high degree of relevance, is ambiguous. Franken and Brown (1995) have described two dimensions of competitiveness: 1) the desire to perform better than anyone else, and 2) the desire to improve personal performance. The first dimension is determined by interpersonal competitiveness, as evidenced by the desire to beat others. The second dimension is characterized by the pursuit of the objectives set, not only by outperforming others, but also by performing to the best of one's ability (Griffin-Pierson, 1990). An individual uses experience from competitive situations for personal development. References to relevant elements of competitiveness are the Hypercompetitive Attitude (HCA) by Ryckman et al., (1990) and Personal Development Competition Attitude (PDCA) by Ryckman et al., (1996). The HCA refers to a strong need of the individual to compete and win (avoiding losses). This is used as a means to maintain or strengthen self-esteem, with a personal focus on manipulation, aggression, exploitation and denigration of others. HCA's goal is not only to do everything right, but also to radiate superiority at the expense of the opponent. In addition, in the relational spheres, HCA is associated with anger and hostility towards others (Ryckman et al., 1990). The PDCA refers to an attitude in which the result (i.e. winning) is not central, but the pleasure and control of the task. PDCA is concerned with self-discovery, self-improvement and task control instead of seeking comparison with others. Other people are not seen as potential competitors, but as possible help that can assist the individual progress for self-fulfilment and learning (Ryckman et al., 1996).

The degree of competitiveness and the approach of a student can significantly affect a student's motivation for personal development. A student high in competitiveness will most likely become more motivated from the interpersonal BPS condition, in which personal results will be compared with other students. Since avoiding losses is central to this matter (Ryckman et al., 1990). As a result, the interpersonal BPS condition will have a greater influence on the extrinsic motivation of a competitive student. While on the other hand, a student low in competitiveness is likely to become more motivated from the intrapersonal BPS condition, where it is only about personal results and getting the best out of themselves. Since pleasure and control are central to this matter (Ryckman et al., 1996). As a result, the intrapersonal BPS condition will have more influence on intrinsic motivation when a student is less competitive. Students with a competitive attitude are expected to be more motivated by the interpersonal approach because they compare themselves to others and find an extrinsic motivator.

In order to answer research question 3, the following hypotheses have been constructed. H5: The effect for the intrapersonal BPS on motivation for personal development will be stronger for students low in competitiveness. H6: The influence of intrapersonal BPS on intrinsic motivation will be stronger for students low in competitiveness. H7: The influence of interpersonal BPS on extrinsic motivation will be stronger for students high in competitiveness.

In conclusion, the stimulation of personal development amongst students is important to provide insight into their personal competencies and to meet the needs of the knowledge society. The present study investigated how students can be activated and motivated to reach their maximum potential by testing the influence of BPS exercises, and by exploring which approach (interpersonal or intrapersonal) works best for the BPS intervention, with competitiveness as moderator variable. The research aim is presented in the conceptual model below (Figure 2).

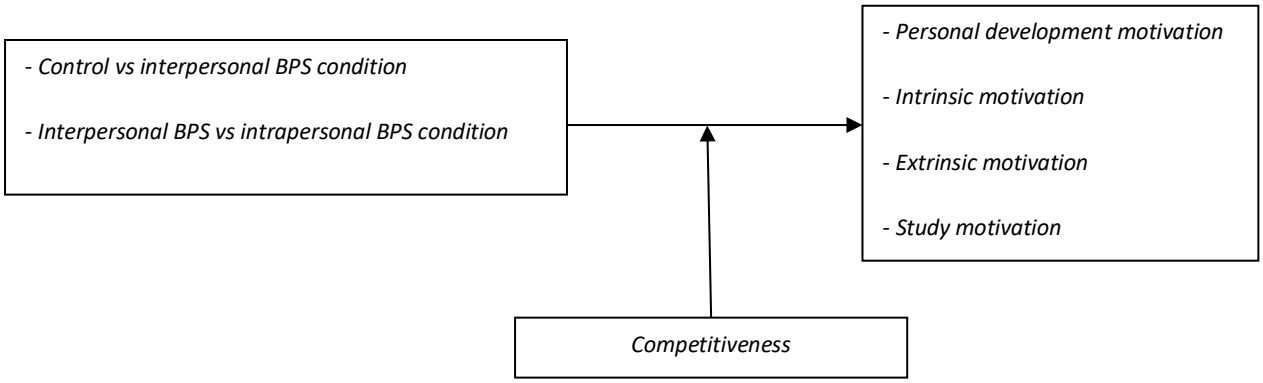

Figure 2. Conceptual model to explain the concepts and the moderating effect in this study

Methodology

The methodology to study the effect of the three conditions will be described in this chapter. As presented in Figure 6, the three different conditions ultimately result in two groups: 1) control condition versus interpersonal BPS condition, and 2) interpersonal BPS condition versus intrapersonal BPS condition. In the first group, the effect of best possible selves is investigated since the approach in both the control condition and the interpersonal BPS condition are based on the interpersonal approach of Nijs et al., (2014). The conditions differ from each other by the fact that the control condition does not receive a best possible self (BPS) exercise and the interpersonal BPS condition does receive a BPS exercise (see Appendix, Table 11). In the second group, the effect of the interpersonal approach versus the intrapersonal approach is analysed, since both groups have a BPS exercise, but the approach is different (either interpersonal or intrapersonal). This section starts with a description of the students that participated in this study, followed by the procedure of the research, hereafter the instruments that were used as measurement, and concludes with the methods used to analyse the gathered data.

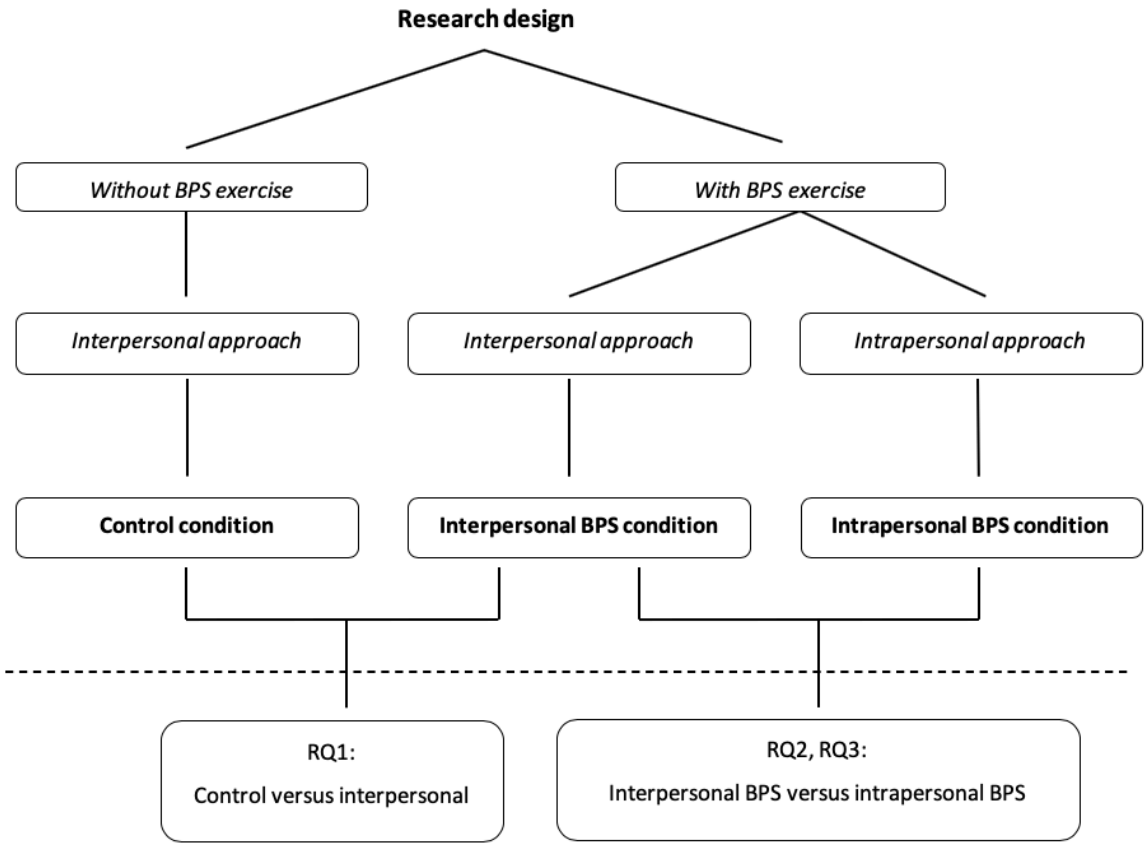

Figure 6. Research design representing the three conditions resulting in two groups for the analysis

Participants

The intended research population consisted of students of 18 years or older who are studying at higher education (University of Applied Sciences and University students) in the Netherlands. The sampling method used in this study is a non-random sampling method. This method of sampling is considerably more effective in terms of cost and time. A total of 217 students participated in the study, of which 172 via Sona system (a test-subject system) and 45 via personal contacts of the researcher. The sample was reduced to 182 by excluding 35 respondents who did not complete the survey. The reason for this removal was that these 35 respondents did not complete certain elements of the survey. The respondents either did not fill in anything at all or did not complete the exercise properly. The absence of the correct completion of the BPS exercise made it impossible to carry out the analyses correctly. Participants were between 16 and 40-years-old (M = 20.83, SD = 2.77) (see Appendix, Table 13) of which 29% is male and 71% is female (see Appendix, Table 14). As presented in Table 14 in Appendix, most participants study at Universities (wo) (93%) and the other participants (7%) study at University of Applied Sciences (hbo). Of the bachelor students, 68% were in the first year, 6% were in the second year, 13% were in the third year and 4% were in the fourth year of the bachelor. For the masters, 3% was in the first year and 1% was in the second year of the master (1 = hbo + wo bachelor year one, 2 = hbo + wo bachelor year two, 3 = hbo + wo bachelor year three, 4 = hbo bachelor year four, 5 = hbo + wo master year one, 6 = hbo + wo master year two, 7 = wo master year three). Of the students, 91% were studying social studies, 7% study STEM studies and the remaining 2% was unknown. Of the participants, 61 were assigned to the intrapersonal BPS condition, 59 were assigned to the interpersonal BPS condition, and 62 were assigned to the control condition.

Procedure

Participants were approached in two ways: 1) BMS (Behavioural, Management and Social sciences) students of the University of Twente were given the opportunity to participate in the research via Sona (a test subject system), and linked the participants to the start of the survey, and 2) the researcher actively asked students at the UT Campus and students willing to participate were given a link to the survey. Participants via Sona received credits for their participation (0.5 EC). The participants who were approached directly by the researcher had the chance to win one of the three vouchers worth € 25.00. This research was approved by the Ethics Committee of the University of Twente, faculty Behavioural, Management and Social sciences (BMS).

The experiment conducted was an online questionnaire, in which the participant was guided through the parts of the experiment. The participants received a link to the online questionnaire in

Qualtrics. The questionnaire was available in Dutch and English and started with the informed consent, in which it was emphasized that the data resulting from the survey would be used confidentially, and that the participant could stop the survey at any time, without any explanation. Each participant conducted one session, which took about 30 minutes. After completion of the research, the participant received more information about the purpose of the study and was given the opportunity to withdraw from the study.

The questionnaire started with demographic questions about age, gender, school, study and year of study. The participant must study at a higher education institution. If not, the participant was redirected to the page that explained that the participant could not participate. Next, the participant filled in the competency test. After completing the competency test, the participant was redirected to the questionnaire. Back in the questionnaire, the student answered the questions of the competitive attitude scale (CAS). While completing the CAS, the results of the competency test were being calculated for the corresponding results. After filling in the CAS, the participant received an e-mail with the graph (Figure 3, 4, and 5) that included their personal results, and in text the instructions on how to proceed. The participant received the instruction to check the personal scores of the competency test. The presentation of their personal scores in the graph and the instructions given in the email depended on the condition to which the participant was assigned: intrapersonal BPS, interpersonal BPS or control. The conditions will be extensively described in the section 'Measurement'. In all three conditions, the participants were asked to select two competencies they would like to develop. Only the interpersonal BPS and intrapersonal BPS conditions used the selected competencies in the BPS exercise, since the control condition did not receive the BPS exercise. Afterwards, the participant was redirected to Qualtrics to answer questions regarding their motivation. To check whether the manipulation has worked correctly, participants had to answer the manipulation question. Finally, the participants could indicate whether they wished to A) receive more information about the research, and B) still receive the BPS exercise if they did not receive it. In addition, the participants who were assigned to the control condition could indicate that they still wanted to receive the BPS exercise. The research ended with the debriefing about the research.

Measurement

The experiment consisted of different components, which will be described in this measurement section. In order to measure the reliability of the scales used in this research, Cronbach's Alpha was measured for competitiveness and four types of motivation in SPSS. This is the most common measure of testing the reliability of a scale (Field, 2009). Cronbach's Alpha measures the internal consistency between items, to decide whether the different items in the questionnaire consistently reflect the measuring

construct (Field, 2009). The measurement section displays in chronological order how the experiment was conducted.

