

Well-being and Performance in Academic Settings: The
Predicting Role of Self-efficacy.

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I don't know if you can or cannot... What I know is that if you don't believe you can, surely you will never be able to. This thesis is the result of believing it was possible in the first place...

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(Acknowledgements, in Spanish)

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No obstante, en este apartado, reservo un lugar especial a aquellas personas que han servido como inmejorables modelos para llegar a ser la persona que hoy en día soy. Estas personas son mis padres *Vicen Esteve* y *Joaquín Bresó* sin cuya presencia (incluso en la distancia), mi vida habría carecido de sentido. Ojala algún día yo llegue a ser la mitad de importante para alguien como ellos son para mí.

Finalmente, quiero dedicar esta tesis a todos y cada uno de los estudiantes universitarios que han participado como muestra para la realización y publicación de los estudios que, a continuación, les paso a presentar.

Well-being and Performance in Academic Settings: The Predicting Role of Self-efficacy.

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Foreword

When a PhD. candidate writes a thesis, he or she wants to answer several questions that, supposedly, need to be answered. These questions will differ from one thesis to another, but the first question that every PhD. candidate should answer in any case is the always same: Why? That is, what justifies spending four years working on publishing a thesis? This question will be the first that I will try to answer in the current thesis.

On the first day of my class of every academic semester I ask my students exactly the same questions: Why are you here? Why are you studying this subject? And I always get the same answer: Nothing. They don't actually know why they are there; or maybe they do know, but the reason is not good enough to be shared. Additionally, when I discussed my experience with colleagues from other universities and majors, I realized that similar situations were found among university students in general. This was the main motivation for writing this thesis. I wondered what I could do to understand and change this low level of motivation that students display semester after semester. What is the 'key variable' that can be modified in order to enhance students' interest in their studies? Additionally, the idea of researching this topic was reinforced by the fact that, despite high students' enrollment rates at Universities, weak academic performance and high dropout rates were persistent problems among undergraduates (Lloyd, Tienda, & Zajacova, 2001).

In the case of Spanish students, the National Spanish Plan of Universities Quality Assessment, published by the Council of Spanish University Coordination in December 2002, pointed out that 26% of Spanish students drop out of their studies. Additionally, this situation has been reflected in some studies "*48,573 University students dropped out of their studies during the year 2003 in the Canary Islands*" (Álvarez, Bethencourt,

Cabrera, & González, 2005). Even in newspapers: *“More than 90,500 students, that is, 42% of the total, dropped out of their studies during the 2004-2005 academic year ”* (El Mundo, 25 October, 2006). Furthermore, a report published in May 2006 by the Industrial Research and Development Advisory Committee of the European Commission showed that 48.6% of Spanish students between 18 and 24 years of age abandoned their studies during the previous academic year.

However, this dropout trend among students' is not exclusive to Spain. Other countries have also identified similar problems. For instance, on 22 of September 2005, BBC News published *“Student dropout rates were on the rise in British universities. Figures for the whole of the UK showed that 18,565 young students dropped out of university or college after starting their courses in 2002”*. Besides the high dropout rates, the well-being and performance of those students who continue their studies seems to decrease year by year. In fact, the general feeling reported by teachers is that almost every student can do more and perform better than they usually do. From my own experience and conversations with several lecturers, this situation is likely to be due to their lack of motivation.

Thus, the first step of identifying the problem was completed. Consequently I began to review the existing literature and research on this issue. Finally, I applied existing knowledge in order to provide different ways of approaching to this problem. It is this process of researching that I am going to elaborate in the following thesis. This thesis therefore describes, step by step, chapter by chapter, the development of a research line aimed at developing a model for explain, from a psychosocial point of view, the relationships between students' environment (i.e. obstacles and facilitators), self-efficacy beliefs, students' well-being (i.e., burnout and engagement), and their performance.

Chapter 1

Introduction

Research on how students learn, their motivation and performance at universities is strongly related to work-organizational psychology since lots of studies carried out among university students are conducted from the work-organizational psychology perspective. That is, considering students as an 'active' part of organizations where they have a concrete role and they have to perform concrete tasks (like a job).

What is Work?

The concept of 'work' is dynamic in its meaning. Thus, 'work' defines different sorts of activities, and its meaning has changed with time. The Cambridge English Dictionary provides the following definition of work: *"An activity, such as a job, in which a person uses physical or mental effort to make or do something, usually for money, or the material used or what is produced"* (Cambridge International Dictionary of English, p. 1279). In the field of Work Organizational Psychology, work is defined by Peiró (1986) as *"a set of human, remunerated or not remunerated productive activities which, by means of the use of skills, materials or available information, it allows to produce, or to give services, goods or products. In the above mentioned activity the person contributes energy, skills, knowledge and other resources and obtains some type of material, psychological and/or social compensation"*. Additionally, work is more broadly defined by the Handbook of Industrial, Work and Organizational Psychology (2001) as *"the expenditure of an effort and energy to achieve a goal"* (p.1).

However, the delineation between work and the sphere of non-work is not entirely clear. In fact, there are several activities that do not exactly fit the previous definitions and were not recognized as a job in the past, but are nowadays considered work (such as house-work, childcare or caring for the elderly). The meaning of work has been socially constructed over time and has changed with society (Peiró, Prieto, & Roe, 1996).

Indeed, most social services or health-care jobs were initially performed in an informal working context (i.e. caring for sick relatives, caring for children, counseling, etc.) and, then became 'official' jobs, such as nurses, nannies, counselors, etc. Thus, the meaning of work should be considered in a wider social context (Price, 1985; Wilensky, 1981). Essentially, work is a socially constructed phenomenon with no fixed or universal meaning across space and time. *"What counts as work cannot be read off from an objective analysis of specific activities because the meaning of work is not immanent to the activities; meanings are socially constructed and maintained, they are contingently present and permanently fragile"* (Grint, 1991, p. 47). Therefore, new conceptualizations of work are needed for the new changing societies we live in.

Do Students Work?

Students are not formal workers (in a legal sense) but, from a psychological point of view, most of students' activities related to their studies are comparable to work, and just like formal workers, students form part of structures where they have a concrete role and perform activities that require effort. The main difference between work and study settings is the lack of a direct relationship of the activities with money, in the case of students. But, even on this level, students do have a sort of economic relationship with their performance since they obtain grants and financial support for their studies from the government when they successfully accomplish each academic year. Hence, at least for those who need and value this financial support, the tasks as students also have an economic goal, just like formal workers. Additionally, students also receive a form of direct compensation or benefit in terms of education, qualifications or vocational skills that will be valuable in the future. Like formal workers, students have to attend regular activities (classes) and perform specific tasks (individual or group projects). Like formal workers,

their performance is regularly assessed by exams and supervised (by their teachers). Thus, it can be concluded that similar environmental and personal factors could have similar effects on students as they have on formal workers.

Do Stress and Well-being models Work among Students?

Theoretical work-stress models, such as the Job Demands-Control-Support model (Karasek & Theorell, 1990) or the Job Demands-Resources model (Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), have also been applied to academic settings and their suitability has been largely demonstrated (Chambel & Curren, 2005; Cotton, Dollard, & de Jonge, 2002). Nevertheless, more research is still needed in order to improve a possible lack of these previous models and to fit them wholly to the students' context.

Therefore, the present thesis is an attempt to validate a whole 'heuristic' model that works for understand and explain the relationships between students' environment (i.e. obstacles and facilitators), self-efficacy beliefs, students' well-being (i.e., burnout and engagement), and their performance. Consequently, a students' performance model (*Figure 1.1*) will be tested by means of different kinds of studies (cross-sectional, longitudinal, quasi-experimental, etc.), one that focuses on the main parts of the whole model and takes into account the relevance of approaching practice by interventions besides the theoretical implications.

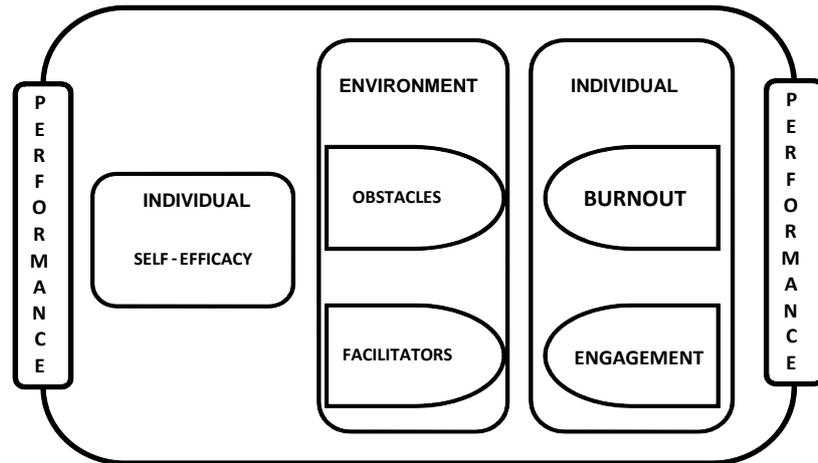


Figure 1.1. The “Heuristic” model of performance proposed for students’ settings

As seen in *Figure 1.1*, this heuristic model considers student performance an antecedent and also a consequence of the combination of three main aspects: student’s self-efficacy (individual aspect); the student’s perception of obstacles and facilitators (environmental aspects); and student’s burnout and engagement (as indicators of well-being).

The study of theoretical and empirical relationships between stress and performance has been one of the most relevant issues in the field of work and organizational psychology. As far back as 1949, the principal objective of occupational psychology was described by Leslie Hearnshaw as the ‘maximization of achievement and the minimization of stress at work’. However, after researchers on work-organizational psychology had spent almost 40 years focusing on the stress-performance relationships, in 1987 Wallis still wrote “*we are very far from understanding just how stress, satisfaction, and achievement interact*” (Wallis, 1987, p. 113).

Hence in recent times, several models have been tested on different samples of workers in order to validate a comprehensive framework which helps to understand how workers can reduce stress and enhance performance at work. For instance, the Demands Control Model (Karasek, 1978, 1998) assumed that job strain is caused by the combination of high

job demands and low job control. More recently, the Job Demands-Resources Model (JD-R) (Demerouti, et al., 2001) postulated the existence of a dual process (i.e., motivational process vs. health impairment process) led by the relationship between job-demands and job-resources. Thus, the JD-R model, based on Karasek's previous model, attributes employee well-being to the characteristics of work environments.

Previous studies have supported the underlying predictions of the JD-R model, namely that job demands are the main predictors of negative job strain (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003; Bakker, Demerouti, & Verbeke, 2004), while job resources are the most important predictors of work engagement (Hakanen, Bakker, & Schaufeli, 2006). However, studies on the JD-R model had been restricted to work characteristics, and have ignored the role of employees' personal resources, which can be important determinants of their adaptation to work environments (Hobfoll, 1989; Judge, Locke, & Durham, 1997). That is the main reason why Xanthopoulou, Bakker, Demerouti, & Schaufeli, (2007) investigated the importance of personal resources and tested that personal resources, together with job demands and job resources, contribute to explain variance in exhaustion and work engagement. However, the conceptualization of personal resources used by Xanthopoulou, et al., (2007) considered them a general personal characteristic that predisposes the individual, closer to a personality trait, and not a concrete resource related to the task/work. In fact the 'extension of the JD-R model' proposed by Xanthopoulou, et al., (2007) considered self-efficacy as a personal resource, but it is taken into account as a general dimension which refers to individuals' perceptions of their general ability to meet demands in a broad array of contexts (Chen, Gully, & Eden, 2001). Conversely, self-efficacy in the present thesis is specifically assessed in the background of the Social Cognitive Theory (SCT)

principles (Bandura, 1997; 2001), where self-efficacy is specific of a domain. Moreover, the power of self-efficacy focuses on its relationship with past and future success and not on a personal trait. According to the SCT (Bandura, 1997, p.3), self-efficacy is defined as the “*belief in one’s capabilities to organize and execute the course of action required to produce given attainments*”.

In order to advance conceptualization about student stress, well-being, and performance, the above-mentioned literature on work and organizational psychology is followed in the absence of well conceived specific theories for students. Research has consistently demonstrated the convenience of assessing processes typically used in work psychology, such as stress, among students (Abouserie, 1994; Felsten & Wilcox, 1992). Like paid workers, students work in hierarchical structures, with defined ‘job’ tasks and variable levels of control and support. They are required to meet deadlines, and progress is dependent on performance (Cotton, et al., 2002, p. 148). Different studies have also supported this idea, linking student work to regular work; for instance, in relation to the university student role (Winefield, 1993). Thus, what students do at university is conceptualized as ‘work’. Then theorized links between the environmental conditions (i.e., obstacles and facilitators), well-being (i.e., burnout and engagement), and performance, are examined.

Students’ Obstacles and Facilitators

In general terms, obstacles have been defined as characteristics of a situation which have the capacity to *impede* performance. For instance, Brown and Mitchell (1991) defined performance obstacles as factors in the work environment that restrict productivity by inhibiting employees in the execution of task responsibilities. They defined organizational obstacles somewhat more narrowly as tangible organizational

characteristics that have the capacity to restrict performance (Brown & Mitchel, 1993). Obstacles have also been called performance barriers (Tesluk & Mathieu, 1999) or situational factors (Peters & O'Connor, 1980). Although slightly different terms are used, what they have in common is that they refer to aspects in the work situation that interfere with translating individual ability and motivation into effective performance. In the case of students, obstacles are those aspects of academic environment that potentially impede their academic performance (e.g., poor library services, lack of computers, and poor scheduling of classes).

Conversely, facilitators are characteristics of the work situation that have the capacity to *enhance* performance. They were defined by Schneider and Bowen (1993) as Human Resource policies (e.g., training, supervising behaviors) toward removing work obstacles. In a somewhat similar vein, facilitators have also been defined as actions and strategies directed to mitigate problems caused by the obstacles that interfere with performance (Tesluk & Mathieu, 1999). In the case of students, facilitators are those aspects of the academic environment that potentially enhance academic performance (e.g., motivating teachers, good library facilities, and extra-training).

Student's Well-being: Burnout and Engagement

The assessment of well-being among workers, and recently among students has been a recurrent issue in the field of work and organizational psychology. Several aspects such as satisfaction, stress, burnout, etc., have been usually discussed. Thus traditionally, burnout has been one of the most examined concepts in order to assess well-being at work. Burnout is considered a three-dimensional syndrome (i.e., emotional exhaustion, depersonalization, and reduced personal accomplishment) that is measured

with the Maslach Burnout Inventory-Human Services Survey (MBI-HSS; Maslach & Jackson, 1981). Emotional exhaustion, which refers to feelings of being depleted of one's emotional resources, is regarded as the basic individual stress component of the syndrome. Depersonalization, referring to negative, cynical or excessively detached responses to other people at work, represents the interpersonal component of burnout. Finally, reduced personal accomplishment refers to feelings of decline in one's competence and productivity, and to one's lowered sense of efficacy, representing the self-evaluation component of burnout (Maslach, 1998).

Originally, all three dimensions of the MBI-HSS refer to contacts with recipients like students, patients, or clients. However, nearly a quarter of a century of research and practice has shown that burnout also exists outside the realm of human services. Therefore, the concept of burnout was broadened to include all employees and not only those who do 'people work' of some kind (Maslach & Leiter, 1997). Consequently, the original version of the MBI was adapted for use outside human services. This new version was called the MBI-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996) and consists of the three dimensions that parallel those of the original MBI in such a way that they are more generic and do not refer to the other people one is working with. The factor-structure of the MBI-GS proved to be cross-nationally invariant across samples from Sweden, Finland, and The Netherlands (Schutte, Toppinnen et al., 2000), and from Spain and the Netherlands (Salanova, Schaufeli Llorens, Peiró, & Grau, 2000). Initially, the MBI-GS was applied directly to assess students' burnout, but a specific questionnaire, the MBI-Student Survey (MBI-SS; Schaufeli, Salanova, Gonzalez-Romà, & Bakker, 2002), was developed for assessing 'academic burnout'. Students' burnout, as defined by the MBI-SS, is a three-dimensional emotional syndrome (i.e., exhaustion, cynicism, and inefficacy) that refers to feeling exhausted

because of study demands and having a cynical and detached attitude toward one's study. The past 25 years of research into burnout have increased the understanding of workers' (and students') well-being (Schaufeli & Buunk, 2002), and the three-dimensional structure of burnout is largely proved.

However, one main question about the structure of burnout still needs to be answered, namely the role of the so-called: 'third dimension' of burnout: lack of efficacy. The measurement of this third dimension has been criticised. For instance, most studies consistently show that professional efficacy correlates relatively poorly with exhaustion and cynicism (Lee & Ashforth, 1996; Green, Walkey & Taylor 1991). Additionally from a conceptual point of view, instead of a genuine burnout dimension, professional efficacy has been considered to be similar to a personality construct (Cordes & Dougherty, 1993; Shirom, 2003). Some etiological models also posit that burnout develops out of feelings of inefficiency and it can, therefore, be considered to be a crisis of professional efficacy. For example, Cherniss (1980, 1993) assumed that the lack of confidence in one's own competences is a critical factor in the development of burnout. Finally, clinical experience with burned-out patients suggests that exhaustion and cynicism appear together, whereas lack of professional efficacy is observed much less frequently (Brenninkmeijer & Van Yperen, 2003; Roelofs, Verbraak, Keijsers, de Bruin & Schmidt, 2005).

Those criticisms are the main reason why this issue is discussed, and a proposal of improvement in the measurement of burnout is suggested in Chapter 4 of the present thesis. Additionally, the results obtained from this study allow to suggest a different role of efficacy and inefficacy that are discussed in Chapter 5. Moreover, recent studies confirm the etiological role that the lack of professional efficacy plays in

the development of burnout (Salanova, Peiró & Schaufeli, 2002; Van Dierendonck, Schaufeli & Buunk, 2001). Hence, by taking the latter considerations into account, and based on the SCT, perceived efficacy is considered a predicting variable in the present thesis rather than a component of burnout.

Recently, the development in burnout research has shifted toward its opposite: engagement. According to Maslach and Leiter (1997), engagement is characterized by energy, involvement, and efficacy, which are the direct opposites of the three burnout dimensions exhaustion, cynicism and lack of professional efficacy, respectively. Engagement is assessed by means of three dimensions (vigor, dedication, and absorption) (Schaufeli, et al., 2002). The relationship between burnout and engagement can be described using two underlying dimensions: energy and identification (González-Romá, Schaufeli, Bakker, & Lloret, 2006; Schaufeli & Bakker, 2004). The energy dimension covers the range *exhaustion–vigor*, whereas the identification dimension covers *cynicism–dedication* (Figure 1.2). This conceptualization of well-being allows to assess the ‘whole well-being’, by not only considering the negative side, but also the ‘positive side of well-being’. Nevertheless, notice that the ‘whole well-being’ assessment model does not consider both the third dimensions of engagement (i.e., absorption) and burnout (i.e., inefficacy) since recent evidence suggests that absorption plays a slightly different role and might perhaps be considered a consequence of engagement rather than a constituting component (Salanova, Llorens, Cifre, Martínez, & Schaufeli, 2003), and also given the criticisms of the role of inefficacy, as previously pointed out. Additionally, González-Romá, et al. (2006) used a nonparametric Mokken scaling method in three different samples and demonstrated the suitability of considering *energy* (i.e., exhaustion, and

vigor) and *Identification* (i.e., cynicism, and dedication), that is, two distinct bipolar dimensions and not two poles of a single dimension (Figure 1.2).

Burnout has been a major topic in work stress research in the past three decades (Halbesleben & Buckley, 2004; Schaufeli & Enzmann, 1998), whereas work engagement has recently gained increasing interest in the field of occupational health psychology (Schaufeli & Bakker, 2004). The study of the ‘positive side of well-being’ follows an emerging trend toward ‘positive psychology’ that focuses on human strengths, well-being and optimal functioning rather than on weaknesses and malfunctioning (Seligman & Csikszentmihalyi, 2000).

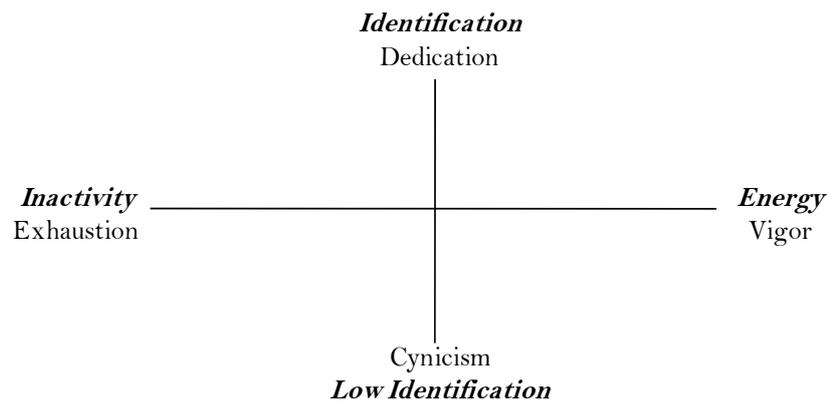


Figure 1.2. The energy vs. identification dimensions of well-being

Hence, the present thesis conceptualizes student well-being as academic burnout and engagement. Both, negative and positive aspects of well-being will be assessed in order to estimate the relevance that each *face of the same coin* has in the motivation and performance of students.

The study of well-being and performance in recent years has focused on the investigation of its antecedents, and several studies have found conclusive results about the relationship of self-efficacy with well-being and performance, and the leading role of well-being in students' success (Pajares, 1996; Stajkovic & Luthans, 1998; Lent, Brown, &

Hackett, 1994). However, there are still no conclusive results that can help us to unequivocally think about which are the real *key variables* that can be considered the best predictors of well-being. Thus, more research is needed in order to be able to solve some still hidden research questions. This point is one of the most significant motivations and justifications (in terms of theory advances) for the current thesis.

The Predictive power of Self-efficacy.

In 1977 with the publication of *Self-efficacy: Toward a Unifying Theory of behavioral Change*, Albert Bandura bridged an important gap in the social-behavioral theory, that he developed almost ten years before, by carrying out one of the most useful and relevant theories in social sciences. Self-efficacy was considered to be the missing element in previous theoretical approaches, and the importance of personal factors was pointed out. By applying the SCT principles to students' functioning, self-efficacy can be considered component of a dynamic interaction of personal (efficacy beliefs), environmental (obstacles and facilitators) and well-being (burnout and engagement), but one that takes into account that the individual level is the key point in this process. At the same time, the reciprocal nature of the determinants of the human functioning in the SCT allows, in terms of intervention, to apply efforts to both personal and environmental processes. Using the SCT, for instance, teachers can improve their students' emotional states and correct their self-beliefs by changing their self-perception; and they can also improve their academic skills and self-regulatory practices (behavior), and can finally propose changes in the environment (classrooms or educational structures) that can be useful to maximize student performance (Pajares, 1996).

Although the SCT is based on the idea that individuals are agents proactively engaged in their own development and can make things

happen by their actions (human agency), the environment also influences their perceptions and the power of the individual can also be influenced by the environment. For students' settings, this means that besides the influence that students' self-efficacy has in their well-being and future performance, the obstacles and facilitators that students perceive will also influence their self-efficacy beliefs and, consequently, their future performance. This is the reason why the influence of environmental aspects (obstacles and facilitators) is also considered in the present thesis (see Chapter 3).

In addition, self-efficacy is also responsible for the extent to which students persist in their tasks and how much effort they invest in the execution of a concrete task. Students' functioning is influenced by several factors but, expectations that a student has about his/her own action and, the interpretation of success or failure in the execution, necessarily have a central role in the determination of behavior (Pajares, 1996). Thus in this thesis, each of these variables will be assessed in order to investigate the antecedent-consequent effect that one has on the others.

The two major aims of the present thesis are to evaluate a 'heuristic' model (*Figure 1.1*) which allows to study relationships between self-efficacy, obstacles and facilitators perceived by the students, burnout-engagement, and their performance; and based on the results, to develop and test an intervention which aims at maximizing self-efficacy of students in order to enhance students' well-being and their performance. Different parts of the whole model will be tested separately (Chapters 2-5), whereas in the last study (Chapter 6), the effectiveness of an intervention program is evaluated.

Support for the relationships between self-efficacy and performance in academic settings exists (see Lent, Brown, & Hackett, 1994, 2004;

Schunk, 1995). A meta-analysis carried out in 1998 by Stajkovic and Luthans derived an average correlation of .38 between self-efficacy and work-related performance. This conclusion suggests that self-efficacy may be a better predictor of performance, much more so than the personality traits-based constructs that are commonly used in organizational research (Adler & Weiss, 1988; George, 1992). Likewise, a relevant line of enquiry in organizational behavior research relates workers' well-being to performance. Lyubomirsky, King, and Diener (2005) suggested a conceptual model (as a result of a large meta-analysis), which argued that the happiness-success link exists, not only because success makes people happy, but also because a positive affect stimulates success. The notion here is simple; when students feel well, they engage in their tasks and perform better. Conversely under high levels of stress, students' cognitive processes, such as concentration and memory, are affected (Fisher, 1994). In fact, a review carried out by Daniels and Harris (2000) concluded that *"there is a body of longitudinal evidence and some studies that have found that well-being predicts future performance after controlling for initial performance"* (p. 306). In addition, factors on well-being (especially the negative ones) appear to have a stronger effect on performance than environmental conditions (Daniels & Harris, 2000; Wright & Staw, 1999).

Plan of Chapters

This thesis is based on five empirical studies. Chapters 2 to 5 deal with cross-sectional studies, whereas Chapter 6 presents a quasi-experimental and longitudinal study. Although causation cannot be deduced from correlations resulting from cross-sectional studies, correlations are a necessary condition for propositions about causality (Kenny, 1979; Rapoport, 1980). Correlational evidence is relevant to the thesis, since hypotheses do not work without it (Lyubomirsky, King, & Diener, 2005).

First of all Chapter 2, based on SCT, examines the role that self-efficacy plays in the prediction of student burnout and engagement among 863 Spanish and 721 Portuguese students. Then, in Chapter 3, by following classical models of well-being and stress, the relationship of obstacles and facilitators on the one hand, and performance on the other hand, is discussed. Additionally, the power of the ‘positive side’ of well-being (engagement) is tested and compared with the negative side (burnout).

Chapter 4 criticizes the structure of burnout (as an indicator of well-being), suggesting the use of inefficacy (in negative) instead of efficacy (positive) to assess burnout. Therefore, a change of the role of the commonly measured ‘third dimension’ of burnout is suggested, and academic efficacy is proposed to actually be an antecedent-predicting variable and not a constituent burnout dimension. Considering previous studies, Chapter 5 evaluate separately the role that efficacy and inefficacy beliefs play in the prediction of self-efficacy, students’ burnout and engagement among two samples of Spanish (N=203) and Belgian (N=150) university students.

Self-efficacy has shown its power as a buffer in stress processes, and there is considerable evidence regarding the positive effects of self-efficacy on well-being and performance in different settings such as the workplace, school and sports (Bandura, 1999, 2001). The positive effect of self-efficacy on well-being (i.e. burnout and engagement) has been proved in several studies (Salanova, Grau, Cifre, & Llorens, 2000; Salanova, Llorens, Cifre, Martinez, & Schaufeli, 2003; Salanova, Peiró & Schaufeli, 2002). Therefore, based on these previous results, the current thesis shows different studies carried out using samples of university students from different countries (i.e. Spain, The Netherlands, Portugal and Belgium) whose results support the antecedent role of self-efficacy in the

motivational process with engaged students. Furthermore, and as described in Chapters 2 and 5, this predicting role of self-efficacy was also invariant across two samples of Spanish, Belgian and Portuguese students, and in itself, it is evidence of the robustness of these findings. Moreover in Chapter 6, the predicting power that self-efficacy plays in the students' learning process is tested in a sample of undergraduate students using a quasi-experimental longitudinal design.

Finally, Chapter 7 summarizes the findings of the previous studies and discusses theoretical, methodological, and practical issues. Furthermore, it identifies the limitations of the research presented in the thesis and makes suggestions for future studies.

References

- Abouserie, R. (1994). Sources and levels of stress in relation to locus of control and self esteem in university students. *Educational Psychology, 14*, 323–330.
- Adler, S., & Weiss, H. M. (1988). Recent developments in the study of personality and organizational behaviour. In C. L. Cooper & I. Robertson (Eds.), *International review of Industrial and organizational psychology* (pp.307-330). Chichester, England: Wiley.
- Álvarez, P. Bethencourt, J. T. Cabrera, L., & González, M. (2005). *Abandono y Prolongación de los Estudios universitarios: un Obstáculo en la mejora de la Calidad de la Enseñanza [Dropout and Enlargement of the Studies at universities: an Obstacle for the Learning Quality Improvement]*. Final Report. Gobierno Autónomo de Canarias. Universidad de La Laguna.
- Bakker, A. B., Demerouti, E., Taris, T., Schaufeli, W. B., & Schreurs, P. (2003). A multigroup analysis of the job demands-resources model in four home-care organizations. *International Journal of Stress Management, 10*, 16–38.
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management, 43*, 83–104.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman & Co.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1-26.

- Chambel, M. J., & Curras, L. (2005). Stress in Academic Life: Work Characteristics as Predictors of Student Well-being and Performance. *Applied Psychology: An International Review*, 54, 135 – 147.
- Consejo de Universidades (2002). *Plan Nacional de la Evaluación de la Universidades. Informe Global 1996-2002 [National Spanish Plan of Universities Quality Assessment. Global Report 1996-2002]*, Secretaría General. Ministerio de Educación, Cultura y Deportes. Madrid.
- Cotton, S. J., Dollard, M. F., & de Jonge, J. (2002). Stress and student job design: Satisfaction, well-being, and performance in university students. *International Journal of Stress Management*, 9, 147–162.
- Daniels, K., & Harris, C. (2000). Work, psychological well-being and performance. *Occupational Medicine*, 50, 304–308.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands: resources model of burnout. *Journal of Applied Psychology*, 86, 499–512.
- Felsten, G., & Wilcox, K. (1992). Influences of stress and situation-specific mastery beliefs and satisfaction with social support on well-being and academic performance. *Psychological Reports*, 70, 291–303.
- Fisher, S. (1994). *Stress in academic life*. Buckingham: The Society for Research into Higher Education and Open University Press.
- George, J. M. (1992). The role of Personality in organizational life: Issues and evidence. *Journal of Management*, 18, 185-213.
- González-Romá, V., Schaufeli, W.B., Bakker, A., Lloret, S. (2006). Burnout and engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*, 68, 165–174.

- Grint, K. (1991). *The Sociology of Work. An Introduction*. Cambridge: Polity Press.
- Hakanen, J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology, 43*, 495-513.
- Hearnshaw, L. (1949). What is industrial psychology? *Occupational Psychology, 23*, 1-8.
- Halbesleben, J. R. B., & Buckley, R. M. (2004). Burnout in organizational life. *Journal of Management, 30*, 859-879.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist, 44*(3), 513-524.
- Industrial Research and Development Advisory Committee of the European Commission. (2006, May). "*Calidad y Relevancia: un desafío para la Educación Europea*" [*Quality and Relevance: a challenge for European Education*]. Brussels.
- Judge, T. A., Thoresen, C. J., & Pucik, V. (1996, August). *Managerial coping with organizational change: A dispositional perspective*. Paper presented at the Academy of Management Annual Meeting, Cincinnati, OH.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: implications for job design. *Administrative Science Quarterly, 24*, 285-308.
- Karasek, R. A. (1998). Demand/Control Model: a social, emotional, and physiological approach to stress risk and active behaviour development. In Stellman, J.M. (Ed.), *Encyclopedia of Occupational Health and Safety*, ILO, Geneva, pp. 34.06-34.14.

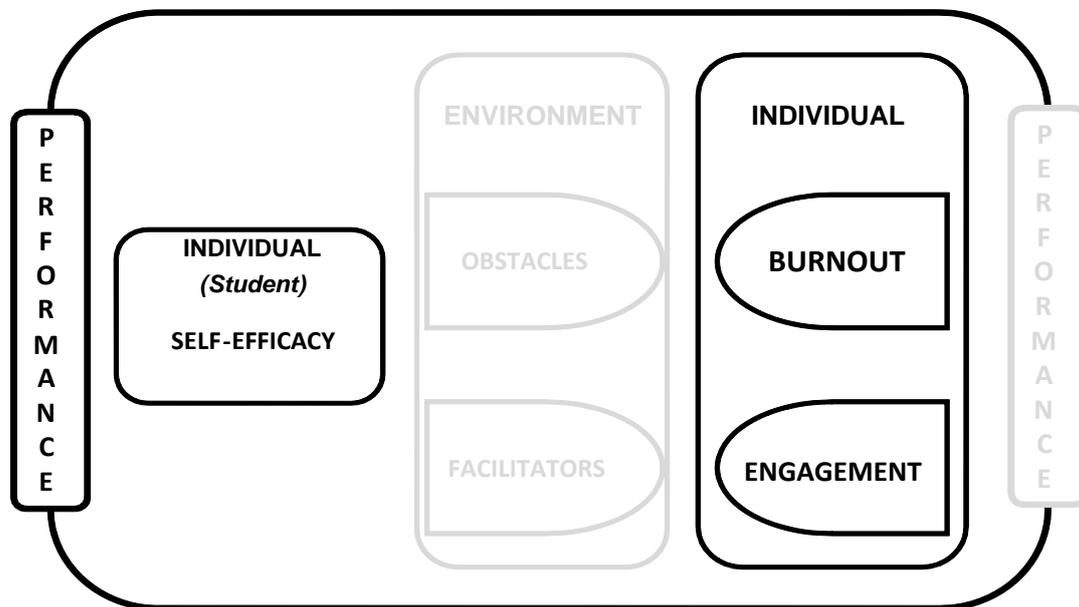
- Kenny, D. A. (1979). *Correlation and Causality*. New York: Wiley.
- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a Unifying Social Cognitive Theory of Career and Academic Interest, Choice, and Performance. *Journal of Vocational Behavior Monograph*, *45*, 79-122.
- Lent, R. W., Brown, S. D., & Hackett, G. (2004). *Journal of Counseling Psychology*, *51*, 482-509.
- Lloyd, K. M., Tienda, M., Zajacova, A. (2001). Trends in educational achievement of minority students since Brown v. Board of Education. In Snow, C. Eds. *Achieving High Educational Standards for All: Conference Summary*. National Academy Press, Washington, DC, pp 147-182.
- Lyubomirsky, S., King, L., & Diener, E. (2005). The Benefits of Frequent Positive Affect: Does Happiness Lead to Success? *Psychological Bulletin*, *131*, 803-855.
- Molina, M. J. (25 October 2006). Las nuevas metodologías docentes podrían aumentar aún más el índice de fracaso [New teaching methodologies could increase dropout index]. *El Mundo*, 465.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, *66*(4), 543-578.
- Peiró, J. M. (1986). *Psicología de la Organización* [Organizational Psychology]. UNED, Madrid.
- Peiró, J. M., Prieto, F. & Roe, R. A. (1996). La Aproximación Psicológica al Trabajo en un Entorno Laboral Cambiante. In Peiró, J. M., & Prieto, F. *Tratado de Psicología del Trabajo: La Actividad Laboral en su Contexto*. Síntesis, Madrid.

- Procter, P, (Ed.), (1995). Cambridge International Dictionary of English. Cambridge University Press, Cambridge.
- Price, R. (1985). Work and Community. *American Journal of Community Psychology*, 13, 1-12.
- Rapoport, A. (1980). Review of Correlation and Causality. *Canadian Journal of Psychology* 34(2), 200-201.
- Salanova, M., Schaufeli, W. B., Llorens, S., Peiró, J. M., & Grau, R. (2000). Desde el 'burnout' al 'engagement': ¿una nueva perspectiva? [From 'burnout' to 'engagement': A new perspective?] *Revista de Psicología del Trabajo y las Organizaciones*, 16, 117-134.
- Schaufeli, W. B., & Bakker, A. B. (2004). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior*, 25, 293-315.
- Schaufeli, W. B., Martínez, I., Marqués-Pinto, A., Salanova, M., & Bakker, A. (2002a). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Studies*, 33, 464-481.
- Schunk, D. H. (1995). Self-efficacy and education and instruction. In J. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 281-303). New York: Plenum Press.
- Seligman, M. E. P., & Csikszentmihalyi, M. (Eds.). (2000). Positive psychology: an Introduction. *American Psychologist*, 55(1), 5-14.
- Stajkovic, A. D., & Luthans, F. (1998). Self-Efficacy and Work-Related Performance: A Meta-Analysis. *Psychological Bulletin*, 124, 240-261.
- University drop-out rate rising. (2005, September the 22nd). BBC News. Available: <http://news.bbc.co.uk> [10 October 2006].

- Viswesvaran, C., Sinangil, H. K., Ones, D. S., & Anderson, N. (2001). Where We have Been, Where We are, (and Where We Could be). In Anderson, N., Ones D. S., Sinangil, H. K., & Viswesvaran, C. (Eds.) *Handbook of Industrial, Work and Organizational Psychology*. Vol. 1 (pp. 1-10). SAGE Publications. London.
- Wallis, D. (1987). Satisfaction, stress, and performance: issues for occupational psychology in the 'caring' professions. *Work & Stress* 1, 113-128.
- Wilensky, H. (1981). Family life cycle, work, and the quality of life: Reflections on the roots of happiness, despair, and indifference in modern society. In B. Gardell & G. Johansson (Eds.) *Work life* (pp. 256-285). New York: Cambridge University Press.
- Winefield, H. R., Winefield, A. H., & Tiggemann, M. (1992). Social support and psychological well-being in young adults: The Multi-Dimensional Support Scale. *Journal of Personality Assessment*, 58, 198-210.
- Wright, T. A., & Staw, B. M. (1999). Affect and favorable work outcomes: Two longitudinal tests of the happy-productive worker thesis. *Journal of Organizational Behaviour*, 20, 1-23.
- Xanthopoulou, D. (2007). A Work Psychological Model that Works. Doctoral Thesis. Utrecht University.
- Xanthopoulou, D., Bakker, A.B., Demerouti, E. & Schaufeli, W.B. (2007). The role of personal resources in the Job Demands-Resources Model. *International Journal of Stress Management*, 14, 121-141.

Chapter 2

Past Success and Self-efficacy as Antecedents of Burnout and Engagement among Spanish and Portuguese University Students



Summary

Based on Albert Bandura's Social Cognitive Theory (1997, 2001), this study examines the mediating role of self-efficacy in the prediction of student burnout and engagement. Spanish (n=863) and Portuguese (n=721) students provided information about their past academic success, self-efficacy, burnout (i.e., exhaustion and cynicism), and engagement (i.e., vigor and dedication). Structural equation modeling analyses were consistent with a full mediation model in which academic past success predicts self-efficacy, which in turn, predicts student burnout and engagement. Additionally, multiple-group analyses revealed the cross-national stability of the proposed model. Implications of the study are discussed, together with limitations and suggestions for future research.

In recent years the study of self-efficacy has received increasing attention in the educational field, not only from the teachers' point of view, but also from the perspective of students. Research suggests that student self-efficacy is an antecedent of motivation and also the future performance of students (Bores-Rangel, Church, Szendre, & Reeves, 1990; Elias, & Loomis, 2004; Pintrich & Schunk, 1995; Multon, Brown, & Lent, 1991; Zimmerman, 2000). This finding is congruent with the Social Cognitive Theory (SCT; Bandura, 1986, 1997, 2001), which postulates that the beliefs that people have about themselves are key elements in the exercise of control and personal agency, and in which individuals are viewed both as products and producers of their own environments (Pajares, 1996).

Self-efficacy is defined by Bandura (1997, p. 3) as "people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives". Moreover, self-efficacy determines how people feel, think, motivate themselves and behave in the future. Based on the SCT, it can be assumed that knowledge, skills and previous success, although important, are not sufficient to predict the motivational states of students. Beliefs that students hold about their capabilities are also needed because, ultimately, these influence the way in which they will behave in the future. This does not mean that students can accomplish tasks beyond their capabilities simply by believing that they can. Competent functioning requires equilibrium between self-efficacy on the one hand, and skills and knowledge on the other hand. Instead, it means that proper self-perceptions of capabilities help determine what individuals do with the knowledge and skills they have. The individuals involved in a particular behaviour interpret the results of their actions, use these interpretations to create and develop beliefs about their capabilities to engross in

subsequent behaviours in similar domains, and behave in concert with their beliefs. At school, for example, the beliefs that students develop about their academic capabilities help determine what they do with the knowledge and skills they have learned. (Pajares, 1996).

In this sense, and according to the SCT, we assume that students' beliefs about past success in an academic setting will not only influence how they will perform in the future, but also how they feel, i.e., their psychological well-being. Thus, the main objective of the present study is to test the mediation role that self-efficacy plays between students' past success and their well-being in terms of burnout and engagement.

Sources of Self-efficacy

According to the SCT, self-efficacy is affected by four principal sources (a) mastery experiences: past experiences of success or command, (b) vicarious experience by observing the successes and failures of others, (c) verbal persuasion, and (d) psychological states or emotional activation. Mastery experiences refer to previous success in similar tasks. Hence, the better the past success in a concrete student task, the more self-efficacious he or she will be to face similar future tasks. Secondly, vicarious experiences (learning by observation-imitation) also influence students' self-efficacy. When a student observes what other students are able to do, and realizes the consequences that their behaviours have, he/she uses this information to build his/her own self-efficacy beliefs. The strength of this vicarious-learning process depends on the similarities between the observed student (model) and the observer, on the similarities between the observed task and the future task, and also on the power of influence that the model observed has on the observer. Thirdly, students build and develop their self-efficacy as a result of the positive-negative feedback received from their professors, relatives, colleagues, etc. (verbal

persuasion). Thus, positive feedback such as “you can do it; I trust in your competence, etc.” enhances self-efficacy. Conversely, negative evaluations such as “From my point of view, you are not good enough to deal with it” decrease self-efficacy. However, verbal persuasion is the weakness of the self-efficacy sources, and its effects can be only temporal (short-term effect) if they are not supported and reinforced by future success. Finally, students can receive information related to their self-efficacy from the psychological reactions that they experience when they must face certain tasks. Psychological states such as anxiety, stress, fatigue, etc., influence students’ cognitions since sensations of anguish, an increased heartbeat, sweating, etc., collaborate with poor performance, or a perception of incompetence or of possible defeat (Bandura, 1986; Pajares, 1996).

The combination of these four sources produces several self-efficacy perceptions that work through cognitive processes (i.e., imagining goals, predicting difficulties), motivational processes (i.e., anticipating outcomes, planning goals), affective process (i.e., coping with stressing situations, controlling negative thoughts) and selection process (i.e., approaching or avoiding concrete situations) (Bandura, 1977, 1995). However, the most influential source of self-efficacy is mastery experiences (interpreted results of one’s past success) because they provide an individual with real-life evidence that he/she actually has for what it takes to succeed (Bandura, 1997). Consequently, several studies have tested the power of past success as a source of self-efficacy in different learning settings (Fletcher, 2005; Schunk, & Ertmer, 2000; Zeldin, 2001).

The process by which a student builds his/her self-efficacy beliefs is quite intuitive: a student engages in the achievement of concrete tasks (i.e., exams), interprets their result, and uses this interpretation to develop beliefs about his/her capacity for accomplishment in similar future tasks.

Accordingly, self-efficacy can be considered 'critical' for students' achievement and performance.

Self-efficacy, Burnout and Engagement among Students

At the same time that psychological states influence self-efficacy, increased self-efficacy influences students' psychological states, as well as the choices they make and the courses of action they follow. Students who believe that they are self-efficacious in a certain domain feel better and more competent. Self-efficacious students tend to approach difficult tasks (i.e., hard exams) as challenges to be mastered rather than dangers to be avoided. Furthermore, they show a greater intrinsic interest in activities, set challenging goals and maintain a strong commitment to them. Therefore, self-efficacy is a clear antecedent of student well-being (Bandura, 1997; Caraway, Tucker, Reinke, Hall, 2003; Pajares, 1996). In fact, changes in self-efficacy levels are related to changes in well-being states, such as burnout and engagement (Salanova, Bresó, & Schaufeli, 2005; Xanthopoulou, Bakker, & Demerouti, 2007).

Traditionally, burnout and engagement are defined as work-related states of mind, and formally speaking, students are not employees. However, we assume that from a psychological perspective, student core activities can be considered 'work'. Namely, they are involved in structured, coercive activities (e.g., attending classes and making assignments), that are directed toward a specific goal (i.e., passing exams and acquiring a degree). And the suitability of assessing burnout and engagement among university students has been largely tested across different samples. For instance, Orbo (2005) tested the factorial structure of academic burnout in a sample of 153 Norwegian university students. Duran, Extremera, Rey, Fernandez-Berrocal, and Montalban (2006)

tested the relationship of individual resources in academic burnout and engagement in a sample of 373 Spanish students.

Student burnout is a syndrome that is commonly measured by three dimensions (i.e., exhaustion, cynicism, and lack of efficacy). It refers to feeling exhausted because of study demands and having a cynical and detached attitude toward one's study (Schaufeli, Martinez, Marques-Pinto, Salanova, & Bakker, 2002a). In the present study, the third dimension of burnout, lack of efficacy, is excluded because accumulating evidence suggests that this dimension plays a different role (Brenninkmeijer & Van Yperen, 2003; Bresó, Salanova, & Schaufeli, 2007; Green, Alkey, & Taylor, 1991; Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). In fact, Green, Walkey and Taylor (1991) concluded that exhaustion and cynicism constitute the 'core of burnout'. Furthermore and compared to exhaustion and cynicism, a lack of professional efficacy shows a different pattern of correlations with other variables (see Schaufeli & Enzmann, 1998). Moreover, clinical experience with burned-out patients suggests that exhaustion and cynicism appear together, whereas lack of professional efficacy is observed much less frequently (Brenninkmeijer & Van Yperen, 2003).

Recently, burnout research has been broadened to also include its opposite, engagement, thereby covering the entire range of well-being (Maslach, Schaufeli & Leiter, 2001). Engagement refers to a 'persistent, positive affective-motivational state of fulfilment that includes three aspects: vigor, dedication, and absorption' (Schaufeli, Salanova, González-Romá & Bakker, 2002b, p. 72). Vigor is characterized by high levels of energy and mental resilience, the willingness to invest effort, and persistence even in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. Finally, absorption is characterized by being fully concentrated and

deeply engrossed in one's work, whereby time passes quickly and one has difficulties with detaching oneself from work. Recent evidence, however, suggests that absorption plays a slightly different role and might perhaps be considered a consequence of engagement, rather than a constituting component (Salanova, Llorens, Martinez, Cifre, & Schaufeli, 2003). In fact, compared to both other dimensions of engagement, this dimension also showed a different pattern of results in other previous studies (see Schaufeli et al., 2002b). Accordingly, absorption has been excluded from the present study.

Conceptually speaking, vigor and dedication are considered direct opposites of the core burnout dimensions of exhaustion and cynicism, respectively (Maslach, Schaufeli & Leiter, 2001). By using non-parametric scaling, Gonzalez-Romá, Schaufeli, Bakker & Lloret (2006) recently showed that vigor and exhaustion, and dedication and cynicism, indeed each span a separate continuum that is labelled energy (from vigor to exhaustion) and identification (from dedication to cynicism), respectively. From this perspective, burned-out students lack energy and do not identify themselves with their studies. Quite the opposite, in fact, as they distance themselves by displaying a cynical attitude toward their studies. Engaged students, on the other hand, feel energetic and identify strongly with their studies as they are deeply involved in them. A study carried out by Salanova et al. (2005) showed that students' self-efficacy positively predicted academic engagement and negatively predicted academic burnout.

The Current Study

In the current study, we tested a model that connects the relationship between the past academic success of students and self-efficacy, on the one hand, and between self-efficacy, and student burnout

and engagement, on the other hand. In other words, we examine the mediating role of self-efficacy between past success and student well-being (see Figure 2.1). Previous research has demonstrated the positive effect of past success on self-efficacy (Schunk & Ertmer, 2000; Zimmerman, 2000), and also the predicting value of self-efficacy predicting well-being (Lubbers, 2004; Siu, Lu, Spector, 2007). Additionally, this model is tested among two students samples from two different countries (i.e., Spain and Portugal) in order to test cross-national differences. These two countries were selected to make suitable comparisons. We needed to be sure of assessing the same variables using similar indicators, and the fact that the Portuguese and Spanish education systems are similar, in terms of the type of evaluations, exams, the way the academic year is organized, etc. allowed comparisons between them to be made.

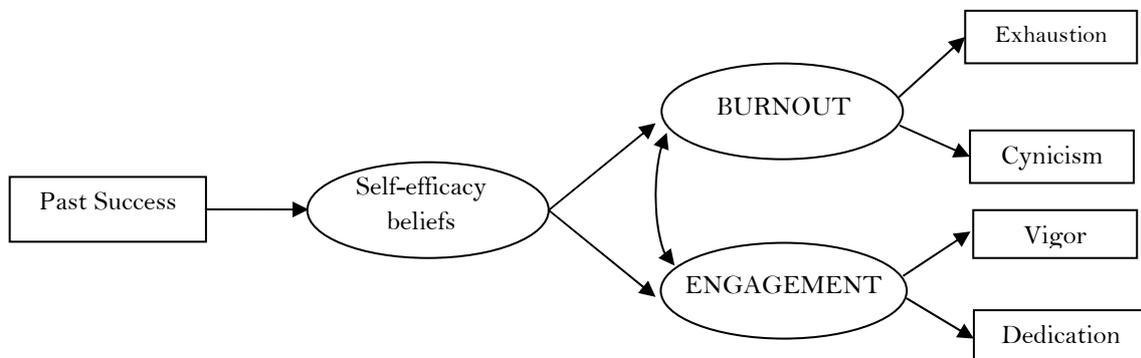


Figure 2.1. The hypothesized model

Based on the research model (Figure 2.1), we expect:

H1: The relationship between past academic performance on the one hand and burnout and engagement on the other hand will be fully mediated by academic self-efficacy, whereby self-efficacy is.

- a. negatively related to burnout*
- b. positively related to engagement*

H2: This model will be invariant across both samples, i.e., Spain and Portugal.

Method

Sample and Procedure

A paper-and-pencil questionnaire was handed out in classrooms before lectures began. Among approximately 1,600 undergraduate students, 1,584 questionnaires were completed voluntarily and returned (around 98%). Students were enrolled in two different universities in Spain and Portugal. The anonymity of the students was guaranteed and data were used exclusively for research purposes.

Sample 1 consisted of 863 Spanish students; 550 females (63.7%) and 313 males (36.3%) from three faculties: law school (35%), social and behavioural sciences (34%) and chemistry and engineering (31%). Their mean age was 23.47 years (s.d. = 2.7).

Sample 2 consisted of 721 Portuguese students; 604 females (83.8%) and 117 males (16.2%). Students were enrolled in psychology (49%), philology (24%), social sciences (17%) and educational sciences (10%). Their mean age was 24.67 years (s.d. = 4.7).

Variables

Performance (Pef) was measured using the ratio of exams taken over exams passed. Scores ranged from 0 (no exam passed) to 10 (all exams passed). Mean = 8.01; s.d. = 1.87. Academic self-efficacy was measured with a scale by Midgley, et al., (2000) which reflects the student beliefs concerning their future capacities to achieve adequate levels of academic performance. The scale includes 5 items and scores range from 0 (“never”) to 6 (“always”). An example item is: ‘I will be capable of doing more complicated assignments in class if I try hard enough’. Internal consistencies (Cronbach’s alpha) were .76 and .70 for the Spanish and Portuguese student samples, respectively.

Academic burnout was assessed with two scales of the MBI-SS (Student Survey) (Schaufeli, et al., 2002a): exhaustion (EX), which includes 6 items (e.g., ‘*I feel emotionally drained by my studies*’) and cynicism (CY), which includes 4 items (e.g., ‘*I doubt the significance of my studies*’). All items were scored on a 7-point frequency rating scale ranging from 0 (“never”) to 6 (“always”). Internal consistencies (Cronbach’s alpha) for EX in Spanish and Portuguese students were .71 and .75, respectively. On the other hand, Cronbach’s alpha α was .82 and .74 for CY in the Spanish sample and the Portuguese sample, respectively.

Academic engagement was assessed with two scales of the UWES-SS (Student Survey) (Schaufeli, et al., 2002a). Vigor (VI), which includes 6 items (e.g., ‘When I’m doing my work as a student, I feel bursting with energy’), and dedication (DE) which includes 5 items (e.g., ‘*I am enthusiastic about my studies*’). All items were scored on a 7-point frequency rating scale ranging from 0 (“never”) to 6 (“always”). Internal consistencies (Cronbach’s alpha) for VI in Spanish and Portuguese students were .72 and .92 respectively. Finally, Cronbach’s alpha α for

DE in the Spanish sample was .89, and was .71 for the Portuguese students.

Data Analyses

Structural equation modeling (SEM) methods, as implemented by AMOS 6.0 (Arbuckle, 2005), were used to test the research model (see Figure 2.1). Maximum likelihood estimation methods were used and the input for each analysis was the covariance matrix of the items. The goodness-of-fit of the model was evaluated using absolute and relative indices. The absolute goodness-of-fit indices calculated were: (1) the χ^2 goodness-of-fit statistic; (2) the Root Mean Square Error of Approximation (RMSEA); (3) the Goodness of Fit Index (GFI); and (4) the Adjusted Goodness of Fit Index (AGFI) (Jöreskog & Sörbom, 1986). Since the χ^2 -test is sensitive to sample size, the computation of relative goodness-of-fit indices is strongly recommended (Bentler, 1990). The following relative goodness-of-fit indices were computed: (1) Incremental Fit Index (IFI); (2) Non-Normed Fit Index (NNFI) – also called the Tucker Lewis Index (TLI); (3) Comparative Fit Index (CFI) (Marsh, Balla, & Hau, 1996). Since the distribution of the GFI and the AGFI is unknown, no statistical test or critical value is available (Jöreskog & Sörbom, 1986). Values near .08 for RMSEA are considered to indicate an acceptable model fit, as a rule of thumb, and those smaller than .08 are considered to indicate a good model fit (Cudeck & Browne, 1993). Finally, all three relative fit-indices values greater than .90 are considered to indicate a good fit (Hoyle, 1995).

Finally, we constrained the best fitting model, and we tested the differences between unconstrained and constrained models in the multiple-group analyses in order to test the invariance of the model between samples (Byrne, 2001).

Results

Preliminary Analyses:

A multivariate analysis MANOVA was performed, and the results did not show a significant effect of gender in self-efficacy. However, they displayed a significant multivariate effect of gender for the burnout and engagement dimensions [Wilks' lambda = .988; $F(5, 1527) = 3.751$; $p = .002$], as did country for all the study variables [Wilks' lambda = .926; $F(5, 1527) = 24.442$; $p = .000$]. More specifically, female students scored higher than male students on burnout (i.e., exhaustion and cynicism), and lower on engagement (i.e., vigor and dedication). In addition, Spanish students scored higher than Portuguese students on burnout, but lower on engagement and self-efficacy. However, no significant gender \times country interaction effect was found [Wilks' lambda = .994; $F(5, 1527) = 1.722$; $p = .126$]. Because significant main effects were found for country and gender, both samples were not pooled, but analysed separately.

Descriptive Analyses

Then, the means, standard deviations, inter-correlations and internal consistencies (Cronbach's α) of each variable were calculated (see Table 2.1). As seen, all values of α met the criterion of .70 (Nunnally & Bernstein, 1994), and most scales also met the more stringent criterion of .80 (Henson, 2001). As expected, the inter-correlations between dimensions of the same construct (i.e., burnout and engagement) were positive, whereas the correlations between the burnout and engagement dimensions were negative. Also as expected, self-efficacy is significantly and strongly correlated with burnout and engagement in the expected direction. The more self-efficacious students feel, the less burned-out and the more engaged they are. Finally, past academic performance is positively and significantly correlated with self-efficacy in both samples.

Table 2.1

Means, standard deviations, correlations, and internal consistencies (Cronbach's α for Spanish/Portuguese samples on the diagonal) of the burnout scales (EX, CY), engagement (VI, DE) and Self-efficacy beliefs (S-E) in the Spanish ($n = 863$) and the Portuguese sample ($n = 721$).

	Spanish		Portuguese		Correlations					
	M	SD	M	SD	EX	CY	VI	DE	S-E	Pef
EX	2.84	1.14	2.46	1.02	.71/.75	.42**	-.13**	-.21**	-.20**	-.10*
CY	1.84	1.28	1.41	1.11	.48**	.82/.74	-.26**	-.56**	-.26**	-.06
VI	2.90	.98	3.34	.89	-.31**	-.41	.72/.92	.58	.36**	.14**
DE	4.08	1.17	4.29	1.03	-.28**	-.67**	.63**	.89/.71	.36**	.09*
S-E	4.12	1.19	3.88	.73	-.14**	-.25**	.56**	.45**	.76/.70	.16**
Pef	6.62	.75	8.23	1.71	-.03	-.01	.16**	.05	.24**	--

Notes: * $p < .01$ ** $p < .05$

Model Testing

First, the fit of model, as depicted in Figure 2.1, was tested in both samples independently. The results, which are shown in Table 2.2, indicate that the model fits the data well in both samples, with all fit indices meeting their respective criteria, and where all the path coefficients were significant ($t > 1.96$; $p < .05$).

Table 2.2

The fit indices of the proposed model for the Spanish ($n = 863$) and Portuguese sample ($n = 721$)

	Model	χ^2	df.	GFI	AGFI	NNFI	IFI	CFI	RMSEA
Spanish	M1	23.42	10	.99	.98	.98	.99	.99	.03
	Null model	1976.01	21	.60	.46	-	-	-	.32
Portuguese	M1	32.59	10	.99	.96	.97	.99	.99	.06
	Null model	1653.75	21	.55	.40	-	-	-	.33

Next, a model was fitted to the data that included two direct paths from past performance to burnout and engagement. As assumed in the hypothesized model, these direct paths appeared as non significant in both countries. Therefore, it may be concluded that self-efficacy fully mediates the relationship between past performance and student well-being.

In order to analyze this mediation in greater detail, partial correlations of past performance with each burnout and engagement dimension were computed, and were controlled for self-efficacy. The results show a significant partial correlation between performance and each burnout and engagement dimension (Exhaustion: $-.13$; $p < .001$; Cynicism: $-.10$; Vigor: $.26$; $p < .001$ and Dedication: $.07$; $p < .01$). Then, additional analyses were carried out following a method used by Peiró, González-Romá, Ripoll, & Gracia, (2001) for estimating this mediational effect. Firstly, direct paths from past performance to burnout and engagement were added to the initial model (M1), and the resulting model (M2) fitted the data (see Table 2.3). Although the model fits the data, none of the newly introduced parameters was statistically significant. Therefore, full mediation exists. Secondly in an alternative model (M3), the unstandardized path coefficients linking self-efficacy with burnout and engagement were fixed to the values as estimated by M1. Although M3 fits the data, with all the fit indices meeting their criteria, the difference between the chi-square statistics associated with M3 and M2 was not statistically significant. Thus, the influence of past performance on student burnout and engagement was fully mediated by student self-efficacy (Table 2.3). However, these relationships were stronger in both samples (Spain/Portugal) in the case of engagement ($.68/.73$), and burnout ($-.46/-.40$).

Finally, and following the suggestions proposed by Byrne (2001), the invariance of the model across both samples was tested. That is, we

compared the fit of the model in which the estimates were constrained to be equal across both samples (Mc) with that of the unconstrained model (M). As expected, the freely estimated model (M) fitted the data well across both samples, with all the fit indices meeting their corresponding critical values (see Table 2.4). However, the fit deteriorated significantly when all the factor loadings and structural path coefficients were constrained to be equal in both samples (Mc). This means that although the underlying structure is similar in both samples, the sizes of the factor loadings and structural path coefficients differ.

In order to assess invariance in greater detail, two additional models were fitted to the data: (1) a model that assumes only the factor loadings of the latent variables (i.e., self-efficacy, burnout and, engagement) to be invariant (Mfa); (2) a model that assumes structural path coefficients between variables to be invariant (Mr). In the final step,

an iterative process was used as recommended by Byrne (2001, pp. 173-199) to assess the invariance of each estimate separately. That is, the invariance of each factor loading and structural path coefficient was assessed individually by comparing the fit of the model in which a particular estimate was constrained to be equal across both samples with that of the previous model in which this was not the case. When the fit did not deteriorate, this constrained element was included in the next model to which another constrained estimate was added, and so on.

Table 2.3

Fit of the research model for testing Mediator Effects. Spanish sample (n=863) and Portuguese sample (n=721)

	Model	χ^2	Df	GFI	AGFI	NNFI	IFI	CFI	RMSEA	$\Delta\chi^2$	ΔDf
Spanish	M1	59.10	11	.98	.95	.95	.98	.98	.07		
	M2	21.74	8	.99	.98	.98	.99	.99	.05	M1-M2 = 37.36***	3
	M3	23.44	12	.99	.98	.99	.99	.99	.03	M2-M3 = 1.7 n.s.	4
Portuguese	M1	85.33	11	.97	.92	.92	.96	.95	.09		
	M2	28.04	8	.99	.96	.97	.99	.99	.06	M1-M2 = 57.29***	3
	M3	34.08	12	.99	.97	.98	.99	.99	.05	M2-M3 = 6.04 n.s.	4

Notes: χ^2 = Chi-square; Df = degrees of freedom; GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness-of-Fit Index; NNFI = Non-Normed Fit Index; IFI = Incremental Fit Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation. *** = χ^2 differences between the models are significant at $p < .001$; M_c = Full constrained model; M_{fa} = Model with factor loadings constrained; M_r = Model with regression weights constrained; M_{fi} = Final Model.

Table 2.4

Fit indices of the proposed model (That include past performance as antecedent, self-efficacy beliefs as a full mediating variable and burnout-engagement as dependent variables). Multiple group analyses including the Spanish (n = 863) and the Portuguese sample (n = 721)

Model	χ^2	Df	GFI	AGFI	NNFI	IFI	CFI	RMSEA	$\Delta\chi^2$	ΔDf
M	144.5	22	.97	.94	.94	.97	.97	.06		
M _c	316.10	28	.95	.90	.91	.95	.95	.08	M - M _c = 171.67***	6
M _{fa}	152.31	25	.97	.94	.94	.97	.97	.06	M - M _{fa} = 7.81**	3
M _r	236.37	25	.96	.91	.90	.94	.94	.07	M - M _r = .91.87***	1
M _{fi}	147.97	25	.97	.94	.94	.97	.97	.05	M - M _{fi} = 3.47 n.s.	3

Notes: GFI: goodness-of-fit index; AGFI: adjusted goodness-of-fit index; RMSEA: root-mean-square error of approximation; NFI: normed fit Index; CFI: comparative fit index; IFI: incremental fit index; ** $p < .005$ *** $p < .001$

The final model (M_{fi}) (See Figure 2.2 and Table 2.4) showed that the structural path coefficient linking past performance with self-efficacy, and self-efficacy with burnout, and engagement are invariant across samples, and also that the factor loadings of the burnout and engagement dimensions (exhaustion, cynicism, vigor and dedication) differ across samples.

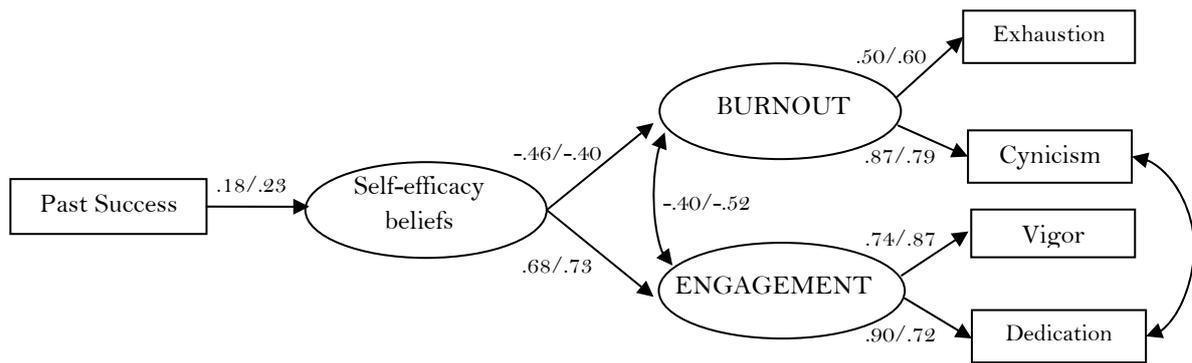


Figure 2.2. Results of the multiple-group analyses (final model): Spanish students ($n = 863$); Portuguese students ($n = 721$).

Discussion

The main objective of the current study was to examine the mediating role that self-efficacy plays in the relationship between past success and well-being (i.e., burnout and engagement) among a cross-national sample of university students. Previous research has found relationships between past success and self-efficacy (Bandura, 1997; Pajares, 1996), and between self-efficacy and burnout-engagement (Heuven, Bakker, & Schaufeli, 2006; Linnenbrink & Pintrich, 2003; Xanthopoulou, et al., 2007). The present study integrates both research findings into a comprehensive model in which self-efficacy plays a key role as a mediator.

We studied two samples of students from two different countries (i.e., Spain and Portugal) in order to compare possible cross-national variations. If we bear in mind that burnout and engagement are related to future performance and to students' achievement (Leiter & Maslach, 2005; Salanova, Martinez, Bresó, Llorens, & Grau, 2005), then the results confirm the full mediating role of self-efficacy, and highlight the relevance that self-efficacy has in the students' learning process. Based on the research model (Figure 2.1), two hypotheses were tested. Firstly, SEM analyses were performed in order to test the mediating role of self-

efficacy. The results confirm that self-efficacy in both samples indeed fully mediates the relationship between past success on the one hand, and burnout and engagement on the other hand. As expected, the relationship of self-efficacy with burnout is negative, whereas its relationship with engagement is positive. Thus, Hypothesis 1 was supported by the data, and self-efficacy mediated between what a student has previously performed, and how engaged and burned-out he/she feels. The more self-efficacy noted among students, the less burnout and more engagement they will score. The confirmation of Hypothesis 1 allows us to consider that the hypothesized model fits the data in both samples. However, the results also pointed out the stronger relationship of self-efficacy with engagement than with burnout. This coincides with previous theoretical models and with research carried out in the framework of positive organizational psychology (Friedrickson, 1998; Seligman & Csikszentmihaly, 2000), which pointed out the predominance that the positive side has (compared with the negative) in the promotion of well-being and positive emotions (Friedrickson, 2001).

Finally, the multiple-group analysis shows that although the proposed structural model fitted the data of both samples well, it was not entirely invariant across both samples. It seems that only the factor loadings of the burnout and engagement dimensions (i.e., exhaustion, cynicism, vigor, and dedication) differ across samples. We expected differences between Spanish and Portuguese loadings since the previous Analysis of Variance carried out already revealed that Spanish and Portuguese students present significantly different scores in self-efficacy, burnout, and engagement. However, the multiple-group test shows that the structure of the model is invariant in both countries, That is, the relationships between the four latent constructs are similar. Therefore, although students from Spain and Portugal scored differently on the

burnout and engagement dimensions, the relationships among the latent variables are invariant across both countries. We can only speculate why the factor loadings differ between countries, which might be due to slight differences in the connotations of the items as a result of either translation or cultural differences.

Theoretical Implications

The most relevant theoretical implication of the current study is the test of the predictive role that self-efficacy plays for the ‘positive side of well-being’. That is, although this study is not a longitudinal design, it fits the data well when self-efficacy is taken as an antecedent of burnout and engagement. And as this idea is congruent with the SCT, it also extends information regarding the power of the ‘positive side of well-being’. In other words, in order to explain well-being, the predictive power of self-efficacy is much stronger on the positive side (engagement) than on the negative side (burnout). Additionally, it proves and reinforces the power of positive feelings that enhance well-being. (Diener, Diener, & Diener, 1995; Diener, 2000, Fredricksson, 1998, 2000, 2001; Kahneman, Diener, & Schwarz, 2003).

Practical Implications

As our tests revealed, only high past success does not guarantee high levels of engagement and low levels of burnout because the relationship between past success and burnout-engagement is fully mediated by self-efficacy. In fact by following the results of the present study with a view to increasing engaged students, students need to feel self-efficacious. Consequently, universities should invest resources that enhance students’ self-efficacy. But how can this be done? As we pointed out previously, there are four sources of self-efficacy (i.e., mastery experiences, vicarious learning, verbal persuasion and psychological

states). From our point of view, the promotion of healthy psychological states using counselling programs related to relaxation, happiness, control of anxiety, and mood states can be a useful strategy to enhance self-efficacy among students. For instance, anxiety to face exams is the common cause of students' inefficacy since this anxiety avoids students doing their exams. The improvement of these psychological states can be possible by intervention-counselling programs, and changes in student psychological states would enhance their self-efficacy, well-being and performance (Bandura, 1997).

Limitations and Further Research

Concerning the limitations of the present study, the most relevant limitations concern the kind of information analyzed and the design used. All measures were self-reports and using this kind of measure has been considered an important limitation in studies carried out in the field of Psychology. Self-reports are considered to be influenced by many other factors not related with objective conditions (Spector, 1992), well-being (Coyne, 1994), and individual differences (Burke, Brief, & George, 1993). Nevertheless, Spector (2006) provided empirical evidence against the belief that the method itself produces systematic variance in observations that inflate correlations to any significant degree. Moreover in the current study, the measurement in the case of past success was not entirely subjective because it was based on 'objective' information (exams passed) (see Frese & Zapf, 1988). Nevertheless, we recommend the use of students' GPA for future research in order to avoid recollection bias.

For further research, longitudinal studies that also include a measurement of future performance are needed to increase the dynamism of the model proposed and its prediction power. Thus, studies that focus on promoting self-efficacy, use its sources, and which test the effects of

this promotion on burnout, engagement and future performance are needed to advance in this research field.

Final Note

Within an SCT background, the present study proved the power that self-efficacy has to predict burnout and engagement among students from two different countries. The results obtained suggest that promoting self-efficacy could be an effective way to decrease burnout, and especially, to enhance engagement among students. Thus, the current research suggests that the promotion of students' self-efficacy could be the "key" that universities should turn to in order to encourage engagement among their students.

References

- Arbuckle, J. L. (2005). *Amos users' guide version 6.0*. Chicago, Ill: Smallwaters Corporation.
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, *84*, 191-215.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, *44*, 1175-1184.
- Bandura A, (1995). *Self-Efficacy in Changing Societies*. New York: Cambridge Univ. Press
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bentler, P. (1990). Fit indexes, Lagrange multipliers, constraint changes and incomplete data in structural models. *Multivariate behavioral research*, *25* (2), 163-172.
- Bores-Rangel, E., Church, T., Szendre, D., & Reeves, C. (1990). Self-efficacy in relation to occupational consideration and academic performance in high school equivalency students. *Journal of Counseling Psychology*, *37*, 407-418.
- Brenninkmeijer, V & Van Yperen, N. (2003). How to conduct research on burnout: advantages and disadvantages of a unidimensional approach to burnout. *Occupational and Environmental Medicine*, *60*, 16-21.

- Bresó, E., Salanova, M. & Schaufeli, W.B (2007). In search of the 'third dimension' of burnout: Efficacy or inefficacy? *Applied Psychology: An International review*, 56, 460-478.
- Burke, M. J., Brief, A. P., & George, J. M. (1993). The role of negative affectivity in understanding relations between self-reports of stressors and strains: A comment on the applied psychology literature. *Journal of Applied Psychology*, 78, 402-412.
- Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications and programming*. Mahwah, NJ: Erlbaum.
- Caraway, K., Tucker, C., Reinke, W. M., & Hall, C. (2003). Self-Efficacy, Goal Orientation, and Fear of Failure as Predictors of School Engagement in High School Students. *Psychology in the Schools*, 40, 417, 428.
- Coyne, J. C. (1994). Self-reported distress: Analog or ersatz depression. *Psychological Bulletin*, 116, 29-45.
- Cudeck, R. & Browne, M. W. (1993). Alternative ways of assessing model fit. In K.A. Bollen and J. Scott Long (Eds.), *Testing structural equation models* (pp. 1-9). Newbury Park, CA: Sage.
- Diener, E. (2000). Subjective well-being: The science of happiness, and a proposal for a national index. *American Psychologist*, 55, 34-43.
- Diener, E., Diener, M., & Diener, C. (1995). Factors predicting the subjective well-being of nations. *Journal of Personality and Social Psychology*, 69, 851-864.
- Duran, A., Extremera, N., Rey, L., Fernandez-Berrocal, P., & Montalban, F. M. (2006). Predicting academic burnout and engagement in educational settings: Assessing the incremental validity of perceived

- emotional intelligence beyond perceived stress and general self-efficacy. *Psicothema*, 18, 158-164.
- Elias, S. M., & Loomis, R. J. (2004). Utilizing need for cognition and perceived self-efficacy to predict academic performance. *Journal of Applied Social Psychology*, 34, 1687-1702.
- Fletcher, K. (2005). Evaluating an intervention to build online learning self-efficacy. *Dissertation Abstracts. International Section A: Humanities and Social Sciences*, 66 (3-A), 914.
- Fredrickson, B. (1998). What good are Positive Emotions? *Review of General Psychology*, 2, 300-319.
- Fredrickson, B. L. (2000, March 7). Cultivating positive emotions to optimize health and well-being. *Prevention and Treatment*, 3, Article 0001a. Retrieved October 25, 2007 from <http://journals.apa.org/prevention/volume3/pre0030001a.html>.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, 56, 218-226.
- Frese, M., & Zapf, D. (1988). Methodological issues in the study of work stress: Objective vs subjective measurement of work stress and the question of longitudinal design studies. In Cooper, C. L. & Payne, R. (Eds). *Causes, Coping, and Consequences of Stress at Work*. John Wiley, West Sussex, England, pp. 375-409.
- González-Romá, V., Schaufeli, W. B., Bakker, A., & Lloret, S. (2006). Burnout and engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*, 68, 165-174.

- Green, D. E., Walkey, F. H., & Taylor, A. J. W. (1991). The three factor structure of the Maslach Burnout Inventory. *Journal of Social Behavior and Personality*, 6, 453-472.
- Henson, R.K. (2001). Understanding internal consistency reliability estimates: A conceptual primer on coefficient alpha. *Measurement and Evaluation in Counseling and Development*, 34, 177-189.
- Heuven, E., Bakker, A., & Schaufeli, W. (2006). The role of self-efficacy in performing emotion work. *Journal of Vocational Behavior*, 69(2), 222-235.
- Hoyle, R.H. (1995). The structural equation modeling approach: Basic concepts and fundamental issues. In R. H. Hoyle (Ed.), *Structural equation modeling, concepts, issues and applications* (pp 1-15). Thousand Oaks, Ca: Sage.
- Jöreskog, K.G., & Sörbom, D. (1986). *LISREL user guide version VI* (4th. ed.). Scientific Software International, Mooresville, I.
- Kahneman, D., Diener, E. & Schwarz, N. (Eds.). (2003). *Well-being: The foundations of hedonic psychology*. New York: Russell Sage Foundation.
- Lee, R. T. & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133.
- Leiter, M., & Maslach, C. (2005). A mediation model of job burnout. In Antoniou, A. S., and Cooper, C. L. (Eds.), *Research companion to organizational health psychology* (pp. 544-564). Elgar Publishing.

- Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of Self-efficacy Beliefs in Student Engagement and Learning in the Classroom. *Reading & Writing Quarterly, 19*, 119-137.
- Lubbers, R. W., (2004). Self-efficacy and affective well-being among young workers: Examining job quality as an antecedent of employee health and performance outcomes. *Dissertation Abstracts. International: Section B, 64*(10-B) 5261.
- Marsh, H. W., Balla, J. R., & Hau, K. T. (1996). An evaluation of Incremental Fit Indices: A clarification of mathematical and empirical properties. In G.A. Marcoulides & R.E. Schumacker (Eds.), *Advanced structural equation modeling, issues and techniques* (pp. 315-353). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*, 397-422.
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., Gheen, M., Kaplan, A., Kumar, R., Middleton, M. J., Nelso, J., Roeser, R. & Urda, T. (2000). *Manual for Patterns of Adaptive Learning Scales*. University of Michigan Press.
- Multon, R., Brown, S., & Lent, R. (1991). Relation of self efficacy beliefs to academic outcomes: A meta analytic investigation. *Journal of Counseling Psychology, 38*, 30-38.
- Nunnally, J.C., & Bernstein, I.H. (1994). *Psychometric theory* (3rd ed.), New York, NY: McGraw-Hill.
- Orbo, M. (2005). Utbrenthet: Må man ha brent for å brenne ut? Validering og predikering av utbrenthet blant norske studenter. [Does one have to have burnt the candle at both ends in order to

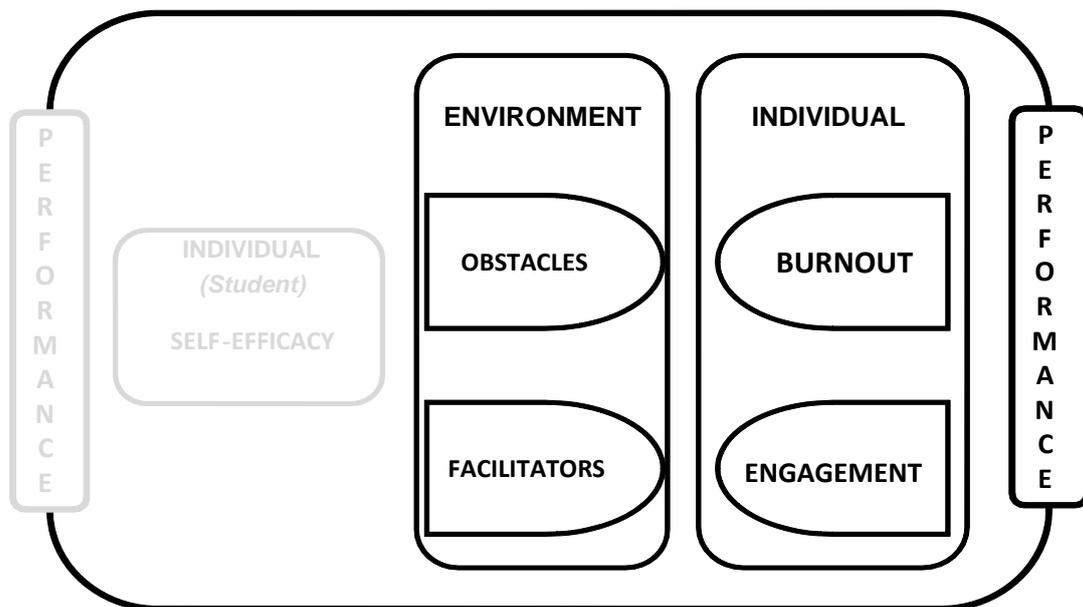
- get burnout? Validation and prediction of burnout among university students in Norway]. *Nordisk psykologi*, 57(4) 417-430.
- Pajares, F. (1996). Current Directions in Self-efficacy Research. In M. Maehr & P. R. Pintrich (Eds.). *Advances in motivation and achievement*. Volume 10, (pp. 1-49). Greenwich, CT: JAI Press.
- Peiró, J. M., González-Romá, V., Ripoll, P., & Gracia, F. J. (2001). Role stress and work team variables in primary health care teams: A structural equations model. In J. De Jonge, P. Vlerick, A. Büssing, and Schaufeli W. B. (Eds.), *Organizational psychology and health care at the start of the new millennium* (pp. 105–122). München, Germany: Rainer
- Pintrich, P. R., & Schunk, D. H. (1995). *Motivation in education: Theory, research, and Applications*. Englewood Cliffs, N.J.: Prentice-Hall.
- Salanova, M., Bresó, E., & Schaufeli, W. B. (2005). Hacia un modelo espiral de las creencias de eficacia en el estudio del burnout y del engagement. [Towards a spiral model of efficacy beliefs in burnout and engagement research]. *Ansiedad y Estrés*, 11, 215-231.
- Salanova, M., Llorens, S., Cifre, E., Martínez, I., & Schaufeli, W.B. (2003). Perceived Collective Efficacy, Subjective Well-Being and Task Performance among Electronic Work Groups: An Experimental Study. *Small Group Research*, 34, 43-73.
- Salanova, M., Martínez, I., Bresó, E., Llorens, S., and Grau, R. (2005) Bienestar psicologico en estudiantes universitarios: Facilitadores y obstaculizadores del desmpeno academico [Psychological well-being among university students: Facilitators and obstacles of academic performance]. *Anales de Psicología*, 21 (1), 170-180.