Competency test

The competency test is based on the Career Compass. The Career Compass is a tool developed by the researchers of the research project 'Mind the Gap!' (Veelen et al., 2018). The tool measures, on the basis of scientifically founded questions, the competencies, personality, values and goals of Science, Technology, Engineering and Mathematics (STEM) students. Subsequently, the tool is able to convert the constructs to 5 different profiles. The current study has been conducted in Qualtrics and Google Forms, the Career Compass as a tool is not incorporated in this research. Only the questions related to the competencies were used. Since the original questions are based on the formal accreditation program of STEM education, the items measuring the construct 'design' have been removed. In addition, the 'interpersonal skills' have been added as a construct to fit a more generic student population. The questions have been validated in a study by Veelen et al., (2018) and concern 29 items that measured the following ten competencies: Management & Commerce, Research, Interpersonal Skills, Analytical, Self-organization, International Orientation, Teaching, Flexibility, Collaboration, and Competing (see Appendix, Table 9).

Competitiveness questions

In order to measure competitiveness, the competitive attitude scale (CAS) by Menesini et al., (2018) was used with ten items on a 5-point Likert Scale from 'Strongly disagree' to 'Strongly agree' (see Appendix, Table 10). For example: *"I find myself competitive, even in situations that don't call for competition".* Of these 10 items, 3 items were reversed. The degree of competitiveness has a medium reliability on all 10 items with Cronbach's $\alpha = .647$ (see Appendix, Table 16).

Control condition, interpersonal BPS condition and intrapersonal BPS condition

The control condition, intrapersonal BPS condition and interpersonal BPS condition differ in 3 ways: 1) the instructions to select two competencies they want to further develop and the instructions in the BPS exercise, 2) the way the results are displayed in the graph, and 3) the incorporation in the BPS exercise.

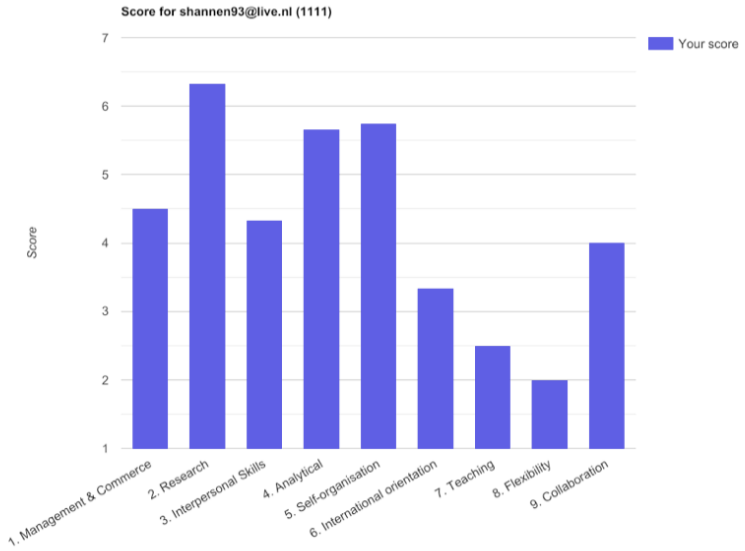

Figure 3: Graph presenting the personal scores of the competencies in the intrapersonal BPS condition

The intrapersonal BPS condition only showed the personal results of the competency test in the graph (Figure 3). After reviewing the results, they were instructed to choose two competencies they find most interesting to further develop during their study, so they can bring out the best in themselves (intrapersonal approach). Participants were then directed to the motivation questions.

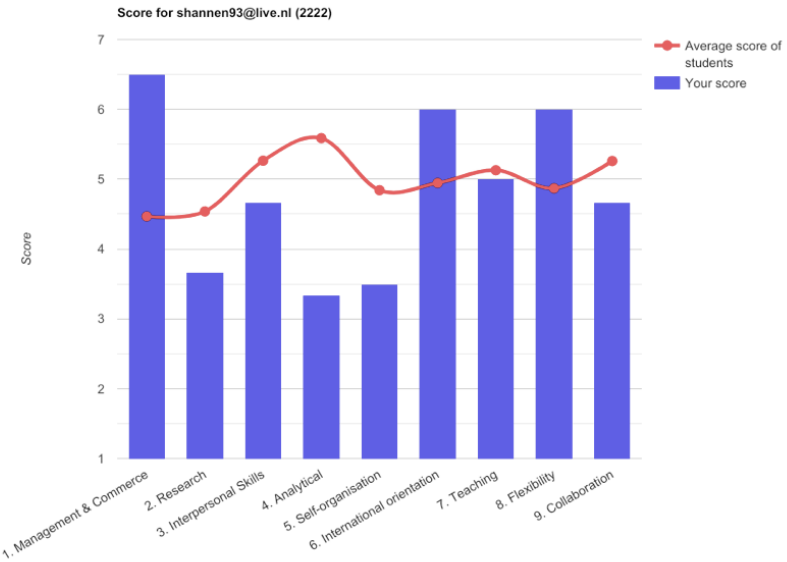

Figure 4: Graph presenting the personal scores of the competencies in the interpersonal BPS condition

The interpersonal BPS condition showed the personal results of the competency test in the graph, with an average score of fellow students (Figure 4). After reviewing the results, they were instructed to choose two competencies on which they score relatively high to further develop during their study, so they can distinguish themselves from their fellow students (interpersonal approach). Participants were then directed to the motivation questions.

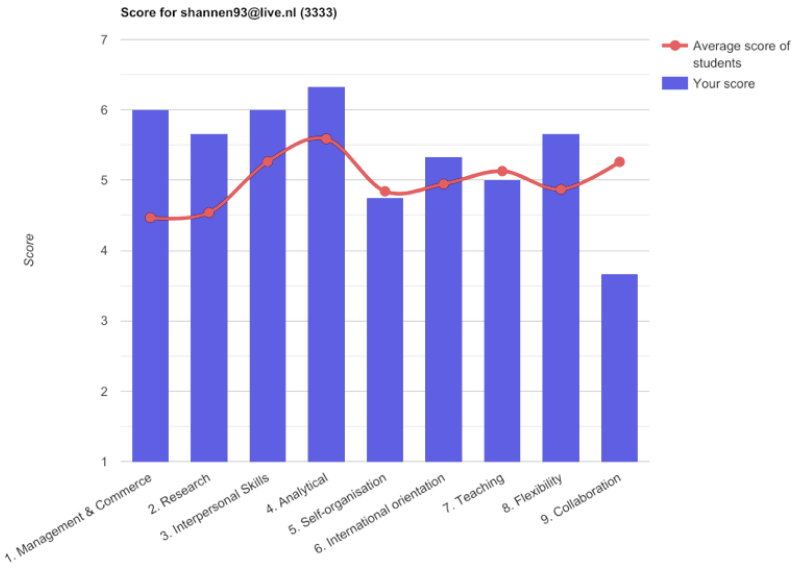

Figure 5: Graph presenting the personal scores of the competencies in the control condition

The control condition showed the personal results of the competency test in the graph, with an average score of fellow students (Figure 5). After reviewing the results, they were instructed to choose two competencies on which they score relatively high to further develop during their study (interpersonal approach). The control condition did not receive the BPS exercise and were then directed to the motivation questions.

As presented in Table 2, the control, interpersonal BPS and intrapersonal BPS condition also differ in terms of instructions they received during the experiment. The intrapersonal BPS condition included instructions focused on competencies that they find most interesting to further develop to bring out the best in themselves, when they have fully developed the competencies, and getting the most out of the competencies that is feasible for them. While the interpersonal BPS condition focused on competencies on which they score relatively high to further develop to distinguish themselves from their fellow students, when they fully mastered the competencies, and perform better than other graduates. Lastly, the control condition focused on competencies on which they score relatively high to further develop.

Table 2

Difference between instructions for interpersonal BPS condition and intrapersonal BPS condition

	Control	**Interpersonal BPS**	**Intrapersonal BPS**
Choose competencies	On which you score relatively high to further develop during your studies.	On which you score relatively high to further develop during your studies to that you can distinguish yourself from your fellow students.	That you find most interesting to further develop during your studies so that you can bring out the best in yourself.
What your future life will look like	-	When you have fully mastered these competencies.	When you have fully developed these competencies.
The image they are visualizing	-	You fully master the chosen competencies and perform better than other graduates.	You will get the most out of the competencies that are feasible for you.

Best possible self exercise

As described above, the participants in the intrapersonal BPS and interpersonal BPS condition received a BPS exercise, after selecting two competencies. The participant was asked to imagine what future life will be like when they have fully developed or mastered the two chosen competenciess. The instructions stated that they should imagine themselves when they have graduated successfully and that everything went as smoothly as possible. They are at the beginning of their careers and during their studies they have worked hard on the chosen competencies. They had to hold on to the image they visualized and describe it in 50 words in a text box located underneath. After the participants described what their future life would look like, they had to write down a goal that would help them to fully develop the first selected competency at the end of their studies. Subsequently, they did the same for the second selected competency.

Motivation questions

Motivation was measured on four different levels with 14 items on a 5-Point Likert Scale from 'Strongly disagree' to 'Strongly agree' (see Appendix, Table 12). The four levels are intrinsic motivation, extrinsic motivation, amotivation, and study motivation. All items, except study motivation, combined form motivation for personal development (amotivation reversed). Intrinsic motivation was assessed by means of items of the Academic Motivation Scale (Vallerand et al., 1992) of which 2 items were aimed at intrinsic motivation and 2 items were aimed at intrinsic motivation towards accomplishment. Extrinsic motivation was measured with 2 items of the Academic Motivation Scale (Vallerand et al., 1992) that were

aimed at identifying extrinsic motivation and 2 items of Motivated Strategies for Learning Questionnaire (Pintrich & De Groot, 1990) that were aimed at external regulation. Amotivation was measured through 2 items of the Academic Motivation Scale (Vallerand et al., 1992). Both items were negative and reversed during the analyses. Study motivation was assessed using 3 items of Student Adjustment to College Questionnaire (Credé & Niehorster, 2012) to find out the motivation for the study.

In the current research, the Cronbach's Alpha for intrinsic motivation has a medium reliability of Cronbach's $\alpha = .68$ (see Appendix, Table 17). Also, study motivation has a medium reliability of Cronbach's $\alpha = .69$ (see Appendix, Table 19). Followed by a medium reliability for personal development motivation construct with Cronbach's $\alpha = .65$ (see Appendix, Table 20). However, extrinsic motivation has a poor reliability of Cronbach's $\alpha = .44$ (see Appendix, Table 18). A Pearson correlation test was done on the extrinsic motivation items to check the low Cronbach's Alpha (see Appendix, Table 21). A positive correlation has been found between *Extrinsic motivation 6* and *Extrinsic motivation 7* with $r = .296$, $p < .001$. Besides, a positive correlation has been found between *Extrinsic motivation 7* and *Extrinsic motivation 8* with $r = .189$, p .010. Lastly, a positive correlation has been found between *Extrinsic motivation 8* and *Extrinsic motivation 9* with $r = .368$, $p < .001$. According to the Cronbach's Alpha, the reliability of extrinsic motivation is very low. The Pearson correlation test supports this with 3 positive correlations between the items. There is a correlation, but not strong enough. As shown in Table 18 in Appendix, Cronbach's Alpha does not increase when one of the items is removed. In order to perform the analyses, extrinsic motivation with the four items and the low Cronbach's Alpha is incorporated in this research.

A principal axis factoring was conducted with oblique rotation for the four types of motivation in order to establish the validity of the questionnaires. The factor analysis resulted in four factors with Eigenvalues > 1 (see Appendix, Table 22). The four factors accounted for approximately 54% of the variance in the constructs. As presented in Table 22 in Appendix, the general statement for motivation (Motivation 1) tends towards intrinsic motivation. Consequently, the first statement is added to the intrinsic motivation construct. Despite the findings of the Pearson correlation and the factor analysis on the four types of motivation, the research continues with the following constructs and the equivalent items: intrinsic motivation, extrinsic motivation, study motivation, and personal development motivation.

Data analysis

Prior to the analyses, the collected data were prepared by checking for missing data and outliers. Before testing the hypotheses, a manipulation check was done in order to test whether the manipulation had worked. Per condition, it was checked whether the participants interpreted the experiment correctly. Subsequently, the data were analysed using statistical software in SPSS. Since the central research questions of this study concern the way the (partly) continuous independent variables influence the dependent variables, multiple regression analysis has been performed on the data in SPSS. The results were considered significant when $\alpha < .05$.