- Schaufeli, W. B. & Enzmann, D. (1998). *The burnout companion to study and research: A critical analysis*. London: Taylor & Francis.
- Schaufeli, W. B., Martinez, I., Marques-Pinto, A., Salanova, M., & Bakker, A. (2002a). Burnout and Engagement in University Students: A Cross-national Study. *Journal of Cross-Cultural Psychology*, 33 (5), 464-481
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. (2002b). The measurement of burnout and engagement: A confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71-92.
- Seligman, M. E. P., & Csikszentmihalyi, M. (Eds.). (2000). Positive psychology: an Introduction. *American Psychologist*, 55(1), 5-14.
- Siu, O., Lu, C., & Spector, P. E. (2007) Employees' Well-being in Greater China: The Direct and Moderating Effects of General Self-efficacy *Applied Psychology. An International Review* 56(2), 288-301.
- Schunk, D. H., & Ertmer, P. A. (2000). Self-regulation and academic learning: Self-efficacy enhancing interventions. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 631-649). New York: Academic Press.
- Spector, P. E. (1992). A consideration of the validity and meaning of self-report measures of job conditions. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 123-151). Chichester, England: Wiley.
- Spector, P. E. (2006). Method Variance in Organizational Research. *Organizational Research Methods*, 9(2), 221-232.

- Xanthopoulou, D., Bakker, A., & Demerouti, E. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management, 14*(2), 121-141.
- Zeldin, A. (2001). Sources and effects of the self-efficacy beliefs of men and women with careers in mathematics, science, and technology. *Dissertation Abstract International Section A: Humanities and Social Sciences 61*(10-A) 3896.
- Zimmerman, B. (2000). Self-efficacy: An Essential motive to Learn. *Contemporary Educational Psychology 25*, 82-91.

Chapter 3

The Mediating Role of Students' Burnout and Engagement in the prediction of Academic Performance



Summary

The objective of this study is to analyze the mediating role that student well-being (i.e., burnout and engagement) plays in the relationship between obstacles and facilitators in their academic environment on the one hand, and their future academic performance on the other hand. The sample was composed of 527 university students who filled out a questionnaire and whose academic performance (GPA) during the following year was taken from university records. Structural equations modeling showed that, as expected, engagement fully mediated the relationship between facilitators and the following year's academic performance. Contrary to expectations however, burnout did *not* predict future performance, although it was associated with the presence of obstacles and with the absence of facilitators. Our results illustrate that positive psychological states (i.e., engagement) are more important in explaining performance than negative states (i.e., burnout).

For decades, academic performance has attracted the attention of educators and researchers given the poor achievement of students predicts, amongst others, school dropout (Ekstrom, Goertz, Pollack, & Rock, 1986) and delinquent behaviors (Tremblay, Masse, Perron, LeBlance, Schwartzman, & Ledingham, 1992). The current study adopts an occupational health perspective by assuming that students' well-being constitutes a crucial element in the relationship between their academic environment and their future academic performance. Our purpose is to show that, instead of directly affecting student's performance, obstacles and facilitators in the academic environment exert an *indirect* effect via students' well-being. In other words, we assume that well-being mediates the relationship between the students' academic environment and their academic performance. More specifically, we distinguish between negative well-being (i.e., student burnout) and positive well-being (i.e., student engagement), whereby obstacles are expected to have a *negative* impact on future performance through burnout, and facilitators are expected to have a *positive* impact on future performance through engagement. By doing so, we concur with Positive Psychology (Seligman & Csikszentmihalyi, 2000) that acknowledges a more balanced view on well-being by not only including negative aspects (such as burnout), but also positive aspects (such as engagement).

Our occupational health perspective implies that we consider students as 'workers'. Although, formally speaking, students are neither employed nor hold jobs, their core activities can be considered as work from a *psychological* perspective. That is to say, they are involved in structured, coercive activities (e.g., attending classes and doing assignments) that are directed toward a specific goal (i.e., passing exams and acquiring a degree). Hence students, like workers, may also experience burnout and engagement. That is, two types of well-being that

are defined in relation to work. Burnout manifests itself in students through exhaustion and a cynical attitude toward their studies, whereas its positive opposite, engagement, is characterized by feeling vigorous and being dedicated to studies (Schaufeli, Martínez, Marques-Pinto, Salanova, & Bakker, 2002a).

Obstacles and Facilitators

Obstacles are characteristics of the work situation that have the capacity to *impede* performance. For instance, Brown and Mitchell (1993) defined performance obstacles as factors in the work environment that restrict productivity by inhibiting employees in the execution of task responsibilities. They defined organizational obstacles as somewhat more narrow, such as tangible organizational characteristics that have the capacity to restrict performance. Obstacles have also been called performance barriers (Tesluk & Mathieu, 1999) or situational factors (Peters & O'Connor, 1980). Although slightly different terms are used, they refer to aspects in the work situation that interfere with transforming individual ability and motivation into effective performance. In the case of students, obstacles are those aspects of the academic environment that potentially impede their academic performance (e.g., poor library services, lack of computers, and poor scheduling of classes).

Facilitators, on the other hand, are characteristics of the work situation that have the capacity to *enhance* performance. They are defined by Schneider and Bowen (1993) as Human Resource policies (e.g., training, supervising behaviors) toward removing work obstacles. In a somewhat similar vein, facilitators have also been defined as actions and strategies directed to mitigate problems caused by the obstacles that interfere with performance (Tesluk & Mathieu, 1999). In the case of students, facilitators are those aspects of the academic environment that

potentially enhance academic performance (e.g., motivating teachers, good library facilities, and extra-training).

Student's Well-being: Burnout and Engagement

Initially, the burnout concept was linked to human services such as health care, education, and social work where employees do 'people' work of some kind (Maslach & Jackson, 1981). Later the concept was extended to also include other occupational groups. A questionnaire was developed to assess burnout regardless of the occupational setting in which it occurred: the Maslach Burnout Inventory – General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996). From a psychological point of view, as students' activities can be regarded as work, burnout has also been studied in students (Balogun, Helemoe, Pellegrini, & Hoerberlein, 1995; Gold, Bachelor & Michael, 1989; Gold & Michael, 1985; Meier & Schmeck, 1985; Powers & Gose, 1986). These studies used slightly adapted versions of the original MBI-Human Services Survey (MBI-HSS) in which 'instructors' was substituted for 'recipients' However, a suchlike rewording is not unproblematic because the meaning of an item might change dramatically. For instance, the item '*I treat some instructors as if they were impersonal objects*' does not refer to a cynical or indifferent attitude toward the students' core activity (i.e. studying and taking classes), but toward the teacher. It is likely that a negative attitude toward teachers is at least partly based on personal preferences rather than on study-related experiences. To overcome this problem, the MBI-Student Survey (MBI-SS; Schaufeli, *et al.*, 2002a), that is based on the MBI-GS, has been developed where all items refer to the students' 'work'; (e.g., '*I have become less enthusiastic about my studies*').

Accordingly, student burnout, as assessed by the MBI-SS, refers to feeling exhausted because of study demands and having a cynical and

detached attitude toward one's study. In the present study, the third dimension of burnout, incompetence or lack of efficacy, is excluded because accumulating evidence suggests that this dimension plays a different role. For instance, most studies show that lack of professional efficacy correlates relatively low with exhaustion and cynicism (for a meta-analysis, see Lee & Ashforth, 1996). This led Green, Walkey and Taylor (1991) to the conclusion that exhaustion and cynicism constitute the 'core of burnout'. Furthermore, compared to exhaustion and cynicism, lack of professional efficacy shows a different correlation pattern with other variables (see Schaufeli & Enzmann, 1998). Clinical experience with burned-out patients suggests that exhaustion and cynicism appear together, whereas lack of professional efficacy is observed much less frequently (Brenninkmeijer & Van Yperen, 2003). These empirical results have led some scholars to conclude that lack of professional efficacy is not a genuine burnout dimension (Shirom, 2005). Recently, research into burnout has been broadened to also include its opposite, engagement, thereby covering the entire range of well-being (Maslach, Schaufeli, & Leiter, 2001). Work engagement refers to a 'persistent, positive affective-motivational state of fulfilment that includes three aspects: vigor, dedication, and absorption' (Schaufeli, Salanova, González-Romá, & Bakker, 2002b, p. 72). Vigor is characterized by high levels of energy and mental resilience, the willingness to invest effort, and persistence even in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. Finally, absorption is characterized by being fully concentrated and deeply engrossed in one's work, when time passes quickly and one has difficulties to detach oneself from work. Recent evidence, however, suggests that absorption plays a slightly different role and might perhaps be considered a consequence of engagement rather than a constituting component

(Salanova, Llorens, Martinez, Cifre, & Schaufeli, 2003). Accordingly, absorption has been excluded in the present study.

Conceptually speaking, vigor and dedication are considered direct opposites of the core burnout dimensions, these being exhaustion and cynicism, respectively (Maslach, Schaufeli, & Leiter, 2001). By using non-parametric scaling, Gonzalez-Romá, Schaufeli, Bakker, & Lloret (2006) recently showed that vigor and exhaustion, and dedication and cynicism, each indeed span a separate continuum that is labelled energy (from vigor to exhaustion) and identification (from dedication to cynicism), respectively. From this perspective, burned-out students lack energy and do not identify themselves with their studies. In fact, quite the opposite occurs as they distance themselves by displaying a cynical attitude toward their studies. Engaged students, on the other hand, feel energetic and identify strongly with their studies as they are deeply involved in them.

Students' Well-being and Performance

As Daniels and Harris, 2000 (p. 306) conclude, "*There is a body of longitudinal evidence, and some studies have found that well-being predicts future performance, after controlling for initial performance*". Although the results are not entirely conclusive, there is some evidence of a weak negative relationship between burnout and job performance (Garman, Corrigan, & Morris, 2002; Sing, 2000; Wright & Cropanzano, 1998). It is therefore plausible that burned-out students will perform poorly because they are fatigued, used up, irritable, frustrated, detached, and cynical. Indeed, McCarthy, Pretty and Catano (1990) found a negative relationship between student burnout and academic achievement. On the other hand, it is likely that engaged students perform better because they can draw upon considerable energy resources and they are deeply involved in studying. This is confirmed by Salanova, Martinez, Bresó, Llorens and Grau (2005),

who, with a large sample of Spanish students, showed that those with better academic performance not only experienced less burnout, but that they were also more engaged and satisfied with their studies.

There is some evidence that organizational obstacles negatively affect psychological well-being (Brown & Mitchell, 1993). Conversely, organizational facilitators play the opposite role. That is, they improve psychological well-being (Schneider & Bowen, 1993). Similar results were found among Spanish students (Salanova *et al.*, 2005). Their perceptions of obstacles and their perceptions of facilitators were significantly and positively correlated with burnout and engagement, respectively. In the present study, we assume that instead of directly affecting students' academic performance, obstacles and facilitators will have an *indirect* effect via students' well-being (Danna, 1999; Sargent & Terry, 1998). Evidence for such an indirect effect comes from Cotton, Dollard and de Jonge (2002), who found that high study demands among Australian college students in combination with low control, plus a poor social support, decreased students' well-being, and subsequently resulted in poor academic performance. In addition, this research indicated that students who feel satisfied with their academic life, and who have low levels of anxiety and depression, performed better. In accordance with the author's *happy-productive student hypothesis*, satisfaction mediated the impact of the work environment on performance. In a similar vein, Chambel and Curren (2005) showed that levels of satisfaction among Portuguese students (positive well-being) had a direct positive impact on student performance, but also mediated the relationship between control and performance. Incidentally, this mediating relationship was *not* found in the case of negative well-being (i.e., anxiety and depression).

So far, there is only limited evidence for a positive relationship between engagement and performance. Recently, Salanova, Agut and

Peiró, (2005) showed that levels of work engagement of contact employees working in hotels and restaurants are related to employee performance, as perceived by customers. Furthermore, Harter, Schmidt and Hayes (2002), in an impressive study, showed that levels of employee engagement are weakly but positively related to business-unit performance (i.e., customer satisfaction and loyalty, profitability, productivity, turnover, and safety) across almost 8,000 business-units of 36 companies. As far as students are concerned, Schaufeli, *et al.*, 2002a found that the more engaged students are, the more exams they passed during the last semester. A positive relationship between engagement and performance was also found in an experimental study with students performing a group task: the more engaged the groups felt, the better their group performance (Salanova *et al.*, 2003).

Finally, the relationship among negative and positive environmental characteristics (i.e., obstacles and facilitators) with negative and positive well-being (i.e., burnout and engagement) was demonstrated empirically in four independent employee samples (Schaufeli & Bakker, 2004). This study suggests the existence of two largely independent processes: (1) an effort-driven energetic process that starts with job demands, leading to health complaints through burnout; (2) a motivational process that is driven by the availability of job resources, leading to commitment to organization through work engagement. Schaufeli and Bakker (2004) confirmed the mediating role of burnout and engagement as assumed by both processes, and they also found that a lack of job resources was associated with burnout. In the present study, we used obstacles and facilitators instead of job demands and resources, respectively. This is because these concepts are, by definition, related to performance, and also because previous research seems to substantiate this

claim, at least as far as obstacles are concerned: they may impede performance (Brown & Mitchell, 1993; Tesluk & Matthieu, 1999).

To summarize, only a few studies exist on the relationship between burnout or engagement and academic performance. In general, it seems that these studies corroborate the results that have been found for employees, namely that burnout is weakly but negatively related to performance, and that engagement is weakly but positively related. However, virtually all the studies conducted among students are cross-sectional in nature and employ self-reported performance measures. Therefore, we used a prospective design and assessed students' performance objectively by using their Grade Point Average (GPA).

The Research Model

Our research model is graphically represented in Figure 3.1. As seen, we expect that obstacles and facilitators predict future academic performance via students' well-being (i.e., burnout and engagement).

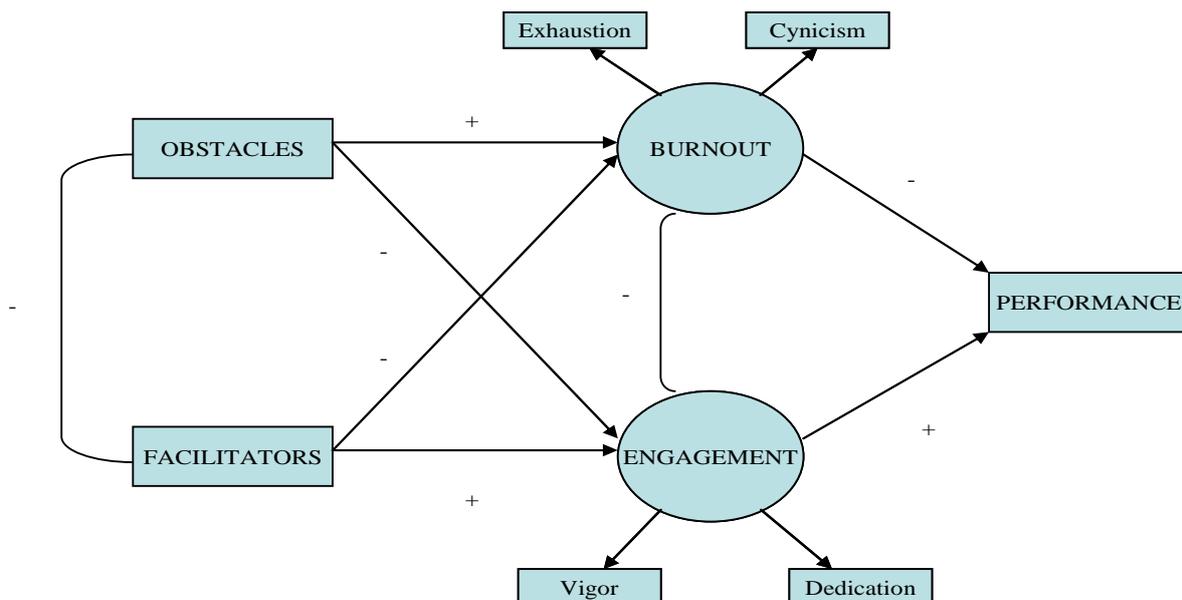


Figure 3.1. The hypothesized model

In addition to this full mediation effect, we will also test an alternative partial mediation model that additionally includes the direct paths from obstacles and facilitators to performance.

Method

Sample and Procedure

A stratified sample of 867 students was drawn from the approximate number of 6,000 undergraduate students at the Universitat Jaume I in Castellón (Spain), based on the number of students of each of its three faculties. The final study sample was composed of 527 students; 67% were female and 33% were male. Participants studied law (27%), chemistry and engineering (33%), and social and behavioural sciences (40%). The mean sample age of was 22 years and 6 months (SD = 2.6; range 18 to 43). Questionnaires were distributed by psychology students before a class started, and participation was voluntary. Originally, 863 students completed the questionnaire, but 236 students did not fill in their identification number, so it was impossible to link their questionnaire data with their GPA, as administered by the university. Therefore they were excluded from further analyses.

Variables

In order to measure academic *obstacles* and *facilitators*, a self-constructed inventory was developed. First, a brainstorming session was carried out with 40 students using the critical incidents method (Flanagan, 1954) in order to identify specific obstacles and facilitators. Participants were invited to answer the following question: “*Please imagine those concrete situations in which you performed poorly (or excellently). What kind of factors, do you believe, impeded (or enhanced) your performance in that particular case?*” Two lists emerged which, after eliminating any overlap,

contained 35 obstacles (e.g., '*poor university services*') and 31 facilitators (e.g., '*motivating teachers*'). Next, an inventory was composed of these two sets of obstacles and facilitators, whereby a dichotomous scoring system was used: 0 (not present) to 1 (present). The sum of the number of obstacles and facilitators was used as a measure of academic obstacles and facilitators, respectively.

Academic burnout (i.e., exhaustion and cynicism) was assessed with the MBI-SS (Student Survey) (Schaufeli et al., 2002a). The exhaustion (EX) scale, including 6 items (e.g., '*I feel emotionally drained by my studies*') and the cynicism (CY) scale with 4 items (e.g., '*I doubt the significance of my studies*'). All items are scored on a 7-point frequency rating scale ranging from 0 (never) to 6 (always). Internal consistencies (Cronbach's α) for EX and CY were .74 and .77, respectively.

Academic engagement was assessed with the UWES-SS (Student Survey) (Schaufeli, et al., 2002a). The vigor (VI) scale includes 6 items (e.g., '*When I'm doing my work as a student, I feel I'm bursting with energy*'), and the dedication (DE) scale includes 5 items (e.g., '*I am enthusiastic about my studies*'). Items of the UWES-SS are similarly scored as those of the burnout inventory. Internal consistencies (Cronbach's α) for VI and DE were .75 and .84, respectively. In order to avoid answering bias, burnout and engagement items were merged randomly.

Future academic performance was measured by students' GPA of the semester following the one in which they completed the questionnaire. In the Spanish grading system, GPA ranges from 5 to 10.

Data Analyses

Structural equation modeling (SEM) methods, as implemented by AMOS (Arbuckle, 1997), were used to test the research models. First, the

hypothesized model (M1) was tested, which assumes that burnout and engagement fully mediate the relationship between obstacles and facilitators on the one hand, and students' future academic performance on the other hand (See Figure 3.1). Next, an alternative partial mediation model (M2) was fitted to the data with additional direct paths from obstacles and facilitators to performance.

Maximum likelihood estimation methods were used and the input for each analysis was the covariance matrix of the items. The goodness-of-fit of the models was evaluated using absolute and relative indices. The *absolute* goodness-of-fit indices calculated were: (1) the χ^2 goodness-of-fit statistic; (2) the Root Mean Square Error of Approximation (RMSEA); (3) the Goodness of Fit Index (GFI); and (4) the Adjusted Goodness of Fit Index. (Jöreskog & Sörbom, 1986). Since the χ^2 -test is sensitive to sample size, the computation of relative goodness-of-fit indices is strongly recommended (Bentler, 1990). The following *relative* goodness-of-fit indices were computed: (1) Normed Fit Index (NFI); (2) Non-Normed Fit Index (NNFI), also called the Tucker Lewis Index (TLI); (3) Comparative Fit Index (CFI). (Marsh, Balla & Hau, 1996). Since the distribution of the GFI and the AGFI is unknown, no statistical test or critical value is available (Jöreskog & Sörbom, 1986). For RMSEA, as a rule of thumb, values smaller than .08 are considered to indicate an acceptable model fit (Cudeck & Browne, 1993), whereas all three relative fit-indices values greater than .90 are considered to indicate a good fit (Hoyle, 1995).

Results

Descriptive Analyses

Table 3.1 displays the means, standard deviations, intercorrelations and internal consistencies (Cronbach's α) of the study variables. As Table

3.1 displays, all values of α meet the criterion of .70 (Nunnally & Bernstein, 1994).

For obstacles and facilitators, values of Cronbach's α were not computed as, instead of referring to an underlying latent factor, both are sets of basically independent environmental factors. Contrary to expectations, obstacles and facilitators are *positively* related, meaning that the more obstacles students perceive, the more facilitators they identify. As expected, obstacles are significantly correlated with both burnout scales, but they neither correlated with engagement scales nor with performance. Also as expected, facilitators positively correlated with both engagement scales, but also with performance. In addition, facilitators negatively correlated with CY. As expected, the interrelations between both engagement dimensions and between both burnout dimensions are positive, whereas the correlations between the burnout and engagement scales are negative. Finally, both dimensions of engagement positively correlated with performance, whereas only EX, and not CY, is negatively correlated with performance.

Table 3.1

Means (M), Standard Deviations (SD), Correlations (r) and internal consistencies (Cronbach's α) of the study variables (n=527)

	M	SD	1	2	3	4	5	6	7
1. Obstacles	7.01	3.23	--	.39***	.15***	.13***	-.03	-.04	-.04
2. Facilitators	7.20	4.04	--		-.06	-.15***	.16***	.19***	.09*
3. Exhaustion	2.76	1.09	.74			.44***	-.16***	-.24***	-.11**
4. Cynicism	1.73	1.24	.77				-.28***	-.57***	-.05
5. Vigor	2.94	0.95	.75					.58***	.13***
6. Dedication	4.22	1.11	.84						.11**
7. Performance	6.62	0.76	--						--

Note. * p < .05; ** p < .01; *** p < .001

Model Testing

First, the fit of M1, as depicted in Figure 3.1, was tested. The results are shown in Table 3.2 and indicate that M1 fits the data well, where all fit indices meeting their respective criteria, and where all path coefficients were significant ($t > 1.96$; $p < .05$), except for the path from burnout to academic performance ($t = 1.13$). So these results suggest that engagement mediates the relationship between obstacles and facilitators on the one hand, and future academic performance on the other hand, while burnout does not.

In order to test whether the impact of obstacles and facilitators on future academic performance is fully or partially mediated by students' well-being, the alternative model M2 was subsequently fitted to the data. As seen in Table 3.2, the fit of M2 is superior to that of M1 because $\Delta\chi^2$ is significant ($p < .05$) and all fit parameters of the model either improved or remained unchanged.

Table 3.2

The fit of the hypothesized full mediation model (M1) and the alternative partial mediation model (M2) (n=527)

	χ^2	df	p	GFI	AGFI	RMSEA	NFI	IFI	CFI	$\Delta\chi^2$	df
M1	38.628	10	.00	.98	.95	.06	.95	.92	.96		
M2	31.633	8	.00	.98	.95	.06	.97	.92	.96	M1-M2= 6.99	2

Note. χ^2 = Chi-square; df=degrees of freedom; GFI=Goodness-of-Fit Index; AGFI=Adjusted Goodness-of-Fit Index; RMSEA=Root Mean Square Error of Approximation; NFI=Normed Fit Index; IFI=Incremental Fit Index and CFI=Comparative Fit Index. M1=full mediation model. M2=partial mediation model.

Figure 3.2 displays the standardized path coefficients of M2, that is, the best fitting model, which accounts for 3% of the variance of students' future academic performance. As expected, and as Figure 3.2 depicts, the paths from obstacles to engagement and from facilitators to burnout are both negative. This means that the more obstacles students perceive, the

less engaged they are, and that the more facilitators they experience, the less burned-out they feel. As expected, burnout and engagement relate negatively, unlike obstacles and facilitators, which correlated positively (see Table 3.1).

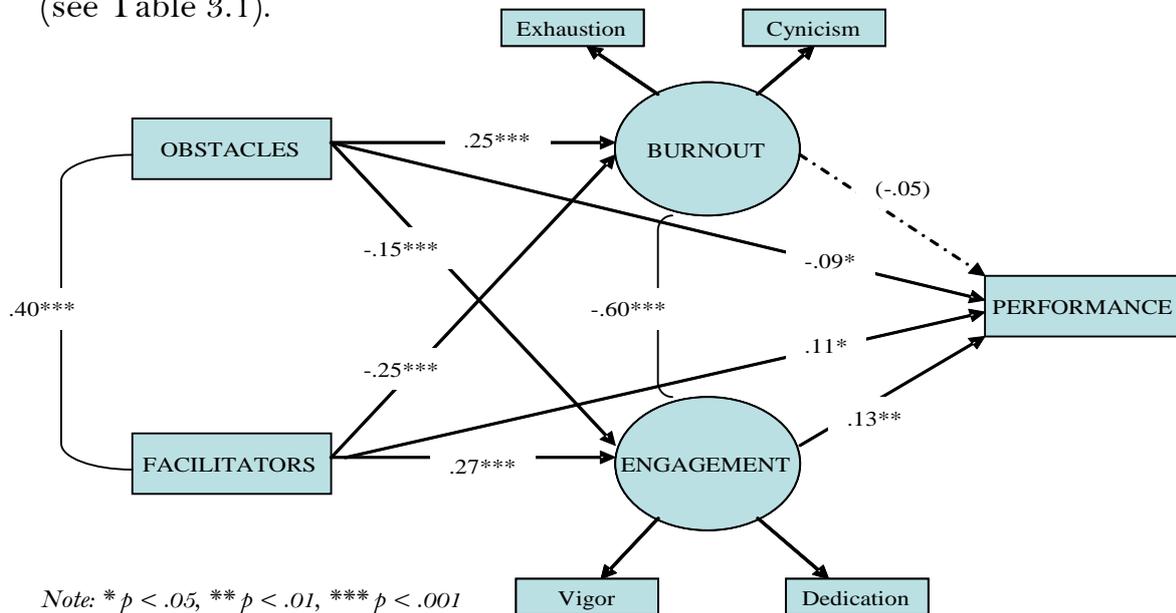


Figure 3.2. Final model (standardized path coefficients)

Discussion

This study investigated the mediating role played by student well-being (i.e., burnout and engagement) in the relationship between the perceived academic environment (in terms of obstacles and facilitators) and objective future academic performance (see Figure 3.1). It was found that only positive well-being, engagement, partially mediates the impact of academic obstacles and facilitators on future academic performance. That is, facilitators and obstacles are positively and negatively associated with engagement, respectively, which, in turn, positively affects future academic performance. In addition, direct but weaker relationships were observed between obstacles and facilitators on the one hand, and for academic performance on the other hand. As expected, obstacles and facilitators were positively and negatively associated with burnout, respectively, but *no* significant effect of burnout on future academic

performance was observed. The latter agrees with past research, which also failed to establish a link between burnout and performance, particularly when performance was measured by using objective indicators instead of self-reports or other people's assessments (Garden, 1991; Lazaro, Shinn & Robinson, 1985; Rafferty, Lemkau, Purdy, Rudisill, 1986).

In short, students who perceive many facilitators and few obstacles in their environment feel engaged, which may boost their future academic performance. However, students who perceive many obstacles and few facilitators feel burned-out, although that does seem to affect their performance.

In addition, a positive association was found between obstacles and facilitators. At first glance this might appear somewhat puzzling because one would expect obstacles and facilitators to be negatively related because facilitators mitigate problems caused by the obstacles that interfere with performance (Tesluk & Mathieu, 1999). However, it can be speculated that students, by way of compensation, who perceive many obstacles actively look for facilitators in their environment as a coping strategy (Eriksen, Olf, & Ursin, 2000).

Theoretical Implications

Our results agree with recent research about how facilitators or job resources increase engagement and, in turn, increase specific positive behaviors, such as quality of service (Salanova et al., 2003), employee performance (Salanova, Agut, & Peiró, 2005), and organizational commitment (Schaufeli & Bakker, 2004). Yet our findings also suggest that students' perceptions of obstacles and facilitators directly affect their academic performance one semester later through increasing levels of academic engagement.

On a more general level, this agrees with Hackman and Oldham's (1980) Job Characteristics Theory (JCT). The JCT assumes the so-called critical psychological states (i.e., meaningfulness, responsibility, and knowledge of the results), that are presumed to mediate between job characteristics (i.e., organizational facilitators or resources such as variety, task identity, task significance, autonomy and feedback) and outcomes (e.g., job performance). In our study, engagement, but not burnout, seems to play an analogous role to such a critical psychological state. However, our findings extend the JCT, since according to this theory, the critical psychological states are primarily cognitive in nature (e.g., knowledge of the results, self-efficacy, and control appraisals), whereas our engagement construct reflects an affective state. Hence, it appears that obstacles and facilitators affect students' feelings regarding their studies, which in turn induces good performance.

The fact that positive affects, such as engagement, lead to students' performance also agrees with the so-called '*Broaden-and-Build*' theory of positive emotions (Fredrickson, 2001). This theory posits that the experience of positive emotions broadens thought-action repertoires and builds enduring personal resources. Although Fredrickson's theory centers on emotions such as joy, interest, and contentment, it can be speculated that academic engagement, which includes enthusiasm, pride, inspiration and challenge, might have a similar effect on broadening habitual modes of thinking and acting, and may thus increase the likelihood of displaying better future performance.

Practical Implications

Our findings suggest that although academic obstacles and facilitators directly impacted on academic performance, the effects from engagement to performance were stronger. However, the path from burnout to performance was non-significant. This means that engagement

is directly related to performance, which offers the possibility of an increase in engagement through increasing facilitators, or of decreasing obstacles in order to boost performance. However, the variance explaining performance was only 3%, which leaves considerable room for other variables to explain additional variance. For instance Salanova, Bresó and Schaufeli (2005) showed that engagement in Spanish and Dutch students may be increased by students' enhancing efficacy beliefs. An upward positive spiral was observed in which past academic success reinforced efficacy beliefs and engagement, resulting in more positive future efficacy beliefs. In this way, efficacy beliefs may boost students' engagement levels and, eventually, their future performance.

Although no effect of burnout on future academic performance was observed in this study, relationships with obstacles and facilitators seem to exist in the sense that the presence of obstacles and the absence of facilitators are associated with burnout. Hence, student burnout might be decreased by removing obstacles and augmenting facilitators. By doing so, not only is burnout expected to decrease (which is a valuable outcome for students in itself), but performance may also increase indirectly through engagement.

Limitations and Future Research

Our results may be partly influenced by common method variance because self-report questionnaires were used to measure obstacles, facilitators, burnout and engagement. However, we used an 'objective' measure of academic performance so that the problem with common method variance would be less serious for our central outcome variable. Furthermore, the list of obstacles and facilitators was composed based on an independent qualitative study, which might also have reduced method variance.

Although our study used a prospective design in which future academic performance was predicted from current perceptions of the academic environment (i.e., obstacles and facilitators) and student well-being (i.e., burnout and engagement), future longitudinal research should investigate the dynamic, reciprocal nature of the study variables. For instance, academic performance may also positively impact engagement, or decreases the perception of obstacles in the environment or even increases facilitators in the sense of accumulating resources over time, as described by the Conservation of Resources Theory (Hobfoll & Shirom, 2001). Finally, a promising avenue seems to be that which includes personal resources such as efficacy beliefs, in addition to environmental facilitators or job resources to predict performance over the time (Xanthopoulou, Bakker, Demerouti & Schaufeli, 2007).

Final Note

Despite limitations, the results of our study provide a strong case for the existence of a motivational process that links positive perceptions of the environment (facilitators) through work engagement to future performance, as objectively assessed by students' GPA. On the other hand, a health impairment process seems to also exist in the sense that the presence of obstacles and the absence of facilitators are associated with student burnout. However, this process is not involved in predicting performance, thus illustrating the independence of both processes.

References

- Balogun, J. A., Helemoe, S., Pellegrini, E., & Hoerberlein, T. (1995). Test-retest reliability of a psychometric instrument designed to measure physical therapy students' burnout. *Perceptual and Motor Skills*, 81, 667-672
- Brenninkmeijer, V., & Van Yperen, N. (2003). How to conduct research on burnout: advantages and disadvantages of a unidimensional approach to burnout. *Occupational and Environmental Medicine*, 60, 16-21.
- Britt, T. W., Adler, A. B. & Bartone, P. T. (2001). Deriving benefits from stressful events: The role of engagement in meaningful work and hardiness. *Journal of Occupational Health Psychology*, 6, 53-63.
- Brown, K. A. & Mitchell, T. R. (1993). Organizational obstacles: Links with financial performance, customer satisfaction and job satisfaction in a service environment. *Human Relations*, 46, 725-757.
- Buunk, B. P., De Jonge, J., Ybema, J. F., & Wolff, C. J. (1998). Psychosocial aspects of occupational stress. In T. Drenth & C.J. Wolff (Eds.), *Handbook of work and organizational psychology* (vol. 2, pp.145 -182). Trowbridge, Wilts: Psychology Press.
- Chambel, M. J., & Curren, L. (2005). Stress in Academic Life: Characteristics as Predictors of student Well-being and Performance. *Applied Psychology: An International Review*, 54, 135-147
- Cotton, S., Dollard, M., & De Jonge J. (2002). Stress and student job design: Satisfaction, well-being, and performance in university students. *International Journal of Stress Management*, 9, 147-162.

- Cudeck, R., & Browne, M. W. (1993). Alternative ways of assessing model fit. In K.A. Bollen and J. Scott Long (Eds.), *Testing structural equation models* (pp. 1-9). Newbury Park, CA: Sage.
- Daniels, K., & Harris, C. (2000). Work, psychological well-being and performance. *Occupational Medicine, 50*, 304–308.
- Danna, K. (1999). Health and well-being in the workplace: A review and synthesis of the literature. *Journal of Management, 25*, 357–384.
- Demerouti, E., Bakker, A. B., Janssen, P. P. M. & Schaufeli, W. B. (2001). Burnout and engagement at work as a function of demands and control. *Scandinavian Journal of Work, Environment & Health, 27*, 279-286.
- Ekstrom, R. B., Goertz, M. E., Pollack, J. M., & Rock, D. A., 1986. Who drops out of high school and why? Findings from a national study. *Teachers College Record, 87*, 356–373.
- Eriksen, H. R., Olf, M., and Ursin, H. (2000). Coping with subjective health problems in organizations. In Dewe, P., Leiter, M. and Cox, T. (Eds.), *Coping, health and organizations* (pp. 34-51). Taylor and Francis: New York.
- Fortier, M. S., Vallerand, R. J., & Guay, F. (1995). A motivational analysis of academic achievement. *Contemporary Educational Psychology 20*, 257–274.
- Frentz, C., Gresham, F. M., & Elliot, S. N. (1991). Popular, controversial, neglected, and rejected adolescents: contrasts of social competence and achievement differences. *Journal of School Psychology, 29*, 109–120.

- Garden, A. M. (1991). Relationship between Burnout and Performance. *Psychological Reports, 68*(3), 963-977.
- Garman, A. N., Corrigan, P. W., & Morris, S. (2002). Staff burnout and patient satisfaction: Evidence of relationships at the care unit level. *Journal of Occupational Health Psychology, 7*, 235-241.
- Ginsburg, G. S., & Bronstein, P. (1993). Family factors related to children's intrinsic/extrinsic motivational orientation and academic performance. *Child Development 64*, 1461-1474.
- Gold, Y. & Michael, W. B. (1985). Academic self-concept correlates of potential burnout in a sample of first-semester elementary school practice teachers: A concurrent validity study. *Educational and Psychological Measurement, 45*, 909-914.
- Gold, Y., Bachelor, P. A. & Michael, W. B. (1989). The dimensionality of a modified form of the Maslach Burnout Inventory for university students in a teacher-training program. *Educational and Psychological Measurement, 49*, 549-561.
- Gonzalez-Romá, V., Schaufeli, W. B., Bakker, A., & Lloret, S. (2006). Burnout and engagement: Independent factors or opposite poles? *Journal of Vocational Behavior, 68*, 165-174.
- Green, D. E., Walkey, F. H., & Taylor, A. J. W. (1991). The three factor structure of the Maslach Burnout Inventory. *Journal of Social Behavior and Personality, 6*, 453-472.
- Grolnick, W. S., & Slowiaczek, M. L. (1994). Parents' involvement in children's schooling: a multidimensional conceptualization and motivation model. *Child Development 65*, 247-252.

- Guay, F., & Vallerand, R. (1997). Social context, students' motivation, and academic achievement: toward a process model. *Social Psychology of Education 1*, 211–233.
- Harter, J. K., Schmidt, F. L. & Hayes, T. L. (2002). Business-Unit-Level relationship between employee satisfaction, employee engagement, and business outcomes: A meta-analysis. *Journal of Applied Psychology*, 87, 268-279.
- Hobfoll, S. E., & Shirom, A. (2001). Conservation of resources theory: Applications to stress and management in the workplace. In R. T., Golembiewski (Ed.), *Handbook of organizational behavior* (2nd ed., pp. 57-80). New York: Marcel Dekker.
- Hymel, S., Comfort, C., Schonert-Reichl, K., & McDougall, P. (1996). Academic failure and school dropout: the influence of peers. In: Juvonen, J., Wentzel, K.R. (Eds.), *Social Motivation: Understanding Children's School Adjustment*. Cambridge University Press, New York, pp. 313–345.
- Jex, S. (1998). *Stress and job performance: Theory, research, and implementation for management practice*. Thousand Oaks, CA:Sage.
- Lazaro, L., Shinn, M., & Robinson, P. E. (1985). Burnout, performance and job withdrawal behavior. *Journal of Health and Human Resources Administration*, 7, 213–234.
- Lee, R. T. & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133.
- Leiter, M. P., & Schaufeli, W. B. (1996). Consistency of the burnout construct across occupations. *Anxiety, Stress and Coping*, 9, 229-243.

- Maslach, C. (1993). Burnout: a multidimensional perspective. In Schaufeli, W. B., Maslach, C., Marek, T. (Eds.), *Professional Burnout Developments in Theory and Research*. Taylor & Francis, Washington, DC, pp. 15–32.
- Maslach, C. , Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, *52*, 397-422.
- Maslach, C., Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior* *2*, 99–113.
- McCarthy, M. E., Pretty, G. M., Catano, V. (1990). Psychological sense of community and student burnout. *Journal of College Student Development* *31*, 211–216.
- Meier, S. F., & Schmeck, R. R. (1985). The burned-out college student: A descriptive profile. *Journal of College Student Personnel*, *26*, 63-69.
- Normandeau, S., & Guay, F. (1998). Preschool behavior and first-grade school achievement: the mediational role of cognitive self-control. *Journal of Educational Psychology*, *90*, 111–121.
- Peters, L. H., & O'Connor, E. J. (1980). Situational Constraints and Work Outcomes: The Influences of a Frequently Overlooked Construct. *Academy of Management Review*, *5*, 391-397.
- Powers, S., & Gose, K. F. (1986). Reliability and construct validity of the Maslach Burnout Inventory in a sample of university students. *Educational and Psychological Measurement*, *36*, 251-257.
- Rafferty, J. P., Lemkau, J. P., Purdy, R., & Rudisill, J. R. (1986). Validity of the Maslach Burnout Inventory for family practice physicians. *Journal of Clinical Psychology*, *42*, 488-492

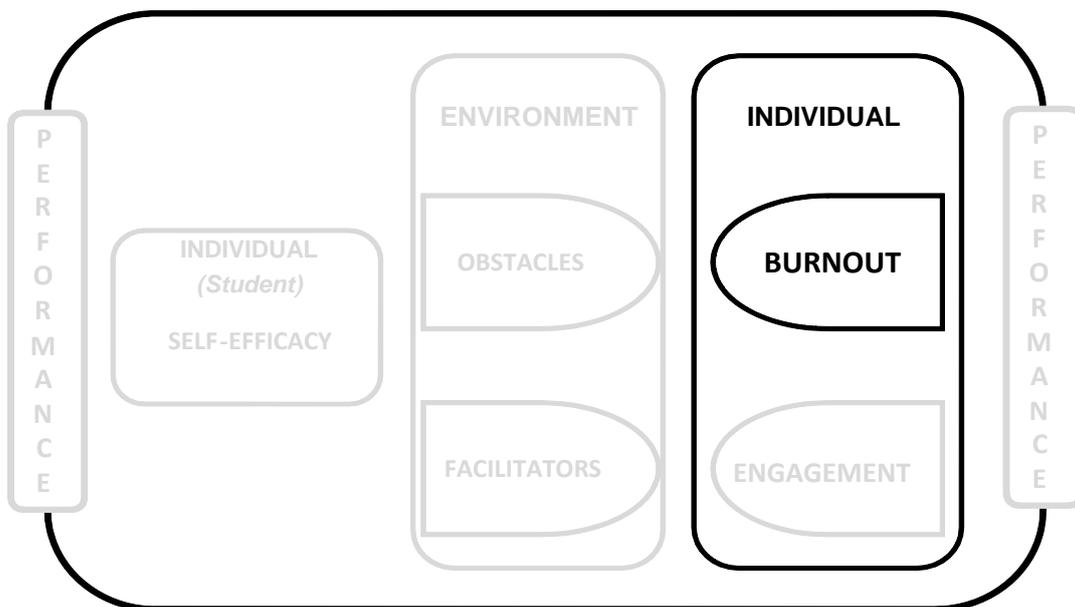
- Salanova, M., Agut, S., & Peiró, J. M. (2005). Linking Organizational Resources and Work Engagement to Employee Performance and Customer Loyalty: The Mediation of Service Climate. *Journal of Applied Psychology, 90*, 1217-1227.
- Salanova, M., Bresó, E., & Schaufeli, W. B. (2005). Hacia un modelo espiral de las creencias de eficacia en el estudio del burnout y del engagement. [Towards a spiral model of efficacy beliefs in burnout and engagement research]. *Ansiedad y Estrés, 11*, 215-231.
- Salanova, M., Llorens, S., Cifre, E., Martínez, I., & Schaufeli, W. B. (2003). Perceived Collective Efficacy, Subjective Well-Being and Task Performance among Electronic Work Groups: An Experimental Study. *Small Group Research, 34*, 43-73.
- Salanova, M., Martínez, I., Bresó, E., Llorens, S. & Grau, R. (2005). Bienestar psicológico en estudiantes universitarios: facilitadores y obstaculizadores del desempeño académico [Psychological Well-being among university students: facilitators and obstacles of academic performance]. *Anales de Psicología, 21*, 170-180.
- Salanova, M., Schaufeli, W. B., Llorens, S., Peiró, J. M., & Grau, R. (2001). Desde el 'burnout' al 'engagement': una nueva perspectiva [From burnout to engagement : A new perspective]. *Revista de Psicología del Trabajo y de las Organizaciones, 16*, 117-134.
- Sargent, L. D., & Terry, D. J. (1998). The effects of work control and job demands on employee adjustment and work performance. *Journal of Occupational and Organizational Psychology, 71*, 219 -236.
- Schaufeli, W. B., & Enzmann, D. (1998). *The burnout companion to study and research: A critical analysis*. London: Taylor & Francis.

- Schaufeli, W., Martinez, I., Marques-Pinto, A., Salanova, M., & Bakker, A. (2002a). Burnout and Engagement in University Students: A Cross-National Study. *Journal of cross-cultural psychology*, *33*, 464-481.
- Schaufeli, W. B., Leiter, M. P., Maslach, C. & Jackson, S. E. (1996). Maslach Burnout Inventory - General Survey. In C. Maslach, S.E. Jackson & M.P. Leiter (Eds.), *The Maslach Burnout Inventory-Test Manual (3rd ed.)*. Palo Alto, CA: Consulting Psychologists Press.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. (2002b). The measurement of burnout and engagement: A confirmatory factor analytic approach. *Journal of Happiness Studies*, *3*, 71-92.
- Schneider, B. y Bowen, D. (1993). The service organization: human resources management is crucial. *Organizational Dynamics*, *21*, 39-52.
- Schutte, N., Toppinnen, S., Kalimo, R. & Schaufeli, W.B. (2000). The factorial validity of the Maslach Burnout Inventory – General Survey across occupational groups and nations. *Journal of Occupational and Organizational Psychology*, *73*, 53-66.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: an Introduction. *American Psychologist*, *55*(1), 5-14.
- Shirom, A. (2003). Job related burnout: A review. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 245-264). Washington, DC: American Psychological Association.
- Shirom, A. (2005). Reflections on the study of burnout. *Work & Stress*, *19*(3), 263 - 270
- Sing, J. (2000). Performance productivity and quality of frontline employees in service organizations. *Journal of Marketing*, *64*, 15-34.

- Taris, T.W., Schreurs, P.J.G., & Schaufeli, W.B. (1999). Construct validity of the Maslach Burnout Inventory - General Survey: A two-sample examination of its factor structure and correlates. *Work & Stress, 13*, 223-237.
- Tesluk, P. E., & Mathieu, J. E. (1999). Overcoming roadblocks to effectiveness: incorporating management of performance barriers into models of work group effectiveness. *Journal of Applied Psychology, 84*(2) 200-202.
- Tremblay, R. E., Masse, B., Perron, D., LeBlance, M., Schwartzman, A. E., & Ledingham, J. E. (1992). Early disruptive behavior, poor school achievement, delinquent behavior, and delinquent personality: longitudinal analyses. *Journal of Consulting and Clinical Psychology, 60*, 64-72.
- Wright, T. A., & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology, 83*, 486-493.
- Xanthopoulou, D., Bakker, A., Demerouti, E., & Schaufeli, W. (2007). The role of personal resources in the Job Demands-Resources Model. *International Journal of Stress Management, 14*, 121-141.
- Yang, H. (2004). Factors affecting student burnout and academic achievement in multiple enrolment programs in Taiwan's technical-vocational colleges. *International Journal of Educational Development, 24*, 283-301.

Chapter 4

In search of the 'third dimension' of burnout: Efficacy or inefficacy?



Summary

This study contributes to the ongoing debate as to whether or not lack of efficacy is the constituting ‘third dimension’ of burnout. This debate is obscured by the fact that lack of efficacy is measured by positively framed efficacy items that are reversed in order to be indicative of burnout. Instead, this study includes an *inefficacy* scale that consists of negatively worded items that are *not* reversed. In two samples of university students from Spain (n=193) and the Netherlands (n=235), the factor structure of the traditional Maslach Burnout Inventory – Student Survey (MBI-SS), that includes an ‘efficacy’ scale, is assessed and compared with that of academic burnout that, instead, includes an ‘inefficacy’ scale. Confirmatory factor-analyses in both samples showed a slightly better fit of the latter. Furthermore, results were remarkably similar across samples, which illustrate the robustness of our findings. It is concluded that an inefficacy scale should be used to assess burnout in future research instead of efficacy.

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Traditionally, burnout is considered a three-dimensional syndrome (i.e., emotional exhaustion, depersonalization, and reduced personal accomplishment) that is measured with the Maslach Burnout Inventory-Human Services Survey (MBI-HSS; Maslach & Jackson, 1981). Emotional exhaustion, which refers to feelings of being depleted of one's emotional resources, is regarded as the basic individual stress component of the syndrome. Depersonalization, referring to negative, cynical or excessively detached responses to other people at work, represents the interpersonal component of burnout. Finally, reduced personal accomplishment refers to feelings of decline in one's competence and productivity, and to one's lowered sense of efficacy, representing the self-evaluation component of burnout (Maslach, 1998). To date, well over 1,000 studies used the MBI to assess burnout, so it may be considered the 'gold standard' for measuring the construct (Schaufeli & Enzmann, 1998). In this study we question the validity of the third dimension of the MBI, reduced personal accomplishment, because it is assessed by *reversing positively framed items*.

The present study argues that using negatively worded items that reflect poor efficacy is a better strategy as it improves the construct validity of the MBI. The current study is the first to challenge the MBI-GS as a 'gold standard' by comparing the original (reversed) positively worded third dimension with a negatively worded subscale. The study was carried out among students of two different countries in order to demonstrate the robustness of our findings.

Student Burnout

Originally, all three dimensions of the MBI-HSS refer to contacts with recipients like students, patients, or clients. However, nearly a quarter of a century of research and practice has shown that burnout also exists

outside the realm of human services. Therefore, the concept of burnout was broadened to include *all* employees and not only those who do ‘people work’ of some kind (Maslach & Leiter, 1997). Consequently, the original version of the MBI was adapted for use outside human services. This new version was called MBI-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996) and consists of the three dimensions that parallel those of the original MBI in the sense that they are more generic and do not refer to other people one is working with. For instance, the first MBI-GS dimension, exhaustion, is measured by items that tap fatigue but do not make direct reference to other people as the source of one’s tiredness. The items that measure cynicism reflect indifference or a distant attitude toward work in general, not necessarily with other people. The latter was called ‘depersonalization’ in the MBI-HSS. Finally, professional efficacy has a broader focus compared to the corresponding MBI-HSS scale, encompassing both social and non-social aspects of occupational accomplishment. Psychometric research with the MBI-GS using confirmatory factor analysis demonstrated that this three-factor structure is invariant across occupations such as Canadian clerical and maintenance employees, technical staff, nurses, and managers (Leiter & Schaufeli, 1996), Dutch software engineers and university staff (Taris, Schreurs, & Schaufeli, 1999), Dutch, Swedish and Finnish blue-collar and white-collar workers (Schutte, Toppinen, Kalimo, & Schaufeli, 2000), Spanish and Dutch information and communication workers (Salanova, Schaufeli, Llorens, Grau, & Peiró, 2000), Norwegian police officers, traffic controllers, journalists and managers (Richardsen & Martinissen, 2005), and Dutch human services professionals and other occupational groups (Bakker, Demerouti, & Schaufeli, 2002). In addition, the factor-structure of the MBI-GS proved to be cross-nationally invariant across samples from Sweden, Finland, and The Netherlands (Schutte, *et al.*, 2000), and Spain and the Netherlands (Salanova, *et al.*, 2000). In recent years, the number of studies of burnout has increased spectacularly, and the study of burnout has been

extended to almost every job, and even to non occupational samples, for example students (Balogun, Helgemoe, Pellegrini, & Hoerberlein, 1996; Chang, Rand, & Strunk, 2000; Fimian, Fastenau, Tashner, & Cross, 1989; Gold, Bachelor & Michael, 1989; Martínez, Marques, Salanova, & Lopez da Silva, 2002; McCarthy, Pretty, & Catano, 1990; Schaufeli, Salanova, González-Romá, & Bakker, 2002; Yang, 2004). These studies assessed ‘academic burnout’ in students using a slightly modified version of the MBI-GS. Although, formally speaking, students are neither employed nor do they hold jobs, from a psychological perspective, their core activities can be considered ‘work’. Namely, they are engaged in structured, coercive activities (e.g. attending classes, completing assignments) that are directed toward a specific goal (i.e., passing exams). Hence, being a work-related phenomenon, burnout may also exist in students, where it manifests itself by feeling exhausted because of study demands, having a cynical and detached attitude toward one’s study, and feeling incompetent as a student (see also: McCarthy, Pretty, & Catano, 1990; Meier & Schmeck, 1985). In a similar vein, several studies on stress in academic life have also considered students a kind of employee (e.g., Chambel & Curral, 2005).

The ‘Third dimension’: Efficacy or Inefficacy

The past 25 years of research into burnout have answered many questions and have increased our understanding of workers’ (and students’) well-being (see Schaufeli & Buunk, 2002, for an overview). However, one main question about the structure of burnout still needs to be answered, namely the role of the so-called: ‘third dimension’ of burnout – lack of professional efficacy. Three kinds of criticisms have been raised against the burnout construct that pertain to the exceptional role of professional efficacy.

Firstly, from an empirical point of view, most studies consistently show that professional efficacy correlates relatively poorly with exhaustion and cynicism (for a meta-analysis, see Lee & Ashforth, 1996). This has led Green, Walkey and Taylor (1991) to the conclusion that exhaustion and cynicism constitute the 'core of burnout'. Furthermore, Schaufeli, Salanova *et al.* (2002) have shown that instead of loading on burnout, professional efficacy loads on the opposite, that is, the positive concept of work engagement together with vigor, dedication, and absorption, thus leaving exhaustion and cynicism as core burnout dimensions. Moreover, professional efficacy seems to develop in parallel to exhaustion and cynicism (e.g., Leiter, 1992; Taris, Le Blanc, Schaufeli, & Schreurs, 2005). Then, professional efficacy is particularly related to job resources, whereas the other two burnout dimensions are also related to job demands (see Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998).

Secondly, from a conceptual point of view, instead of a genuine burnout dimension, professional efficacy has been considered to be similar to a personality construct (Cordes & Dougherty, 1993; Shirom, 2003). Some etiological models also posit that burnout develops out of feelings of inefficiency and it can, therefore, be considered a crisis of professional efficacy. For example, Cherniss (1980, 1993) assumes that the lack of trust in one's own competences is a critical factor in the development of burnout. Additionally, Leiter (1992) regards burnout essentially as an 'efficacy crisis'. Recent studies seem to confirm the etiological role that lack of professional efficacy plays in the development of burnout (Salanova, Llorens, Cifre, Martinez, & Schaufeli, 2003; Salanova, Peiró & Schaufeli, 2002; Van Dierendonck, Schaufeli & Buunk, 2001).

Thirdly, clinical experience with burned-out patients suggests that exhaustion and cynicism appear together, whereas lack of professional efficacy is observed much less frequently (Brenninkmeijer & Van Yperen,

2003; Roelofs, Verbraak, Keijsers, de Bruin & Schmidt, 2005). So it seems that in psychotherapeutic clients, burnout manifests itself by both core dimensions, but not by lacking efficacy. Taken together, empirical, theoretical and clinical evidence exists for the particular role that professional efficacy plays as the 'third dimension' of burnout.

However, in our opinion, the special role of lacking professional efficacy might, at least in part, reflect an artifact. Namely, this 'third dimension' of burnout is measured by positively worded items, whereas both other dimensions (i.e., exhaustion and cynicism) are measured by negatively worded items. These positively worded efficacy items are then reversed in order to achieve an indicator of either inefficacy or reduced efficacy. In other words, a high score on efficacy is assumed to be equivalent with a low score on inefficacy, and vice versa. This procedure of reversing the scores of efficacy items is questionable, although it assumes that efficacy and inefficacy are perfect opposites. In other words, it is assumed that efficacy and inefficacy are scaled along the same unipolar dimension. However, this is not likely to be the case. Instead, we argue that efficacy and inefficacy are more likely to be strongly (but not perfectly) and negatively related to each other. For instance, imagine a student who scores high on the efficacy item '*In my opinion, I am a good student*'. Reversing his score on this item makes him score low, meaning that he is not a good student. But not being a good student does not necessarily imply that one is a poor student. This would be the case when the student would agree with the inefficacy item '*In my opinion, I am a poor student*'.

Recently, Bouman, Te Brake and Hoogstraten (2002) reworded the positive personal accomplishment items into negatively framed items in a sample of students. Compared to the group that filled out the traditional efficacy scale, the group that completed the inefficacy scale showed much

higher (positive) correlations with exhaustion and depersonalization ($r's < -.20$ versus $r's > .45$), respectively. Thus, negatively rewording the items leads to higher correlations with the other two burnout dimensions. So not only the sign, but also the *size* of the correlation changes, which suggests that the low correlations of personal accomplishment with the other two dimensions might reflect an artefact caused by reversing positively worded items. Unfortunately, Bouman, *et al.* (2002) used two separate groups that completed an efficacy and an inefficacy scale, respectively, so that their concurrent validity could not be assessed.

In a similar vein, Salanova, Bresó and Schaufeli (2005) using a version of MBI-GS for assessing the academic burnout (see Schaufeli, Salanova *et al.* 2002), showed that efficacy and inefficacy play a different role when it comes to predicting future academic burnout, engagement and self-efficacy among Spanish and Belgian university students. Results indicated that past performance is positively related to efficacy, and negatively to inefficacy. In turn, efficacy beliefs seem to be involved in a positive, upward spiral (current efficacy beliefs \rightarrow engagement \rightarrow high future academic self-efficacy), whereas inefficacy beliefs seem to be involved in a negative, downward spiral (current inefficacy beliefs \rightarrow burnout \rightarrow poor future academic self-efficacy).

Hypotheses

The main aim of the current study is to investigate the role of the 'third dimension' of burnout using positive (tapping efficacy) as well as negatively worded items (tapping inefficacy) instead of reversing positively worded items, as is the usual procedure. More specifically, we hypothesize that:

H₁: Compared with the original efficacy scale, inefficacy is positively and more strongly correlated with the other two burnout dimensions (i.e. cynicism and exhaustion). In fact, this is a replication of the results of Bouman, et al. (2002).

H₂: The three-factor model constituted by exhaustion, cynicism and inefficacy, fits the data.

H₃: The hypothesized three-factor model (i.e., exhaustion, cynicism and inefficacy) is invariant across samples from different countries (i.e., Spain and the Netherlands).

Method

Sample and Procedure

Sample 1 consisted of 193 undergraduate students from Universitat Jaume I (Castellón, Spain); 140 females (73%) and 53 males (27%). Their mean age was 22.4 years ($SD = 4.2$). The questionnaires were filled in before classes by psychology students, and participation was voluntary.

Sample 2 consisted of 235 undergraduate students from Utrecht University (the Netherlands); 204 females (87%) and 31 males (13%). Their mean age was 21.8 years ($SD = 3.4$). The questionnaires were distributed during breaks and filled in voluntarily by students of the Social Faculty.

Instruments

In order to assess exhaustion, cynicism and efficacy, a modified version of the Maslach-Burnout Inventory-General Survey (MBI-GS; Schaufeli, Leiter, Maslach, & Jackson, 1996) was used that had been slightly adapted for use in student samples: the MBI-SS (Maslach Burnout Inventory- Student Survey (Schaufeli, Salanova *et al.*, 2002). For instance, the item '*I feel emotionally drained from my work*' was rephrased as '*I feel emotionally drained from my studies*'. The MBI-SS consists of 16 items that are grouped into three scales: Exhaustion (EX; 5 items), Cynicism (CY; 5 items), and academic Efficacy (EF; 6 items). All items were scored on a 7-point frequency rating scale ranging from 0 (never) to 6 (always). High scores on EX and CY, and low scores on EF are indicative of burnout (i.e., all EF-items

were reversibly scored). As suggested by Schutte, *et al.*, (2000) one CY-item ('*when I'm in class or I'm studying I don't want to be bothered*') was eliminated because it was shown to be ambivalent and thus unsound. For the Dutch and Spanish samples, the adapted previously published Dutch (Schaufeli & Van Dierendonck, 2000) and Spanish (Salanova & Schaufeli, 2000) translations of the MBI-SS were used, respectively.

Finally, to assess 'inefficacy' the scale from the MBI-SS measuring academic efficacy was reworded, that is, all items were rephrased negatively (INEF). In order to avoid answering bias, the positive and negatively worded items were presented in a random order in both samples.

Data Analyses

Structural Equation Modelling (SEM) methods, as implemented by the AMOS program (Arbuckle & Wothke, 1999), were used to test the factorial model that includes exhaustion, cynicism and academic inefficacy. In addition, the traditional model including exhaustion, cynicism and academic efficacy was fitted to the data. Before performing SEM, the frequency distributions of the scales were checked for normality and multivariate outliers were removed. First, the model with academic inefficacy was tested in each sample separately (Spain and the Netherlands) and next a multiple group analysis (Byrne, 2001; pp. 173-199) was performed in order to assess factorial invariance across both national samples.

Maximum likelihood estimation methods were used and the input for each analysis was the covariance matrix of the items. The goodness-of-fit of the models was evaluated using absolute and relative indices. The absolute goodness-of-fit indices calculated were (see Jöreskog & Sörbom, 1986): (1) the χ^2 goodness-of-fit statistic; (2) the Root Mean Square Error of Approximation (RMSEA); (3) the Goodness of Fit Index (GFI); (4) the

Adjusted Goodness of Fit Index (AGFI). Non-significant values of χ^2 indicate that the hypothesized model fits the data. However, χ^2 is sensitive to sample size, so that the probability of rejecting a hypothesized model increases as the sample size increases. To overcome this problem, the computation of relative goodness-of-fit indices is strongly recommended (Bentler, 1990). Values of RMSEA smaller than .08 indicate an acceptable fit and values greater than 0.1 should lead to model rejection (Cudeck & Brown, 1993). In contrast, the distribution of the GFI and the AGFI is unknown, so that no statistical test or critical value is available (Jöreskog & Sörbom, 1986).

The relative goodness-of-fit indices computed were (see Marsh, Balla & Hau, 1996): (1) Non-Normed Fit Index (NNFI) – also called the Tucker Lewis Index; (2) Incremental Fit Index (IFI); (3) Comparative Fit Index (CFI). The latter is a population measure of model misspecification that is particularly recommended for model comparison purposes (Goffin, 1993). For all three relative fit-indices, and as a rule of thumb, values greater than .90 are considered to indicate a good fit (Hoyle, 1995).

Results

First, descriptive analyses were performed and internal consistencies were computed for the four burnout scales in each sample separately (see Table 4.1). Values of Cronbach's α range from 0 to 1 in case of multi-point formatted scales. The higher the score, the more reliable (i.e. internally consistent) the scale is. Usually, 0.7 is considered to be an acceptable value for Cronbach's α , although lower levels are common for newly developed scales (Nunnally & Bernstein, 1994). In both samples, almost all the values of Cronbach's α meet the criterion of .70. There are two exceptions: (1) the value of α for EX in the Dutch sample is

slightly lower than .70 (i.e., .68); (2) the value of α for INEF does not meet the criterion in either Dutch sample ($\alpha = .65$), or in the Spanish sample ($\alpha = .62$). In spite of the low alpha values for INEF, they are, nevertheless, considered acceptable because a minimum value of .60 is recommended for newly developed scales (Nunnally & Bernstein, 1994). More detailed item analyses revealed that the item-rest correlations were quite similar in size so that Cronbach's α could not be improved by deleting one item or more from the INEF scale.

Table 4.1

Means, standard deviations, PM-correlations, and internal consistencies (Cronbach's α for Spanish/Dutch samples on the diagonal) of the burnout scales (EX, CY, EF and INEF) in the Spanish ($n=193$) and the Dutch sample ($n=235$).

	Spanish		Dutch		F	Correlations			
	M	SD	M	SD		EX	CY	EF	INEF
EX	2.41	1.13	1.98	.85	14.89**	.78/.68	.58**	-.38**	.44**
CY	1.65	1.18	1.36	1.03	7.76**	.29**	.80/.85	-.41**	.50**
EF	3.78	.85	3.64	.77	3.57	-.14*	-.28**	.70/.73	-.62**
INEF	2.80	.89	1.54	.73	267.75**	.48**	.40**	-.48**	.62/.65

Notes: EX = Exhaustion, CY = Cynicism, EF = Academic Efficacy, INEF = Academic Inefficacy; Correlations for the Dutch students below the diagonal; * $p < .05$; ** $p < .01$.

Before proceeding with the correlation and factor analysis, taking into account the preponderance of females particularly in the Dutch sample (87%), multivariate analyses of variance (MANOVAs) were carried out using country and gender as factors and EX, CY, EF and INEF as dependent variables. The levels of burnout (EX, CY, EF, INEF) of male and female students do not appear to differ across both countries. That is, a non significant multivariate country X gender interaction effect was observed [$F(4, 410) = .99, n.s.$]. Hence, it is unlikely that the gender distribution in the samples affects our results.

As expected (Hypothesis 1) in both samples, the observed correlations of academic inefficacy with exhaustion and cynicism are higher than with academic efficacy. In the Spanish sample, INEF is significantly more highly correlated with EX ($t = 1.9$; $p < .05$) and with CY ($t = 1.73$; $p < .05$) than with EF. The same is true for the Dutch sample with corresponding values of $t = 8.16$ ($p < .001$) and $t = 7.43$ ($p < .001$), respectively. On average, inefficacy is correlated .44 and .47 for the other two burnout dimensions, against -.22 and -.39 for efficacy in the Dutch and Spanish samples, respectively. Furthermore, as Table 4.1 illustrates, the differences in correlations among academic inefficacy and efficacy with the other burnout scales in the Dutch sample are higher than in the Spanish sample (i.e., $|.22|$ versus $|.08|$).

Although the results from Table 4.1 support Hypothesis 1, we additionally performed Confirmatory Factor Analyses (CFA) in order to estimate the ‘true’ correlations between the latent burnout components (see Table 4.2). By definition, these correlations are higher than the observed correlations, but the pattern is the same: latent correlations of inefficacy with the other two burnout components (on average .65 in the Spanish sample and .61 in the Dutch sample) are higher than the corresponding latent correlations of efficacy (on average .45 in the Spanish sample and .28 in the Dutch sample).

Table 4.2

Latent intercorrelations between the burnout scales (EX, CY, EF and INEF) in the Spanish (n=193) and the Dutch sample (n=235)

	EX	CY	EF	INEF
Exhaustion	--	.72	-.48	.61
Cynicism	.41	--	-.42	.68
Ac. Efficacy	-.19	-.37	--	--
Ac. Inefficacy	.62	.61	--	--

Note: Correlations for the Dutch sample below the diagonal

The differences in correlations of academic efficacy and inefficacy with the other two burnout dimensions (i.e., exhaustion and cynicism) are larger than the observed correlations in the Spanish sample: $|.13|$ for exhaustion and $|.26|$ for cynicism in favor of inefficacy, against $|.08|$ and $|.09|$ for the observed correlations, respectively. Hence, Hypothesis 1 is supported to a larger extent when the correlations between the latent burnout dimensions are considered instead of observed correlations.

Next, in order to test Hypotheses 2, the three-factor model with INEF as a ‘third dimension’ was fitted to the data of both samples (see Table 4.3).

Table 4.3

The fit indices of the alternative burnout model (i.e. exhaustion, cynicism and academic inefficacy) for the Spanish (n=193) and Dutch samples (n=235)

	Model	χ^2	df.	GFI	AGFI	NNFI	IFI	CFI	RMSEA
Spanish	M	176.52	87	.90	.86	.88	.90	.90	.07
	M(r)	157.12	86	.91	.87	.90	.92	.92	.06
	Null model	985.82	105	.44	.36	-	-	-	.21
Dutch	M	225.87	87	.88	.84	.83	.86	.86	.08
	M(r)	167.30	86	.91	.88	.88	.92	.92	.06
	Null model	1069.09	105	.49	.42	-	-	-	.20

Note: M(r) = Re-specified model

The Model fits well in the Spanish sample, with the IFI, CFI and RMSEA values satisfying their respective criteria. In the Dutch sample however, these fit indices only approached their criteria. Yet based on the so-called Modification Indices, the fit of the model could be improved in both samples by allowing three pairs of errors² to correlate so that the values of all fit indices, except for NNFI in the Dutch sample, are satisfactory. Hence, the three-factor model that includes exhaustion,

² The error terms of inef2-inef5 were correlated in the Spanish sample, as were those of cy1-cy2 and inef4-inef5 in the Dutch sample.

cynicism and academic inefficacy fits the data. This means that Hypothesis 2 is confirmed, albeit some minor modifications have been made (i.e., allowing three pairs of errors to correlate). Figures 4.1 and 4.2 show the estimated factor loadings and correlations between factors in the Spanish and Dutch samples, respectively.

By way of comparison, the original model that includes academic efficacy instead of inefficacy also fitted the data. This model fitted reasonably well in the Spanish sample ($\chi^2 = 159.93$; $df = 87$; $GFI = .90$; $AGFI = .86$; $NNFI = .84$; $IFI = .92$; $CFI = .92$; $RMSEA = .07$), but the fit to the data of the Dutch sample was rather poor ($\chi^2 = 204.19$; $df = 87$; $GFI = .89$; $AGFI = .85$; $NNFI = .80$; $IFI = .82$; $CFI = .82$; $RMSEA = .08$). Thus, compared to the model with INEFF, the model with EFF fitted less well in the Dutch sample, but fitted slightly better in the Spanish sample.

Finally in order to test Hypothesis 3, a multiple-group analysis was carried out including both samples simultaneously. Multiple-group analysis provides more efficient parameter estimations than either of the two single-group models (Arbuckle & Wothke, 1999). Besides, the equivalence of factor loadings and correlations between latent variables can be assessed with this method. As expected, the model with INEFF (M) fits the data well across both samples with all fit indices meeting their corresponding critical values (see Table 4.4). However, the fit deteriorated significantly when all factor loadings and all correlations were constrained to be equal in both samples (Mc). This means that, although the underlying factor structure is similar in both samples, the size of the factor loadings and the correlations differ across samples.

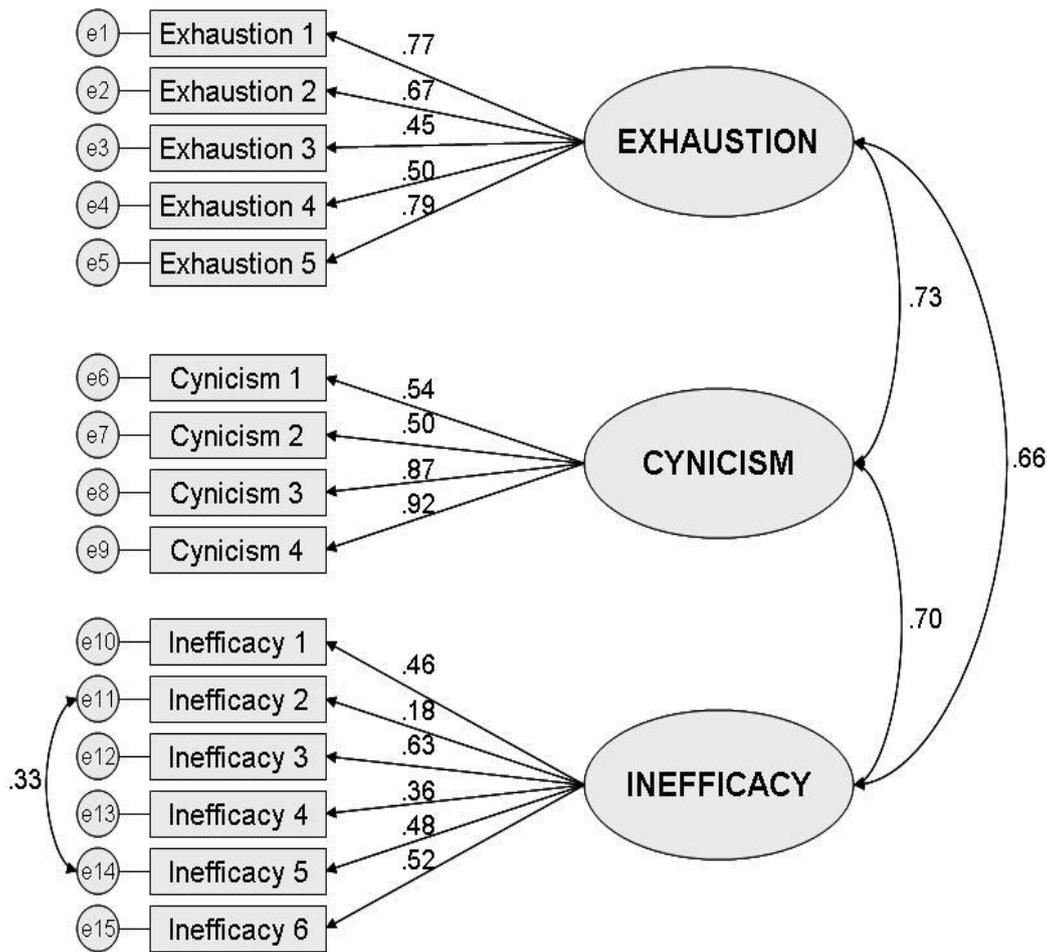


Figure 4.1. Results of the Confirmatory Factor Analysis (i.e. exhaustion, cynicism and academic inefficacy). Spanish students (n=193)

Next, in order to assess the invariance of the model in greater detail, two additional models were tested with the data: (1) a model that assumes only the correlations between factors to be invariant (M_{co}); (2) a model that assumes only the factor loadings to be invariant (M_{fa}). As seen in Table 4.4, the fit of both models is inferior compared to that of M . This means that the correlations *and* the factor loadings differ systematically across both samples.

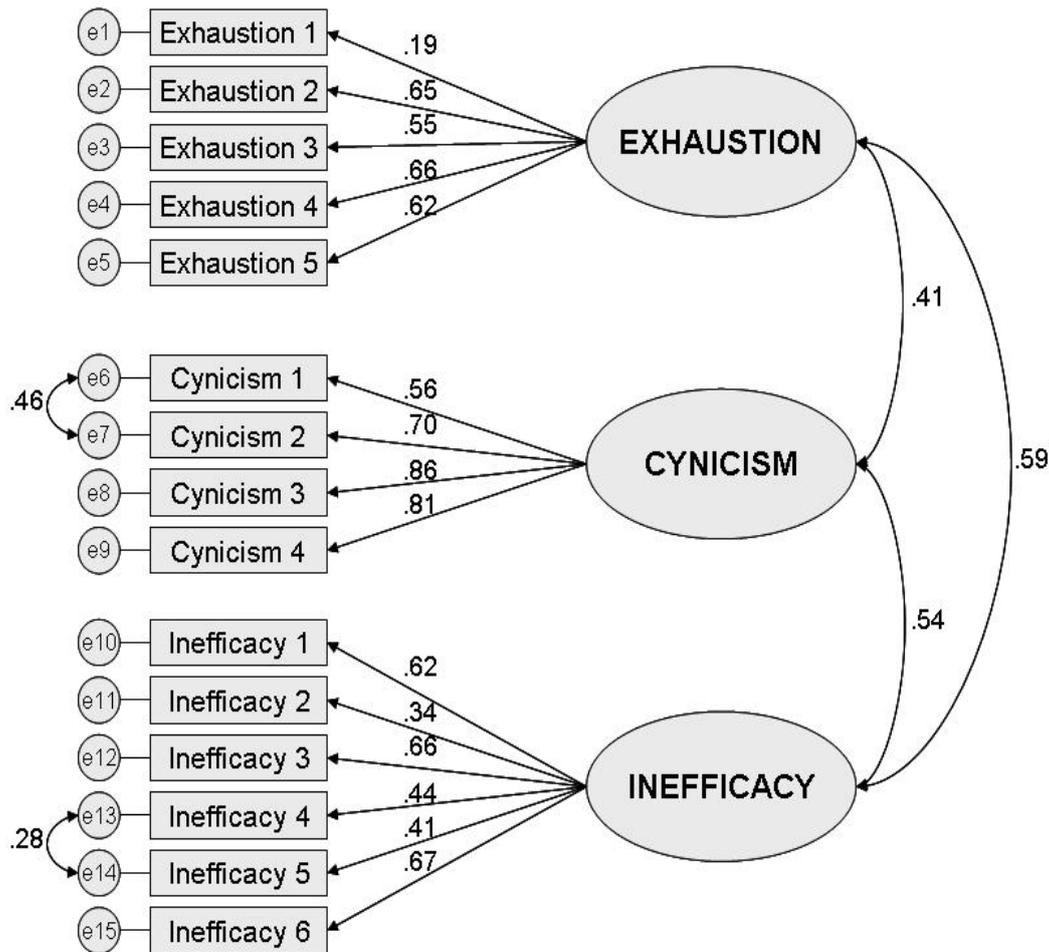


Figure 4.2. Results of the Confirmatory Factor Analysis (i.e. exhaustion, cynicism and academic inefficacy). Dutch students (n=235)

Table 4.4

The fit indices of the alternative burnout model (M_2 , i.e. exhaustion, cynicism and academic inefficacy). Multiple group analyses including the Spanish ($n = 193$) and the Dutch sample ($n = 235$)

Model	χ^2	Df	GFI	AGFI	NNFI	IFI	CFI	RMSEA	$\Delta\chi^2$	df
M_2	324.47	171	.91	.88	.90	.92	.92	.04		
M_c	395.75	186	.89	.86	.87	.89	.89	.05	M- $M_c = 71.28^{***}$	15
M_{co}	341.01	174	.91	.87	.89	.91	.91	.05	M- $M_{co} = 16.54^{***}$	3
M_{fa}	372.85	183	.90	.87	.88	.90	.90	.05	M- $M_{fa} = 48.38^{***}$	12
M_{fi}	339.29	179	.91	.88	.90	.92	.92	.04	M- $M_{fi} = 14.82$	8

Notes: χ^2 =Chi-square; df=degrees of freedom; GFI=Goodness-of-Fit Index; AGFI=Adjusted Goodness-of-Fit Index; NNFI=Non-Normed Fit Index; IFI=Incremental Fit Index; CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation. All the χ^2 differences between the models are significant at $p < .001$; M_2 =Revised three-factor model (freely estimated); M_c =Full constrained revised three-factor model; M_{co} =Three-factor model with correlations between factors constrained; M_{fa} =Three-factor model with factor loadings constrained; M_{fi} =Final Model; *** $p < .001$.

An iterative process was used in the final step, as recommended by Byrne (2001) in order to assess the invariance of each estimate separately (see also Schaufeli, Salanova *et al.* 2002). That is, the invariance of each factor loading and each correlation between factors was assessed individually by comparing the fit of the model in which a particular estimate was constrained to be equal across both samples with that of the previous model where this was not the case. When the fit did *not* deteriorate, this constrained element was included in the next model to which another constrained estimate was added, and so on.

The final model (M_{fi}) showed that the correlation between CY and INEF, as well as the factor loadings of the two EX items (ex3, ex5), two CY items (cy3, cy4), and the three INEF items (inef2, inef4, inef6), proved to be invariant across both samples. Thus, it appeared that the inefficacy scale contains the highest proportion of invariant items and that INEF is correlated equally as strong with CY in both national samples.

Hence, it is concluded that Hypothesis 3 is partly confirmed. That is, the underlying factor structure of the three-factor burnout model that includes inefficacy instead of efficacy is similar in both student samples from Spain and the Netherlands. However, only seven of the fifteen factor loadings and one of the three correlations between factors appeared to be invariant across both samples.

Discussion

The main aim of the current study was to investigate the role of the ‘third dimension’ of burnout using negatively framed inefficacy items instead of reversing positively worded efficacy items. First, it was shown that, as expected (Hypothesis 1), the (positive) correlations of the inefficacy scale with the other two burnout scales (exhaustion and

cynicism) were higher than the (negative) correlations with the efficacy scale. This result was obtained in the Spanish and the Dutch student samples, and it was also noted for the observed correlations for the latent correlations. The differences in the size of the correlations with efficacy and inefficacy were slightly larger among Dutch students than among Spanish students, particularly as far as the observed correlations were concerned. Taken together, these results corroborate those previously reported by Bouman, *et al.* (2002), where the relatively strong correlations of the inefficacy scale with both remaining burnout dimensions support the conceptualization of academic burnout as a three-dimensional syndrome constituted by exhaustion, cynicism and academic inefficacy, instead of (reversed) efficacy.

Results from a series of confirmatory factor analyses carried out in two independent samples of students from Spain and the Netherlands showed that the alternative model which includes an inefficacy scale fits the data of both samples (Hypothesis 2), albeit allowing one pair of items to correlate in the Spanish sample (see Figure 4.1) and two pairs of errors in the Dutch sample (see Figure 4.2). Although this procedure might increase the risk of chance capitalization (Cudeck & Brown, 1993), it is thought to be justified because the correlated error terms were allowed between items belonging to the *same* scale, and because at least one correlated error (between cy1 and cy2) has been observed previously in other samples including students from Portugal, Spain, and the Netherlands (Schaufeli, Salanova *et al.*, 2002) which including blue and white collar workers from Sweden, Finland, and the Netherlands (Schutte, *et al.*, 2000). The fact that initially, before re-specification, the model with INEF did not fit the data very well in the Dutch sample is likely to be caused by other factors than the rewording of efficacy items because the original model with efficacy also fit the data relatively poorly. Collectively,

there are two indications that suggest that instead of using a (reversed) efficacy scale, the use of an inefficacy scale is a better strategy to measure academic burnout among students. Firstly, the model with INEF (M2) fits the data of both samples. In fact the fit is slightly better than that of the traditional model with EF (M1). Secondly, the observed and latent correlations of INEF with both remaining burnout dimensions, compared with EF, are stronger in both samples. Hence, the concurrent validity of INEF over EF was demonstrated.