Manipulation question

To determine whether the best possible selves and interpersonal BPS versus intrapersonal BPS were interpreted as it should, a crosstab was performed. As presented in Table 23 in Appendix, between 65% and 69% indicate the correct answer. In the intrapersonal BPS condition 12% selected interpersonal BPS condition as the answer and 21% selected control condition as the answer. 67% selected the correct answer: intrapersonal BPS. In the interpersonal BPS condition, 4% selected the intrapersonal BPS condition and 28% selected the control condition as the answer. 68% selected the correct answer: interpersonal BPS. In the control condition, 11% selected the intrapersonal BPS condition as the answer and 23% selected the interpersonal BPS condition as the answer. 66% selected the correct answer: control. Regarding the BPS exercise, the participants performed the exercise as intended based on the answers given in the text boxes for the visualization and the goals. An example is added below to illustrate one of the answers.

Visualization participant 3864: *"In my ideal future, I would continue to pursue a PhD in Psychology. I am particularly interested in the work with trauma victims and the work with children. Consequently, both of the competencies would aid me in future. As research is a significant part of a PhD program and interpersonal skills are important in working with trauma victims."*

- Goal 1: ***"****I am trying to work on my interpersonal skills through voluntary work."*
- Goal 2: ***"****Bachelor and Master theses are both connected to research and should give me an idea of where to start and help me gain the necessary skills."*

Based on the answers given during the BPS exercises, it has been concluded that the BPS exercise has been correctly interpreted and performed.

Results

This section outlines the results of the analyses, together with the interpretation to answer the research questions of this study. The first research question addressed is the influence of a BPS exercise on motivation for personal development and study motivation, by using the control condition versus interpersonal BPS condition. In the second research question the intrapersonal BPS condition is compared with the interpersonal BPS condition and the influence of both on motivation for personal development, study motivation, intrinsic motivation, and extrinsic motivation. The last research question investigates the moderating effect of competitiveness in the intrapersonal BPS and interpersonal BPS condition on motivation for personal development, intrinsic motivation, and extrinsic motivation. In order to carry out the analyses, dummy variables were used to test the specific hypotheses. The conditions are coded using the 'contrast method' as explained by Rossem (2010, p. 13) and is a very flexible way of dummy coding. By contrast coding, certain hypotheses can determine the effect of a categorical variable on a continuously dependent variable by means of planned equations (Rossem, 2010).

Table 3

Contrast coding of the control, interpersonal BPS, and intrapersonal BPS condition into dummy variables

	Control condition	Interpersonal BPS condition	Intrapersonal BPS condition
RQ 1: Control versus interpersonal BPS	-1	1	0
RQ 2, RQ 3: Interpersonal BPS vs intrapersonal BPS	0	-1	1

As a first indication of the results, this chapter starts with descriptive statistics and correlations between the variables of the study (see Table 4). Based on the results of the Pearson correlation, *gender* is strongly related to *competitiveness*. Besides, *study institution* and *social vs STEM studies* are strongly related to *intrinsic motivation*. Therefore, *gender* (0 = female; 1 = male), *study institution* (1= University of Applied Sciences; 2 = University) and *social vs STEM studies* (1 = social studies; 2 = STEM studies) are included as control variables in the linear regressions.

Table 4

Pearson correlations, means, and standard deviations of all variables

	1. Age	2. Gender	3. Study institution	4. Social vs STEM study	5. Study year	6. Intrinsic motivation	7. Extrinsic motivation	8. Study motivation	9. Personal develop. motivation	10. Competitiveness	11. Control versus inter BPS	12. Inter BPS vs intra BPS
Demographic variables												
1. Age	-											
2. Gender***	**-.21****	-										
3. Study institution***	**-.32****	**.20****	-									
4. Social vs STEM study***	**.30****	-.14	**-.67****	-								
5. Study year***	**.48****	-.12	**-.41****	**.62****	-							
Dependent variables												
6. Intrinsic motivation	.01	.03	**.20****	**-.21****	-.06	-						
7. Extrinsic motivation	-.01	-.11	-.02	.14	.14	**.41****	-					
8. Study motivation	-.00	.04	.03	-.03	.06	.06	.11	-				
9. Personal development motivation	.05	-.04	.11	-.06	.07	**.84****	**.73****	**.16***	-			
Moderator variable												
10. Competitiveness	-.02	**-.15***	.01	.02	.07	.10	**.36****	-.01	**.25****	-		
Independent variables												
11. Control vs inter BPS	.02	-.04	.02	.01	.11	-.01	-.00	.10	-.01	-.06	-	
12. Inter BPS vs intra BPS	.08	.05	.00	-.03	-.14	.08	-.04	**-.16***	.02	.07	**-.49****	-
N	182	182	182	180	173	182	182	182	182	182	182	182
Mean	20.83	1.71	1.93	1.08	1.62	4.03	3.53	4.20	3.83	2.55	-.02	.01
SD	2.77	.45	.26	.27	1.15	.48	.56	.66	.40	.52	.82	.81

* $p < .05$ (2-tailed)
** $p < .01$ (2-tailed)
Note: Significant correlations shown in bold
*** *Gender* (0 = male, 1 = female), *Study institution* (1 = University of Applied Sciences, 2 = University), *Social vs STEM study* (1 = social studies, 2 = STEM studies), *Study year* (1 = first year bachelor hbo + wo, 2 = second year bachelor hbo + wo, 3 = third year bachelor hbo + wo, 4 = fourth year bachelor hbo, 5 = first year master hbo + wo, 6 = second year master hbo + wo, 7 = third year master wo).s in

Effect of best possible selves on motivation

To test hypothesis 1, two separate linear regressions were performed to test whether participants in the interpersonal BPS condition had a significantly higher score than participants in the control condition on *motivation for personal development* (see model 1 Table 5) and *study motivation* (see model 1 Table 6). It was found that there is no significant difference between the control condition and interpersonal BPS condition for *personal development motivation* (β = < -.01*, p* = .992) and *study motivation* (β = .03*, p* = .758). Investigation of the intrinsic and extrinsic motivation showed no significant difference between the control condition and interpersonal BPS condition as well (*intrinsic motivation* with β = .03*, p* = .733; *extrinsic motivation* with β = < -.01*, p* = .887).

Table 5

Regression analysis personal development motivation (Model 1: without interaction variable, Model 2: with interaction variable)

	Model 1		Model 2	
Personal development motivation	β	*p*	β	*p*
Best possible selves (control versus inter)	-.00	.992	.00	.969
Approach ()	-.01	.890	-.01	.901
Competitiveness (standardized)	.26	.001**	.26	.001**
Gender (control variable)	-.04	.615	-.04	.572
Study institution (control variable)	.16	.114	.16	.106
Social vs STEM studies (control variable)	.04	.701	.04	.696
Interaction variable (inter BPS vs intra BPS X competitiveness)	-	-	-.06	.415
R^2	.084		.088	
F	2.66		2.37	
p	.017*		.025*	

* $p < .05$

** $p < .01$

Table 6

Regression analysis study motivation (Model 1: without interaction variable, Model 2: with interaction variable)

	Model 1		Model 2	
Study motivation	β	*p*	β	*p*
Best possible selves (control versus inter)	.03	.758	.03	.739
Approach (inter BPS vs intra BPS)	-.14	.095	-.14	.098
Competitiveness (standardized)	.01	.874	.02	.837
Gender (control variable)	.05	.546	.04	.572
Study institution (control variable)	.00	.959	.01	.942
Social vs STEM studies (control variable)	-.02	.839	-.02	.842
Interaction variable (inter BPS vs intra BPS X competitiveness)	-	-	-.03	.655
R^2	.027		.028	
F	.81		.72	
p	.564		.656	

* $p < .05$

** $p < .01$

Effect of interpersonal BPS versus intrapersonal BPS condition on motivation

To test hypothesis 2-3, three separate linear regressions were performed to test whether participants in the intrapersonal BPS condition had a significantly higher score than participants in the interpersonal BPS condition on *motivation for personal development* (see model 1 Table 5), *study motivation* (see model 1 Table 6)*,* and *intrinsic motivation* (see model 1 Table 7). It was found that there is no significant difference between the intrapersonal BPS condition and interpersonal BPS condition for *personal development motivation* (β = -.01*, p* = .890), *study motivation* (β = -.14*, p* = .095), and *intrinsic motivation* (β = .07*, p* = .402).

Table 7

Regression analysis intrinsic motivation (Model 1: without interaction variable, Model 2: with interaction variable)

	Model 1		Model 2	
Intrinsic motivation	β	*p*	β	*p*
Best possible selves (control versus inter)	.03	.733	.03	.734
Approach (inter BPS vs intra BPS)	.07	.402	.07	.403
Competitiveness (standardized)	.11	.126	.11	.129
Gender (control variable)	-.01	.919	-.01	.919
Study institution (control variable)	.17	.099	.17	.100
Social vs STEM studies (control variable)	-.10	.319	-.10	.321
Interaction variable (inter BPS vs intra BPS X competitiveness)	-	-	-.00	.993
R^2	.077		.077	
F	2.40		2.05	
p	.030*		.052	

* $p < .05$

** $p < .01$

To test hypothesis 4, one linear regression was performed to test whether participants in the interpersonal BPS condition had a significantly higher score than participants in the intrapersonal BPS condition on *extrinsic motivation* (see model 1 Table 8). It was found that there is no significant difference between the intrapersonal BPS condition and interpersonal BPS condition for *extrinsic motivation* (β = -.06, $p = .424$).

Table 8

Regression analysis extrinsic motivation (Model 1: without interaction variable, Model 2: with interaction variable)

	Model 1		Model 2	
Extrinsic motivation	β	*p*	β	*p*
Best possible selves (control versus inter)	-.01	.887	-.01	.944
Approach (inter BPS vs intra BPS)	-.06	.424	-.06	.435
Competitiveness (standardized)	.35	.000**	.36	.000**
Gender (control variable)	-.06	.392	-.07	.342
Study institution (control variable)	.10	.302	.11	.275
Social vs STEM studies (control variable)	.19	.044*	.19	.043*
Interaction variable (inter BPS vs intra BPS X competitiveness)	-	-	-.09	.227
R^2	.154		.161	
F	5.26		4.73	
p	.000**		.000**	

* $p < .05$

** $p < .01$

Moderator competitiveness on motivation for interpersonal BPS versus intrapersonal BPS

Competitiveness was examined as a moderator of the relationship between interpersonal BPS versus intrapersonal BPS and *motivation for personal development* (see model 2 Table 5)*,* and *intrinsic motivation* (see model 2 Table 7). In the first step of the regression analysis, *best possible selves, approach, competitiveness, gender, study institution,* and *social versus STEM studies* were entered. In the second step of the regression analysis, the interaction term between *inter BPS versus intra BPS* X *competitiveness* was entered.

Hypothesis 5-6 tested whether participants in the intrapersonal BPS condition had a significantly higher score than participants in the interpersonal BPS condition on *motivation for personal development* (see model 2 Table 5)*,* and *intrinsic motivation* (see model 2 Table 7) with *competitiveness* as interaction variable. It was found that there is no significant difference between the intrapersonal BPS condition and interpersonal BPS condition for *personal development motivation* (β = -.06*, p* = .415), and *intrinsic motivation* (β = < -.01*, p* = .993) with *competitiveness* as interaction variable. Competitiveness was also examined as a moderator of the relationship between interpersonal BPS versus intrapersonal BPS and *extrinsic motivation* (see model 2 Table 8). In the first step of the regression analysis, *best possible selves,*

approach, competitiveness, gender, study institution, and *social versus STEM studies* were entered. In the second step of the regression analysis, the interaction term between *inter BPS versus intra BPS* X *competitiveness* was entered.

Hypothesis 7 tested whether participants in the interpersonal BPS condition had a significantly higher score than participants in the intrapersonal BPS condition on *extrinsic motivation* with *competitiveness* as interaction variable (see model 2 Table 8). It was found that there is no significant difference between the intrapersonal BPS condition and Interpersonal BPS condition for *extrinsic motivation* (β = -.09*, p* = .227) with *competitiveness* as interaction variable.

All things considered; no significant effect was found for the 7 hypotheses. Therefore, it was concluded that *motivation for personal development* and *study motivation* were not significantly higher for the interpersonal BPS condition with a BPS exercise than the control condition without BPS. Moreover, *motivation for personal development* and *study motivation* were also not significantly higher for the intrapersonal BPS condition that for the interpersonal BPS condition. Also, *intrinsic motivation* of students was not significantly higher for the intrapersonal BPS condition than for the interpersonal BPS condition. Likewise, *extrinsic motivation* of students was not significantly higher for the interpersonal BPS condition than for the intrapersonal BPS condition. Complementarily, *personal development motivation* was not significantly higher for students low in competitiveness in the intrapersonal BPS condition. Similarly, *intrinsic motivation* was not significantly higher for students low in competitiveness in the intrapersonal BPS condition. Additionally, *extrinsic motivation* was not significantly higher for students high in competitiveness in the interpersonal BPS condition. The Pearson correlation shows a significant effect between the degree of *competitiveness* and *personal development motivation* and *extrinsic motivation.* The Pearson correlation also shows an effect between the *interpersonal BPS versus intrapersonal BPS* conditions on *study motivation*. In summary, the results indicate that for BPS exercises and the two approaches during the BPS exercise, no significant difference was found for the effect on motivation for personal development.