Finally, Hypothesis 3, that assumed invariance of the three-factor model across both national samples, was only partly confirmed with 7 out of 15 factor-loadings (47%) and one out of three (33%) inter-correlations between scales being invariant. Similar results were obtained by Schaufeli, Salanova *et al.* (2002) who fitted the traditional MBI-SS in three samples of Dutch, Spanish and Portuguese samples. In addition the MBI-SS proved only partly invariant in these authors' cross-national study. Obviously, the *structures* of the traditional and the alternative MBI-SS are similar across student samples from different nations in terms of latent, underlying factors, but the contribution of various items to these latent factors seems to differ from one country to another. The same applies to some inter-correlations between latent factors. Most likely, language and cultural differences in the interpretation of items might be the reason for this result.

As far as the internal consistencies of the traditional burnout scales are concerned, only EX in the Dutch sample did not meet the standard of .70 that is recommended by Nunnally and Bernstein (1994). The slightly lower value of .68 for EX in the Dutch sample is quite remarkable because, usually, EX is the most reliable burnout scale (Lee & Ashforth, 1996; Schaufeli & Enzmann, 1998). Inspection of the item-total correlations did not lead to the identification of a particular unsound EX-item that would

be responsible for the relatively low internal consistency. In addition, the internal consistencies found for the self-constructed scale that measures academic inefficacy did not meet the criterion of .70 for existing scales in either sample. Additionally in the case of INEF, additional item analyses did not reveal any weak or unsound items that, once removed, would increase internal consistency. This means that the inefficacy scale needs to be improved in order to be applied in future research, preferably by including additional items.

In conclusion, this study suggests that including an inefficacy scale to measure burnout, instead of adhering to the traditional (reversed) efficacy scale, seems to be a good strategy to capture the 'real' meaning of burnout. Traditionally, the burnout construct is measured with two 'negative' dimensions (i.e., exhaustion and cynicism) and one reversed 'positive' dimension (i.e., efficacy). This has led to a paucity of results, suggesting a particular role for lacking professional efficacy as the 'third dimension' of burnout, as compared to the 'core of burnout' that is constituted by exhaustion and cynicism (Green, *et al.*, 1991).

The present study suggests that this particular role of lacking professional efficacy might be, at least in part, due to an artefact caused by the fact that the positively worded efficacy items are reversed in order to obtain an indicator of burnout. Obviously, reversing positive scores yields different results than using 'negative' items to measure the same construct. This agrees with research on the structure of affect, where it is debated whether positive and negative effects are two independent factors, or whether they are two poles of a single bi-polar dimension (Russell & Carroll, 1999).

An obvious limitation of the present study is that only students were included. Although academic burnout is certainly an issue, future research

should also focus on efficacy and inefficacy in occupational burnout. The major limitation of the current study is that it focussed exclusively on the MBI and that we only examined the relationships of efficacy and inefficacy with the other two burnout dimensions. Therefore, future research should include antecedents (e.g. work overload, role problems, lack of support) and consequences (e.g. depression, poor commitment, turnover, absenteeism) of burnout, and evaluate their relationships with efficacy and inefficacy. In that way, the true nature of the 'third dimension' of burnout may be established.

References

- Arbuckle J. L., & Wothke, W. (1999). *Amos users' guide version 4.0*. Smallwaters. Corporation: Chicago, Ill.
- Bakker, A., Demerouti, E., & Schaufeli, W. B. (2002). Validation of the Maslach Burnout Inventory –General Survey: An internet study. *Anxiety, Stress & Coping, 15*, 245-260.
- Balogun, J. A., Helgemoe, S., Pellegrini, E., & Hoerberlein, T. (1996). Academic performance is not a viable determinant of physical therapy students' burnout. *Perceptual and Motor Skills, 83*, 21-22.
- Bentler, P. M. (1990). Comparative fit indexes in structural equation models. *Psychological Bulletin 107*, 238-246.
- Bouman, A., Te Brake, H., & Hoogstraten, J. (2002). Significant effects due to rephrasing the MBI' s PA items. *Psychological Reports, 91*, 825-826.
- Brenninkmeijer, V., & Van Yperen, N. (2003). How to conduct research on burnout: advantages and disadvantages of a unidimensional approach to burnout. *Occupational and Environmental Medicine, 60(Suppl. 1)*, 16-21.
- Byrne, B. M. (2001). *Structural equation modeling with AMOS: Basic concepts, applications and programming*. Mahwah, NJ. Erlbaum.
- Chambel, M. J., & Curren, L. (2005). Stress in Academic Life: Work Characteristics as Predictors of Student Well-being and Performance. *Applied Psychology: An International Review, 54*, 135-147.

- Chang, E. C., Rand, K. L. & Strunk, D. P. (2000). Optimism and risk for burnout among working college students: Stress as a mediator. *Personality and Individual Differences, 29*, 255-263.
- Cherniss, C. (1980). *Professional burnout in the human service organizations*. New York: Praeger.
- Cherniss, C. (1993). Role of professional self-efficacy in the etiology and amelioration of burnout. in Schaufeli, W. B., Maslach, Ch. (Eds.), *Professional burnout: Recent developments in theory and research. Series in applied psychology: Social issues and questions*. (pp. 135-149). Washington, DC, USA: Taylor & Francis.
- Cordes, C. L., & Dougherty, T. W. (1993). A review and integration of research on job burnout. *Academy of Management Review, 18*, 621-656.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 53*, 63-70.
- Cudeck, R., & Browne, M. W. (1993). Alternative ways of assessing model fit. In K. A. Bollen, and J. Scott Long (eds.), *Testing structural equation models* (pp. 1-9). Sage: Newbury Park, CA.
- Fimian, M. J., Fastenau, P. A., Tahener, J. H. & Cross, A. H. (1989). The measure of classroom stress and burnout among gifted and talented students. *Psychology in the Schools, 26*, 139-153.
- Goffin, R. D. (1993). A comparison of two new indices for the assessment of fit of structural equation models. *Multivariate Behavioral Research 28*, 205-214.
- Gold, Y., Bachelor, P., & Michael, W. B. (1989). The dimensionality of a modified form of the Maslach Burnout Inventory for university

- students in a teacher-training program. *Educational and Psychological Measurement*, 49, 549-561.
- Green, D. E., Walkey, F. H., & Taylor, A. J. W. (1991). The three factor structure of the Maslach Burnout Inventory. *Journal of Social Behavior and Personality*, 6, 453-472.
- Hoyle, R.H. (1995). The structural equation modeling approach: Basic concepts and fundamental issues. In R. H. Hoyle (Ed.), *Structural equation modeling, concepts, issues, and applications* (pp. 1-15). Sage: Thousand Oaks, CA.
- Jöreskog, K. G., & Sörbom, D. (1986). *LISREL user guide version VI* (4th. Ed.) Scientific Software International, Mooresville, Ill.
- Lee, R., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133.
- Leiter, M. P. (1992). Burn-out as a crisis in self-efficacy: Conceptual and practical implications. *Work & Stress*, 6, 107-115.
- Leiter, M. P., & Schaufeli, W. B. (1996). Consistency of the burnout construct across occupations. *Anxiety, Stress and Coping*, 9, 229-243.
- Lazaro, L., Shinn, M., & Robinson, P. E. (1985). Burnout, performance and job withdrawal behavior. *Journal Health Human Resources Administration*, 7, 213-234.
- McCarthy, M. E., Pretty, G. M., & Catano, V. (1990). Psychological sense of community and student burnout. *Journal of College Student Development*, 31, 211-216.

- Marsh, H. W., Balla, J. R., & Hau, K. T. (1996). An evaluation of incremental fit indexes: A clarification of mathematical and empirical properties. In G. A. Marcoulides & R.E. Schumacker (Eds.), *Advanced structural equation modeling techniques* (pp. 315–353). Mahwah, NJ: Lawrence Erlbaum.
- Martínez, I., Marques, A., Salanova, M., & Lopez da Silva., A. (2002). Burnout en estudiantes universitarios de España y Portugal [Burnout among university students in Spain and Portugal]. *Ansiedad y Estrés*, 8, 13-23.
- Maslach, C. (1998). A multidimensional theory of burnout. In C. L. Cooper (Ed.), *Theories of organizational stress* (pp. 68-85). Oxford, U.K.: Oxford University Press.
- Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Occupational Behavior* 2, 99–113.
- Maslach C., & Leiter M. P. (1997). *The Truth About Burnout: How organizations cause personal stress and what to do about it*. San Francisco: Jossey-Bass.
- Meier, S. T., & Schmeck, R. R. (1985). The burned-out college student: A descriptive profile. *Journal of College Student Personnel*, 26, 63-69.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.) New York, NY: McGraw-Hill.
- Richardsen, A. M., & Martinussen, M. (2005). Factorial validity and consistency of the MBI-GS across occupational groups in Norway. *International Journal of Stress Management*, 12, 289-297.
- Roelofs, J., Verbraak, M., Keijsers, G. P, De Bruin, M. B., & Schmidt, A. J. (2005). Psychometric properties of a Dutch version of the Maslach

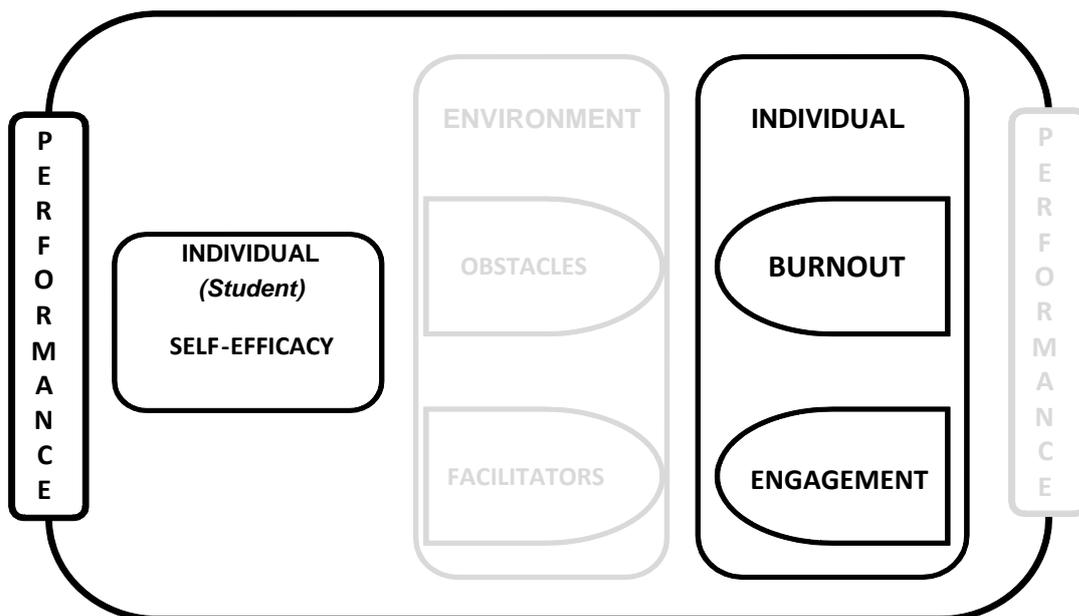
- Burnout Inventory – General Survey (MBI-DV) in individuals with and without clinical burnout. *Stress and Health*, 21, 17-25.
- Russel, J. A., & Carroll, J. M. (1999). On the bipolarity of positive and negative affect. *Psychological Bulletin*, 125, 3-10.
- Salanova, M., Bresó, E., & Schaufeli, W. B. (2005). Hacia un modelo espiral de las creencias de eficacia en el estudio del burnout y del engagement [Towards a spiral model of efficacy beliefs in burnout and engagement research]. *Ansiedad y estrés*, 11, 215-231.
- Salanova, M., Llorens, S., Cifre, E., Martínez, I., & Schaufeli, W. B. (2003). Perceived collective efficacy, subjective well-being and task performance among electronic work groups: An experimental study. *Small Groups Research*, 34, 43-73.
- Salanova, M., Peiró, J. M., & Schaufeli, W. B. (2002). Self-efficacy specificity and burnout among information technology workers: An extension of the Job Demands-Control Model. *European Journal on Work and Organizational Psychology*, 11, 1-25.
- Salanova, M., & Schaufeli, W. B. (2000). Exposure to information technology and its relation to burnout. *Behaviour & Information Technology*, 5, 385-392.
- Salanova, M., Schaufeli, W. B., Llorens, S., Peiró, J. M., & Grau, R. (2000). Desde el “burnout” al “engagement”: ¿una nueva perspectiva? [From ‘burnout’ to ‘engagement’: A new perspective?] *Revista de Psicología del Trabajo y de las Organizaciones*, 16, 117-134.
- Schaufeli, W. B., & Buunk, B. P. (2002). Burnout: An overview of 25 years of research and theorizing. M.J. Schabracq, J.A.M. Winnubst, C.L.

- Cooper. *Handbook of work and health psychology* (pp. 383-425). Chichester, UK: Wiley.
- Schaufeli W. B., & Enzmann D. (1998). *The Burnout Companion to Study & Practice: A Critical Analysis*. Philadelphia: Taylor & Francis
- Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). Maslach Burnout Inventory - General Survey. In C. Maslach, S. E. Jackson & M.P. Leiter (Eds.), *The Maslach Burnout Inventory-Test Manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Schaufeli, W. B., Martínez, I., Marqués-Pinto, A., Salanova, M., & Bakker, A. (2002a). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Studies*, 33, 464-481.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. (2002b). The measurement of burnout and engagement: A confirmatory factor analytic approach. *Journal of Happiness Studies*, 3, 71-92.
- Schaufeli, W. B., & Van Dierendonck, D. (2000). *Maslach Burnout Inventory: Nederlandse versie* [Maslach Burnout Inventory: Dutch version]. Lisse, The Netherlands: Swets and Zeitlinger.
- Schutte, N., Toppinnen, S., Kalimo, R., & Schaufeli, W. B. (2000). 'The factorial validity of the Maslach Burnout Inventory – General Survey across occupational groups and nations'. *Journal of Occupational and Organizational Psychology* 73, 53-66.
- Shirom, A. (2003). Job related burnout: A review. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 245-264). Washington, DC: American Psychological Association.
- Taris, T. W., Le Blanc, P., Schaufeli, W. B., & Schreurs, P. J. (2005). Are there relationships between the dimensions of the Maslach Burnout

- Inventory? A review and two longitudinal tests. *Work & Stress*, 19, 256-262
- Taris, T. W., Schreurs, P. J. G., & Schaufeli, W.B. (1999). Construct validity of the Maslach Burnout Inventory-General Survey: A two-sample examination of its factor structure and correlates. *Work & Stress*, 13, 223-237.
- Van Dierendonck, D., Schaufeli, W. B., & Buunk, B. P. (2001). Towards a process model of burnout: Results from a secondary analysis. *European Journal of Work and Organizational Psychology*, 10, 41-52.
- Yang, H. J. (2004). Factors affecting student burnout and academic achievement in multiple enrolment programs in Taiwan's technical-vocational colleges. *International Journal of Educational Development*, 24, 283-301.

Chapter 5

Towards a spiral model of Efficacy beliefs in the Study on Burnout and Engagement



Summary

In this study the Downward and Upward Spiral Models of efficacy beliefs are tested in two samples of Spanish (N=203) and Belgian (N=150) university students, respectively. Results from Structural Equations Modeling showed empirical support for the Downward Spiral Model of burnout, which is considered as a “crisis of efficacy”, and for the Upward Spiral Model of engagement, considered as a ‘boost of efficacy’. Additionally, results show empirical support for the mediating role that perceived efficacy plays in the relationship between past success and the current levels of burnout/engagement; on the other hand, these results predict self-efficacy in academic success. Finally, multiple-group analyses show that the research model was invariant across both samples.

Nowadays, facing new challenges requires strong doses of confidence in oneself, and when we savour success, we feel more confident in the competences acquired and we generate a kind of positive spiral circle. On the other hand however, lack of confidence is also guided by the same process of beliefs-behaviour influence, but this time it is negative, generating both psychological unease and rare successful behaviour patterns. At the same time, such behaviour patterns imply major beliefs of incompetence and mistrust in oneself and generate a kind of negative spiral circle. These psychosocial processes form part of the Social Cognitive Theory by Albert Bandura (1997, 1999, 2001) which defines self-efficacy as the “beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments” (Bandura, 1997, p.3).

The Social Cognitive Theory distinguishes the different types of efficacy beliefs. Firstly we come across ‘self-efficacy’ which has a ‘future’ dimension since these beliefs are expectations concerning the efficacy in those actions to be undertaken in the future. These efficacy beliefs are genuinely derived from the self-efficacy concept itself. Nonetheless, other efficacy beliefs also exist such as beliefs in the same levels of current competence in relation to a specific domain (e.g. ‘I do an excellent job’). Bandura (1997) pointed out that perceived competence influences self-efficacy and, therefore, these are different constructs since they refer to the perceptions of efficacy at different moments in time. Consequently, we could even talk about present self-efficacy (perceived efficacy or competence) and future self-efficacy (self-efficacy) (Bandura, June 2002, personal communication). In this study we will use the “efficacy beliefs” concept to refer to present perceived efficacy (efficacy) and future perceived efficacy (perceived self-efficacy) in order to be consistent with the Social Cognitive Theory.

But how do these efficacy beliefs develop and what are the main sources of input or deterioration of these beliefs? According to the Social Cognitive Theory, there are four main sources: (1) experiences of success or command, (2) vicarious experience by observing the successes and failures of others, (3) verbal persuasion, and (4) physiological states or emotional activation. Although all these aspects constitute sources of self-efficacy, experiences of success are the most important source of self-efficacy. Success increases positive self-efficacy assessments, which in turn influence future success; conversely, repeated failures increase the negative assessments of the competences themselves, which in turn enhance the possibility of more failures in the future.

So, why is self-efficacy so important? What does it influence? According to the Social Cognitive Theory, self-efficacy influences the way people act, think and feel. We tend to avoid those activities which we believe surpass our capacities and we are inclined to undertake those activities that we have a command over. Self-efficacy determines the effort required to perform tasks as well as the persistence, the number of attempts and the time that we will invest to face obstacles. It also affects how we think and feel. A negative feeling of self-efficacy is associated with burnout, depression, anxiety and helplessness. Positive self-efficacy is associated with persistence, dedication and satisfaction in the tasks we perform (Garrido, 2000; Martínez, Marques-Pinto, Salanova, & Da Silva, 2002; Salanova, Grau, Cifre, & Llorens, 2000; Salanova, Llorens, Cifre, Martínez, & Schaufeli, 2003; Salanova & Schaufeli, 2000). In this study, we test the “spiral model” where we analyze burnout as an efficacy crisis (negative downward spiral) and we also analyze engagement (positive upward spiral).

Burnout as an efficacy crisis: the negative Downward Spiral Model.

Recent research into the syndrome of feeling ‘sick and tired’ at work (‘burnout’), with its three classic dimensions; exhaustion, depersonalization/cynicism and lack of personal achievement/efficacy; has revealed two tendencies in the traditional study of the concept (Maslach, Schaufeli, & Leiter, 2001): (1) extension to all types of professions and other pre-occupational samples, and (2) the study of its theoretical opposite, ‘engagement’, or psychological link. Firstly, the ‘burnout’ concept has extended to all kinds of professions and occupational groups, and it is not only restricted to the domain of services to people (i.e., health workers, teaching staff and social workers). Furthermore, it has also extended to pre-occupational samples such as the so-called academic burnout.

The publication of MBI-SS (*Maslach Burnout Inventory-Student Survey*) by Schaufeli, Salanova, González-Romá and Bakker (2002a) made it possible to study ‘burnout’ outside the occupational sphere by defining its dimensions in reference to ‘study’. Other research works in this sphere (Agut, Grau, & Beas, 2001; Martínez et al., 2002; Martínez, Marqués-Pinto, & Lopes da Silva 2000-2001; Martinez & Salanova, 2001; Salanova, Schaufeli, Llorens, Peiró, & Grau, 2000; Schaufeli, Martínez, Marqués-Pinto, Salanova & Bakker, 2002b) have revealed the need to study academic burnout (as well as its opposite, engagement), showing its invariance in groups of students from different European countries.

Additionally, these studies have revealed that the central dimensions, or what we call the ‘core’ of burnout, are exhaustion and cynicism. Similar conclusions have also been reached in workers’ samples (Green, Walkey, & Taylor, 1991, p.463). The so-called ‘third component’ of burnout (professional efficacy) has been criticized in many senses. For example, some authors point out that professional efficacy is a construct which comes close to a more stable personality dimension (Cordes &

Gougherty, 1993; Shirom, 1989) rather than a central component of burnout. From an empirical point of view, professional efficacy plays a different role (Maslach, Schaufeli, & Leiter, 2001). The results of a recent meta-analysis confirm the independent role of the professional efficacy of the other two dimensions of burnout with a minor correlation, which is non significant in some instances (Lee & Ashforth, 1996). Other studies have indicated that efficacy beliefs play a modulating and relieving role among the occupational demands and burnout (Salanova, Peiró, & Schaufeli, 2002). Furthermore, some theories and models about burnout development indicate that it develops from feelings of inefficacy or 'efficacy crisis'. For example, Cherniss (1980, 1993) assumes that the lack of confidence in competences themselves is a crucial factor in burnout development. Additionally, Leiter (1992) goes one step further and considers burnout essentially as an 'efficacy crisis.'

Burnout is apparently related to personal, professional and collective incompetence (Grau, Salanova, & Peiró, 2001; Salanova et al., 2002; Salanova et al., 2003). To a certain extent these negative beliefs, brought about by experiences of failure or lack of command, imply burnout development, also understood as 'efficacy crisis.' In turn, it could be expected that burnout is negatively associated with self-efficacy in future academic success, thus producing a negative spiral circle or 'vicious circle'.

At any rate, we know of no empirical studies that have demonstrated this process to date. In the original MBI-HSS, MBI-GS and MBI-SS, the items of both the emotional exhaustion and depersonalization/cynicism dimensions are formulated in a negative sense, while the items of both the Personal Achievement and Professional or Academic Efficacy dimensions, respectively, are formulated positively. For the first time, Bouman, Brake and Hoogstraten (2002) have studied

the implications of formulating items positively or negatively, showing that the participants who responded to the Personal Achievement scale with negatively formulated items (as with the rest of the MBI-HSS dimensions) displayed more feelings of personal competence (when items were inverted) than those who responded directly to this scale with positively formulated items. Moreover, formulating negatively, which is Personal Non-achievement, correlates more intensely with exhaustion ($r = .46$) and depersonalization ($r = .57$) than formulating positively (that is, $r = -.14$ and $r = -.19$, respectively). Following these authors' recommendations, but with MBI-SS on this occasion, in this study we used both the positive traditional version or academic 'efficacy' and another version of the scale, but with negatively formulated items, which we will call academic 'inefficacy'

Efficacy as an 'Engagement boost:' the Positive Upward Spiral Model

The second development in research on burnout, as Maslach, Schaufeli and Leiter (2001) pointed out, is a change toward its opposite: engagement or the psychological link. In the occupational context, *engagement* has been defined (Schaufeli et al., 2002a, p. 79) as 'a positive psychological work-related state that is characterized by vigor, dedication and absorption'. This tendency coincides with current research on 'Positive Psychology' which centers on human strengths and the optimum functioning of the human being and not so much on weaknesses and malfunctions (Seligman & Csikszentmihalyi, 2000). Engagement is actually an indicator of intrinsic motivation to work, or in our case, an indicator of intrinsic motivation to study. More than a specific and temporal state, engagement refers to a cognitive-affective state which is more persistent in time and is not focussed exclusively on one object or specific conduct. 'Vigor' is characterized not only by high levels of energy while one studies, but also of persistence and a strong desire to make an

effort in ones studies. 'Dedication' is displayed by high levels of the meaning of studying, of enthusiasm, inspiration, pride and challenge in relation to the studies or the career that one undertakes. In occupational contexts, it is a concept that comes close to the term 'job involvement' (Kanungo, 1982), but job involvement refers basically to identification with work, whereas in qualitative and quantitative terms, 'job dedication' goes further than mere identification. Finally, 'absorption' is characterized by feeling completely immersed and happy when studying, while one feels that time 'flies' and one 'gets carried away'. It is a concept that comes close to the term '*flow*' or state of optimum experience, characterized by focalized attention, mental clarity, control of ones environment, loss of self-conscience, with no notion of time and an enjoyment of the task in process (Csikszentmihalyi, 1990). Nonetheless, *flow* refers to a temporary experience rather than a psychological state that persists over time, as is the case of engagement. However, the basic engagement dimensions (or the so-called 'core' engagement) are vigor and dedication as the more direct opposites of the burnout dimensions (exhaustion and cynicism, respectively) (Schaufeli & Bakker, 2004).

The Social Cognitive Theory considers engagement as a boost to motivated behaviour and which derives from high levels of self-efficacy in people. Indeed, this theory indicates that self-efficacy provides the person with a self-motivating mechanism because, as a consequence of observing ones own competences, the person sets himself/herself goals which in turn mobilize effort, with orientation toward goals and persistence over time (Bandura, 1997, 2001). The relationship between effort and perseverance with performance is very high. In one sense, successes favor perseverance and effort, while these lead to failures in the opposite sense (Bandura, 1997). Furthermore, the relationships between psychosocial processes, behaviours and the environment are mutually reciprocal.

Research on engagement shows its positive influence on the personal and social functioning in various contexts (Salanova et al., 2000, 2003; Salanova, Agut, & Peiró, 2005b; Schaufeli & Bakker, 2004). Recently (Salanova, Martínez, Bresó, Llorens, & Grau, 2005a), the Upward Spiral Model of the relationships among academic success in the past, efficacy beliefs, engagement and future academic success (measured a year after in T2) in a sample of 527 Spanish university students was tested. The greater the success in the past, the greater the perceived efficacy, engagement and future academic success. These results revealed the Upward Spiral Model's empiric evidence of academic self-efficacy by finding a total mediation of these beliefs in the relationships among academic success, engagement and future performance. However, this study does not corroborate the negative spiral model because, although 26% of burnout variance is predicted by self-efficacy, burnout did not predict the student's future performance, which did occur with engagement. This requires further research, for example, by using measures of inefficacy beliefs, or 'negative self-efficacy' as Albert Bandura himself calls it (Bandura & Locke, 2003). This too is one of the objectives of the present study.

Hypotheses

H1. Efficacy beliefs will be associated negatively with burnout and positively with engagement. That is, high efficacy and academic self-efficacy will be related to a lower burnout and a higher engagement.

H2. The greater the academic success in the past, the greater the perceived efficacy. This is the hypothesis of 'success as a source of efficacy'.

H3. The relationships between past success and burnout/engagement are measured by perceived efficacy. That is, past academic success will be related to burnout and engagement depending on the perceived efficacy.

H4. There is a mediation of burnout/engagement in the relationships between past success and efficacy on the one hand, and between past success and self-efficacy in future success on the other hand.

H5. Perceived efficacy will be positively associated with engagement, which in turn, will be positively associated with self-efficacy in future success (the Upward Spiral Model). This is the hypothesis of the 'efficacy beliefs as a boost of engagement'.

H6. Perceived efficacy will be positively associated with burnout, which in turn, will be negatively associated with self-efficacy in future success (the Downward Spiral Model). This is the hypothesis of the 'burnout as an efficacy crisis.'

Method

Sample and Procedure

The sample is composed of a total of 353 university students studying the humanities and social sciences careers in two European countries, Spain (N=203) and Belgium (N=150). The sample of Spanish students is made up of 18.2% males and 81.8% females. Ages range between 20 and 36 years with a mean age of 22 years and an SD of 2.5 years. The sample of Belgian students is formed by 22% males and 78% females. Ages range between 18 and 33 years with a mean age of 29 years and an SD of 1.8 years.

Members of the research team administered the measure instruments in both Spain and Belgium, and they previously requested permission from the teachers who gave the classes. The scales were originally in Spanish and were translated into Dutch by a native Belgian. Once translated into Dutch, these were back-translated into Spanish to compare differences and similarities with the original instrument. This

counter-translation process was already performed in a former study (see Schaufeli et al., 2002a).

Instruments

Academic success was measured objectively with the mean marks of the participants' academic performance since they began their studies until the semester prior to administering the questionnaire. This information was obtained with the participants' previous consent, and the confidentiality of data and their exclusive use for research purposes were guaranteed. Marks ranged from 5 (pass mark) to 10 (highest mark).

Efficacy beliefs. These were measured with three different indicators which we have called: efficacy, inefficacy and self-efficacy. If we take these differentiations into account, perceived academic efficacy (known as 'efficacy' from this point onward) was measured with the academic efficacy scale from MBI-SS (*Maslach Burnout Inventory – Student Survey*, by Schaufeli et al., 2002a). It is formed by 6 items in a Likert-type scale which goes from 0 (never) to 6 (always). An example of an item is: '*In my opinion, I am good at my studies*'.

Perceived academic inefficacy (called 'inefficacy' from this point onward) was measured by negatively rewording the items in the MBI-SS efficacy scale. It is made up of 6 items in a Likert-type scale which goes from 0 (never) to 6 (always). An example of an item is: '*In my opinion, I am a bad student*'. This scale was used in the sample of Belgian students owing to the fact that this hypothesis came about after carrying out the first analyses with the Spanish sample.

Self-efficacy in the future success (known as 'self-efficacy' from now onward) was measured with the scale by Midgley et al., (2000) which reflects the students' beliefs concerning their future capacities to achieve adequate levels of academic performance. The scale is formed by 5 items

which goes from 0 (never) to 6 (always). An example of an item is: *'I will be capable of doing more complicated assignments in class if I try hard enough'*.

Academic burnout was measured with the 'core' burnout dimensions: exhaustion (5 items) and cynicism (5 items) of the MBI-SS (Spanish version in Salanova et al., 2000). All the items score in a seven-point frequency scale which goes from 0 (never) to 6 (always). Examples of items are: *'I am emotionally exhausted by my studies'* (Exhaustion) and *'I have become more cynical with regard to the usefulness of my studies'* (Cynicism).

Academic engagement was measured with the 11-item version of the SAIS (*Student Academic Engagement Scale*) of Salanova et al., (2000). For this study, we used the 'core' engagement dimensions, that is, Vigor (6 items) and Dedication (5 items). All the items also score in a seven-point frequency scale which goes from 0 (never) to 6 (always). In order to avoid response biases, the burnout and engagement items appeared randomly in the questionnaire.

Results

Preliminary Analyses:

Firstly, we analyzed the internal consistency for each scale in both samples. The initial α coefficient for the Spanish sample for each scale was: α Efficacy = .70, α Exhaustion = .72, α Cynicism = .68, α Vigor = .76, α Dedication = .86 and α Self-efficacy = .83. If we eliminate item 13 from the cynicism scale, α increases to .75. Similar results have been found in other studies where item 13 (*"All I want to do is to work/study without being disturbed"*) has not worked well (Salanova & Schaufeli, 2000; Salanova et al., 2000; Schaufeli et al., 2002a,b; Schutte, Toppinnen, Kalimo, & Schaufeli, 2000). The α coefficients in all the scales of the Belgian sample exceeded the recommended criterion of .70 (Nunnally & Bernstein,

1994). The ‘inefficacy’ scale exceeds the criterion of .60 indicated by Nunnally and Bernstein (1994) for new scales. Initially, α of the ‘inefficacy’ scale in the Belgian sample was .59. We obtained an α coefficient of .67 by eliminating items 2 and 4. With regard to the inter-correlations matrix between scales, both engagement scales reasonably correlated positively ($r = .47$ in the Spanish sample and $r = .46$ in the Belgian sample), while the burnout scales do not present such a high inter-correlation ($r = .39$ for the Spanish sample and $r = .38$ in the Belgian sample).

With the objective of checking whether students from both countries differ in relation to scores with the scales, different ANOVAs were carried out with the variable ‘country’ as a factor and the rest as dependent variables. The results show that Spanish and Belgian students differ significantly in efficacy, exhaustion, vigor and self-efficacy. Spanish students present higher values of efficacy and self-efficacy than their Belgian counterparts. Nonetheless, Spanish students also show higher levels of exhaustion and lower levels of vigor.

Table 5.1

Means (M) and Standard Deviations (SD) of the study variables in the Spanish (n=203) and Belgian (n=150) samples.

Variables	Spain		Belgium		F
	M	SD	M	SD	
Academic Success	6.76	.78	6.80	.73	.27
Efficacy	3.89	.80	3.53	.73	18.24***
Exhaustion	2.73	1.04	2.27	1.02	16.92***
Cynicism	1.61	1.15	1.65	1.07	.13
Vigor	2.95	1.00	3.37	.85	16.75***
Dedication	4.39	1.10	4.42	.86	.06
Self-efficacy	4.25	.94	3.95	.59	11.25***

Notes: *** $p < .01$; M= Mean; SD= Standard Deviation

Hypothesis testing⁴:

Table 5.2 shows the correlations matrix among the variables used in the first part of the study. Hypothesis 1 is confirmed for both samples (Spanish and Belgian), except for the correlation between efficacy and cynicism in the Belgian sample. In this particular case, the correlation is not significant at the conventional level of .05, although it is close ($r = .08$). Therefore, high academic efficacy is related to lower burnout and greater engagement, which in turn correlate with self-efficacy in the sense that the lower the burnout and the higher the engagement, the greater the academic self-efficacy in these student samples.

Table 5.2

Inter-correlations and internal consistency of the study variables in the Spanish (n=203) and Belgian (n= 150) samples.

Variables	Correlations						
	1	2	3	4	5	6	7
1. Academic Success	----	.18**	-.07	-.01	.07	-.05	.12
2. Efficacy	.31**	.70/.70	-.16*	-.13	.60**	.47**	.43**
3. Exhaustion	-.07	-.22**	.72/.76	.38**	-.17*	-.22**	-.27**
4. Cynicism	-.11	-.42**	.39**	.75/.79	-.01	-.50**	-.20**
5. Vigor	.22**	.53**	-.03	-.15*	.76/.72	.46**	.37**
6. Dedication	.17*	.62**	-.19**	-.60**	.47**	.86/.85	.37**
7. Self-efficacy	.17*	.55**	-.19**	-.36**	.32**	.42**	.83/.80

Notes: ** $p < .01$; * $p < .05$; Correlations for the study of Belgian students (below the diagonal). Cronbach's coefficient alpha for Spanish/Belgian students (on the diagonal). (ns) = non significant.

Hypothesis 2, or the hypothesis of 'success as a source of efficacy' is also corroborated in both samples since the correlations between success and efficacy and success and self-efficacy are significant. Nonetheless, and

⁴ In order to test our hypothesis, we divided this study into two parts. In the first part, we tested Hypotheses 1 to 5, and we used both samples of Spanish and Belgian students. The second part of the study was performed to test Hypothesis 6, and it was conducted with the Belgian sample whose data were collected later than those collected here in Spain.

also for the Belgian sample, the correlation between success and self-efficacy was close to the conventional level of .05 ($r = .07$). To test the rest of the studies in the present study, we used a structural equation analysis (*Structural Equation Modeling - SEM*). However, Hypotheses 1 and 2 may also be tested using SEM.

According to Baron and Kenny (1986) and to Judd and Kenny (1981), the structural equation analysis is the best strategy to analyze data when a mediational model involves latent constructs. According to the four basic steps to establish the mediation effects by these authors, and to verify our work hypotheses, we adjusted our research model (M1) (see Figure 5.1) to the data. Burnout and engagement are latent variables with two indicators each (exhaustion and cynicism for burnout, and vigor and dedication for engagement). Academic success, efficacy and self-efficacy are measured with a simple indicator, that is, the scale mean. Our research model also estimates a correlation between errors of ‘cynicism’ and ‘dedication’ as they have systematically appeared to be correlated in other studies (see Salanova et al., 2000; 2003; Schaufeli & Bakker, 2004).

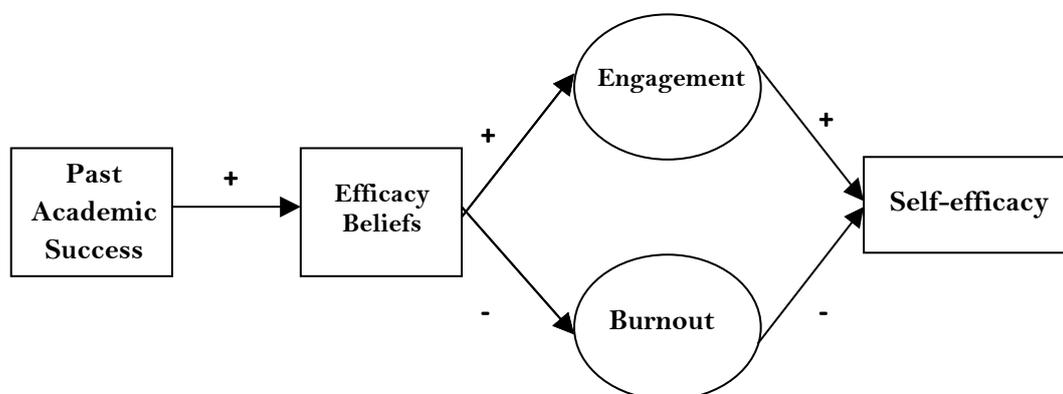


Figure 5.1. Research model (part 1 of the study)

We firstly tested the model in each of the two samples separately, and then we did a multiple-group analysis with both samples. In Table 5.3 we are able to see that our research model (M1) adjusts to the data in both samples (Spanish and Belgian) with a non significant Ji-squared test. All the adjustment indices are above the established criteria. Additionally, all the regression coefficients are significant ($t > 1.96$). These results not only show that academic efficacy is predicted for academic success (Hypothesis 2), but it measures the relation between past success and burnout and engagement (Hypothesis 3), and self-efficacy (Hypothesis 4).

Nonetheless, we did further analyses to verify whether this mediation is total or partial. We compared our research model (M1) with another partial mediation model which assumes direct relations between past success and burnout and engagement, between efficacy and self-efficacy, and between past success and self-efficacy (M2). The results demonstrate that although M2 adjusts to the data and that the differences between the Ji-squared tests are not significant, and none of the new parameters estimated in M2 was statistically significant ($t < 1.96$ for all the parameters). Therefore, we verified whether it is a model of total mediation.

Table 5.3

The fit indices of the research model (see Figure 5.1) for the Spanish (n=193) and Belgium samples (n=235)

	Model	χ^2	df.	p	GFI	AGFI	RMSEA	TLI	CFI	NFI	$\Delta\chi^2$	df
Spanish	M1	7.58	11	.75	.99	.97	.00	.99	.99	.98		
	M2	7.49	7	.37	.99	.96	.01	.99	.99	.98	M2-M1= 1.41	4
Belgian	M1	14.67	11	.19	.97	.93	.04	.97	.98	.94		
	M2	6.18	7	.11	.97	.91	.06	.94	.98	.95	M2-M1= 8.49	4

Notes: χ^2 = Chi-square; d.f.=degrees of freedom; p=probability; GFI=Goodness-of-Fit- Index; AGFI=Adjusted Goodness-of-Fit Index; NNFI=Non normed Fit Index; IFI=Incremental Fit Index; CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation; M1=Full Mediation Model; M2= Partial Mediation Model.

Finally, we performed a multiple-group analysis which included both samples simultaneously. The multiple-group analysis offers better parameter estimations than single-group models (Arbuckle, 1997). Besides, using this model type enables the evaluation of the equivalence between the regression coefficients. As expected, M1 shows a good adjustment to data for both samples where all the indicators present values above their criterion (see Table 5.4). Nonetheless, the adjustment deteriorates significantly when all the coefficients are constrained to be equal in both samples (M1_c). This means that although the latent structure of the model is similar in both samples, the size of the estimated coefficients differs.

In this way, three additional models were tested to analyze the model invariance with more detail: (1) a model that only assumes the invariance of the regression coefficients (M1_{re}); (2) a model that assumes the invariance of only the factorial weights (M1_{fa}), and (3) a model which assumes the invariance of only the covariance between errors (M1_{co}). As seen in Table 5.4, although these new models adjust to the data, the adjustment worsens significantly when we compare it with our research model (M1), except for M1_{co} where the difference is not significant. This means that the regression coefficients and the factorial weights differ significantly and systematically between both samples.

Table 5.4

Fit indices of the research model. Multiple-group analysis, including the Spanish (n=203) and Belgian (n=150) samples.

Model	χ^2	df.	p	GFI	AGFI	RMSEA	NFI	CFI	$\Delta\chi^2$	df
M1	22.26	22	.44	.98	.95	.00	.96	.99		
M1 _c	42.75	30	.06	.96	.93	.03	.93	.98	M1 _c -M1=20.49***	8
M1 _{re}	39.25	27	.06	.97	.93	.03	.94	.98	M1 _{re} -M1=16.99***	5
M1 _{fa}	29.81	24	.19	.97	.94	.02	.95	.99	M1 _{fa} -M1=7.55***	2
M1 _{co}	22.45	23	.49	.98	.96	.00	.96	.99	M1 _{co} -M1=.19	1
M1 _{fi}	27.94	27	.41	.98	.96	.01	.96	.99	M1 _c -M1=5.68	5

*Notes: χ^2 =Chi-square; d.f.=degrees of freedom; p=probability; GFI=Goodness-of-Fit- Index; AGFI=Adjusted Goodness-of-Fit Index; NNFI=Non normed Fit Index; IFI=Incremental Fit Index; CFI=Comparative Fit Index; RMSEA=Root Mean Square Error of Approximation; M1=Research Model (free estimation); M1_c=Constrained Model; M1_{re} = Model with constrained regression coefficients; M1_{fa} = Model with constrained factorial weights; M1_{co} = Model with covariances between constrained errors; M1_{fi} = Final model. *** $p < .01$.*

As a final step, we carried out the iterative process recommended by Byrne (2001) with the aim to evaluate the invariance of each estimation separately, that is, the invariance of each estimation was evaluated individually by comparing the model adjustment in each specific constrained estimation, which is equal in both samples, with the previous model. When the adjustment did not deteriorate, this constrained element was included in the following model in which another constrained element was added. This process was repeated until we obtained the final model (M1_{fi}) (see Figure 5.2). In this model, the estimations that were invariant in both samples were the covariance between errors of cynicism and dedication, and all the regression equations (except the *path* from efficacy to engagement). These results partially corroborate Hypothesis 5 that of ‘efficacy beliefs as a motor of engagement’ since perceived efficacy is positively associated with engagement, which is in turn positively associated with self-efficacy in future success (Upward Spiral Model). However, the relation between perceived efficacy and engagement was not invariant in both samples.

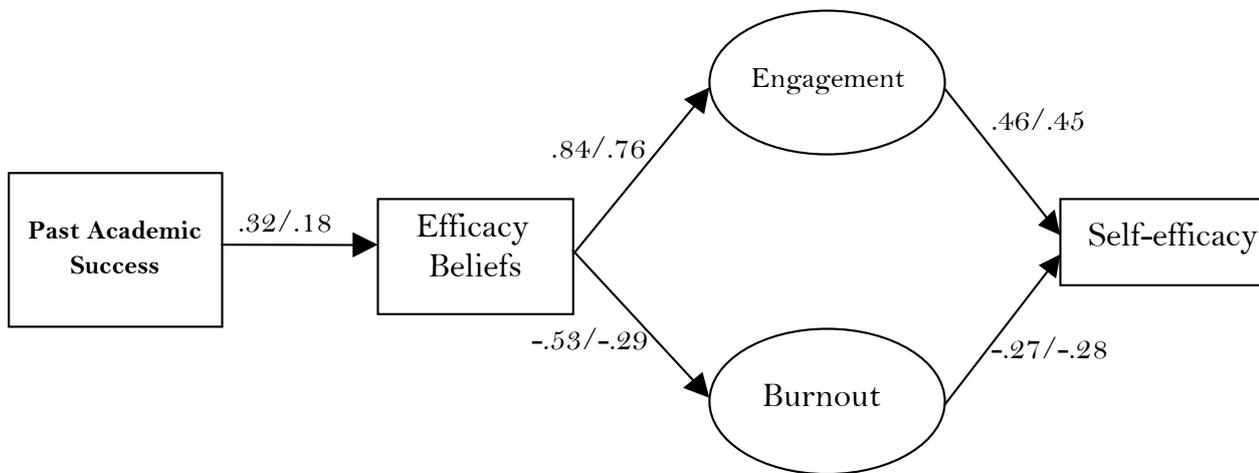


Figure 5.2. Original research model (significant standardized coefficients) with multiple-group analysis data (n=203 Spanish students and n=150 Belgian students). Spanish/Belgian samples.

We carried out more structural equation analyses (part 2 of the study) to test the hypothesis of ‘burnout as an efficacy crisis’ (Hypothesis 6) by extending the original research model. Suggestions from recent studies about the use of the Personal Achievement scale of the MBI-HSS in the negative sense (Bouman et al., 2002) led us to include an ‘inefficacy’ scale in the second sample. The means and standard deviations of this new scale appear in Table 5.5, as does the inter-correlations matrix with the remaining scales of this study. We also included the descriptive data from the ‘efficacy’ scale to be able to carry out a better visual inspection of the behaviour of these variables. Firstly, we should point out that the results from the study by Bouman et al. (2002) are confirmed in that the participants in the study show higher levels of efficacy when we measure in a negative sense and invert the items positively than in the opposite case (perceived inefficacy). On the other hand, the correlation with past academic success is significant for ‘efficacy’ ($r = .31$), but it only comes close to the conventional level of .05 for ‘inefficacy’ ($p = .09$). This result confirms the observations from Bandura’s Social Cognitive Theory. When there are correlations between ‘efficacy’ and ‘inefficacy’ with self-efficacy

in future success, we expect a greater correlation (positive) with ‘efficacy’ than with ‘inefficacy’. Although the items are formulated in a different sense, the correlation between ‘inefficacy’ and self-efficacy is, however, greater in future success ($r = -.69$) than that between ‘efficacy’ and self-efficacy in future success ($r = .43$). In relation to the correlations with the burnout dimensions, we obtain the same results as in the study by Bouman et al. (2002), but with the MBI-SS version on this occasion. Correlations are greater for ‘inefficacy’ ($r = .30$ with exhaustion and $.20$ with cynicism) than in the case of ‘efficacy’ ($r = -.16$ and $-.13$, respectively). Finally, while the correlations with dedication are similar in both cases, the correlation for vigor with ‘efficacy’ is greater ($r = .60$) than with ‘inefficacy’ ($r = -.45$).

Table 5.5

Means (M), Standard Deviations (SD) and zero-order correlations for Self-efficacy (Belgium = 150)

Variables	M	SD	Past Succes	Efficacy Belifs	Inefficacy Beliefs	Exh	Cyn	Vigor	Ded
Inefficacy Beliefs	2.53	.76	-.13*	-.55**	-.69**	.30**	.20**	-.45**	-.42**
Efficacy Beliefs	3.53	.73	.31**	-----	.43**	-.16*	-.13	.60**	.47**

Notes: * $p < .05$; ** $p < .01$; M = Mean; SD = Standard Deviation; Exh = Exhaustion; Cyn = Cynicism; Ded = Dedication.

The results of the SEM we performed appear in Figure 5.3. From the Downward Spiral Model we expected that past academic success to be related in a negative sense in ‘inefficacy’ (that is, the greater the success, the lower the ‘inefficacy’). In turn, we expected that ‘inefficacy’ to be related positively to burnout (this is the hypothesis of burnout as an efficacy crisis), and in turn that burnout is negatively related to self-efficacy in future success.

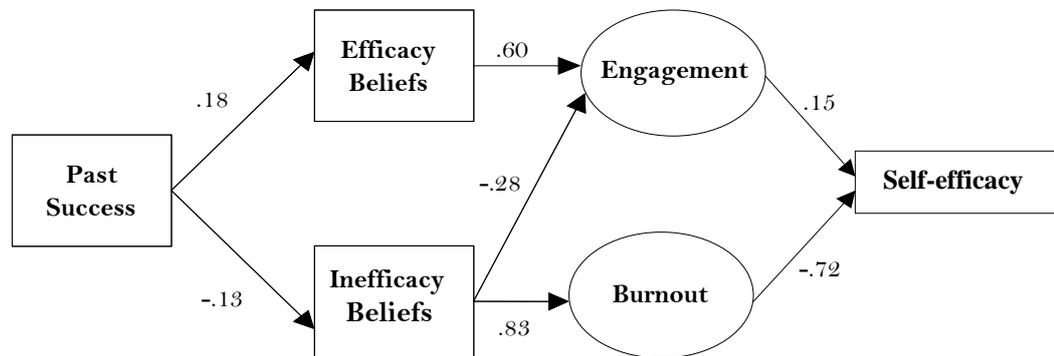


Figure 5.3. Extended research model (significant standardized coefficients; n=150 Belgian students).

In Table 5.6 we can see the data as a result of the structural equation analysis performed. The extended hypothesized model (ME_{x1}) does not fit to the data. When we look at the modification indices and we correlate the errors of ‘efficacy’ and ‘inefficacy’, the model fit improves significantly (ME_{x_m}), and all the adjustment indices are above their criteria. The only relation that was not significant was that between efficacy and burnout ($t < 1.96$).

Table 5.6

Fit of the extended original research model (n=150 Belgian students)

Model	χ^2	Df	p	GFI	AGFI	RMSEA	NFI	CFI	$\Delta\chi^2$	df
ME _x	81.33	15	.00	.89	.74	.17	.79	.81		
ME _{x_m}	30.28	15	.01	.95	.90	.08	.92	.95	ME _x -ME _{x_m} =51.05	0

Notes: df = degrees of freedom; p = probability; GFI = Goodness-of-Fit Index; AGFI = Adjusted Goodness-of-Fit Index; RMSEA = Root Mean Square Error of Approximation; NFI=Normed Fit Index and CFI = Comparative Fit Index; ME_x = Extended Research Model; ME_{x_m} = Modified Model

Discussion

In this study we have tested a ‘spiral model’ which analyzed burnout as an efficacy crisis (‘Downward’ Spiral Model) and engagement (‘Upward’

Spiral Model) between university students from two countries (Spain, $n=203$ and Belgium, $n=150$). The main finding of this study has been the empirical evidence shown on the spiral model of efficacy as a vicious circle (with inefficacy) and as a virtuous circle (with efficacy). We have verified that efficacy beliefs, burnout and engagement are related to each other (Hypothesis 1). Efficacy beliefs relate positively and significantly to engagement, but negatively and significantly to burnout. When we talk about efficacy beliefs we refer to both perceived efficacy and self-efficacy. It is interesting to point out that the correlation between efficacy and self-efficacy is not as high as would be expected. In this study, the mean correlation in both samples was $r = .49$. This confirmed the expectations of the Social Cognitive Theory to a certain extent, which indicates that perceived efficacy and self-efficacy are two psychosocial constructs, which differ despite their correlation. Thus, a difference would exist between believing that one possesses the capacities (perceived efficacy) and being capable of using them under varying situations (self-efficacy).

As we indicated in the Introduction, the main sources of efficacy are the experiences acquired from past success. Success increases the positive evaluations of efficacy, which in turn increase future success with a higher probability. However, the opposite may occur, that is, repeated failures increase the negative evaluations of the competences themselves, which in turn would increase the possibility of experiencing more failures in the future. In this study we have shown that experiences of command and success are a source of efficacy. By taking into account past academic success, our results indicate just what the Social Cognitive Theory highlights, that is, success in academic tasks increases the positive evaluations of efficacy itself; thus confirming our second work hypothesis where we expected 'the greater the past academic success, the greater the perceived efficacy'.

With regard to measuring efficacy beliefs and burnout/engagement, we set out two work hypotheses and this study also confirmed them both. In relation to the positive spiral process, or virtuous circle of self-efficacy, we considered efficacy as a motor of engagement in this study. The academic efficacy derived from past success is positively associated with engagement and also with self-efficacy development in future academic success. Thus engagement, or the psychological link, appears as a 'motivator' related to the high levels of self-efficacy in these university students, therefore confirming the predictions from the Social Cognitive Theory where it is indicated that efficacy beliefs provide the person with a self-motivating mechanism, which behaves as the mobilization of effort, orientation toward goals and persistency in time. Additionally, this work is added to the list of studies in favor of research on engagement where the positive influence of engagement is demonstrated in different contexts, for example: academic functioning (Schaufeli et al., 2002b); group functioning (Salanova et al., 2003), occupational stress due to exposure to the information and communication technologies (Salanova et al., 2001); the service quality perceived by customers in hotels and restaurants (Salanova, et al., 2005b); and future success (Salanova et al., 2005a).

Furthermore, it may be pointed out that we have been able to perform a finer analysis of the research model invariance proposed in this study by applying a multiple-group analysis. The invariance is not total, but it does establish some structural relations which remain invariant in both samples. In the present work, we have performed a thorough analysis using competitive models and observing the differences in adjusting the models to the data.

In relation to the 'vicious' spiral model, we tested the hypothesis of 'burnout as an efficacy crisis' and the results confirm our predictions. On

the other hand, it is an innovation in this field to analyze efficacy and inefficacy collectively, and their relation with burnout and engagement. This line of research is related to the burnout models from self-referential approaches in that burnout is a consequence of the development of an efficacy crisis (Cherniss, 1980, 1993).

At any rate, the present study also assumes an innovation because it is the first time that a spiral model following the recommendations of Bouman et al (2002) is tested by formulating the Personal Achievement Scale in a negative sense, which results in the Academic Efficacy scale in the case of the MBI-SS. Our study supports the results obtained by these authors. On the one hand, the participants show higher levels of self-efficacy when the items are inverted than when they respond to the original positive self-efficacy scale. On the other hand, inefficacy correlated more intensively with exhaustion and cynicism than with efficacy, just as these authors discovered. Furthermore, while inefficacy is related (negatively) to engagement, that is, the greater the inefficacy, the lower the engagement; this is not the case with efficacy. Therefore, lower levels of burnout do not arise with higher levels of efficacy.

In relation to the limitations of this study, since the study of this subject matter is in its initial stage, it would be advisable to go into it more deeply by analyzing its relations with other personal and organizational results as well as to check the extended model in other student samples from other countries. From our point of view, the hypothesis testing and the evaluation of models from a cross-cultural perspective are one of the main challenges in current psycho-social research. Finally, it would also be advisable to use more measurements of time in future studies to verify both the positive and negative spirals in order to be able to check how these spirals expand and contract over time.

References

- Agut, S., Grau, R. & Beas, M. (2001). Burnout en mujeres: Un estudio comparativo entre contextos de trabajo y no trabajo. [Burnout among women; A comparative Study between work and non work contexts]. *Ansiedad y Estrés*, 7(1), 79-88.
- Arbuckle J. L., & Wothke, W. (1999) Amos users' guide version 4.0. Smallwaters. Corporation: Chicago, Ill.
- Bandura, A. (1997). *Self-efficacy: the exercise of control*. New York, NY: Freeman
- Bandura, A. (1999). Social cognitive Theory of Personality, in L. Pervin O. John (eds.) *Handbook of Personality* 2nd edition, (Guilford, New York), pp.154-196.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26.
- Bouman, A., Te Brake, H., & Hoogstraten, J. (2002). Significant effects due to rephrasing the MBI' s PA items. *Psychological Reports*, 91, 825-826.
- Cherniss, C. (1993). Role of professional self-efficacy in the etiology and amelioration of burnout. in Schaufeli, W. B., Maslach, Ch. (Eds), *Professional burnout: Recent developments in theory and research. Series in applied psychology: Social issues and questions*. (pp. 135-149). Washington, DC, USA: Taylor & Francis.
- Cordes, C. L., & Dougherty, T. W. (1993). A review and integration of research on job burnout. *Academy of Management Review*, 18, 621-656.

- Extremera, N., Durán, A., & Rey, L. (2005). La inteligencia emocional percibida y su influencia sobre la satisfacción vital, la felicidad subjetiva y el engagement en trabajadores de centros para personas con discapacidad intelectual. [Perceived Emotional Intelligence and its influence in Satisfaction, Happiness and Engagement among Employees from emotional Disabilities care Centers]. *Ansiedad y Estrés*, 11, 63-73.
- Garrido, E. (2000). Autoeficacia en el mundo laboral. [Self-efficacy in the labour World]. *Apuntes de Psicología*, 18(1), 9-28.
- Grau, R., Salanova, M., & Peiró, J. M. (2000). Efectos moduladores de la autoeficacia en el estrés laboral [Modulating effects of Self-efficacy in Work Stress]. *Apuntes de Psicología*, 18, 57-75.
- Green, D. E., Walkey, F. H., & Taylor, A. J. W. (1991). The three factor structure of the Maslach Burnout Inventory. *Journal of Social Behavior and Personality*, 6, 453.
- Lee, R., & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133.
- Leiter, M. P. (1992). Burn-out as a crisis in self-efficacy: Conceptual and practical implications. *Work & Stress*, 6, 107-115.
- Manzano, G. (2002). Bienestar subjetivo de los cuidadores formales de Alzheimer: Relaciones con el burnout, engagement y estrategias de afrontamiento. [Subjective Well-being among Alzheimer care employees: Relationships between Burnout, Engagement and Coping Strategies]. *Ansiedad y Estrés*, 8, 225-244.

- Martínez, I. M., Marques, A., Salanova, M., & Lopez da Silva, A. (2002). Burnout en estudiantes universitarios de España y Portugal. [Burnout among Spanish and Portuguese University Students]. *Ansiedad y Estrés*, 8, 13-23.
- Martínez, I. M., & Salanova, M. (2001). Burnout y engagement en estudiantes de la Universitat Jaume I. [Burnout and Engagement among Students in Jaume I University]. In J. F. García Bacete and M. A. Fortea (dir.): *Docència Universitària: Avanços Recents*. Publicacions de la Universitat Jaume I.
- Martínez, I. M., Marques Pinto, A., & Lopes da Silva, A. L. (2000-2001). Burnout em estudantes do ensino superior [Burnout among University Students]. *Revista Portuguesa de Psicologia*, 35, 151-167.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology*, 52, 397-422.
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., Gheen, M., Kaplan, A., Kumar, R., Middleton, M. J., Nelso, J., Roeser, R., & Urdan, T. (2000). *Manual for Patterns of Adaptive Learning Scales*. University of Michigan Press.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.) New York, NY: McGraw-Hill.
- Salanova, M., Agut, S., & Peiró, J. M. (2005b). Linking Organizational Resources and Work Engagement to Employee Performance and Customer Loyalty: The Mediation of Service Climate. *Journal of Applied Psychology*, 90, 1217-1227.
- Salanova, M., Grau, R., Llorens, S., & Schaufeli, W. B. (2001). Exposición a las tecnologías de la información, Burnout y Engagement: el rol

modulador de la Autoeficacia relacionada con la tecnología. [Exposure to Information Technologies, Burnout, and Engagement: The modulating Role of Self-efficacy]. *Revista de Psicología Social Aplicada*, 11, 69-90.

Salanova, M., Llorens, S., Cifre, E., Martínez, I., & Schaufeli, W. B. (2003). Perceived collective efficacy, subjective well-being and task performance among electronic work groups: An experimental study. *Small Groups Research*, 34, 43-73.

Salanova, M., Martínez, I., Bresó, E., Llorens, S., & Grau, R. (2005a). Bienestar psicológico en estudiantes universitarios: facilitadores y obstaculizadores del desempeño académico [Psychological Well-being among university students: facilitators and obstacles of academic performance]. *Anales de Psicología*, 21, 170-180.

Salanova, M., Peiró, J. M., & Schaufeli, W. B. (2002). Self-efficacy specificity and burnout among information technology workers: An extension of the Job Demands-Control Model. *European Journal on Work and Organizational Psychology*, 11, 1-25.

Salanova, M., & Schaufeli, W. B. (2000). Exposure to information technology and its relation to burnout. *Behaviour & Information Technology*, 5, 385-392.

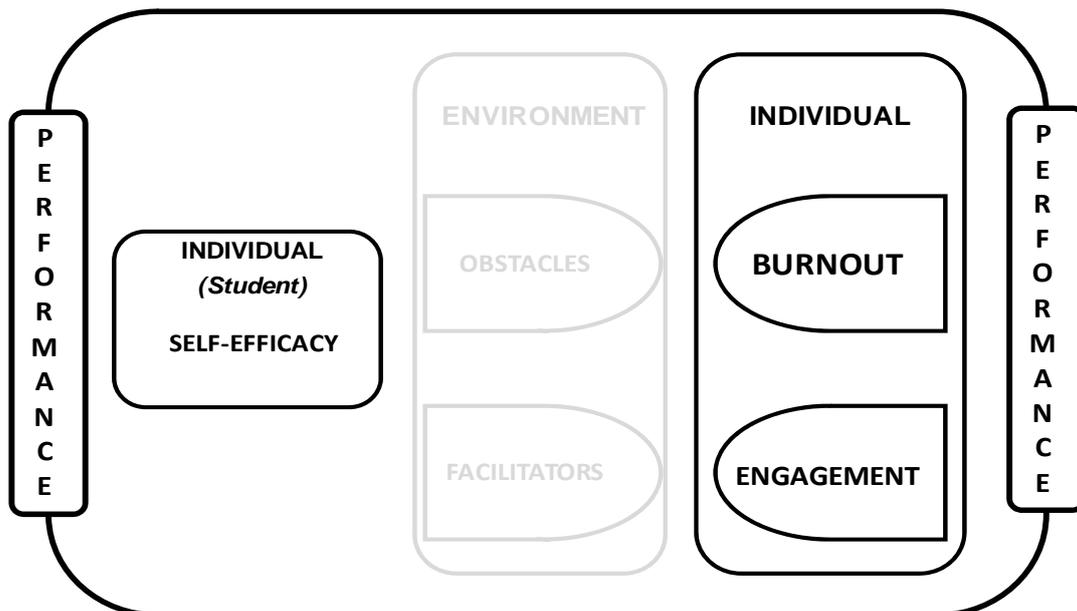
Salanova, M., Schaufeli, W. B., Llorens, S., Peiró, J. M., & Grau, R. (2000). Desde el "burnout" al "engagement": ¿una nueva perspectiva? [From 'burnout' to 'engagement': A new perspective?]. *Revista de Psicología del Trabajo y de las Organizaciones*, 16, 117-134.

Schaufeli, W. B., Leiter, M. P., Maslach, C., & Jackson, S. E. (1996). Maslach Burnout Inventory - General Survey. In C. Maslach, S. E.

- Jackson & M.P. Leiter (Eds.), *The Maslach Burnout Inventory-Test Manual* (3rd ed.). Palo Alto, CA: Consulting Psychologists Press.
- Schaufeli, W. B., Martínez, I., Marqués-Pinto, A., Salanova, M., & Bakker, A. (2002b). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Studies*, *33*, 464-481.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. (2002a). The measurement of burnout and engagement: A confirmatory factor analytic approach. *Journal of Happiness Studies*, *3*, 71-92.
- Schutte, N., Toppinnen, S., Kalimo, R., & Schaufeli, W.B. (2000). 'The factorial validity of the Maslach Burnout Inventory – General Survey across occupational groups and nations'. *Journal of Occupational and Organizational Psychology* *73*, 53-66.
- Seligman, M. E. P., & Csikszentmihalyi, M. (Eds.). (2000). Positive psychology: an Introduction. *American Psychologist*, *55*(1), 5-14.
- Shirom, A. (1989). Burnout in work organizations. In C. L. Cooper & I. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 25-48), Chichester: Wiley & Sons.

Chapter 6

Can a Self-efficacy-Based Intervention Decrease Burnout, Increase Engagement, and Enhance Performance? A Quasi-experimental Study



Summary

Using the Social Cognitive Theory as a theoretical framework, this study evaluated a 4-month, individual cognitive-behavioral intervention program to increase self-efficacy, engagement, and performance, and to decrease burnout, among university students. The main objective of the intervention was to decrease student anxiety to cope with exams in order to increase their self-efficacy beliefs. One study group intervened, and two control groups participated (i.e., stressed group vs. healthy control group). All 3 groups filled out a questionnaire before the intervention and 6 months later (2 months after finishing the intervention). The results showed that self-efficacy, engagement and performance increased in the intervened group when compared with both control groups. Regarding burnout, decreases were noted in both the intervened and stressed control groups but not in the healthy control group. The implications of the study are discussed, together with limitations and suggestions for future research.

One of the most important concerns in the field of educational psychology is to discover how student performance can be improved. From this perspective, researchers have focused on describing the best conditions for academic success. Undoubtedly, there is not one unequivocal way to improve students' performance but, several studies have tested the exact most efficient determinants of students' performance (Eskew, & Faley, 1988; Gul & Fong, 1993; Naser & Peel, 1998; Pintrich & De Groot, 1990). These studies pointed out that, for instance, self-expectation of examination results, past achievement in similar tasks, self-efficacy, and also the overall level of self-control, are related and can be considered antecedents of students' cognitive involvement, well-being, and performance. However, past experience in similar tasks (previous academic performance) and self-efficacy beliefs have been considered the strongest predictors of students' performance, and their relevance has been confirmed across samples (Burton & Dowling, 2005; Klomegah, 2007; Lent, Brown, & Larking, 1984; McKenzie, & Schweitzer, 2001; Multon, Brown, & Lent, 1991; Pajares, 1996; Zeegers, 2004; Zimmerman, 2000). The present study examines the effectiveness of a self-efficacy-based intervention among university students, and tests changes in well-being (in terms of burnout and engagement) as well as performance using a longitudinal design. Bandura's Social Cognitive Theory (SCT) is used as a theoretical framework that postulates that self-efficacy is related to academic success by increasing students' well-being and persistence to master challenging academic tasks, thereby promoting the efficient use of acquired knowledge and skills (Bandura, 1982).

Self-efficacy is defined as people's judgments of their capabilities to organize and execute the courses of action required to attain designated types of performances. It is concerned not with the skills one has, but with the judgments of what one can do with whatever skills one possesses

(Bandura, 1986; p. 391). Students who are self-efficacious tend to generate and test alternative courses of action when they initially do not achieve success. They perform better in the classroom through elevated levels of effort and persistence, and deal more effectively with problem situations by influencing cognitive and emotional processes related to those situations (Bandura, 1997). An extensive body of research has shown that academic self-efficacy is positively related with grades in college (Bong, 2001; Brown, Lent, & Larkin, 1989; Hackett, Betz, Casas, & Rocha-Singh, 1992; Lent, et. al, 1984; Multon, Brown, & Lent, 1991) and with performance (Bandura, 1986; Klomegah, 2007; Schunk, 1995; Zimmerman & Bandura, 1994).

Hence, the relevance of self-efficacy in the students' learning process is undeniable. But how do these efficacy beliefs develop? And, how can efficacy beliefs be promoted and increased? Students' efficacy beliefs can be changed and promoted in several ways, by mastery experiences, vicarious learning, social persuasion, and by specific psychological states (Bandura, 1997). In fact, several studies have demonstrated the effectiveness of intervention programs promoting self-efficacy in different contexts. For instance, among college women (Betz & Schifano, 2000), in students who participate in on-line learning (Fletcher, 2005), in academic achievement (Freedman, 1996), and in college student learning (Wei, 2004).

One of the most important sources of efficacy beliefs, besides mastery experience (past success on related tasks), are psychological states. The lower the levels of anxiety, stress, and fatigue, the higher the levels of self-efficacy. Furthermore, students have, at the same time, the capability to alter their own thinking, and self-efficacy beliefs can also influence the psychological states themselves. When students experience negative thoughts and are anxious about their capabilities, these negative

affective reactions can, themselves, further lower perceptions of capability and activate a stress process that helps ensure the inadequate performance they fear. For instance, those students who face public speaking with fear will surely develop a lack of confidence in their public speaking skills. Psychological states of students fade with a task to anticipate the idea of success or failure of outcomes (Pajares, 1996). Therefore, in order to design the intervention program for enhancing self-efficacy, we focused on the current study which centers on the optimization of psychological states, thus expecting that changes will affect self-efficacy and will influence future psychological states, and so on.

The aim of the current study is to demonstrate that students' self-efficacy can be increased by an intervention that focuses on reducing negative psychological states. As a result, it is expected that intervention decreases student burnout, and increases students' engagement and performance.

Student Burnout and Engagement

Self-efficacy is critical in order to enhance students' well-being to face exams. In fact, changes in self-efficacy levels are strongly related to changes in well-being states, such as burnout and engagement (Salanova, Bresó, & Schaufeli, 2005). Burnout among students refers to feeling exhausted because of study demands, having a cynical and detached attitude toward one's study, and feeling incompetent as a student (Schaufeli, Martinez, Marques-Pinto, Salanova & Bakker, 2002). Although burnout was originally said to be composed of three dimensions, empirical studies have revealed that the core of burnout is constituted by exhaustion and cynicism (Schaufeli & Taris, 2005). Thus, the third dimension of burnout (lack of efficacy) is excluded because previous

studies suggest that this dimension plays a different role (Bresó, Salanova, & Schaufeli, 2007). Indeed, lack of efficacy seems to play an antecedent role in the burnout process instead of part of the burnout syndrome, (Cherniss, 1993, Salanova, Llorens, Cifre, Martínez, & Schaufeli, 2003; Salanova, Peiró, & Schaufeli, 2002; Van Dierendonck, Schaufeli, & Buunk, 2001).

Conversely, engagement is defined as a positive, fulfilling, and motivational state of mind related to students' tasks that is characterized by vigor, dedication, and absorption (Schaufeli, Salanova, González-Romá, & Bakker, 2002). Vigor is characterized by high levels of energy and mental resilience, the willingness to invest effort, and persistence even in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride, and challenge. Finally, absorption is characterized by being fully concentrated in one's task. Recent evidence, however, suggests that absorption plays a slightly different role and might, perhaps, be considered a consequence of engagement rather than a constituting component (Salanova, et al., 2003). Accordingly, absorption has been excluded from the present study. Conceptually speaking, vigor and dedication are considered direct opposites of the core burnout dimensions, exhaustion and cynicism, respectively (González-Romá, Schaufeli, Bakker, & Lloret, 2006).

Burnout has been considered a result of a successive self-efficacy crisis. Cherniss (1993) pointed out that burnout develops from feelings of inefficacy or 'efficacy crisis', assuming that the lack of confidence in competences themselves is a crucial factor in burnout development. Additionally, Leiter (1992) went one step further and considered burnout essentially as an 'efficacy crisis.' Contrarily, engagement has been considered a boost for motivated behaviour which derives from high levels of self-efficacy. The SCT considers engagement to be a boost for

motivated behaviour, which derives from high levels of self-efficacy in people. Indeed, this theory indicates that self-efficacy provides people (in this case, students) with a self-motivating mechanism because, as a consequence of observing ones own competences, people set themselves goals, which in turn mobilize effort with orientation toward goals and persistence over time (Bandura, 1997, 2001). The relationship between effort and perseverance with performance is very close. In one sense, successes favor perseverance and effort, while these lead to failures in the opposite sense (Bandura, 1997). Furthermore, the relationships between psychosocial processes, behaviours and the environment are mutually reciprocal. Moreover, the results of a study carried out by Pintrich and De Groot (1990) suggested that self-efficacy plays a facilitative role in the process of cognitive engagement. In our study we investigate the effectiveness of a self-efficacy enhancing intervention in increasing engagement and performance, and decreasing burnout. We used a quasi-experimental, pre-test/post-test control group design (Cook & Campell, 1979). In addition to an intervened group, we included a healthy and a stressed control group of students who did not participate in the intervention. We hypothesize that:

H1: Compared to both control groups that did not participate in the intervention, students in the intervened group show higher levels of self-efficacy at follow-up.

H2: Compared to both control groups that did not participate in the intervention, students in the intervened group show higher levels of engagement at follow-up.

H3: Compared to both control groups that did not participate in the intervention, students in the intervened group show lower levels of burnout at follow-up.

H4: Compared to both control groups that did not participate in the intervention, students in the intervened group show higher levels of academic performance at follow-up.

Method

Participants Recruitment and Procedure

The university organized a voluntary workshop related to academic stress and anxiety before the first semester exam period. It was announced in the faculties of the university by e-mail to every student and by posters on the walls in corridors. A total of 66 students were interested, and attended the workshop where they were able to do practical activities which allowed them to check their anxiety levels. Then, the possibility of taking part in an individual treatment program was also offered to each student who attended the workshop, and 23 students participated in the *individual intervention program*, thus constituting our intervened group. The remaining 43 students (who did not apply for intervention) were asked to complete our questionnaires and to participate in the study as a control group, but only 27 students accepted to constitute our *stressed control group*. We decided on the name stressed control group because the participants came from the same initial sample just as the *intervened group* did (that is, workshop attendants). Thus, they considered that they have problems related to their psychological states (specifically anxiety and stress because of their studies). Moreover, a second healthy control group was also used, which was independent from the *intervened group* and did not participate in the workshop. It was composed of 27 students sampled from the same university, of a like age and who enrolled in similar courses to the intervened group. All participants were asked to fill in the questionnaire

twice: during the workshop (Time 1 [T1]), and 6 months later, that is, 2 months after the whole intervention had finished (Time 2 [T2]).

Intervention Program

The intervention consisted of 4 individual 2-hour sessions, and was based on the standard cognitive behavioral treatment for anxiety (Barlow, Rapee, & Brown, 1992; Blowers, Cobb, & Mathews, 1987). Specifically, the problems that these students had to attend and pass their exams were treated. Hence, the general idea is to improve their psychological state and to promote their emotional competences to cope with exams, thus minimizing their feeling of incompetence and their consequent increases of anxiety to face exams. To do so, the intervention focused on the main emotional and cognitive components of anxiety (Morris, Davis, & Hutchings, 1981) by centering on students' intolerance of uncertainty, erroneous beliefs about worry, poor problem orientation, and cognitive avoidance.

The cognitive-behavioral treatment based on a standard protocol, was applied to students by one experienced therapist (6 years of clinical experience working with university students). A cognitive-behavioral therapy (CBT) was selected because it is a well-supported treatment for anxiety disorders (Barlow, 2002). This approach is considered one of the most popular and effective types of psychotherapy to overcome anxiety (Barrowclough, King, Colville, Russell, Burns, & Tarrier, 1991). In fact, treatment guidelines now state that the CBT should be the first step to treat anxiety (cf. National Institute for Clinical Excellence, 2004). The aim was to help students to develop coping skills before their anxiety takes over, changing, therefore, false or self-defeating beliefs and making students think positively in order to deal with exams.

Bandura (1997) pointed out that, physiological states such as anxiety, stress, arousal, and/or fatigue, provide information about efficacy

beliefs, and that they are considered their sources. Because individuals have the capability to alter their own thinking, self-efficacy beliefs, in turn, also powerfully influence the physiological states themselves. Consequently, we assume that changes in students' anxiety levels will influence their self-efficacy. Additionally, students can gauge their confidence by the emotional state they experience when they consider a future action.

Participants

Of the 77 students in the intervention and control groups, who filled out the questionnaire at T1, 71 also participated at T2 (92%), and only these 71 students were included in the final analysis. The final *intervened group* consisted in 21 students, and the stressed and healthy control groups included 23 and 27 students, respectively (see Figure 6.1). Overall, 30 (42.3%) male and 41 (57.7%) female students were included. Their mean age was 21.6 years (s.d. = 1.69; ranging from 18 to 26).

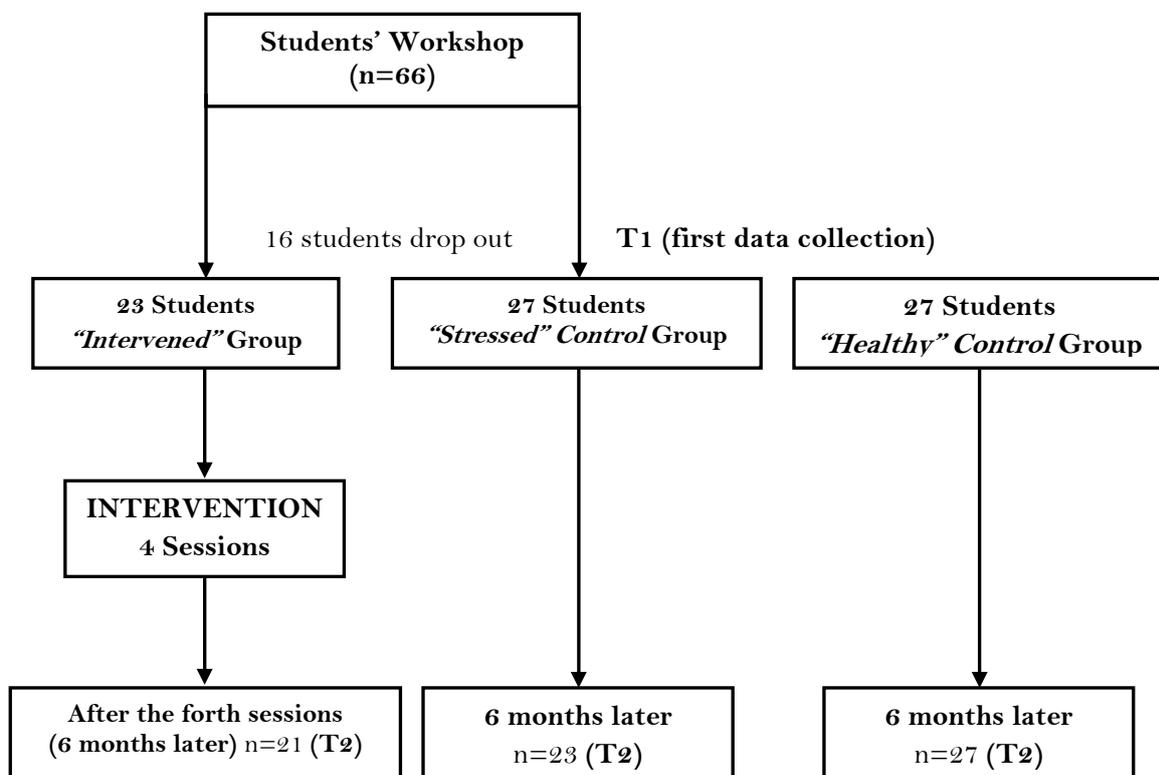


Figure 6.1. Flow diagram of participants through each stage of the trial.

Measures

Self-efficacy was measured with the scale of Midgley et al., (2000) which reflects the students' beliefs concerning their future capacities to achieve adequate levels of academic performance. The scale includes 5 items and scores from 0 (never) to 6 (always). An item example is: *'I will be capable of doing more complicated assignments in class if I try hard enough'*. Internal consistencies (Cronbach's α) for T1 and T2 were .91 and .90, respectively.

Academic burnout was assessed with two scales of the MBI-SS (Student Survey) (Schaufeli, et al., 2002): exhaustion (EX), which includes 6 items (e.g., *'I feel emotionally drained by my studies'*) and cynicism (CY), which includes 4 items (e.g., *'I doubt the significance of my studies'*). All items are scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("always"). Internal consistencies (Cronbach's α) for EX at T1 and T2 were .85 and .76, respectively, and were .81 and .70 at T1 and T2, respectively, for CY.

Academic engagement was assessed with two scales of the UWES-SS (Student Survey) (Schaufeli, et al., 2002). Vigor (VI), which includes 6 items (e.g., *'When I'm doing my work as a student, I feel bursting with energy'*) and dedication (DE) which includes 5 items (e.g., *'I am enthusiastic about my studies'*). All items are scored on a 7-point frequency rating scale ranging from 0 ("never") to 6 ("always"). Internal consistencies (Cronbach's α) for VI at T1 and T2 were .81 and .89, respectively; and were .72 and .81 at T1 and T2, respectively, for DE.

Performance was measured by estimating the ratio between exams taken over exams passed. Marks ranged from 0 (no exam passed) to 10 (all exams passed).

Results

Descriptive and Correlation Analyses

Tables 6.1 and 6.2 show the means, standard deviations, and inter-correlations of the outcome measures in the 3 groups. As seen, correlations are in the expected direction (e.g. cynicism and exhaustion as well as vigor and dedication are positive and significantly correlated). Regarding reliability, all the Cronbach's α values meet the more stringent criterion of .80 (Henson, 2001), except dedication ($\alpha = .72$) at T1, exhaustion ($\alpha = .76$) at T2, and cynicism ($\alpha = .70$) at T2 that meet the usual criterion of .70 (Nunnally & Bernstein, 1994) (Table 6.2).