Discussion

This research aimed to define a method that helps every highly educated student in the Netherlands to reach their maximum potential. The research objective was twofold: 1) gain insight in how a student can be activated to develop oneself, and 2) to explore the effectiveness of different approaches to fit the needs and wishes of students. Therefore, best possible self (BPS) exercises and interpersonal versus intrapersonal approaches were investigated in this study. In addition, competitiveness was tested to determine whether it moderates the effect of interpersonal versus intrapersonal approach on motivation. At the beginning of this chapter the answers to the research questions will be discussed. Additionally, for each research question is discussed why certain effects have been found and to what extent these effects are relevant to the scientific and practical field. Followed by exploratory findings and the limitations of this study.

Activating students' personal development through best possible selves

In order to answer research question 1, it was expected that motivation for personal development and study motivation of students would be higher for the interpersonal BPS condition than the control condition without BPS. Motivation for personal development and study motivation of students are not significantly higher for the interpersonal BPS condition than the control condition without BPS. This finding is not in line with the hypothesis (1). Therefore, regarding research question 1 it may be concluded that students who received BPS exercises were not significantly more motivated to develop themselves on a personal level than students who did not receive a BPS exercise. This was tested for personal development motivation and study motivation. In order to investigate the absence of significant effects for BPS in this study, the answers given for BPS activity in this study have been reviewed and the literature on BPS has been consulted in order to identify potential causes.

Prior to the analyses, the answers to the BPS exercise in this study were checked and assessed for correct completion. Answers not related to the BPS exercise have been removed as described in the method section. Overall, the exercise was performed as intended. With an average of 48 words (SD = 12,7), the participants described a clear vision about their future self. The average time spent on the survey is 25 minute per participant. Based on the check for correct completion, the average number of words and the time spent on the exercise, it can be concluded that the BPS exercise was executed correctly. The averages between the conditions reveal little difference. With regard to establishing goals to improve competencies, the answers with a mean number of words of 23 (SD = 16,8) per goal, revealed that the participants all set concrete goals. Previous research on positive activities, such as the BPS, has shown that the effect of a positive activity on an individual is moderated by the activity characteristics,

the person characteristics, and the degree of "fit" between the person and the activity (Lyubomirsky & Layous, 2013).

Regarding the activity characteristics of the BPS exercise, previous research indicates through experiments that the dose (or repetition) of a BPS activity influences the effect on the individual (Loveday et al., 2016). Since this study was a one-moment-in-time measure, it can be stated on the basis of the results that a single implementation of the BPS might not be sufficient to stimulate motivation. Findings by Nawrath (2017) revealed that there is not one particular frequency of BPS that works best for every individual. Sheldon and Lyubomirsky (2006) implemented the BPS intervention as one writing exercise, followed by a one-week visual exercise in which the participants could choose when and how often they wanted to perform the exercise. The results show a large increase in the positive effect. The most influential factor is the self-regulation of the participants, in which participants decide for themselves when to perform the BPS activity (Lyubomirsky et al., 2005). In the original BPS experiment, participants completed the BPS activity in-person, independently of each other, and submitted the answer handwritten to the researcher (King, 2001). Layous et al., (2013) studied the effect of the BPS activity online versus in-person. In this study, participants were randomly assigned to complete the BPS activity online or in-person. No significant difference between the online and in-person group was found (Layous et al., 2013). Since then, the online delivery method is used as standard in BPS experiments. A meta-analysis by Nawrath (2017) shows that BPS include more significant results when the intervention was implemented online. One explanation could be that participants are able to choose when to start the intervention and therefore experience a higher degree of self-regulation (Lyubomirsky et al., 2005). Participation in self-regulatory interventions enables participants to experience the increase in well-being as their own performance (Vella-Brodrick & Klein, 2010).

Research by Carver and Scheier (1990, 2001b, 2012) and Higgins (1987, 1989) demonstrates that students performing the BPS activity continuously compare themselves to their current selves and their ideal selves. In doing so, they strive to minimize the discrepancy between the two images. Best possible selves provide the individual possibilities to focus on specific, task-oriented thoughts and feelings to stimulate action (Inglehart et al., 1989). A potential reason for the insignificant effect could be theof the study. The time span of this study could be too short to measure the effect of best possible selves on motivation. Considering the best possible selves were only measured at one moment in time, the students could use some more time to implement the task-oriented thoughts and feelings to reach their ideal future self. At the same time, the BPS exercise focused on the participant's life after graduation. Considering most students are first-year students, it is possible that the goal linked to the BPS seemed too far away and therefore unfeasible (Brown & Diekman, 2010). Another activity related explanation is based on the expectation value model of motivation (Carver & Scheier, 2001b) and states that experiencing steps

towards an important goal, increases positive emotions and promotes psychological well-being. Physical and mental steps towards a goal can give the desired effect. Since this study was measured at one moment in time (not several times in a certain period), it might be possible that the students did not experience the possibility to make physical or mental steps towards their intended goal, and therefore not result in motivation for personal development. In accordance with this statement, a meta-analysis by Bolier et al., (2013) advises to carry out positive psychological interventions over a longer period of time. Although a meta-analysis of Nawrath (2017) has not been able to translate this finding directly into the BPS intervention, the results of this study seem to endorse it. Based on the activity characteristics mentioned above, studying the best self in longitudinal research can provide a good opportunity to determine the underlying mechanism. The longitudinal study might explore a number of effects: frequency of BPS, time impact between BPS, and short- and long-term BPS. An important consideration in a longitudinal study is that carrying out a BPS activity too often can lead to adaptations. As a result, the effect of the BPS can decrease (Lyubomirsky et al., 2005).

Regarding the person's characteristics, results from another study by Austenfeld et al., (2006) showed that the BPS activity does not work equally well for all types of individuals and depends on person characteristics. Participants that benefit most from the BPS intervention are older than 30 (Nawrath, 2017; Sin & Lyubomirsky, 2009). According to Charles et al., (2003) it is plausible that adults in the mid-thirties have a clearer picture of their goals and future in the next five to ten years. The goals are related to more emotional meaning, which in turn gives more meaning to the BPS activity (Charles et al., 2003). In imagining the ideal self, the individual experiences the affective state connected to the ideal self (Markus & Nurius, 1986). This allows the older participants to experience a more positive affective state compared to students, as students may not associate goals in obtaining information with strong positive emotions. The circumstances of the participants in the BPS intervention should be considered as well. An older adult might find themselves in a more secure position, where setbacks do not fundamentally affect the image portrayed. Younger adults experience more setbacks and are in a more precarious position (Almeida, 1998). Since the average age of the participants 21 ($M = 20.83$, $SD = 2.77$) is, it can be concluded that the sample of this study is too young to experience the effect of BPS exercises.

The findings from these studies suggest that the BPS is not a one-size-fits-all intervention as it was conceived and designed in this study. In conclusion regarding BPS, relatively little is known about the underlying mechanisms that explain why and how the BPS works (Loveday et al., 2016).

Approaches to stimulate personal development

In order to answer research question 2, the expectation was twofold: A) personal development motivation, study motivation, and intrinsic motivation would higher for the intrapersonal BPS than the interpersonal BPS, and B) extrinsic motivation of students would be higher for the interpersonal BPS than the intrapersonal BPS. To our knowledge, this is the first study that has explored the effect of interpersonal versus intrapersonal approaches with BPS on motivation. Regarding the first expectation for research question 2, it was found that motivation for personal development (H2), study motivation (H2), and intrinsic motivation (H3) of students is not significantly higher for the intrapersonal BPS condition than for the interpersonal BPS condition. Regarding the second expectation for research question 2, it was found that extrinsic motivation is not significantly higher for the interpersonal BPS condition than for the intrapersonal BPS condition (H4). The findings of this study are not in line with hypotheses 2, 3, and 4. For research question 2, it can be concluded that students who received the intrapersonal BPS, were not significantly more motivated to develop themselves on a personal level than students who received interpersonal BPS. Interestingly, if there is any effect between motivation and approach, it seems to be more the contrary than expected. In other words, there seems to be more motivation in the interpersonal BPS than the intrapersonal BPS. In addition, the Pearson correlation did show an effect between the interpersonal BPS versus intrapersonal BPS group and study motivation. The study motivation decreases in the intrapersonal BPS condition compared to the interpersonal BPS condition. This means that students may benefit more from the interpersonal approach to develop study motivation.

Regarding the insignificant effect of the interpersonal BPS versus intrapersonal BPS, several explanations have been suggested. The increase of the overall motivation of the students, the low reliability of the construct extrinsic motivation, and once again the time span of the study. A potential explanation for the insignificant effect is that the BPS activity increases the students' general motivation by making the ideal self concrete (Fukada et al., 2011). Therefore, increase in general motivation by performing the BPS activity makes it more difficult to draw conclusions about the effect of interpersonal versus intrapersonal approach. Similar to the influence of the BPS, the time span of the study may have influenced the effect of the interpersonal and intrapersonal approach. The time span of the BPS exercise could have been too short to investigate the differences between the approaches. Repeating the study after a certain time can make the effect of the intrapersonal versus interpersonal approach more visible and specific. Based on the time span of the study and the potential overall increase in motivation, it can be concluded that the interpersonal and intrapersonal approach should be examined separately from the BPS.

Since most research on BPS is composed of longitudinal studies, this study requires a longitudinal design and implementation in order to measure differences between the interpersonal and intrapersonal approach (Boehm et al., 2011; Leondari et al., 1998; Oyserman et al., 2002, 2004). In which there is a time span between measurements, the effect of BPS and intrapersonal and interpersonal approaches can be re-evaluated. Consequently, it is possible to look at the effect of best possible selves when students are given more time to realize their ideal selves. Another consideration is, for instance, to offer the BPS exercise during a course in module 1 with the aim to develop competencies for module 2. This information might serve for testing whether short- or long-term goals are more appropriate for BPS. Another aspect to consider is adding one condition to the original study; intrapersonal without BPS. As a result, the difference between the interpersonal and intrapersonal approaches can be assessed without the BPS. This makes it possible to look at the actual difference between the two approaches without the possibility that BPS increases the overall motivation.

Approaches and competitiveness in stimulating personal development

In order to answer research question 3, the expectation was twofold: A) the effect of the intrapersonal BPS on motivation for personal development and intrinsic motivation would be higher for students low in competitiveness, and B) the effect of the interpersonal BPS on extrinsic motivation would be higher for students high in competitiveness. To our knowledge, this is the first study that has explored the moderating effect of competitiveness in BPS with interpersonal versus intrapersonal approach on motivation. It was found that the effect for the intrapersonal BPS condition on motivation for personal development (H5) and intrinsic motivation (H6) is not significantly stronger for students low in competitiveness. Additionally, the influence of interpersonal BPS condition on extrinsic motivation (H7) is not significantly stronger for students high in competitiveness. These findings are not in line with the hypotheses 5, 6, and 7. Accordingly, to answer research question 3, students with a competitive attitude are not significantly more motivated by interpersonal approach since they compared themselves to others, and on the other hand, students without a competitive attitude are not significantly more motivated by intrapersonal approach.

In the Pearson correlation coefficient, it can be seen that competitiveness and extrinsic motivation (regardless of the low internal consistency) are related, but in the linear regression this effect does not occur. As described in the literature, there are two types of competitiveness. There is a chance that the difference in both types has had an influence on the effects of this research. It can be further investigated whether there is a concrete difference in both forms and how the difference interacts with motivation. Another possible explanation is based on the evolutionary theory which shows that the male participants are more competitive than female participants and is based on the premise that men and

women are shaped by natural selection to be effective competitors (Cashdan, 1998). Competition for both genders differ as a consequence of the differences in the reproduction strategy. Since most participants in this study are female, the difference between men and women in this context can be investigated further. The results seem to reveal an effect between degree of competitiveness and personal development motivation and extrinsic motivation. A student with a high degree of competition showed a higher motivation for personal development and extrinsic motivation. In addition, the Pearson correlation shows an effect between the interpersonal BPS versus intrapersonal BPS group and the study motivation. The following section of this study evaluates and interprets the results.

It is striking that for the entire study, primarily no effects on motivation were found. Literature on motivation gives another remarkable observation: no unambiguous relationship between motivation and performance. Research shows that motivation can be related to performance (PISA, 2016; Wijsman et al., 2018) but it is not clear what this relationship looks like. It is often thought that motivation leads to better performance, but the opposite is also true: motivation increases through better results (Poorthuis et al., 2015). Other researchers even doubt whether there is a mutual relationship (Kirschner et al., 2018). The results of the participants displayed after the competency test may have had a possible influence on the above effect. For example, students who perform less well according to the competency test therefore have less or no motivation and vice versa. The present study disregarded the effect of personal scores on motivation. One of the main effects of the insignificant effects in this study can be explained by the low internal consistency of the extrinsic motivation items. Since extrinsic motivation is part of the personal development motivation, the low internal consistency affected the reliability of the construct. Despite the low Cronbach's Alpha for extrinsic motivation, the items were used during the analyses. After reviewing the items, it was noticed that the orientation of all four items can be divided into 2 orientations: 1) career and job market, and 2) being better than and proving to other students. Due to the two different orientations of the 4 items, the items do not correlate enough with each other to form a good construct. Dividing the structure into two sub scales was a potential solution. However, the Cronbach's Alpha did not increase by creating the sub scales. For this reason, the four items were used to analyse the construct extrinsic motivation. In subsequent research, it is preferable to connect the extrinsic motivation items better.