Table 6.1

Means and Standard Deviations of the study variables at T1 and T2 for each group

Variable	Intervened Group (N=21)				Stressed Control Group (N=23)				Healthy Control Group (N=27)			
	T1		T2		T1		T2		T1		T2	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Self-efficacy	3.28	.96	4.45	.55	3.25	1.05	3.07	.66	4.20	.84	4.12	.81
Exhaustion	3.50	.95	2.10	.67	3.49	.91	2.06	.65	2.70	1.32	2.64	.93
Cynicism	2.81	.75	1.65	.49	2.77	.73	1.66	.54	1.45	1.17	1.54	1.11
Vigor	2.80	.86	4.05	.75	2.72	.67	2.59	.60	3.73	.81	3.67	.93
Dedication	3.51	.87	4.21	.80	3.43	.81	2.94	.52	4.05	.89	3.96	.92
Performance	5.25	1.30	6.84	1.33	5.92	1.57	6.10	1.54	7.22	.89	7.76	1.01

Table 6. 2

Correlations of the study variables at T1 and T2

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Self-efficacy	.91										
2. Exhaustion T1	-.48**	.85									
3. Cynicism T1	-.26*	.62*	.81								
4. Vigor T1	.43**	-.49**	-.63**	.81							
5. Dedication T1	.39**	-.41**	-.52**	.85**	.72						
6. Performance T1	.29*	-.25*	-.33**	.38**	.30*	--					
7. Self-efficacy T2	.51**	-.22	-.17	.14	.17	-.02	.90				
8. Exhaustion T2	.004	.42**	-.03	.08	.05	.18	-.04	.76			
9. Cynicism T2	-.10	.45**	.61**	-.27*	-.18	.07	-.14	.26*	.70		
10. Vigor T2	.13	-.09	-.21	.46**	.47**	-.05	.43**	.09	-.16	.89	
11. Dedication T2	.17	-.04	-.16	.45**	.57**	.06	.47**	.04	-.08	.77**	.81
12. Performance T2	.23	-.20	-.33**	.49**	.29*	.22*	.15	-.06	-.08	.31**	.42**

Notes: Cronbach α in the diagonal. * $p < .05$; ** $p < .01$ (two-tailed).

Hypothesis Tests

First, a multivariate test including all the dependent variables (i.e. self-efficacy, exhaustion, cynicism, vigor, dedication, and performance) across all 3 groups was performed. The result showed a significant multivariate effect of time [Wilks' lambda = .237; $F(6.63) = 33.76$; $p < .001$] and group [Wilks' lambda = .327; $F(12.126) = 7.87$; $p < .001$], and a significant time x group interaction effect [Wilks' lambda = .17; $F(12.126) = 14.96$; $p < .001$].

It was hypothesized that the intervention would have a positive effect on self-efficacy (Hypothesis 1) and engagement (Hypothesis 2), a negative effect on burnout (Hypothesis 3), and a positive effect on performance (Hypothesis 4). Subsequent univariate tests revealed significant time x group interaction effects for self-efficacy ($F = 21.61$; df

= 2; $p < .001$); exhaustion ($F = 19.68$; $df = 2$; $p < .001$); cynicism ($F = 27.6$; $df = 2$; $p < .001$); vigor ($F = 22.73$; $df = 2$; $p < .001$); dedication ($F = 14.67$; $df = 2$; $p < .001$); and performance ($F = 13.13$; $df = 2$; $p < .033$). These significant interaction effects are graphically displayed in Figures 6.2 to 6.5 to help their interpretation. As seen, the levels of self-efficacy in Figure 6.2 of those students who took part in the intervention program increased significantly ($F = 23.89$; $df = 40$; $p < .001$), whereas no significant increase was observed for the stressed ($F = .51$; $df = 44$; *n.s.*) and the healthy ($F = .13$; $df = 52$; *n.s.*) control groups. Hence, Hypothesis 1 is confirmed.

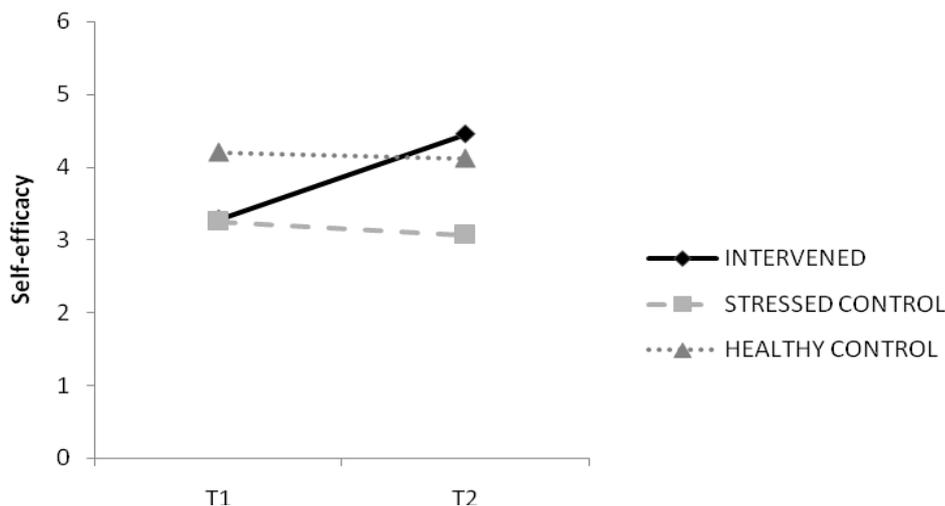


Figure 6.2. Two-way interaction of Group x Time on student Self-efficacy.

A similar pattern was observed for vigor. As Figure 6.3 depicts, the levels of vigor of those students in the intervened group increased significantly ($F = 25.81$; $df = 40$; $p < .001$), whereas no significant increase was observed for the stressed ($F = .48$; $df = 44$; *n.s.*) and the healthy ($F = .06$; $df = 52$; *n.s.*) control groups. Regarding the other engagement dimension, dedication, a significant increase was observed in the intervened group ($F = 7.29$; $p = .01$) but also a significant decrease in the stressed control group was observed ($F = 8.54$; $p = .018$), whereas no

significant increase for the healthy control group was noted ($F = .15$; $df = 52$; $n.s.$) (Figure 6.4). Thus Hypothesis 2, that postulates a significant positive effect of the intervention on engagement, is also confirmed.

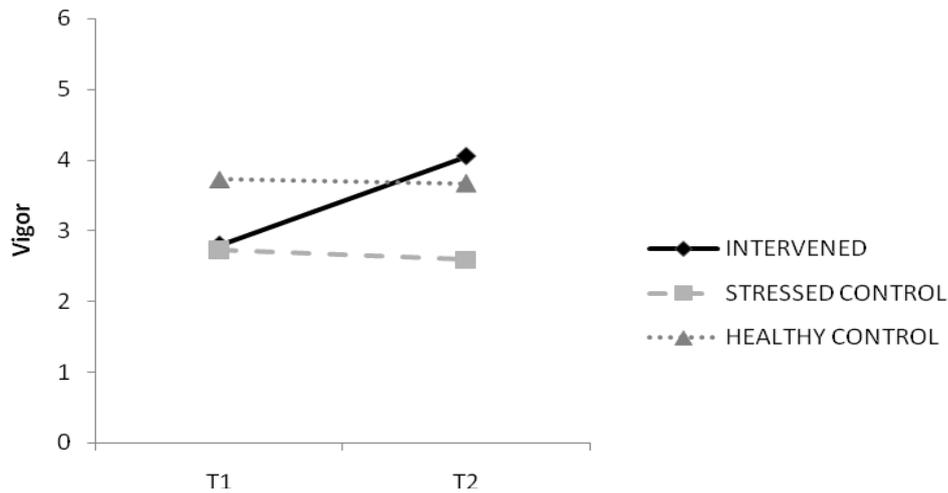


Figure 6.3. Two-way interaction of Group x Time on Vigor.

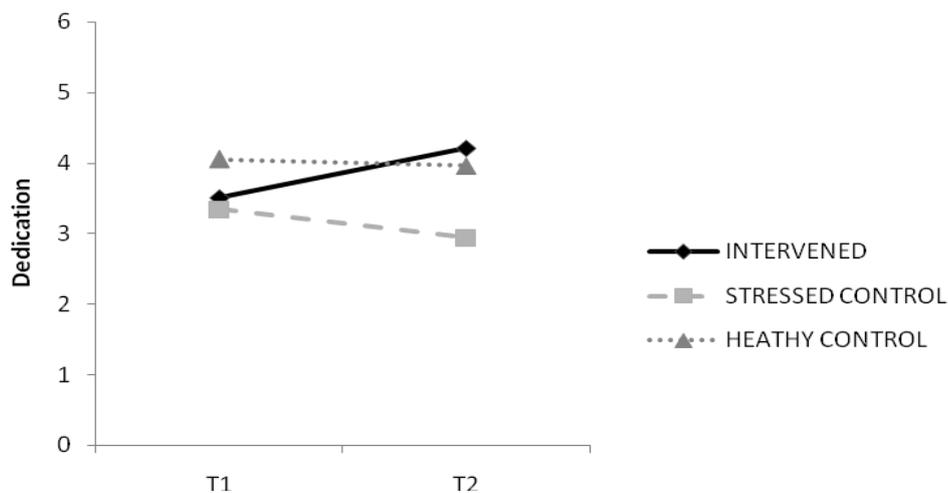


Figure 6.4. Two-way interaction of Group x Time on Dedication.

The results regarding burnout differ slightly from those expected. As expected and displayed in Figure 6.5, the levels of exhaustion of the intervened group decreased significantly ($F = 30.34$; $df = 40$; $p < .001$), whereas no significant decrease was observed in the healthy control group ($F = .036$; $df = 52$; $n.s.$). Contrary to expectations however, the levels of exhaustion of the stressed control group also decreased significantly ($F = 46.06$; $df = 44$; $p <$

.001), and similar results were obtained for cynicism (Figure 6.6) with a significant decrease in the intervened group ($F = 35.87$; $df = 40$; $p < .001$), no significant change in the healthy control group ($F = .088$; $df = 52$; $n.s.$), and a significant decrease in the stressed group ($F = 34.19$; $df = 44$; $p < .001$). Thus, the positive effect on the two burnout dimensions was not restricted to the intervened group, but also occurred in the stressed control group. Therefore, Hypothesis 3 is supported for the intervened group and healthy control group, but not for the stressed control group.

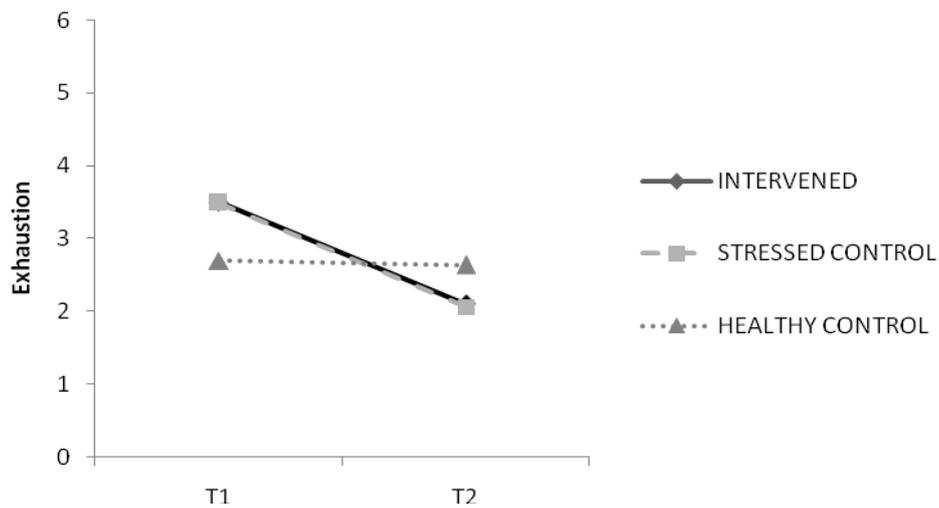


Figure 6.5. Two-way interaction of Group x Time on Exhaustion.

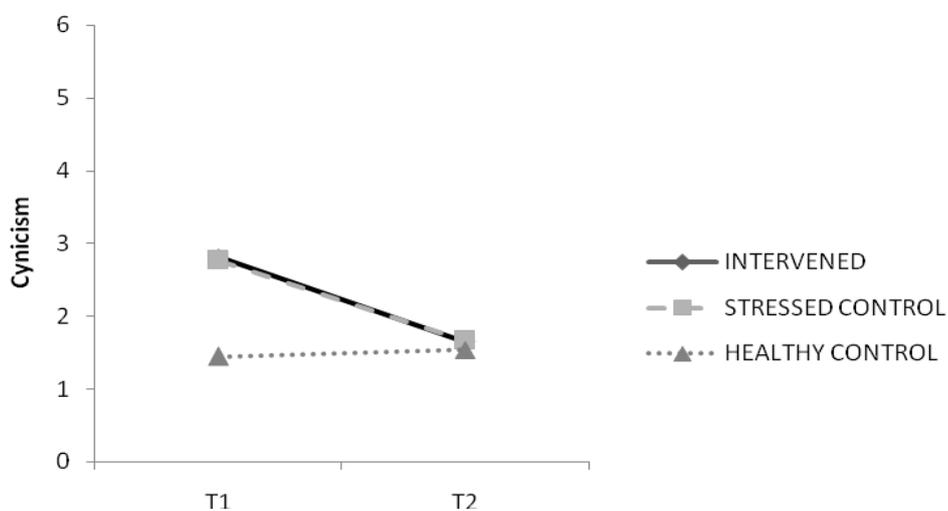


Figure 6.6. Two-way interaction of Group x Time on Cynicism.

Finally, as displayed in Figure 6.7, the performance of the intervened group increased significantly ($F = 15.21$; $df = 40$; $p < .001$), whereas no change in performance was observed for the stressed control group ($F = .16$; $df = 44$; *n.s.*). Contrary to expectations however, the performance levels of the healthy control group also increased significantly ($F = 4.57$; $df = 52$; $p = .037$). Hence, Hypothesis 4 is confirmed for the intervened group and the stressed control group, but not for the healthy control group.

In addition, it is important to note that initial levels of self-efficacy, engagement (vigor and dedication), burnout (exhaustion and cynicism), and performance differ significantly between the healthy control group and the intervened group on the one hand, and the stressed control group on the other hand. At T1, levels of self-efficacy [$(F = 12.87$; $df = 48$; $p < .001$), ($F = 12.62$; $df = 46$; $p < .001$)], vigor [$(F = 12.70$; $df = 48$; $p < .001$; $F = 14.91$; $df = 46$; $p < .001$)], dedication, [$(F = 6.47$; $df = 48$; $p < .01$; $F = 4.39$; $df = 46$; $p < .04$)], exhaustion [$(F = 5.85$; $df = 48$; $p < .02$; $F = 5.45$; $df = 46$; $p < .02$)] cynicism [$(F = 21.75$; $df = 48$; $p < .001$; $F = 21.14$; $df = 46$; $p < .001$)] and performance [$(F = 13.52$; $df = 48$; $p < .001$; $F = 38.79$; $df = 46$; $p < .001$)] were significantly higher (in case of self-efficacy, vigor, dedication, and performance) and lower (in case of exhaustion and cynicism), for the healthy group as compared to the intervention and the stressed groups, respectively. On the other hand, differences at T1 between the intervened group and the stressed control group in all the outcome variables were not significant. This means that the stressed group and the intervened group are comparable as far as levels of self-efficacy, engagement, burnout and performance are concerned.

Finally, effect sizes were estimated for all the outcome variables using Cohen's *d* coefficient (pooled effect size) (Cohen, 1988, 1992). The

results showed “medium” effect sizes for self-efficacy ($r = -.59$), exhaustion ($r = .65$), cynicism ($r = .68$), vigor ($r = -.61$); and performance ($r = -.52$), and a “small” effect size for dedication ($r = -.34$). So overall, effect sizes are relatively strong and in the expected direction.

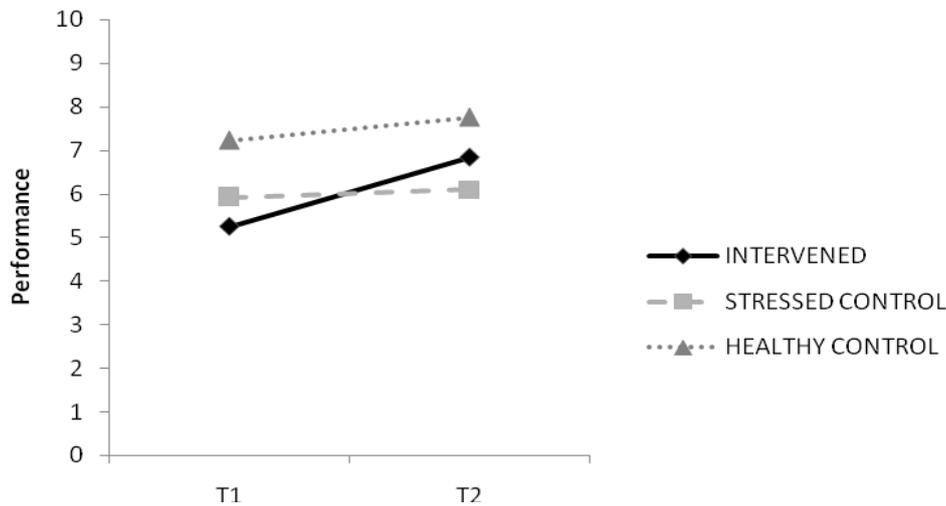


Figure 6.7. Two-way interaction of Group x Time on Performance.

Discussion

The present study investigated the effects of a cognitive behavioral intervention program to increase self-efficacy, engagement, and performance, and to decrease burnout among university students. The study design included one intervened group, and two control groups: one consisting of stressed students with similar baseline scores on the study variables to the intervened group, and another control group consisting of “healthy” students who scored more favorably at baseline scores.

Using Analyses of Variance, by comparing the two control groups, as expected the intervened group presented higher levels of self-efficacy at T2 (Hypothesis 1), higher levels of engagement (Hypothesis 2), and higher levels of performance (Hypothesis 4). However, two unexpected results were obtained and the lowest levels of burnout were not scored by the students from the intervened group (Hypothesis 3).

The first unexpected result indicates that decreases in burnout dimensions not only affected the intervened group, but also the stressed control group over time, as the interaction effects depicted in Figures 6.5, and 6.6 showed. Since students were not randomly distributed across groups, this effect can be due to the regression to the mean effect. This statistical artefact may be observed in a group pre-selected for scoring below the mean on a measurement. Then, it is likely that they score higher on average, purely by chance, if the measurement is repeated (Morton & Torgerson, 2003). The regression to the mean effect could have occurred in our study since the students from the stressed control group are not representative of the average of the general students' population. These students initially scored (T1) higher for burnout, lower for self-efficacy, and lower for engagement than the healthy control group which was randomly sampled from an unspecified population of students (Table 6.1). If this had been the case however, it should also have affected students' engagement, as well as self-efficacy scores of the stressed control group. Nonetheless, the effect was only found for both burnout dimensions. Thus, the regression to the mean effect does not seem to be an adequate cause of the time effect found in burnout dimensions.

Instead, we speculate that although the students from the stressed control group did not take part in the intervention, they could have used alternative ways to cope with their anxiety problems (e.g. asking their friends, family or other counseling staff for help, trying to deal with their anxiety using a self-help technique, or even using professional help). Thus it cannot be ruled out that stressed students used some alternative way to reduce their levels of burnout and to increase their levels of engagement between T1 and T2. Unfortunately, we did not ask those members of the stressed group about such alternatives. This possible explanation of a student actively seeking help or support is more congruent with the

results obtained than the regression to the mean effect, and is also consistent with the results found in previous research. For instance, in the burnout intervention study among 110 female white-collar workers carried out Häätinen, Kinnunen, Pekkonen, and Kalimo (2004), it was found that cynicism scores, decreased spontaneously in the intervened groups and also in the control group. The authors argue that this effect was due to initiatives by participants in self-help techniques during their period of waiting. Moreover in another intervention study among dentists, Te Brake, Gorter, Hoogstraten, and Eijkman (2001) noted that the participants who did not take part in the intervention showed less exhaustion. The authors only checked for self-initiatives in the first post-test and argued that the control group could have taken subsequent actions, thus explaining the positive shift found. Consequently, it could be useful to ask about what stressed students do in order to deal with their anxiety after the workshop for further research.

The second unexpected result was that the better performing students at T2 were not only those in the intervened group, but that all the groups improved their performance in T2, which contradicts our Hypothesis 4. Contrary to what we hypothesized, the healthy control group performed best (Table 6.1). However, and as Figure 6.7 indicates, the slope of the line that showed the highest difference between T1 and T2 in performance was that of the intervened group. Furthermore, we speculate that the performance assessed at T2 will enhance future students' self-efficacy (as a mastery experience), and better performance will probably be shown in the future exams period by those students who took part in the intervention. From this perspective, the effect at T2 can be considered a short-term effect of increased self-efficacy to examine the effect of self-efficacy on future performance. This idea is congruent with the results of a study carried out by Llorens, Salanova, Schaufeli, & Bakker

(2007) that suggests the existence of a positive gain spiral in which efficacy beliefs play a central-mediating role between past and future outcomes by way of engagement. That is, increases in self-efficacy lead to increases in engagement which enhance performance at T1, and this performance at T1 will influence self-efficacy at T2 which once again begin the 'upward' process.

Theoretical Implications

The results demonstrate the effectiveness of an intervention, focused on students' psychological states, on their levels of self-efficacy and engagement. Moreover, the use of 2 different control groups in the design allowed us to discover the success that the intervention showed, specifically in the promotion of engagement. The effect found was exclusively significant for the intervened group in the case of engagement, whereas the changes in burnout also occurred in the stressed control group. In this way, the intervention had the expected effect not only on self-efficacy, but only for engagement and not for burnout. This highlights the power of self-efficacy in the promotion of positive states of mind (Salanova, et al., 2005). This result is also supported by previous research undertaken in the Job Demand-Resources Model (JD-R)(Demerouti, Bakker, Nachreiner, & Schaufeli, 2001). For instance, Xanthopoulou, Bakker, & Demerouti, (2007) proved the effect that self-efficacy has in the motivational process that leads to engagement, but not in the health impairment process that leads to burnout.

All hypotheses were confirmed for the intervened group and also for the healthy control group for self-efficacy and engagement. Thus the effect that the intervention had on self-efficacy meant that students displayed significant increases in their levels of vigor, dedication, and intervention also enhanced their performance at T2. This finding

experimentally supports the assumption that increases in student self-efficacy is the 'key variable' which triggers a positive process which finishes with increased student performance, as pointed out in previous cross-sectional studies. Therefore, the current study reinforces the existence of a positive relationship between self-efficacy, engagement, and performance among students (see Llorens, Salanova, Schaufeli, & Bakker, 2007; Salanova et al., 2005).

Practical Implications

The suitability of promoting counseling activities such as workshops and interventions that promote healthy psychological states in universities is the most relevant practical implication of the present study. The fact that both the stress control group and the intervened group shared the same burnout, self-efficacy and engagement scores, but only the intervened group improved their scores on self-efficacy and engagement dimensions, suggests that intervention played an active role in improving students' positive states of mind, such as efficacy beliefs, vigor and dedication in their studies. Therefore, more university counselling programs could be developed on a larger scale to improve students' psychological states and, thereby, enhance their positive states of mind.

Limitations and Future Research

On the one hand, the use of self-reports has been considered an important limitation in studies like the present one. Self-reports are considered to be influenced by subjective factors (Spector, 1992), well-being (Coyne, 1994), and individual differences (Burke, Brief, & George, 1993). Moreover, the variables assessed in the study involve the risk of being inflated because of the common method variance. Nevertheless, Spector (2006) provides empirical evidence against the belief that the

method itself produces systematic variance in observations that inflates correlations to any significant degree. He argues that using self-reported measures is not actually responsible for design weaknesses.

On the other hand, since the intervened group students knew that the intervention was focused on increasing their self-efficacy, burnout, engagement and performance, they might have answered T2 questionnaires with a 'positive bias'. Thus, the T2 results in the intervened

group could have been exaggerated because of expectation (Staw, 1975). Theoretically, this effect can be due to a demand characteristic (Orne, 1962), which means a possible bias due to the fact that students were participating in the intervention and were expected to change positively. However, this is not likely because the positive effect, besides engagement, was also found for performance which is a more "objective" variable, and is less likely to be affected by this answer tendency (see Frese & Zapf, 1988). Therefore, even though the measures of engagement could be overstated, the measures of performance were stronger (in terms of objectivity), and such measures support the overall results obtained.

In order to generalize the results obtained in the present study, a third limitation is its relatively small sample size. In spite of the limited sample size however, the power of the effects found was strong enough to be highly significant, and even more importantly, estimated pooled effect sizes (Cohen *d*) in each outcome variable were moderately strong with values ranging between .34 and .68.

For further research, it could be useful to use larger student samples, and longitudinal designs that include at least three waves in order to test the mediating role of self-efficacy, as well as the potential self-efficacy well-being performance spirals. The use of a 3-wave sample

would allow us to discover the real causal relationship among self-efficacy, engagement and performance that we speculate in the current research. Additionally, follow-up measures in the control groups between T1 and T2 could be useful to check what exactly students do in relation to their psychological state, and to avoid the possibility of encountering any unexpected effects.

Final Note

In conclusion, this study is one of the few that showed the positive effects of a self-efficacy-based intervention on students' well-being and performance using a quasi-experimental design. Our study proves the effectiveness of intervention programs promoting healthy psychological states and engagement among students in order to optimize their performance. The workshop has effectively identified those students who were "at risk", and to recruit them to participate in the cognitive-behavioral intervention program. Most importantly, an individual cognitive-behavioral intervention proved to be a useful strategy for improving engagement and performance among students.

References

- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*, 37(2), 122–147.
- Bandura, A. (1986). *Social Foundations of Thought and Action: A Social Cognitive Theory*, Prentice-Hall Inc, Englewood Cliffs, NJ.
- Bandura, A. (1993). Perceived self-efficacy in cognitive development and functioning. *Educational Psychologist*, 28(2), 117–149.
- Bandura, A. (1994). Self-efficacy. In V. S. Ramachaudran (Ed.), *Encyclopedia of human behavior* (Vol. 4, pp. 71-81). New York: Academic Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman & Co.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology*, 52, 1-26.
- Barlow, D. H., (2002). *Anxiety and its disorders: The nature and treatment of anxiety and panic* (2nd ed.). New York: Guilford Press.
- Barlow, D. H., Rapee, R. M. & Brown, T. A. (1992). Behavioral treatment of generalized anxiety disorder. *Behavior Therapy*, 23, 551-570.
- Barrowclough, C., King, P., Colville, J., Russell, E., Burns, A. & Tarrier, N. (1991). A randomized trial of the effectiveness of cognitive-behavioral therapy and supportive counseling for anxiety symptoms in older adults. *Journal of Consulting and Clinical Psychology* 69, 756–762.

- Betz, N., & Schifano, R. S., (2000) Evaluation of an Intervention to Increase Realistic Self-Efficacy and Interests in College Women. *Journal of Vocational Behavior* 56, 35–52.
- Blowers, C., Cobb, J. & Mathews, A. (1987). Generalized anxiety: A controlled treatment study. *Behaviour Research and Therapy*, 25, 493-502.
- Bong, M. (2001). Role of self-efficacy and task-value in predicting college students' course performance and future enrollment intentions. *Contemporary Educational Psychology*, 26(4), 553–570
- Brown, S. D., Lent, R. W., & Larkin, K. C. (1989). Self-efficacy as a moderator of scholastic aptitude: Academic performance relationships. *Journal of Vocational Behavior*, 35(1), 64–75.
- Bresó, E., Salanova, M. & Schaufeli, W. B. (2007). In search of the 'third dimension' of burnout: Efficacy or inefficacy? *Applied Psychology: An International review*, 56, 460-478.
- Burke, M. J., Brief, A. P., & George, J. M. (1993). The role of negative affectivity in understanding relations between self-reports of stressors and strains: A comment on the applied psychology literature. *Journal of Applied Psychology*, 78, 402–412.
- Burton, J., & Dowling, D. (2005, July). *In search of the key factors that influence student success*. Paper presented to the Higher Education Research Development and Society of Australia (HERDSA) Conference, Sydney.
- Cherniss, C. (1993). Role of professional self-efficacy in the etiology and amelioration of burnout. In Schaufeli, W. B., Maslach, Ch. (Ed.), *Professional burnout: Recent developments in theory and research*. Series in

applied psychology: Social issues and questions. (pp. 135-149).
Washington, DC, USA: Taylor & Francis.

Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112, 155-159.

Cohen J. (1988). *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed.
Mahwah, NJ: Erlbaum;

Cook, T.D., & Campbell, D.T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Chicago: Rand McNally.

Coyne, J. C. (1994). Self-reported distress: Analog or ersatz depression. *Psychological Bulletin*, 116, 29-45.

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology*, 86, 499-512.

Eskew, R. K., & Faley, R. H., (1988). Some Determinants of Student Performance in the First College-Level Financial Accounting Course. *The Accounting Review*, 63(1), 137-147.

Fletcher, K, (2005). Evaluating an intervention to build online learning self-efficacy. *Dissertation Abstracts. International Section A: Humanities and Social Sciences*, 66(3-A), 914.

Freedman, A. (1996). Effects of a multicomponent group intervention on the self-efficacy and academic achievement of at-risk undergraduates. *Dissertation Abstracts. International Section A: Humanities and Social Sciences*, 57(6-A), 2380.

Frese, M., & Zapf, D. (1988). Methodological issues in the study of work stress: Objective vs subjective measurement of work stress and the question of longitudinal design studies. In Cooper, C. L. & Payne, R.

- (Eds.), *Causes, Coping, and Consequences of Stress at Work* (pp. 375-409). John Wiley, West Sussex, England.
- González-Romá, V., Schaufeli, W. B., Bakker, A., & Lloret, S. (2006). Burnout and engagement: Independent factors or opposite poles? *Journal of Vocational Behavior*, *68*, 165-174.
- Gul, F., & Fong, S. (1993). Predicting success for introductory accounting students; some further Hong Kong evidence. *Accounting Education: An International Journal* *2*(1), 33- 42.
- Hackett, G., Betz, N. E., Casas, J. M., & Rocha-Singh, I. A. (1992). Gender, ethnicity, and social cognitive factors predicting the academic achievement of students in engineering. *Journal of Counseling Psychology*, *39*(4), 527-538.
- Hätinen, M., Kinnunen, U., Pekkonen, M., & Aro, A. (2004). Burnout patterns in rehabilitation: Short-term changes in job conditions, personal resources, and health. *Journal of Occupational Health Psychology*, *9*, 220-237.
- Henson, R. K. (2001). Understanding internal consistency reliability estimates: A conceptual primer on coefficient alpha. *Measurement and Evaluation in Counseling and Development*, *34*, 177-189.
- Klomegah, R.Y. (2007). Predictors of Academic Performance of University Students: an Application of the Goal Efficacy Model. *College student journal*, *41*(2), 407-415.
- Leiter, M. P. (1992). Burn-out as a crisis in self-efficacy: Conceptual and practical implications. *Work & Stress*, *6*, 107-115.

- Lent, R. W., Brown, S. D., & Larkin, K. C. (1984). Relation of self-efficacy expectations to academic achievement and persistence. *Journal of Counseling Psychology, 31*(3), 356–362.
- Llorens, S., Salanova, M., Schaufeli, W.B. & Bakker, A. (2007). Does a positive gain spiral of resources, efficacy beliefs and engagement exist? *Computers in Human Behavior, 23*, 825-841.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*, 397-422.
- McKenzie, K., & Schweitzer, R. (2001). Who Succeeds at University? Factors predicting academic performance in first year Australian university students. *Higher Education Research & Development, 20* (1), 21-33.
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., Gheen, M., Kaplan, A., Kumar, R., Middleton, M. J., Nelso, J., Roeser, R. & Urdan, T. (2000). *Manual for Patterns of Adaptive Learning Scales*. University of Michigan Press.
- Morris, W., Davis, M. A., & Hutchings, C. H. (1981). Cognitive and emotional components of anxiety: literature review and a revised worry-emotionality scale. *Journal of Educational Psychology, 73*(4), 541-55.
- Morton, V. and Torgerson, D. J. (2003). Effect of regression to the mean on decision making in health care. *British Medical Journal 326*, 1083–1084.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology, 38*(1), 30–38.

- Naser, K., & Peel, M. J. (1998). An Exploratory study of the impact of intervening variables on student performance in a Principles of Accounting course. *Accounting Education: An International Journal*, 7(3), 209-223.
- National Institute for Clinical Excellence. (2004). *Anxiety: Management of anxiety (panic disorder, with or without agoraphobia, and generalized anxiety disorder) in adults in primary, secondary and community care*. Retrieved from www.nice.org.uk/CG022quickrefguide.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric theory* (3rd ed.) New York, NY: McGraw-Hill.
- Orne, M. T. (1962). On the social psychology of the psychology experiment: With particular reference to demand characteristics and their implications. *American Psychologist*, 17, 776-783
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, 66(4), 543-578.
- Pintrich, P. R., & De Groot, E. V. (1990). Motivational and self-regulated learning components of classroom academic performance. *Journal of Educational Psychology*, 82, 33-40.
- Salanova, M., Bresó, E., y Schaufeli, W. B., (2005). Hacia un modelo espiral de la autoeficacia en el estudio del burnout y del engagement [Towards a Spiral model of Self-efficacy in th estudy of Burnout and Engagement]. *Ansiedad y Estrés*, 11(2), 215-231.
- Salanova, M., Llorens, S., Cifre, E., Martínez, I & Schaufeli, W. B. (2003). Perceived Collective Efficacy, Subjective Well-Being and Task Performance among Electronic Work Groups: An Experimental Study. *Small Group Research*, 34, 43-73.

- Salanova, M., Peiró, J. M., & Schaufeli, W. B. (2002). Self-efficacy specificity and burnout among information technology workers: An extension of the Job Demands- Control Model. *European Journal of Work and Organizational Psychology, 11*, 1–25.
- Salanova, M., Schaufeli, W. B., Llorens, S., Peiró, J. M., and Grau, R. (2000). Desde el 'burnout' al 'engagement': ¿una nueva perspectiva? [From 'burnout' to 'engagement': A new perspective?] *Revista de Psicología del Trabajo y las Organizaciones, 16*, 117–134.
- Schaufeli, W. B., Martinez, I, Marques-Pinto, A., Salanova, M., & Bakker, A. (2002). Burnout and Engagement in university students. *Journal of Cross-Cultural Psychology, 33*(5), 464–481.
- Schaufeli, W. B., Salanova, M., Gonzalez-Roma, V., & Bakker, A. (2002). The Measurement of Engagement and Burnout: A Two Sample Confirmatory Factor Analytic Approach. *Journal of Happiness Studies, 3*(1), 71–92.
- Schaufeli, W. B. & Taris, T. W. (2005). The conceptualization and measurement of burnout: Common ground and worlds apart. *Work & Stress, 19*, 356–262.
- Schunk, D. H. (1995). Self-efficacy and education and instruction. In Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 281–303). New York: New York.
- Spector, P. E. (1992). A consideration of the validity and meaning of self-report measures of job conditions. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 123–151). Chichester, England: Wiley.

- Spector, P. E. (2006). Method Variance in Organizational Research. *Organizational Research Methods, 9*(2), 221-232.
- Staw, B. M. (1975). Attribution of the “causes” of performance: A general alternative interpretation of cross-sectional research on organizations. *Organizational Behavior and Human Performance, 13*, 414-432.
- Te Brake, J. H. M., Gorter, R. C., Hoogstraten, J., & Eijkman, M. A. J. (2001). Burnout intervention among Dutch dentists: Long-term effects. *European Journal of Oral Sciences, 109*, 380-387.
- Van Dierendonck, D., Schaufeli, W. B., & Buunk, B. P. (2001). Towards a process model of burnout: Results from a secondary analysis. *European Journal of Work and Organizational Psychology, 10*, 41-52.
- Wei, Y. (2004). The Measurement and Intervention of College Students' Learning Self-Efficacy. *Psychological-Science, 27*(4), 905-908.
- Xanthopoulou, D., Bakker, A., & Demerouti, E. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management, 14*(2), 121-141.
- Zeldin, A. L. & Pajares, F. (1997). *Against the odds: Self-efficacy beliefs of women with math-related careers*. Paper presented at the meeting of the American Educational Research Association, Chicago.
- Zeegers, P. (2004). Student learning in Higher Education: a Path Analysis Academic Achievement in Science. *Higher Education Research & Development, 23*(1), 35-56.
- Zimmerman, B. (2000). Self-Efficacy: An Essential Motive to Learn. *Contemporary Educational Psychology 25*, 82-91.

Zimmerman, B. J. & Bandura, A. (1994). Impact of Self-regulatory influences on Writing Course Attainment. *American Educational Research Journal*, 31(4), 845-862.

Chapter 7

General Discussion

The objective of the current thesis was to validate a ‘*heuristic*’ model in order to understand and explain the relationships among students’ environment (i.e. obstacles and facilitators), self-efficacy beliefs, students’ well-being (i.e., burnout and engagement), and their performance. Additionally, the effectiveness of an intervention focused on increasing self-efficacy beliefs among students is also evaluated. In order to carry this out, the model depicted in Figure 7.1 has been partially tested by means of five studies (Chapters 2-6) that constitute the empirical evidence for answering the main research question formulated: *How are obstacles-facilitators, students self-efficacy, burnout-engagement, and performance articulated in the achievement process of students?*

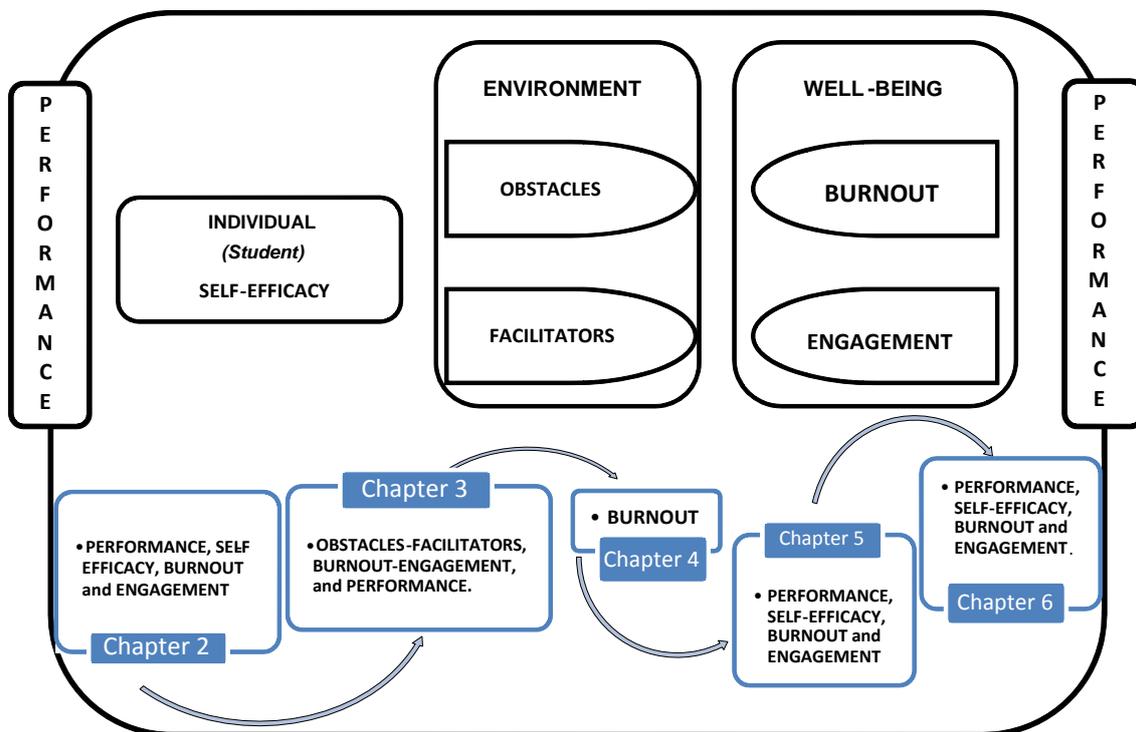


Figure 7.1. The ‘heuristic model’ and variables examined in each chapter.