Based on the manipulation check, it can be questioned whether the students interpreted the approaches interpersonal and intrapersonal correctly. For the intrapersonal BPS condition, 54 out of 61 participants gave the correct answer. While in the interpersonal BPS condition, 39 out of 59 participants gave the right answer. Lastly, 29 out of 62 participants in the control condition gave the correct answer. The intrapersonal BPS condition has a reasonably good score. The poorer scores on the interpersonal and control conditions can be caused by the fact that both conditions are set up approximately the same.

Another possible reason is the formulation of the question. If the question is not formulated correctly, the students may have become confused. It is therefore questionable to what extent the students have experienced in what condition they participated.

Based on the number of participants in the control condition who have indicated that they still wish to receive the BPS exercise, it can be concluded that only 14% of the participants are motivated to develop themselves. Most participants participated through SONA. This means that these participants received credits for participation. BMS students must obtain an X number of credits by participating in surveys. On this basis it can be stated that participating in the surveys is an obligation for the students. This goes hand in hand with a decrease in motivation. In general, the 14% implies that few students are motivated on their own initiative, which in turn creates a greater challenge to motivate them for personal development. Follow-up research should dig deeper into the underlying mechanisms of the absence of motivation for personal development. For this study, the low percentage of motivated students indicates that the results of the BPS and the intrapersonal and interpersonal approaches are influenced by the absence of motivation.

Exploratory findings

Results of the Pearson correlation indicate that male participants are more competitive than female participants. This effect can be supported by early studies on the interaction between small groups, which show that women are less competitive and less interested in the pursuit of dominance than men. In addition, women are less inclined to take a leading position (Aries, 1982; Carli, 1990; Denmark, 1977; McCarrick et al., 1981; Sapp et al., 1996). According to Cashdan (1998), systematic behavioural studies of competitiveness among men and women in a natural setting are scarce. Competitiveness between men and women is often subtle and indirect and is difficult to detect openly.

The Pearson correlation also showed that students at universities have a higher intrinsic motivation than students at Universities of Applied Sciences. A potential explanation for this is that motivation decreases during the study program (ScienceGuide, 2007). The main reason for this decrease is a lack of organization/administration and the absence of challenge. Given that most students in this study are studying at the university and are in their first year of study, the higher intrinsic motivation of the wo students explains this. According to ScienceGuide (2007) the motivation is closely related to the commitment of the students. At Universities of Applied Sciences, the commitment has been declining for a long time. Technical students have a lower intrinsic motivation than students in social studies. The technical students may have a higher developed IQ and lower developed EQ, in contrast to the students of social studies. A possible explanation for the difference in intrinsic motivation might be that students of social studies are more concerned with self-development and development compared to students of

technical studies. Participants in the interpersonal BPS condition have a higher study motivation than students in the intrapersonal BPS condition. This can be explained by the difference between the conditions, in which the interpersonal BPS condition represents an average of other students. In this way the condition insinuates a concrete relationship with the study.

Implications

The current study contributes to literature by connecting previous research on best possible selves and different approaches to talent development in order to motivate students for personal development. The results of this study do not fit with the theory that states the positive impact of best possible selves. The results indicate that both concepts cannot be generalized to Dutch education institutions. According to the results, students are not more or less motivated by both best possible selves and the two approaches (interpersonal and intrapersonal). However, the results also show that, if there is any effect, it tends towards the interpersonal approach rather than the hypothesized intrapersonal approach. Regarding best possible selves theory, a new finding in this study suggests that a short time span for the best possible selves influences the motivation of students. Previous studies have not examined the effect of time. Although the BPS exercise was carried out correctly as described earlier, based on the results there is little reason to use best possible selves and different approaches for students in talent development. Although both concepts are complex, it is recommended to investigate the concepts further. Although this research is focused on providing insight into scientific information in talent development and motivation, it also has practical implications. The implications are important for several groups; students, educational institutions, teachers, and study career counsellors. For educational institutions, it is important to provide students with as many effective resources as possible to develop themselves. Simultaneously, it is important for students to get the best out of themselves. A guideline of an approach or exercise to stimulate personal development is a useful tool for teachers and study counsellors to perform their work as efficiently as possible. It may be important that students do the exercise voluntarily. This can indirectly influence the motivation for personal development.

Limitations

Reasons for the absence of significant differences in the results may include the fact that mainly students from the University of Twente participated via SONA. Most students of the studies Psychology and Communication who participated via SONA, received credits for their participation. Therefore, the intrinsic motivation can be more externally oriented. The intrinsic motivation decreases when external stimuli and rewards are involved. External stimuli shift the reasons for certain behaviour or performance from internal to external. The internal reason for behaviour is focused on interest, or pleasure. At the same time, the external reason for behaviour is aimed at receiving a reward (Deci et al., 1999; Kohn, 1999).

This makes the sample more focused on a small part of the population. The reliability of this data is impacted by the low Cronbach's Alpha for the construct 'extrinsic motivation'. The methodological choices were constrained by time. Therefore, the data was collected at one point in time. It is beyond the scope of this study to create a specific distinction between STEM students and students from social studies. Nonetheless, this research still provides insight into the inclusive approach suggests by researchers in the field of talent development, since the abovementioned limitations did have a small impact on the data observed. One of the main reasons for missing results may be based on the manipulation check. Considering the answers, there is a chance that students have misinterpreted the BPS exercise with the two approaches. If the intervention has been misinterpreted, the chance is quite high this is a potential cause of the missing results.

Suggestions for future research

A recommendation for further research is to investigate the possibility that the BPS exercises increased general motivation by activating the students to create a clear image of their future. Therefore, the difference between the approaches could be influenced. It might be possible that more research into this effect on itself can give different results. Another recommendation for further research is to investigate the effect of time within the best possible self literature. Since there is no specific information to be found regarding the influence of time on best possible selves. A result can be that, in order to stimulate motivation, best possible selves only have an effect on a certain time span. It is advisable for future research to measure a student's basic motivation in advance. In this way the difference can be mapped out before and after the BPS and approaches. In addition, it is advisable to involve a broader group of students from different studies. The main participants in this study are behavioural science students. As mentioned above, the results of the participants displayed after the competency test may have had an impact on the results of this study. Further research can be aimed at the effect of receiving personal scores and how it affects motivation. It is important to take into account the person's characteristics, such as the degree of competitiveness, as this research also did. Future research may focus on the difference between hypercompetitive attitude (HCA) and personal development competitive attitude (PDCA). Since this study has only included the effect of HCA, it might be interesting what the difference is between both forms of competition. In doing so, it is important to look at which form of competition a student shows the most, and then make the link to the effect on, for example, extrinsic and intrinsic motivation. Since literature cannot give a clear indication of the dosage of BPS and it depends on the individual, follow-up research may focus on the effect of time and dosage on the effectiveness of BPS. Therefore, follow-up research by means of a longitudinal study should look at the effect of time between the BPS activity and the number of repetitions.

Conclusion

This research aimed to define a method that helps every highly educated student in the Netherlands to reach their maximum potential. The research objective was twofold: 1) gain insight in how a student can be activated to develop oneself, and 2) to explore the effectiveness of different approaches to fit the needs and wishes of students. The online experiment with three conditions (control condition, interpersonal BPS condition, and intrapersonal BPS condition) revealed that best possible selves and interpersonal versus intrapersonal approaches do not influence the different forms of motivation. At the same time, no interaction effect of competitiveness was found. The research shows, contrary to the hypotheses, that the effect tends more towards the interpersonal approach than the expected intrapersonal approach. The findings suggest that more research into an inclusive approach to students essential is to close the gap between theory and practice.

References

Ainslie, G. (1992). *Picoeconomics: The strategic interaction of successive motivational states within the person*. Cambridge University Press.

Almeida, D. M. (1998). Age differences in daily, weekly, and monthly estimates of psychological distress. *W. Fleeson & D. Mroczek (Chairs), Intraindividual Variability and Change Processes: New Directions in Understanding Personality. Symposium Presented at the 106th Annual Meeting of the American Psychological Association, San Francisco*.

Amabile, T. M., DeJong, W., & Lepper, M. R. (1976). Effects of externally imposed deadlines on subsequent intrinsic motivation. *Journal of Personality and Social Psychology*, *34*(1), 92. https://doi.org/10.1037/0022-3514.34.1.92

Anderson, C. A. (1983). Imagination and expectation: The effect of imagining behavioral scripts on personal influences. *Journal of Personality and Social Psychology*, *45*(2), 293. https://doi.org/10.1037/0022-3514.45.2.293

Aries, E. J. (1982). Verbal and nonverbal behavior in single-sex and mixed-sex groups: Are traditional sex roles changing? *Psychological Reports*, *51*(1), 127–134. https://doi.org/10.2466/pr0.1982.51.1.127

Atkinson, J. W., & Birch, D. (1974). The dynamics of achievement-oriented activity. *Motivation and Achievement*, *271*, 271–325.

Austenfeld, J. L., Paolo, A. M., & Stanton, A. L. (2006). Effects of writing about emotions versus goals on psychological and physical health among third-year medical students. *Journal of Personality*, *74*(1), 267–286. https://doi.org/10.1111/j.1467-6494.2005.00375.x

Bailey, R., & Morley, D. (2006). Towards a model of talent development in physical education. *Sport, Education and Society*, *11*(3), 211–230. https://doi.org/10.1080/13573320600813366

Becker, B. E., Huselid, M. A., & Beatty, R. W. (2009). *The differentiated workforce: Translating talent into strategic impact*. Harvard Business Press.

Bélanger, J., & Gagné, F. (2006). Estimating the size of the gifted/talented population from multiple identification criteria. *Journal for the Education of the Gifted*, *30*(2), 131–163.

Boehm, J. K., Lyubomirsky, S., & Sheldon, K. M. (2011). A longitudinal experimental study comparing the effectiveness of happiness-enhancing strategies in Anglo Americans and Asian Americans. *Cognition and Emotion*, *25*(7), 1263–1272. https://doi.org/10.1080/02699931.2010.541227

Bolier, L., Haverman, M., Westerhof, G. J., Riper, H., Smit, F., & Bohlmeijer, E. (2013). Positive psychology interventions: A meta-analysis of randomized controlled studies. *BMC Public Health*, *13*(1), 119. https://doi.org/10.1186/1471-2458-13-119

Brown, E. R., & Diekman, A. B. (2010). What will I be? Exploring gender differences in near and distant possible selves. *Sex Roles*, *63*(7–8), 568–579.

Brown, S. (2009). *Technology Acceptance and Organizational Change: An Integration of Theory*. https://etd.auburn.edu/handle/10415/1991

Buckingham, M., & Clifton, D. O. (2001). *Now, discover your strengths*. Simon and Schuster.

Carli, L. L. (1990). Gender, language, and influence. *Journal of Personality and Social Psychology*, *59*(5), 941. https://doi.org/10.1037/0022-3514.59.5.941

Carroll, J. S. (1978). The effect of imagining an event on expectations for the event: An interpretation in terms of the availability heuristic. *Journal of Experimental Social Psychology*, *14*(1), 88–96. https://doi.org/10.1016/0022-1031(78)90062-8

Carver, C. S., & Scheier, M. (1990). *Principles of self-regulation: Action and emotion.* The Guilford Press.

Carver, C. S., & Scheier, M. F. (2001a). *On the self-regulation of behavior*. Cambridge University Press.

Carver, C. S., & Scheier, M. F. (2001b). *Optimism, pessimism, and self-regulation.*

Carver, C. S., & Scheier, M. F. (2012). *Attention and self-regulation: A control-theory approach to human behavior*. Springer Science & Business Media.

Cashdan, E. (1998). Are men more competitive than women? *British Journal of Social Psychology*, *37*(2), 213–229. https://doi.org/10.1111/j.2044-8309.1998.tb01166.x

Charles, S. T., Mather, M., & Carstensen, L. L. (2003). Aging and emotional memory: The forgettable nature of negative images for older adults. *Journal of Experimental Psychology: General*, *132*(2), 310–324. https://doi.org/10.1037/0096-3445.132.2.310

Credé, M., & Niehorster, S. (2012). Adjustment to college as measured by the student adaptation to college questionnaire: A quantitative review of its structure and relationships with correlates and consequences. *Educational Psychology Review*, *24*(1), 133–165. https://doi.org/10.1007/s10648-011-9184-5

Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1997). *Talented teenagers: The roots of success and failure*. Cambridge University Press.

Csikszentmihalyi, M., & Seligman, M. (2014). Positive psychology: An introduction. In *Flow and the foundations of positive psychology* (pp. 279–298). Springer.

Deci, E. L. (1971). Effects of externally mediated rewards on intrinsic motivation. *Journal of Personality and Social Psychology*, *18*(1), 105. https://doi.org/10.1037/h0030644

Deci, E. L., & Cascio, W. F. (1972). *Changes in intrinsic motivation as a function of negative feedback and threats.*

Deci, E. L., Koestner, R., & Ryan, R. M. (1999). A meta-analytic review of experiments examining the effects of extrinsic rewards on intrinsic motivation. *Psychological Bulletin*, *125*(6), 627.

Deci, E. L., & Ryan, R. M. (1985). The general causality orientations scale: Self-determination in personality. *Journal of Research in Personality*, *19*(2), 109–134.

Deci, E. L., Vallerand, R. J., Pelletier, L. G., & Ryan, R. M. (1991). Motivation and education: The self-determination perspective. *Educational Psychologist*, *26*(3–4), 325–346. https://doi.org/10.1080/00461520.1991.9653137

Denmark, F. L. (1977). Styles of leadership. *Psychology of Women Quarterly*, *2*(2), 99–113. https://doi.org/10.1111/j.1471-6402.1977.tb00493.x

Dibbelt, S., & Kuhl, J. (1994). Volitional processes in decision making: Personality and situational determinants. *Volition and Personality: Action versus State Orientation*, *9*, 177–194.

Dweck, C. S. (2008). *Mindset: The new psychology of success*. Random House Digital, Inc.

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The role of deliberate practice in the acquisition of expert performance. *Psychological Review*, *100*(3), 363.

Feldhusen, J. F. (1994). Talent identification and development in education (TIDE). *Gifted Education International*, *10*(1), 10–15.

Field, A. (2009). *Discovering Statistics Using SPSS. 3rd edn SAGE Publications Limited: London*. UK.

Franken, R. E., & Brown, D. J. (1995). Why do people like competition? The motivation for winning, putting forth effort, improving one's performance, performing well, being instrumental, and expressing forceful/aggressive behavior. *Personality and Individual Differences*, *19*(2), 175–184. https://doi.org/10.1016/0191-8869(95)00035-5

Fukada, Y., Fukuda, T., Falout, J., & Murphey, T. (2011). Increasing motivation with possible selves. *JALT2010 Conference Proceedings*, 337–349.

Gagné, F. (1998a). A proposal for subcategories within gifted or talented populations. *Gifted Child Quarterly*, *42*(2), 87–95. https://doi.org/10.1177/001698629804200203

Gagné, F. (1998b). The prevalence of gifted, talented, and multitalented individuals: Estimates from peer and teacher nominations. *Talent in Context: Historical and Social Perspectives on Giftedness*, *101*, 126.

Gagné, F. (2004). Transforming gifts into talents: The DMGT as a developmental theory. *High Ability Studies*, *15*(2), 119–147. https://doi.org/10.1080/1359813042000314682

Gagné, Françoys. (1998). A proposal for subcategories within gifted or talented populations. *Gifted Child Quarterly*, *42*(2), 87–95.

Gagné, Françoys. (2009). Building gifts into talents: Detailed overview of the DMGT 2.0. *Leading Change in Gifted Education: The Festschrift of Dr. Joyce VanTassel-Baska*, 61–80.

Gagné, Françoys. (2010). Motivation within the DMGT 2.0 framework. *High Ability Studies*, *21*(2), 81–99. https://doi.org/10.1080/13598139.2010.525341

Gleeson, G. R. (1986). *The growing child in competitive sport*. Hodder and Stoughton.

Griffin-Pierson, S. (1990). The Competitiveness Questionnaire: A Measure of Two Components of Competitiveness. *Measurement and Evaluation in Counseling and Development*, *23*(3), 108–15.

Gross, M. U. M. (2000). Issues in the cognitive development of exceptionally and profoundly gifted individuals. *International Handbook of Giftedness and Talent*, 179–192.

Grum, D. K., & Grum, B. (2015). *Competitiveness and motivation for education among university students*. IJONTE.

Harackiewicz, J. M. (1979). The effects of reward contingency and performance feedback on intrinsic motivation. *Journal of Personality and Social Psychology*, *37*(8), 1352. https://doi.org/10.1037/0022-3514.37.8.1352

Heller, K. A., & Hany, E. (2004). Identification of gifted and talented students. *Psychology Science*, *46*(3), 302–323.

Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, *94*(3), 319.

Higgins, E. T. (1989). Self-discrepancy theory: What patterns of self-beliefs cause people to suffer. *Advances in Experimental Social Psychology*, *22*, 93–136.

Inglehart, M. R., Markus, H., & Brown, D. R. (1989). The effects of possible selves on academic achievement: A panel study. *Recent Advances in Social Psychology: An International Perspective*, 469–477.

Jellinek, M. S., Henderson, S. W., & Pfeiffer, S. I. (2009). The gifted: Clinical challenges for child psychiatry. *Journal of the American Academy of Child & Adolescent Psychiatry*, *48*(8), 787–790.

King, L. A. (2001). The health benefits of writing about life goals. *Personality and Social Psychology Bulletin*, *27*(7), 798–807. https://doi.org/10.1177/0146167201277003

Kirschner, P. A., Claessens, L., & Raaijmakers, S. (2018). *Op de schouders van reuzen. Inspirerende inzichten uit de cognitieve psychologie voor leerkrachten*. Meppel: Drukkerij Ten Brink Uitgevers.

Kohn, A. (1999). *Punished by rewards: The trouble with gold stars, incentive plans, A's, praise, and other bribes*. Houghton Mifflin Harcourt.

Layous, K., Nelson, S. K., & Lyubomirsky, S. (2013). What is the optimal way to deliver a positive activity intervention? The case of writing about one's best possible selves. *Journal of Happiness Studies*, *14*(2), 635–654.

Lee, S.-Y., & Olszewski-Kubilius, P. (2015). Introduction: Leading creative minds and talent development education. *Asia Pacific Education Review*, *16*(2), 149–151. https://doi.org/10.1007/s12564-015-9369-6

Legault, L. (2016). *Intrinsic and extrinsic motivation*.

Legault, L., Green-Demers, I., & Pelletier, L. (2006). Why do high school students lack motivation in the classroom? Toward an understanding of academic amotivation and the role of social support. *Journal of Educational Psychology*, *98*(3), 567.

Leondari, A., Syngollitou, E., & Kiosseoglou, G. (1998). Academic achievement, motivation and future selves. *Educational Studies*, *24*(2), 153–163. https://doi.org/10.1080/0305569980240202

Locke, E. A. (1991). Goal theory vs. control theory: Contrasting approaches to understanding work motivation. *Motivation and Emotion*, *15*(1), 9–28.

Locke, E. A., & Schattke, K. (2018). Intrinsic and extrinsic motivation: Time for expansion and clarification. *Motivation Science*.

Loveday, P. M., Lovell, G. P., & Jones, C. M. (2016). The best possible selves intervention: A review of the literature to evaluate efficacy and guide future research. *Journal of Happiness Studies*. https://doi.org/10.1007/s10902-016-9824-z

Lyubomirsky, S., & Layous, K. (2013). How do simple positive activities increase well-being? *Current Directions in Psychological Science*, *22*(1), 57–62. https://doi.org/10.1177/0963721412469809

Lyubomirsky, S., Sheldon, K. M., & Schkade, D. (2005). Pursuing Happiness: The Architecture of Sustainable Change. *Review of General Psychology*, *9*(2), 111–131. https://doi.org/10.1037/1089-2680.9.2.111

Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, *41*(9), 954. https://doi.org/10.1037/0003-066X.41.9.954

Markus, H., & Ruvolo, A. (1989). *Possible selves: Personalized representations of goals*.

Marsh, H. W., & Hau, K.-T. (2003). Big-Fish–Little-Pond effect on academic self-concept: A cross-cultural (26-country) test of the negative effects of academically selective schools. *American Psychologist*, *58*(5), 364. https://doi.org/10.1037/0003-066X.58.5.364

Mayer, R. E. (2005). The scientific study of giftedness. *Conceptions of Giftedness*, *2*, 437–447.

McCarrick, A. K., Manderscheid, R. W., & Silbergeld, S. (1981). Gender differences in competition and dominance during married-couples group therapy. *Social Psychology Quarterly*, 164–177.

Menesini, E., Tassi, F., & Nocentini, A. (2018). *The competitive attitude scale (CAS): A multidimensional measure of competitiveness in adolescence*. https://doi.org/10.15406/jpcpy.2018.09.00528

Milgram, R. M., & Hong, E. (1999). Multipotential abilities and vocational interests in gifted adolescents: Fact or fiction? *International Journal of Psychology*, *34*(2), 81–93.

Ministerie van Onderwijs, Cultuur & Wetenschap. (2015). *De waarde(n) van weten: Strategische Agenda Hoger Onderwijs en Onderzoek 2015-2025* [Beleidsnota]. https://www.rijksoverheid.nl/documenten/beleidsnota-s/2015/07/07/de-waarde-n-van-weten-strategische-agenda-hoger-onderwijs-en-onderzoek-2015-2025

Ministerie van Onderwijs, Cultuur en Wetenschap. (2019). *Motivatie om te leren: Motiverende kenmerken van het voortgezet onderwijs* [Rapport]. Ministerie van Onderwijs, Cultuur en Wetenschap. https://www.onderwijsinspectie.nl/documenten/rapporten/2019/07/18/motivatie-om-te-leren

Mönks, F. J., & Mason, E. J. (2000). Developmental Psychology and Giftedness: Theories. *International Handbook of Giftedness and Talent*, *141*.

Nawrath, S. N. (2017, August 24). *I want to be the very best: A systematic literature review on the efficiency of the best possible self-intervention.* [Info:eu-repo/semantics/masterThesis]. University of Twente. https://essay.utwente.nl/73355/

Nijs, S., Gallardo-Gallardo, E., Dries, N., & Sels, L. (2014). A multidisciplinary review into the definition, operationalization, and measurement of talent. *Journal of World Business*, *49*(2), 180–191. https://doi.org/10.1016/j.jwb.2013.11.002

Oden, M. H. (1968). *The fulfillment of promise: 40 year follow up of the Terman gifted group* (Vol. 77). Stanford University Press.

Olszewski-Kubilius, P., Subotnik, R. F., & Worrell, F. C. (2015). Conceptualizations of giftedness and the development of talent: Implications for counselors. *Journal of Counseling & Development*, *93*(2), 143–152. https://doi.org/10.1002/j.1556-6676.2015.00190.x

Oyserman, D., Bybee, D., Terry, K., & Hart-Johnson, T. (2004). Possible selves as roadmaps. *Journal of Research in Personality*, *38*(2), 130–149.

Oyserman, D., Terry, K., & Bybee, D. (2002). A possible selves intervention to enhance school involvement. *Journal of Adolescence*, *25*(3), 313–326.

Pelletier, L. G., Dion, S., Tuson, K., & Green-Demers, I. (1999). Why do people fail to adopt environmental protective behaviors? Towards a taxonomy of environmental amotivation. *Journal of Applied Social Psychology*, *29*(12), 2481–2504.

Pelletier, L. G., Fortier, M. S., Vallerand, R. J., & Briere, N. M. (2001). Associations among perceived autonomy support, forms of self-regulation, and persistence: A prospective study. *Motivation and Emotion*, *25*(4), 279–306.

Persson, R. (2014). The needs of the highly able and the needs of society: A multidisciplinary analysis of talent differentiation and it's significance to gifted education and issues of societal inequality. *Roeper Review*, *36*, 43–59. https://doi.org/10.1080/02783193.2013.856830

Pham, L. B., & Taylor, S. E. (1999). From thought to action: Effects of process-versus outcome-based mental simulations on performance. *Personality and Social Psychology Bulletin*, *25*(2), 250–260. https://doi.org/10.1177/0146167299025002010

Pilot, A., & Peeters, C. (2004). De kunst van het kunstonderwijs. *Tijdschrift Voor Hoger Onderwijs & Management*, *11*(2).

Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, *82*(1), 33. https://doi.org/10.1037/0022-0663.82.1.33

PISA, O. (2016). *Volume I: Excellence and equity in education*. Paris: OECD.

Plant, R. W., & Ryan, R. M. (1985). Intrinsic motivation and the effects of self-consciousness, self-awareness, and ego-involvement: An investigation of internally controlling styles. *Journal of Personality*, *53*(3), 435–449. https://doi.org/10.1111/j.1467-6494.1985.tb00375.x

Poorthuis, A., Schuitema, J., & van Zwieten, J. (2015). *Van faalervaring naar leerervaring: Zijn reacties van leerlingen op lage cijfers te beïnvloeden?*

Reis, S. M., & Renzulli, J. S. (1984). Key features of successful programs for the gifted and talented. *Educational Leadership*, *41*(7), 28–34.

Renzulli, J. S. (2005). Applying gifted education pedagogy to total talent development for all students. *Theory into Practice*, *44*(2), 80–89.

Robinson, A., & Clinkenbeard, P. R. (1998). Giftedness: An exceptionality examined. *Annual Review of Psychology*, *49*(1), 117–139.

Rossem, R. V. (2010). *Dummyvariabelen in meervoudige regressie*. 40.

Ruiter, F. de. (2004). Enkele sombere doch hoopvolle gedachten voor het kunstonderwijs. *Tijdschrift Voor Hoger Onderwijs & Management, 11 (2)*.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, *25*(1), 54–67. https://doi.org/10.1006/ceps.1999.1020

Ryan, R. M., & Stiller, J. (1991). The social contexts of internalization: Parent and teacher influences on autonomy, motivation and learning. *Advances in Motivation and Achievement*, *7*, 115–149.

Ryckman, R. M., Hammer, M., Kaczor, L. M., & Gold, J. A. (1990). Construction of a hypercompetitive attitude scale. *Journal of Personality Assessment*, *55*(3–4), 630–639. https://doi.org/10.1080/00223891.1990.9674097

Ryckman, R. M., Hammer, M., Kaczor, L. M., & Gold, J. A. (1996). Construction of a personal development competitive attitude scale. *Journal of Personality Assessment*, *66*(2), 374–385. https://doi.org/10.1207/s15327752jpa6602_15

Sapp, S. G., Harrod, W. J., & Zhao, J. L. (1996). Leadership emergence in task groups with egalitarian gender-role expectations. *Sex Roles*, *34*(1–2), 65–80.

ScienceGuide. (2007). *1 op 5 studenten uiterst gemotiveerd, hbo'ers minst "arm."* ScienceGuide. https://www.scienceguide.nl/2007/12/1-op-5-studenten-uiterst-gemotiveerd-hboers-minst-arm/

Seifert, K., & Sutton, R. (2019). Student diversity. *Educational Psychology*.

Sheldon, K. M., & Lyubomirsky, S. (2006). How to increase and sustain positive emotion: The effects of expressing gratitude and visualizing best possible selves. *The Journal of Positive Psychology*, *1*(2), 73–82. https://doi.org/10.1080/17439760500510676

Sin, N. L., & Lyubomirsky, S. (2009). Enhancing well-being and alleviating depressive symptoms with positive psychology interventions: A practice-friendly meta-analysis. *Journal of Clinical Psychology*, *65*(5), 467–487. https://doi.org/10.1002/jclp.20593

Span, P. (2001). Korte historie van het onderzoek naar begaafdheid in Nederland. *P. Span, AL de Bruin-de Boer & MC Wijnekus, Het Testen van Begaafde Kinderen. Suggesties Voor Diagnostiek En Behandeling. Alphen Aan de Rijn: Samsom*.

Sternberg, R. J., & Davidson, J. E. (2005). *Conceptions of giftedness*. Cambridge University Press.

Subotnik, R. F., & Jarvin, L. (2005). Beyond expertise. *Sternberg, RJ & Davidson, JE (2005), Conceptions of Giftedness*, 343–357.

Subotnik, R. F., Olszewski-Kubilius, P., & Worrell, F. C. (2011). Rethinking giftedness and gifted education: A proposed direction forward based on psychological science. *Psychological Science in the Public Interest*, *12*(1), 3–54. https://doi.org/10.1177/1529100611418056

Subotnik, R. F., Pillmeier, E., & Jarvin, L. (2009). The psychosocial dimensions of creativity in mathematics: Implications for gifted education policy. In *Creativity in mathematics and the education of gifted students* (pp. 165–179). Brill Sense.

Tannenbaum. (1986). Giftedness: A psychosocial approach. *Conceptions of Giftedness*, 21–52.

Tannenbaum. (2003). Nature and nurture of giftedness. *Handbook of Gifted Education*, *3*, 45–59.

Tannenbaum, A. J. (2000). A history of giftedness in school and society. *International Handbook of Giftedness and Talent*, *2*, 23–53.

Taylor, D., & Edge, D. (1997). Personal development plans: Unlocking the future. *Career Development International*, *2*(1), 21–23.

Terman, L. M. (1961). *The promise of youth. Genetic studies of genius, III*. Stanford, California: Stanford University Press.

Treffinger, D. J., & Feldhusen, J. F. (1996). Talent recognition and development: Successor to gifted education. *Journal for the Education of the Gifted*, *19*(2), 181–193. https://doi.org/10.1177/016235329601900205

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., Gagné, M., & Marsolais, J. (2003). Les passions de l'ame: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*(4), 756.

Vallerand, R. J., Fortier, M. S., & Guay, F. (1997). Self-determination and persistence in a real-life setting: Toward a motivational model of high school dropout. *Journal of Personality and Social Psychology*, *72*(5), 1161.

Vallerand, R. J., Pelletier, L. G., Blais, M. R., Briere, N. M., Senecal, C., & Vallieres, E. F. (1992). The Academic Motivation Scale: A measure of intrinsic, extrinsic, and amotivation in education. *Educational and Psychological Measurement*, *52*(4), 1003–1017.

Veelen, R. van, Endedijk, M. D., Möwes, R., Hattum-Janssen, N. van, & Geloven, M. D. (2018). *De lekkende pijplijn tussen opleiding en arbeidsmarkt: De professionele identiteit van bètastudenten in relatie tot hun voorgenomen carrièrekeuzes*. Universiteit Twente

Vella-Brodrick, D., & Klein, B. (2010). Positive psychology and the internet: A mental health opportunity. *Electronic Journal of Applied Psychology*, *6*(2), 30–41.

Wijsman, L. A., Saab, N., Warrens, M. J., van Driel, J. H., & Westenberg, P. M. (2018). Relations of autonomous and controlled motivation with performance in secondary school students' favoured and disfavoured subjects. *Educational Research and Evaluation*, *24*(1–2), 51–67. https://doi.org/10.1080/13803611.2018.1512872

Wood, A. M., Linley, P. A., Maltby, J., Kashdan, T. B., & Hurling, R. (2011). Using personal and psychological strengths leads to increases in well-being over time: A longitudinal study and the development of the strengths use questionnaire. *Personality and Individual Differences*, *50*(1), 15–19.

Wright, R. A., & Brehm, J. W. (1989). *Energization and goal attractiveness.*

Appendix

Table 9

Items used to measure the competencies in English and Dutch

Construct	English	Dutch
Management & Commerce	I am good at chairing meetings	Ik kan goed vergaderingen voorzitten
	I am good at leadership and management	Ik kan goed leidinggeven en managen
	I am good at networking	Ik kan goed netwerken
	I am good at being entrepreneurial	Ik kan goed ondernemen
Research	I am good at conducting research	Ik kan goed onderzoek doen
	I am good at writing research reports	Ik kan goed onderzoeksrapporten schrijven
	I am good at developing new research ideas	Ik kan goed nieuwe onderzoek ideeën bedenken
Interpersonal Skills	I am good at listening to others	Ik kan goed luisteren naar anderen
	I am good at empathizing with others	Ik kan goed mij inleven in anderen
	I am good at communicating with others	Ik kan goed communiceren met anderen
Analytical	I am good at analysing problems	Ik kan goed problemen analyseren
	I am good at thinking analytically	Ik kan goed analytisch denken
	I am good at developing solutions to complex problems	Ik kan goed oplossingen bedenken voor complexe problemen
Self-organization	I am good at managing my time	Ik kan goed mijn tijd managen
	I am good at organizing myself	Ik kan goed mezelf organiseren
	I am good at completing to-do lists	Ik kan goed to-do lijstjes afkrijgen
	I am good at working in a structured way	Ik kan goed gestructureerd werken
International orientation	I am good at speaking a second language (e.g. Dutch, Chinese)	Ik kan goed een tweede taal spreken (bijv. Engels, Chinees)
	I am good at dealing with cultural differences	Ik kan goed met culturele verschillen omgaan
	I am good at working in a culturally diverse context	Ik kan goed werken in een cultureel diverse context
Teaching	I am good at explaining things to others	Ik kan goed dingen uitleggen aan anderen
	I am good at mentoring others	Ik kan goed anderen begeleiden
Flexibility	I am good at dealing with uncertainty	Ik kan goed omgaan met onzekerheid
	I am good at coping with change	Ik kan goed omgaan met veranderingen
	I am good at adapting to new situations	Ik kan goed mij aanpassen aan nieuwe situaties
Collaboration	I am good at project-based teamwork	Ik kan goed in teams aan projecten werken
	I am good at collaborating with people in my field	Ik kan goed samenwerken met mensen binnen mijn vakgebied
	I am good at collaborating with people outside my own field	Ik kan goed samenwerken met mensen buiten mijn vakgebied
Competing	I am good at competing with others	Ik kan goed de competitie aangaan

Table 10

Items used to measure the construct competitiveness in English and Dutch

Question	Dutch	English	Reversed
1	Op school voel ik me niet beter dan andere studenten als ik het beter doe dan zij.	I don't feel any better than other students at school if I do better than them.	X
2	Ik kan het niet uitstaan als ik een argument verlies.	I can't stand to lose an argument.	
3	Ik vind mezelf competitief, zelfs in situaties die niet om competitie vragen.	I find myself competitive, even in situations that don't call for competition.	
4	Competitief zijn inspireert mij om uit te blinken op school.	Being competitive inspires me to excel at school.	
5	Verliezen in een wedstrijd heeft weinig effect op mij.	Losing in a contest has little effect on me.	X
6	Ik concurreer met andere studenten, ook al concurreren ze niet met mij.	I compete with other students, even when they don't compete with me.	
7	Ik zie mijn medestudenten niet als mijn vijanden in een wedstrijd.	I don't see my fellow students as my enemies in a contest.	X
8	Ik vind het niet erg om een medestudent de eer te geven voor iets dat ik net zo goed of beter had kunnen doen.	I don't mind giving a fellow student credit for something I could have done just as well or better.	X
9	Mensen die tijdens de wedstrijd stoppen, zijn zwak.	People who stop during the game are weak.	
10	Als andere studenten worden beloond voor hun prestaties, dan voel ik jaloezie.	If other students are rewarded for their achievements, I feel jealousy.	

X = reversed question

Table 11

Design of the best possible self exercises and the differences per condition

	Intrapersonal BPS condition	**Interpersonal BPS condition**	**Control condition**
		EMAIL	
Text mail with results	**Personal results** In the attached image you will find the personal results of the competency test. **STEP 1:** Open the attached image and check your personal results. In the graph you will find your personal score on each of the competences (the blue bar). Below you can find an explanation of the meaning of the competencies.	**Personal results** In the attached image you will find the personal results of the competency test. **STEP 1:** Open the attached image and check your personal results. In the graph you will find your personal score on each of the competencies (the blue bar) compared to the average score of other students (the red line). Below you can find an explanation of the meaning of the competencies.	**Personal results** In the attached image you will find the personal results of the competency test. **STEP 1:** Open the attached image and check your personal results. In the graph you will find your personal score on each of the competencies (the blue bar) compared to the average score of other students (the red line). Below you can find an explanation of the meaning of the competencies.
Description graph competencies	Blue bar = Your score	Blue bar = Your score Red line = Average score of students	Blue bar = Your score Red line = Average score of students
	1. Management & Commerce: Having a high score suggests you have good entrepreneurial and leadership abilities. 2. Research: Having a high score suggests you are skilled at doing research. 3. Interpersonal Skills: Having a high score suggests you get along well with people. 4. Analytical: Having a high score suggests you are good at analytical thinking. 5. Self-organization: Having a high score suggests you follow a structured approach and organize your time efficiently. 6. International orientation: Having a high score suggests you are skilled at working in international groups. 7. Teaching: Having a high score suggests you are skilled at educating others. 8. Flexibility: Having a high score suggests you are flexible in dealing with changes. 9. Collaboration: Having a high score suggests you are skilled at working together.		
	STEP 2: Choose two competencies from the graph that you find most interesting to further develop during your study so that you can bring out the best in yourself.	**STEP 2:** Choose two competencies from the graph on which you score relatively high to further develop during your study so you can distinguish yourself from your fellow students.	**STEP 2:** Choose two competencies from the graph on which you score relatively high to further develop during your study.

	You are about to do an exercise with these two competencies. During this exercise you think about what your life in the future will look like when you have fully developed these competencies and thus can bring out the best in yourself.	You are about to do an exercise with these two competencies. During this exercise you think about what your life in the future will look like when you fully master these competencies and thus can distinguish yourself from your fellow students.	x
	STEP 3: Have you reviewed your results and selected two competencies that you find most interesting to further develop during your study so that you can bring out the best in yourself? Then you can close this screen and go back to the previous tab where you answered other questions (about your age and education).	**STEP 3:** Have you reviewed your results and selected two competencies on which you score relatively high to further develop during your study so that you can distinguish yourself from your fellow students? Then you can close this screen and go back to the previous tab where you answered other questions (about your age and education).	**STEP 3:** Have you reviewed your results and selected two competencies on which you score relatively high to further develop during your study? Then you can close this screen and go back to the previous tab where you answered other questions (about your age and education).
		QUALTRICS	
Qualtrics selection first competency	Select the two competencies that you find most interesting to further develop during your studies so that you can bring out the best in yourself. The chosen competencies will be used in the exercise. During this exercise you think about what your life in the future will look like when you have fully developed these competencies and thus can bring out the best in yourself.	Select the two competencies on which you score relatively high to further develop during your studies so that you can distinguish yourself from your fellow students. The chosen competencies will be used in the exercise. During this exercise you think about what your life in the future will look like when you have fully mastered these competencies and thus can distinguish yourself from your fellow students.	Select the two competencies on which you score relatively high to further develop during your studies.
	Select below the first competency that you find most interesting:	Select below the first competency on which you score relatively high:	Select below the first competency on which you score relatively high:
Qualtrics selection second competency	Select below the second competency that you find most interesting:	Select below the second competency on which you score relatively high:	Select below the second competency on which you score relatively high:
Component	*Select box*		

Qualtrics exercise	You have reviewed the results of the competency test and you have selected two competencies that you find most interesting to further develop during your studies so that you can bring out the best in yourself.	You have reviewed the results of the competency test and you have selected two competencies on which you score relatively high to further develop during your studies so that you can distinguish yourself from your fellow students.	x
	You are going to do an exercise in which you imagine what your future life will look like when you have fully developed these competencies. Keep in mind that you cannot give wrong answers, the answers should apply to you.	You are going to do an exercise in which you imagine what your future life will look like when you have fully mastered these competencies. Keep in mind that you cannot give wrong answers, the answers should apply to you.	x
	Imagine that you have successfully graduated and that everything went as smoothly as possible. You are at the beginning of your career and during your studies you have worked hard on the competencies so that you can bring out the best in yourself.	Imagine that you have successfully graduated and that everything went as smoothly as possible. You are at the beginning of your career and during your studies you have worked hard on the competencies so that you distinguish yourself from other graduates.	x
	In the image that you are visualizing now, you will get the most out of the competencies that are feasible for you. Keep this image in mind. What does your life look like in this image? What do you do? How do you use the developed competencies?	In the image that you are visualizing now, you fully master the chosen competencies and perform better than other graduates. Keep this image in mind. What does your life look like in this image? What do you do? How do you use the developed competencies?	x
Component	First write down what your future life looks like in about 50 words. The developed competencies are part of your future life. *Text box*	First write down what your future life looks like in about 50 words. The developed competencies are part of your future life. *Text box*	

Qualtrics goal 1	Above you described what your future life will look like when you have fully developed both competencies. We are now going a step back in time, to the present moment.	Above you described what your future life looks like when you fully master both competencies. We are now going a step back in time, to the present moment.	x
	Now write down a goal (or goals) that will help you achieve your future life, as you have just described. How do you ensure that you have fully developed the competency ____ at the end of your study and can bring out the best in yourself. For example, think of a goal that you can use during your studies to develop your ____ skills.	Now write down a goal (or goals) that will help you achieve your future life, as you have just described. How do you ensure that you fully master the competency ____ at the end of your study so you can distinguish yourself from other graduates? For example, think of a goal that you can use during your studies to develop your ____ skills.	x
Component	*Text box*		
Qualtrics goal 2	Now do the same for competency ____. How do you ensure that you have fully developed competency ____ at the end of your study and can bring out the best in yourself. For example, think of a goal that you can use during your studies to develop your ____ skills.	Now do the same for competency ____. How do you ensure that you fully master the competency ____ at the end of your study so you can distinguish yourself from other graduates? For example, think of a goal that you can use during your studies to develop your ____ skills.	x
Component	*Text box*		
Transition to motivation	Continue to the final part of this research.	Continue to the final part of this research.	Continue to the final part of this research.

Table 12

Items used to measure the construct motivation in English and Dutch

Type	Question		Dutch	English	Reversed
Personal development motivation	1	Motivation	Ik wil graag mijn competenties verder ontwikkelen.	I would like to further develop my competencies.	
	2	Intrinsic	Het verder ontwikkelen van mijn competenties zal me plezier en voldoening geven.	The further development of my competencies will give me pleasure and satisfaction.	
	3	Intrinsic	Het verder ontwikkelen van mijn competenties zal me dingen laten ontdekken die ik nog nooit eerder heb ervaren.	The further development of my competencies will allow me to discover things that I have never experienced before.	
	4	Intrinsic	Het ontwikkelen van mijn competenties zal me helpen me mezelf overtreffen.	Developing my competencies will help me outperform myself.	
	5	Intrinsic	Het ontwikkelen van mijn competenties geeft me voldoening in het streven naar excellentie in mijn studie.	Developing my competencies allows me to experience satisfaction in my quest for excellence in my studies.	
	6	Extrinsic	Het ontwikkelen van mijn competenties zal me helpen om me voor te bereiden op mijn carrière.	Developing my competencies will help me to prepare for my career.	
	7	Extrinsic	Het ontwikkelen van mijn competenties zal me een voorsprong geven wanneer ik de arbeidsmarkt betreed.	Developing my competencies will give me a head start when I enter the job market.	
	8	Extrinsic	Ik wil mijn competenties ontwikkelen zodat ik beter word dan de meeste andere studenten.	I want to develop my skills so that I become better than most other students.	
	9	Extrinsic	Het is belangrijk om mijn competenties te ontwikkelen zodat ik aan andere mensen mijn kwaliteiten kan laten zien.	It is important to develop my competencies so I can show other people my qualities.	
	10	Amotivation	Ik heb het gevoel dat ik mijn tijd verspil als ik mijn competenties verder ga ontwikkelen.	I have the feeling that I am wasting my time when I am developing my competencies further.	X
	11	Amotivation	Ik vraag me af of ik moet beginnen aan het verder ontwikkelen van mijn competenties.	I wonder if I should start to further develop my competencies.	X
Study motivation	12	Study motivation	Het behalen van een (hbo of wo) diploma is erg belangrijk voor mij.	Getting a college degree is very important to me.	
	13	Study motivation	Mijn academische doelen en ambities zijn goed gedefinieerd.	My academic goals and purposes are well defined.	
	14	Study motivation	Ik weet waarom ik op het hbo of de universiteit zit en wat ik eruit wil halen.	I know why I'm in college and what I want out of it.	

X = reversed

Note. Items for personal development motivation: 1-11, and items for study motivation: 12-14.

Table 13

Descriptive statistics (N, minimum, maximum, mean and standard deviation) of age, motivation and competitiveness

	N	Minimum	Maximum	Mean	Std. Deviation
Age	182	16	40	20.83	2.77
Intrinsic motivation	182	2.60	5.00	4.03	.48
Extrinsic motivation	182	2.25	5.00	3.53	.56
Study motivation	182	2.33	5.00	4.20	.66
Personal development motivation	182	2.73	5.00	3.83	.40
Competitiveness	182	1.30	3.80	2.55	.52

Table 14

Frequencies of gender, study institution, study, year of study, social versus STEM studies and condition

		Frequency	Percent
Gender	Male	52	28,6
	Female	130	71,4
	Total	182	100,0
Study institution	University of Applied Sciences	13	7,1
	University	169	92,9
	Total	182	100,0
Study	Creative Media and Game Technologies	1	0,5
	HBO - ICT	5	2,7
	Human Resource Management	1	0,5
	Media, Informatie & Communicatie	1	0,5
	Ondernemerschap & Retail Management	1	0,5
	Technische Informatica	1	0,5
	Werktuigbouwkunde	2	1,1
	B - Communication Science	28	15,4
	B - Psychology	134	73,6
	M - Electrical Engineering	1	0,5
	M - Health Sciences	1	0,5
	M - Industrial Design	1	0,5
	M - Interaction Technology	1	0,5
	M - Psychology	1	0,5
	M - Technical Medicine	1	0,5
	Total	180	98,9
Year of study	Bachelor year 1	125	67,9
	Bachelor year 2	11	6,0
	Bachelor year 3	23	12,5
	Bachelor year 4	7	3,8
	Master year 1	5	2,7
	Master year 2	2	1,1
	Total	173	94,0
Social vs STEM studies	Social studies	166	91,2
	STEM studies	14	7,7
	Total	180	98,9
Condition	Intrapersonal BPS	61	33,5
	Interpersonal BPS	59	32,4
	Control	62	34,1
	Total	182	100,0

Table 15

Students in the control condition that wanted to receive the BPS exercise

	Total number	Percentage
Participants in the control condition that did **not** indicate that they wanted to receive the BPS exercise.	54	86%
Participants in the control condition that did indicate that they wanted to receive the BPS exercise.	9	14%
Total	63	100%

Table 16

Reliability analysis competition

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Cronbach's Alpha if Item Deleted
Competitiveness 1	22.55	23.54	.64
Competitiveness 2	22.62	22.63	.63
Competitiveness 3	22.74	20.45	.58
Competitiveness 4	22.81	21.28	.60
Competitiveness 5	22.53	21.47	.59
Competitiveness 6	23.24	20.79	.59
Competitiveness 7	23.55	23.71	.66
Competitiveness 8	23.41	23.85	.65
Competitiveness 9	23.24	23.41	.65
Competitiveness 10	23.22	23.00	.63
Cronbach's Alpha	.65		
N of Items	10		

Table 17

Reliability analysis intrinsic motivation

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Cronbach's Alpha if Item Deleted
Motivation 1	15.84	4.04	.58
Intrinsic motivation 2	15.99	3.75	.58
Intrinsic motivation 3	16.36	3.90	.68
Intrinsic motivation 4	15.98	4.18	.63
Intrinsic motivation 5	16.49	3.92	.66
Alpha	.68		
N of items	5		

Table 18

Reliability analysis extrinsic motivation

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Cronbach's Alpha if Item Deleted
Extrinsic motivation 6	9.87	3.97	.44
Extrinsic motivation 7	10.29	3.52	.39
Extrinsic motivation 8	11.32	2.70	.28
Extrinsic motivation 9	10.88	2.96	.35
Cronbach's Alpha	.44		
N of Items	4		

Table 19

Reliability analysis study motivation

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Cronbach's Alpha if Item Deleted
Study motivation 1	8.08	2.52	.68
Study motivation 2	8.77	1.54	.51
Study motivation 3	8.37	1.94	.55
Cronbach's Alpha	.69		
N of Items	3		

Table 20

Reliability analysis personal development motivation

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Cronbach's Alpha if Item Deleted
Motivation 1	37.79	15.94	.60
Intrinsic motivation 2	37.93	15.29	.59
Intrinsic motivation 3	38.30	16.14	.63
Intrinsic motivation 4	37.93	16.31	.61
Intrinsic motivation 5	38.43	15.70	.61
Extrinsic motivation 6	37.86	16.53	.63
Extrinsic motivation 7	38.28	16.20	.63
Extrinsic motivation 8	39.31	15.55	.64
Extrinsic motivation 9	38.87	16.31	.66
Amotivation 10	37.69	16.69	.64
Amotivation 11	38.70	16.61	.68
Cronbach's Alpha	.65		
N of Items	11		

Table 21

Pearson correlation for extrinsic motivation items

	Extrinsic motivation 6	Extrinsic motivation 7	Extrinsic motivation 8	Extrinsic motivation 9
Extrinsic motivation 6	-			
Extrinsic motivation 7	.30**	-		
Extrinsic motivation 8	-.01	.20**	-	
Extrinsic motivation 9	.09	.02	.37**	-

**. Correlation is significant at the 0.01 level (2-tailed).

Table 22

Factor analysis all motivation items

	Factor			
	1	2	3	4
Motivation 1	.48			.38
Intrinsic motivation 2	.40		.24	.35
Intrinsic motivation 3				.27
Intrinsic motivation 4	.39			
Intrinsic motivation 5	.21		.41	
Extrinsic motivation 6	.68			
Extrinsic motivation 7	.41			
Extrinsic motivation 8			.70	
Extrinsic motivation 9			.50	
Amotivation 10	.24		-.21	.41
Amotivation 11				.59
Study motivation 1		.51		
Study motivation 2		.74		
Study motivation 3		.69		
Eigenvalue	3.01	1.92	1.59	1.08
% of Variance	21.51	13.69	11.35	7.74

Table 23

Crosstab with answers to the manipulation questions and the actual condition

		Actual condition the participant was assigned to		
		Intrapersonal BPS	Interpersonal BPS	Control
Intrapersonal manipulation answer I have selected two competencies that I find most interesting and described how I can develop my competencies so that I can bring out the best in myself.	Count	54	10	17
	Percentage	66,7%	12,3%	21,0%
Interpersonal manipulation answer I have selected two competencies on which I score relatively high and described how I can develop my competencies so that I can distinguish myself from other students.	Count	2	39	16
	Percentage	3,5%	68,4%	28,1%
Control manipulation answer I only selected two competencies on which I score relatively high that I want to further develop.	Count	5	10	29
	Percentage	11,4%	22,7%	65,9%
	Count total	61	59	62
	Percentage total	33,5%	32,4%	34,1%