Summary of Main Findings

Students' Obstacles and Facilitators

The relationship between the characteristics of the student situation (i.e., obstacles & facilitators) and performance was discussed in Chapter 3 of the present thesis. The results showed significant relationships between the obstacles and facilitators perceived by students with their performance. Furthermore, the effect of facilitators on performance is also partially mediated by engagement (see Figure 3.2). That is, students who perceive few obstacles, and especially many facilitators in their environment, feel engaged, which may boost their future academic performance. These results agree with recent research about how facilitators and resources increase engagement and, in turn, increase specific positive behaviors, such as employee performance (Salanova, Agut & Peiró, 2005), and organizational commitment (Schaufeli & Bakker, 2004b). From a theoretical point of view, this agrees with Hackman and Oldham's (1980) Job Characteristics Theory (JCT). The JCT assumes the so-called critical psychological states (i.e., meaningfulness, responsibility, and knowledge of the results) that are presumed to mediate between job characteristics (i.e., organizational facilitators or resources such as variety, task identity, task significance, autonomy and feedback) and outcomes (e.g., job performance). In the study carried out in Chapter 3, engagement seems to play an analogous role in such a critical psychological state. However, the findings depicted extend the JCT since, according to this theory, the critical psychological states are primarily cognitive in nature (e.g., knowledge of the results, self-efficacy, and control appraisals), whereas the engagement construct also reflects an affective state. Hence, it appears that obstacles and facilitators affect students' feelings toward their studies, which in turn induces good performance.

Finally, although the opposite could be expected at first glance, a relatively unexpected positive relationship between obstacles and facilitators was found. Obstacles and facilitators would be expected to be negatively related because facilitators mitigate problems caused by the obstacles that interfere with performance (Tesluk & Mathieu, 1999). However, it can be speculated that students who perceive many obstacles actively look for facilitators in their environment as a coping strategy by way of compensation (Eriksen, Olff & Ursin, 2000).

Student's Well-being: Burnout and Engagement

Traditionally, burnout has been one of the most studied psychological constructs in order to assess well-being at work (and recently, also among students). Although the factor-structure of burnout has been largely proved to be cross-nationally invariant (Schaufeli, & Enzmann, 1998), the conceptualization of the third dimension (i.e., lack of efficacy) has been frequently criticized. For instance, most studies consistently show that professional efficacy correlates relatively poorly with exhaustion and cynicism (Green, Walkey, & Taylor 1991; Lee & Ashforth, 1996). Additionally from a conceptual point of view, instead of a genuine burnout dimension, professional efficacy has been considered to be similar to a personality construct (Cordes, & Dougherty, 1993; Shirom, 2003). Finally, clinical experience with burned-out patients suggests that exhaustion and cynicism appear together, whereas lack of professional efficacy is observed much less frequently (Brenninkmeijer, & Van Yperen, 2003; de Bruin & Schmidt, 2005; Roelofs, Verbraak, & Keijsers, 2005). The results from Chapter 4 suggest the suitability of considering students' efficacy instead of a constituting dimension of burnout, an antecedent of it. Several confirmatory factor analyses carried out in two independent samples of students from Spain and the Netherlands showed that the use of lack of efficacy is not a good scale for assessing burnout among

students. In addition, the results from Chapter 4 show a relatively low correlation of students' efficacy with exhaustion and cynicism, and substantiated recent research on burnout that considered exhaustion and cynicism the core dimensions of burnout (Schaufeli, & Taris, 2005). It has been found that (reduced) professional efficacy, the third dimension of burnout, shows a low correlation with exhaustion and cynicism, and a different pattern of correlations with other variables (Halbesleben & Buckley, 2004). If we take these results into account, and also Schaufeli, & Bakker's (2004a) recommendation, efficacy in the following chapters of this thesis considered only the 'core dimensions' of burnout (i.e., exhaustion and cynicism) as constituting dimensions of burnout.

Additionally, the development in burnout research has recently shifted toward its opposite: engagement. The study of engagement is not as highly developed as research on burnout. Moreover, there are two different approaches in the study into engagement. On the one hand, Maslach and Leiter (1997) conceptualize engagement as the opposite pole of burnout and assume that engagement is characterized by energy, involvement and efficacy, which are considered as the exact opposites of the three burnout dimensions: exhaustion, cynicism and reduced professional efficacy. Based on this approach, engagement is measured by the opposite pattern of scores in the three MBI-GS dimensions (Maslach, Schaufeli, & Leiter, 2001). This means that low scores in exhaustion and cynicism, and high scores in professional efficacy are indicators of engagement.

On the other hand, Schaufeli and Bakker (2001) as well as Schaufeli, Martínez, Marqués-Pinto, Salanova, & Bakker (2002a), follow a different approach of the concept of work and student engagement. They argue that Maslach and Leiter's (1997) approach inhibits an investigation of the relationship between burnout and engagement, since both concepts are

considered to be opposite poles of a continuum that is assessed with one instrument, the MBI-GS. This approach suggests that engagement cannot be measured by the opposite profile of the MBI-GS because, even though in conceptual terms it is the positive antithesis of burnout, the structure as well as the measurement of both concepts is different. Thus, Schaufeli and Bakker (2001) proposed that burnout and engagement should be conceived as two opposite concepts which should be measured independently with different instruments. Therefore following this last research approach, the present thesis studied well-being, and not only measured the negative side (i.e., burnout), but also the positive side (i.e., engagement) of well-being by considering the constituting dimensions of burnout and engagement as two different but inter-correlated constructs.

Students' Burnout-Engagement and Performance

Results from the different SEM analyses carried out in Chapter 3 showed a significant relationship between engagement and future performance among students. However, no significant effect of burnout on future academic performance was observed (Figure 3.2). This result supports past research, which also failed to establish a link between burnout and performance, particularly when performance was measured by using objective indicators instead of self-reports or other people's assessments (Garden, 1991; Lazaro, Shinn & Robinson, 1985; Rafferty, Lemkau, Purdy, & Rudisill, 1986). In addition, this finding makes sense taking into account that the 'theoretical' third dimension of burnout (i.e., professional-academic efficacy) was not assessed in Chapter 3, and that the burnout dimension is supposed to be strongly related to performance (Maslach, 2003; Maslach, et al., 2001).

Furthermore, the results from Chapter 5 confirmed the relationship between past performance and engagement (Figure 5.2). These results showed a greater relationship between past success and engagement than

burnout. Thus, the relationship of students' past success with the 'positive way' of students' well-being (i.e., engagement) was seen to be stronger than the 'negative way' (i.e., burnout). Likewise, Chapter 2 supports the antecedent role that past performance plays on students' well-being; once more, the relationship between past performance and engagement was stronger than the relationship between past performance and burnout. Collectively, the results from Chapters 2 and 5 not only confirmed the relevance of past performance on students' well-being, but also the strength of the positive experiences in the promotion of well-being. This coincides with previous theoretical models carried out in the framework of positive organizational psychology (Fredrickson, 1998; Seligman, & Csikszentmihaly, 2000), which pointed out the predominance of the positive side (compared with the negative side) in the promotion of well-being and positive emotions. This positive relationship between engagement and students' performance also agrees with the so-called '*Broaden-and-Build*' theory of positive emotions (Fredrickson, 2001; Fredrickson, & Losada, 2005). This theory posits that the experience of positive emotions broadens thought-action repertoires and builds enduring personal resources.

Nevertheless, two conditions need to be remarked. Firstly, one theoretical dimension of engagement (i.e., absorption) was not assessed, and secondly, the SEM analyses performed in Chapters 2 and 5 also considered two mediating variables between past performance and burnout-engagement (self-efficacy in the case of Chapter 2, and efficacy beliefs in the case of Chapter 5).

Related to the first issue (the assessment of absorption), recent evidence suggests that absorption plays a slightly different role and might perhaps be considered a consequence of engagement rather than a constituting component (Salanova, Llorens, Cifre, Martínez, & (Schaufeli

& Bakker, 2001; Schaufeli, 2003; Schaufeli, Salanova, González-Romá, & Bakker, 2002b). With regard to the second issue (the role of efficacy beliefs), in the current thesis, and based on the Social Cognitive Theory (SCT; Bandura, 1986, 1997, 2001), students' beliefs about their capability to perform properly are considered as mediating variables between past performance and well-being. The SCT distinguishes two different types of efficacy beliefs and, consequently, both types of efficacy beliefs were tested. 'Self-efficacy' has a 'future' dimension since these beliefs are expectations concerning the efficacy in actions to be undertaken in the future. These efficacy beliefs are genuinely derived from the self-efficacy concept itself. However, other efficacy beliefs also exist such as beliefs in the same levels of current competence in relation to a specific domain (e.g. 'I do an excellent job'). Bandura (1997) pointed out that perceived competence influences self-efficacy and, therefore, these are different constructs since they refer to the perceptions of efficacy at different moments in time. Consequently, it is possible to also talk about present self-efficacy (perceived efficacy or competence) and future self-efficacy (self-efficacy) (Bandura, June 2002, personal communication). In this thesis the role of both kinds of beliefs was evaluated. 'Efficacy beliefs' was used to refer to present perceived efficacy (efficacy) and 'self-efficacy' was used to refer to future perceived efficacy.

In conclusion, the current thesis studied and confirmed relationships between students' well-being and performance. It has also found that students' beliefs of efficacy are needed to enhance performance. Finally, the strength of engagement compared with burnout was also cross-validated.

The Predictive power of Self-efficacy

Previous research suggests that student self-efficacy is an antecedent of motivation as well as of the future performance of students (Bores-Rangel, Church, Szendre, & Reeves, 1990; Elias, & Loomis, 2004; Multon, Brown, & Lent, 1991; Pintrich, & Schunk, 1995; Zimmerman, 2000). Thus, considering the motivational nature of student burnout and engagement (Maslach, 2003; Schaufeli, & Bakker, 2004a), the present thesis included self-efficacy as an antecedent of burnout and engagement as well as performance among students. Additionally, that consideration is congruent with the SCT which postulates that the beliefs that people have about themselves are key elements in the exercise of control and personal agency, and in which individuals are viewed both as products and producers of their own environments.

First, the results of Chapter 5 confirmed that current beliefs of students' efficacy mediate the relationship between past success on the one hand, and burnout and engagement on the other hand. The more efficacious, the less burnout and more engagement. Similarly, burnout and engagement influence future efficacy beliefs (i.e., self-efficacy). What is additionally supported by the SCT postulations is that it can be speculated that future self-efficacy beliefs of students may be influenced by their current burnout and engagement.

Some controversy exists over the relative causal ordering of efficacy in relation to well-being and performance. From the SCT perspective however, it is more important to note that they are reciprocally related to one another. Therefore in the current thesis, reciprocal relationships of performance, burnout, and engagement (see Figure 7.1) were evaluated. In Chapter 5, past performance showed a significant relationship with current efficacy beliefs which, in turn, were

related to burnout and engagement. Nonetheless, burnout and engagement also demonstrated their relationship with self-efficacy. Conversely in Chapter 2, the results supported the predictive role of self-efficacy on students' burnout and engagement. Regarding the relationship of self-efficacy with future performance, Lindsley, Brass, & Thomas (1995) concur that the high interdependence between efficacy and performance may produce a deviation amplifying loop, or spiral, whereby a deviation in one variable (e.g., an increase in self-efficacy) results in a similar deviation in another variable (e.g., an increase in performance) which, in turn, continues to amplify. However, they also suggest that the pattern of the relationship between self-efficacy and performance over time may be more complicated and may be punctuated by corrections in either self-efficacy or performance. They state that focusing on a single variable or attempting to determine unidirectional causality, just as the current organizational research on self-efficacy has done, obscures the properties of the efficacy performance spiral.

Reciprocal Causation

The significant positive relationships among performance, efficacy beliefs and subsequent well-being on the one hand, and between well-being and subsequent self-efficacy on the other hand (Chapter 5), are consistent with Bandura's (1986) discussion of reciprocal causation and with prior empirical evidence (Bandura & Jourden, 1991; Feltz, 1982; Locke, Frederick, Lee, & Bobko, 1984; Wood, & Bandura, 1989). Additionally, past performance was more highly correlated with efficacy beliefs than with self-efficacy (Table 5.2), demonstrating that students evaluate their efficacy beliefs based on their most recent performance. Additionally, past success is directly related to efficacy beliefs whereas self-efficacy is mediated by well-being. This is consistent with Bandura's (1986) concept of self-efficacy as a cognitive, self-regulatory process

central to progressive mastery and learning. According to Bandura (1986, p. 112), “*outcomes influence actions mainly through the central representation and regulation of action patterns.*” It suggests an efficacy-performance relationship in which self-efficacy beliefs are changed over time to reflect the most recent performance. The current thesis provided empirical evidence about the dynamic relationship between past performance, efficacy beliefs, burnout and engagement. Results obtained potentially support that perceived efficacy beliefs (present) are related to burnout and engagement, which, in turn, are related to self-efficacy (future).

Results depicted in Chapter 2 pointed out that students’ self-efficacy was positive and significantly related with engagement, but negative and significantly with burnout. However, the relationship of self-efficacy was stronger with engagement (positive) than with burnout (negative). By considering self-efficacy as a specific personal resource (Bandura, 1997; Lazarus, & Folkman, 1987; Xanthopoulou, Bakker, Demerouti, & Schaufeli, 2007), one possible explanation for this finding can be found in the background of the conservation of resources theory (COR; Hobfoll, 1989, 2001). The COR theory evidences that the acquisition and facilitation of resources is a central motivational construct and suggests that psychological strain occurs under one of three conditions: (1) when resources are threatened, (2) when resources are lost, and (3) when individuals invest resources and do not gain the anticipated level of return. The results from Chapter 2 are consistent with previous research on the motivational power of resources at the workplace (Bakker, Demerouti, & Verbeke, 2004; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001; Hackman, & Oldham, 1980; Houkes, 2002). Furthermore, these findings agree with predictions from the SCT, which assumes that self-efficacy facilitates well-being (Bandura, 1997, 1999). In this sense, the

results support that students' self-efficacy is a powerful personal resource to build future positive experiences, and intrinsic motivation with studies.

There is considerable evidence regarding the positive effects of self-efficacy on well-being in different domains such as the workplace, school, and sports (Bandura, 1999, 2001). For example, research in the work domain shows that high levels of efficacy beliefs have a positive impact on employee well-being (Grau, Salanova, & Peiró, 2001) and work engagement (Salanova, Llorens, Cifre, Martinez, & Schaufeli, 2003). According to Bandura (1997, 2001), efficacy beliefs contribute to motivation in several ways. Efficacy beliefs influence (a) the challenges people pursue, (b) the effort they expend, and (c) their perseverance in the face of obstacles.

So far, students' self-efficacy (as a personal resource) can be seen as one of the resources that students wish to protect. This also means that the COR theory can be mainly considered a framework in order to explain the strength of the positive way (i.e., self-efficacy \rightarrow engagement), compared with the negative way (i.e., self-efficacy \rightarrow burnout).

Intervention on Self-efficacy

Using a quasi-experimental study, Chapter 6 investigated the effects of an intervention program to increase self-efficacy, engagement, and performance, and to decrease burnout among university students. This study was carried out by taking into account relationships between these variables described by the heuristic model (Figure 1.1). The study design included one intervened group, and two control groups: one consisting of stressed students with similar baseline scores in the study variables, the intervened group, and another control group consisting of 'healthy' students who scored more favorably with baseline scores.

The intervention consisted of 4 individual 2-hour sessions, and was based on the standard cognitive behavioral treatment for anxiety (Barlow, Rapee, & Brown, 1992; Blowers, Cobb, & Mathews, 1987). Specifically, the problems dealt with were these students having to sit and pass their exams. Hence, the general idea was to improve their psychological state and to promote their emotional competences to cope with exams, thus minimizing their feeling of incompetence and their consequent increases of anxiety to face exams.

The intervened group presented higher levels of self-efficacy at Time 2, higher levels of engagement, and higher levels of performance (Figures 6.2–6.7). Thus, the results showed the expected effectiveness of an intervention that focused on the students' psychological states as an important source of self-efficacy, and its influence on engagement. However, the lowest levels of burnout were not scored by the students from the intervened group (Table 6.1). Moreover, the effect found was exclusively significant for the intervened group in the case of engagement, whereas the changes in burnout also occurred in the stressed control group. In this way, intervention had the expected effect on self-efficacy and engagement, but not on burnout. This leads to consider the power that self-efficacy can have on promoting the positive side of well-being, which has been previously pointed out in Chapters 3-5. This result is also supported by previous research undertaken in the Job Demand-Resources Model (JD-R; Demerouti, et al., 2001; Schaufeli, & Bakker, 2004a).

Thus the presupposed effect that intervention had on self-efficacy meant that students displayed significant increases in their levels of engagement, and that intervention also enhanced their performance at T2. This finding supports the assumption that increased student self-efficacy is the 'key variable' which triggers a positive process, which finishes with increased student performance. Therefore, the study reinforces the

existence of a positive relationship among self-efficacy, engagement, and future performance in students.

Collectively, the results of Chapters 4-6 provided empirical evidence for the students' reciprocal relationship of performance, efficacy beliefs, and well-being (especially on engagement). Additionally, these results also support the convenience of interventions that focused on improving psychological states to increase students' self-efficacy in order to enhance engagement and performance. Additionally, these results support previous research, and reinforce the importance of personal resources such as self-efficacy, as previously pointed out.

Cross-national Settings

Several multiple-group analyses were carried out in the current thesis. In Chapter 4, the factor structure of the traditional Maslach Burnout Inventory–Student Survey (MBI-SS), that includes an 'efficacy' scale was assessed and compared with that of academic burnout that, instead, includes an 'inefficacy' scale in two student samples from Spain and The Netherlands simultaneously. The results of the multiple-group analyses showed that the structure was not entirely invariant across samples with 7 out of 15 factor loadings (47%) and one out of three (33%) intercorrelations between scales being invariant. Thus, the structures of the traditional and the alternative MBI-SS were similar across student samples from different nations in terms of latent underlying factors. However, the contribution of various items to these latent factors differed from one country to another. The same applies to some intercorrelations between latent factors. It is highly likely that language and cultural differences in the interpretation of items might be the reason for this result. Furthermore in Chapter 5, hypotheses were tested in two samples from Spain and Belgium, respectively. In this case, the invariance was not total, but several structural relationships could be established which

remain invariant in both samples. However, the regression coefficients and the factorial weights differed significantly and systematically between both samples, and the relationship between perceived efficacy and engagement was not invariant across samples.

Finally in Chapter 2, a Structural Equation Model was tested in two samples of Spanish and Portuguese students. It should be pointed out that the multiple-group analyses carried out have been able to perform a finer analysis of the research models invariance proposed. The results showed that factor loadings of the burnout and engagement dimensions (i.e., exhaustion, cynicism, vigor, and dedication) differed across samples. Nevertheless, the multiple-group test showed that the structure of the model is invariant in both countries. That is, the relationships between the four latent constructs were similar. Therefore, although students from Spain and Portugal scored differently on the burnout and engagement dimensions, the relationships among the latent variables were invariant across both countries. It can be only speculated why the factor loadings differ between countries, which might be due to slight differences in the connotations of the items as a result of either translation or cultural differences.

Although the main objective of the current thesis was not to develop a cross-cultural study, that is, to analyze differences between groups of students from different cultural contexts (i.e., countries), the use of samples of students from diverse countries and the finding of similar results across samples, illustrated the robustness of the results obtained. Therefore, besides the stability of the findings across the studies carried out (i.e., across Chapters), the relative cross-validation across countries (i.e., Spanish, Belgian, Dutch, and Portuguese samples) highlighted the strength of the results achieved.

Theoretical Implications

The most relevant theoretical implications of the present thesis are related to both the JD-R Model (Demerouti et. al, 2001) and the SCT (Bandura, 1986, 1997, 2001). This thesis applies and extends previous research in the field of work-organizational psychology in the students' settings.

Implications in the Background of the JD-R Model

Influenced by dominant work psychological models, like Karasek's (1979) demand-control model, the JD-R Model (Demerouti, et. al, 2001; Schaufeli, & Bakker, 2004a) attributes employee well-being to the characteristics of work settings. Previous studies have supported the underlying predictions of the model, namely that job demands are the main predictors of negative job strain (Bakker, Demerouti, Taris, Schaufeli, & Schreurs, 2003; Bakker, Demerouti, & Verbeke, 2004), while job resources are the most important predictors of work engagement (Hakanen, Bakker, & Schaufeli, 2006). In the current thesis, the relationship of students' environment (in terms of demands and resources) with well-being has also been investigated. Thus Chapter 3 tested the relationship that students' obstacles and facilitators of the environment have on well-being. The results showed that obstacles and facilitators were related to burnout and engagement, but these relationships were stronger in the 'positive way' than in the 'negative way'. That is, the relationship among facilitators, engagement and performance was stronger than the relationship among obstacles, burnout, and performance. In fact, the hypothesized mediating role of burnout was not shown (see Figure 3.2). Therefore, Chapter 3 not only applies JD-R postulations to students' settings, but reinforces the power that facilitators (resources in the background of the JD-R Model) have in the promotion of students' well-being compared with obstacles.

Recently, research into the JD-R model has focused on personal resources which can be important determinants of the adaptation of both workers and students to their respective environments (Hobfoll, 1989; Judge, Locke, & Durham, 1997). For instance, Xanthopoulou, et al. (2007) tested the relationship of two kinds of specific personal resources (i.e., general self-efficacy and optimism) in workers' well-being. Likewise, the present thesis supports, and adds empirical evidence of, the relevant role that students' self-efficacy (as a personal resource) plays in students' settings.

Implications in the Background of the SCT

In the present thesis, self-efficacy is studied as a concrete belief related to studies rather than as a general trait that supports the SCT principles (Bandura, 1997; 2001), and allows to consider the reciprocal nature of personal-environmental relationships. The results obtained also agreed with the learning generalization model (Kohn & Schooler, 1982), which suggests that the structural imperatives of environments affect personal characteristics, and that personal characteristics may have important consequences for an individual's perceptions of the environment.

Therefore, the current thesis supports the latest trend of research undertaken in the JD-R Model in work settings and also in student settings. However, this thesis points out and justifies the suitability of considering self-efficacy instead of a general trait, that is, as a specific belief of a domain (i.e., academic tasks).

This thesis studied the predictive role that self-efficacy plays for the 'positive side of well-being'. Although most studies are not longitudinal designs, the different Structural Equation Models fits the data well when self-efficacy is taken as an antecedent of burnout and engagement.

Furthermore, Chapters 4-6 reinforced the relevance of positive feelings that enhance well-being. (Diener, Diener, & Diener, 1995; Diener, 2000; Fredricksson, 1998, 2000, 2001; Kahneman, Diener, & Schwarz, 2003). Thus, the speculated predictive role of self-efficacy was not only theoretically justified and supported in the present thesis, but was also empirically cross-validated by the studies carried out. Additionally, the role of self-efficacy was also tested using a quasi-experimental design (Chapter 6) which supports previous results concluded in previous chapters.

Therefore as a general conclusion, five studies using student samples from four countries and various designs have pointed out the predictive role that self-efficacy seems to play in the students' achievement process. This role was already pointed out (Pajares, 1996; Zimmerman, 2000), although it was never investigated in such detail.

Limitations and further research

Some limitations of the present series of studies should also be mentioned. Firstly, all studies mainly used self-reported data, which raises questions of a common method bias. This is a recurrent issue in research on work and organizational psychology. Self-reports are considered to be influenced by subjective factors (Spector, 1992), well-being (Coyne, 1994), and individual differences (Burke, Brief, & George, 1993). Furthermore, variables such as self-efficacy, burnout, and engagement involve the risk of being inflated because of the common method variance. However, Spector (2006) provides empirical evidence against the belief that the method itself produces systematic variance in observations that inflate the correlations to any significant degree. He argues that using self-reported measures is not actually responsible for design weaknesses. Additionally, some 'objectives' measures sustain the assumptions supported by the self-

reported data. Thus, for instance in Chapter 3, GPA was used for assessing academic performance. Furthermore in this study, the list of obstacles and facilitators was made based on an independent qualitative study, which might also have reduced method variance. Likewise in Chapters 2 and 6, the measurement in the case of past success, being self-reported, was not entirely subjective because it was based on 'objective' information (i.e., exams passed) (see Frese & Zapf, 1988). Although a longitudinal design is used in Chapter 6, it is further elaborated on the causal relationships given its longitudinal nature. A second limitation of the majority of the studies that constitute the current thesis is their cross-sectional nature. This limitation is also a recurrent one in research on psychology because of the limiting conclusions about causality, and this is expressly relevant in Chapter 5 as this study discusses the existence of spiral models among past success, efficacy, and burnout-engagement. In fact, longitudinal designs are needed for further research that favor the testing of causal relationships (Llorens, Salanova, Schaufeli, & Bakker, 2007).

A third limitation is the relatively small sample size employed to generalize the results obtained in this study, especially in relation to Chapter 6. Despite the limited sample size however, the power of the effects found was strong enough to be highly significant. Even more importantly, the estimated pooled effect sizes (Cohen's d) in each outcome variable were moderately strong with values ranging between .34 and .68. Therefore, the proportionately small size of the sample does not invalidate the effect obtained if we are cautious to generalize the results.

Finally, although samples from four different European countries (i.e., Belgium, The Netherlands, Spain, and Portugal) were used for testing the models proposed, more heterogeneity in the samples is needed in order to generalize the conclusions of the present thesis. Additionally,

all students who participated in the studies came from European countries, and this fact limits the generalization of the results. Therefore, more samples of students proceeding from different cross-cultural scenarios such as different continents (e.g. the United States, South America, Japan, China, etc.) would be needed for future studies in order to generalize the power of the whole model tested. Moreover, the design of longitudinal studies based on the whole model proposed (or parts of it) will be useful to either establish or demonstrate the causal structure suggested by this thesis.

Conclusions and Practical Implications

The main objective of the present thesis was to test a heuristic model by means of five different studies which partially tested the whole model. Thus, the role of each variable considered in the whole model was discussed study by study, chapter by chapter. The first conclusion from the results obtained supports the consideration of engagement and burnout as a consequence of efficacy and inefficacy, respectively (see Chapter 5). Then, the antecedent role of self-efficacy in students' well-being was demonstrated and cross-validated besides the relationship that students' self-efficacy had on their performance. Finally, those results showed a considerable cross-national invariance and a practical intervention, which was developed in order to increase self-efficacy among students (Chapter 6), and which showed their effect especially on students' engagement. The results from Chapter 2 revealed that students' self-efficacy enhances their performance. Students need to feel self-efficacious in order to engage in their student tasks. Consequently, universities should invest resources that enhance students' self-efficacy. Additionally, as Chapter 6 concludes, the promotion of healthy psychological states using counseling programs that relate to the control of anxiety were seen

to be a useful strategy to enhance self-efficacy among students. In addition, counseling activities, such as workshops and interventions that promote healthy psychological states in universities, could be an effective way to enhance well-being and performance among students. Therefore, more university counseling programs should be developed to improve students' psychological states and, thereby, to enhance their positive states of mind.

In short, the main conclusion of this thesis is the power that the 'positive' way described has in the relationship of environmental learning characteristics, personal students' characteristics, and students' performance on the one hand. That is, the importance of facilitators, self-efficacy, and engagement compared to obstacles, inefficacy and burnout. And the predictive role that self-efficacy has on the previously described process on the other hand. That is, the predictive role that self-efficacy plays in students' engagement and performance.

Final Note

Six empirical studies have been presented, and data from four European countries have been compared. Cross-sectional, longitudinal, and quasi-experimental designs were developed and, study by study, the relevance of students' self-efficacy was demonstrated. Several theoretical and practical implications have been provided in order to understand the complex interrelationships among self-efficacy, well-being and performance in students over time. Thus, we know what can be done, we know what 'key' must be turned and now it is time for 'action' so that lecturers deal with this challenge and achieve outputs with their students. If we want engaged and brilliant students, we first need them to feel self-efficacious. Self-efficacy leads to more engagement and, subsequently, to more learning and better achievement. Accordingly, the more self-efficacious, the more engaged, and especially the more they learn and the

better they perform, the higher their self-efficacious in the future. But, what can a lecturer do to enhance students' self-efficacy? This thesis showed that counseling activities were useful, and that other strategies can also be carried out in the class. For instance, helping students to maintain relatively high but accurate self-efficacy beliefs by means of accurate feedback (rather than saying *nice paper* or *good job*, providing specific feedback on the aspects of the paper that he or she thought were good), providing students with challenging academic tasks that most students can achieve with effort, or fostering the belief that competence or ability is a changeable, controllable aspect of development (Linnenbrink, & Pintrich, 2003). These activities surely will promote students' self-efficacy and consequently, increase well-being and enhance their performance.

Resumen

(Summary in Spanish)

El objetivo general de esta tesis ha sido poner a prueba un modelo 'heurístico' que sirva para explicar las relaciones existentes entre: las creencias de autoeficacia de los estudiantes, los obstáculos-facilitadores que los éstos perciben, sus niveles de burnout-engagement relacionados con sus estudios y su rendimiento académico. Además, también se ha puesto a prueba la eficacia de una intervención diseñada expresamente para incrementar los niveles de autoeficacia de los estudiantes universitarios. Para llevar a cabo este objetivo el modelo de descrito en la figura 7.1 se ha probado parcialmente mediante 4 estudios transversales y un estudio cuasi-experimental. De este modo, los resultados descritos en esta tesis permiten articular y cuantificar la relación existente entre las variables anteriormente descritas (autoeficacia, obstáculos-facilitadores, burnout-engagement y rendimiento).

Principales resultados obtenidos

Los resultados obtenidos muestran la existencia de una relación significativa entre los obstáculos y facilitadores percibidos por los estudiantes y su rendimiento académico. Además, el efecto que los facilitadores tienen en el rendimiento de los estudiantes ha mostrado estar mediado por sus niveles de engagement (ver Figura 3.2). De este modo, aquellos estudiantes que perciben menos obstáculos y especialmente más facilitadores en sus estudios, se muestran más vigorosos y dedicados en sus tareas y esto se traduce en un mayor rendimiento académico futuro. Estos resultados descritos en el Capítulo 3 apoyan estudios previos realizados en ámbitos laborales sobre el efecto que la percepción de facilitadores tiene en el aumento del engagement (Salanova, Agut y Peiró, 2005; Schaufeli y Bakker, 2004b). Los análisis estructurales realizados en el Capítulo 3 han puesto de manifiesto la relación existente entre el vigor y dedicación de los estudiantes (engagement) y su rendimiento futuro. No obstante, no se encontraron relaciones significativas entre burnout y

rendimiento académico. Este resultado corresponde con resultados obtenidos en estudios realizados por Garden (1991); Rafferty, Lemkau, Purdy y Rudisill (1986) quienes tampoco encontraron relaciones significativas entre burnout y rendimiento.

Por otro lado, los resultados obtenidos en el Capítulo 2 han confirmado el rol antecedente que el rendimiento pasado tiene en el bienestar de los estudiantes. Además, la relación entre rendimiento y engagement fue mayor que la mostrada entre rendimiento y burnout. Del mismo modo, el Capítulo 5 de la presente tesis añade evidencia a la relación entre el rendimiento pasado y engagement (figura 5.2). Estos resultados también mostraron una relación más ‘potente’ entre el rendimiento pasado de los estudiantes y sus niveles de engagement comparada con la relación entre rendimiento pasado y burnout.

Los resultados de los Capítulos 2 y 5 confirman, además de la relación entre el rendimiento pasado y el bienestar de los estudiantes, la relevancia que los éxitos pasados (experiencias de éxito pasado) tienen en el favorecimiento del ‘engagement’ de los estudiantes. Esto coincide con modelos teóricos llevados a cabo en el ámbito de la psicología organizacional positiva (Fredrickson, 1998; Seligman, & Csikszentmihaly, 2000), los cuales ponen de manifiesto el poder predictivo de las emociones y estados de ánimo ‘positivos’ (en comparación con los negativos) en la promoción del bienestar. Esta relación positiva entre el engagement y su rendimiento también coincide con la teoría ‘*Broaden-and-Build*’ (Fredrickson, 2001; Fredrickson, & Losada, 2005) la cual señala que la experiencia de emociones y experiencias positivas en el pasado ‘amplia y genera’ recursos personales que terminan por mejorar el bienestar y rendimiento.

El Poder predictivo de la Autoeficacia

Estudios previos han sugerido que la autoeficacia del estudiante es un claro antecedente de la motivación y el rendimiento futuro (Bores-Rangel, Church, Szendre, & Reeves, 1990; Elias, & Loomis, 2004; Multon, Brown, & Lent, 1991; Pintrich, & Schunk, 1995; Zimmerman, 2000). En la presente tesis, se ha tenido en cuenta la naturaleza motivacional del burnout y especialmente, del engagement de los estudiantes (Maslach, 2003; Schaufeli, & Bakker, 2004a), para considerar la autoeficacia como antecedente de éstos. Además, esta consideración es congruente con la Teoría Social Cognitiva, la cual señala que las creencias de eficacia que los seres humanos tienen acerca de ellos mismos son elementos clave para el control y la 'agencia'; considerando a los individuos tanto productos como productores de sus entornos.

A pesar de la controversia que suscita el orden en la relación causal entre autoeficacia, bienestar psicológico y rendimiento; desde la Teoría Social Cognitiva se ha considerado que estas variables se relacionan de forma recíproca. Por lo tanto, en la presente tesis, las relaciones entre variables se han evaluado desde una perspectiva fundamentada en la 'reciprocidad e interacción' de las variables que forman el modelo heurístico puesto a prueba (Figura 7.1).

Diversos resultados obtenidos en los estudios descritos en esta tesis ofrecen evidencia empírica a cerca de las relaciones dinámicas entre el rendimiento pasado de los estudiantes, su autoeficacia, y sus niveles de burnout-engagement.

Existen pruebas considerables en cuanto a los efectos positivos de la autoeficacia en el bienestar en ámbitos laborales y académicos (Bandura, 1999, 2001). Por ejemplo, la investigación en la esfera laboral ha mostrado que los niveles altos de creencias de eficacia tienen un impacto positivo en

el bienestar de los empleados (Grau, Salanova, y Peiró, 2001) e implicación en el trabajo (Salanova, Llorens, Cifre, Martínez, y Schaufeli, 2003).

Intervención en la Autoeficacia

Mediante un diseño cuasi-experimental, el Capítulo 6 describe los efectos que una intervención diseñada para aumentar las creencias de eficacia, el bienestar psicológico y el rendimiento de los estudiantes. Este estudio fue llevado a cabo teniendo en cuenta las relaciones entre variables descritas por el modelo heurístico descrito previamente.

La intervención consistió en 4 sesiones basadas en una terapia cognitiva centrada en el tratamiento de la ansiedad (Barlow, Rapee, & Brown, 1992; Blowers, Cobb, & Mathews, 1987). Considerando que la mejora de los niveles de ansiedad (como estado psicológico) es una fuente de autoeficacia (Bandura, 1997), la hipótesis de partida que se pone a prueba es que la intervención tendrá un efecto en la autoeficacia mostrada por los estudiantes. El diseño utilizado para probar la eficacia de la intervención empleó, además de un grupo de estudiantes que asistieron a una intervención, 2 grupos (control) equivalentes que no fueron 'intervenidos'. Los resultados mostraron que aquellos estudiantes intervenidos mejoraron significativamente sus niveles de autoeficacia, engagement y rendimiento académico probando así la eficacia que la intervención diseñada tuvo en los estudiantes que en ella participaron. Estos resultados apoyan estudios transversales llevados a cabo bajo los supuestos del modelo Demandas-Recursos (JD-R; Demerouti, et al., 2001; Schaufeli, & Bakker, 2004a).

Colectivamente, los resultados de los Capítulos 4-6 evidencian empíricamente las relaciones existentes entre el rendimiento pasado, las creencias de eficacia y el bienestar (especialmente en su vertiente positiva; engagement). Además, estos resultados, apoyan la utilidad de

intervenciones diseñadas para mejorar y optimizar los estados psicológicos a la hora de potenciar y maximizar el rendimiento académico.

Seis estudios empíricos y utilizando muestras pertenecientes a estudiantes de 4 países Europeos distintos han puesto de manifiesto la relevancia y el poder predictivo que la autoeficacia tiene en el proceso de aprendizaje y logra académico de los estudiantes. Ahora es el momento de poner en práctica las implicaciones teóricas que de esta tesis se han desprendido con el objetivo de mejorar los niveles de bienestar y desempeño de los estudiantes universitarios.

References

- Bakker, A. B., Demerouti, E., Taris, T., Schaufeli, W. B., & Schreurs, P. (2003). A multigroup analysis of the job demands-resources model in four home-care organizations. *International Journal of Stress Management, 10*, 16–38.
- Bakker, A. B., Demerouti, E., & Verbeke, W. (2004). Using the job demands-resources model to predict burnout and performance. *Human Resource Management, 43*, 83–104.
- Bandura, A. (1986). *Social foundations of thought and action*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (1999). Social cognitive theory of personality. In L. Pervin O. John (eds), *Handbook of Personality* 2nd edition. Guilford. New York, 154–196.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology, 52*, 1-26.
- Bandura, A., & Jourden, F. J. (1991). Self-regulatory mechanisms governing the impact of social comparison on complex decision-making. *Journal of Personality and Social Psychology, 60*, 941–951.
- Barlow, D. H., Rapee, R. M. & Brown, T. A. (1992). Behavioral treatment of generalized anxiety disorder. *Behavior Therapy, 23*, 551-570.
- Blowers, C., Cobb, J. & Mathews, A. (1987). Generalized anxiety: A controlled treatment study. *Behaviour Research and Therapy, 25*, 493-502.

- Bores-Rangel, E., Church, T., Szendre, D., & Reeves, C. (1990). Self-efficacy in relation to occupational consideration and academic performance in high school equivalency students. *Journal of Counseling Psychology, 37*, 407-418.
- Brenninkmeijer, V & Van Yperen, N. (2003). How to conduct research on burnout: advantages and disadvantages of a unidimensional approach to burnout. *Occupational and Environmental Medicine, 60*, 16-21.
- Burke, M. J., Brief, A. P., & George, J. M. (1993). The role of negative affectivity in understanding relations between self-reports of stressors and strains: A comment on the applied psychology literature. *Journal of Applied Psychology, 78*, 402-412.
- Cordes, C. L. & Dougherty, T. W. (1993). A review and integration of research on job burnout. *Academy of Management Review, 18*, 621-656.
- Coyne, J. C. (1994). Self-reported distress: Analog or ersatz depression. *Psychological Bulletin, 116*, 29-45.
- Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands: resources model of burnout. *Journal of Applied Psychology, 86*, 499-512.
- Diener, E., Diener, M., & Diener, C. (1995). Factors predicting the subjective well-being of nations. *Journal of Personality and Social Psychology, 69*, 851-864.
- Elias, S. M., & Loomis, R. J. (2004). Utilizing need for cognition and perceived self-efficacy to predict academic performance. *Journal of Applied Social Psychology, 34*, 1687-1702.

- Eriksen, H. R., Olf, M., and Ursin, H. (2000). Coping with subjective health problems in organizations. In Dewe, P., Leiter, M. and Cox, T. (Eds.), *Coping, health and organizations* (pp. 34-51). Taylor and Francis: New York.
- Feltz, D. L. (1982). Path analysis of the causal elements in Bandura's theory of self-efficacy and an anxiety-based model of avoidance behavior. *Journal of Personality and Social Psychology*, *42*, 764-781.
- Fredrickson, B. L. (1998). What good are Positive Emotions? *Review of General Psychology*, *2*, 300-319.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*, 218-226.
- Fredrickson, B. L. (2000, March 7). Cultivating positive emotions to optimize health and well-being. *Prevention and Treatment*, *3*, Article 0001a. Retrieved October 25, 2007 from <http://journals.apa.org/prevention/volume3/pre0030001a.html>.
- Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*, 218-226.
- Fredrickson, B. L., & Losada, M. F. (2005). Positive Affect and the Complex Dynamics of Human Flourishing. *American Psychologist*, *60*(7), 678-686.
- Frese, M., & Zapf, D. (1988). Methodological issues in the study of work stress: Objective vs subjective measurement of work stress and the question of longitudinal design studies. In: Cooper, C. L. & Payne, R.

- (Eds). *Causes, Coping, and Consequences of Stress at Work*. John Wiley, West Sussex, England, 375-409.
- Garden, A. M. (1991). Relationship between burnout and performance. *Psychological Reports*, 68(3), 963-77.
- Grau, R., Salanova M., & Peiró J. M. (2001). Moderating effects of self-efficacy on occupational stress, *Psychology in Spain* 5, 63-74.
- Green, D. E., Walkey, F. H., & Taylor, A. J. W. (1991). The three factor structure of the Maslach Burnout Inventory. *Journal of Social Behavior and Personality*, 6, 453-472.
- Hackman, J. R., & Oldman, G. R. (1980). *Work Redesign*, Addison-Wesley, Reading MA.
- Hakanen, J., Bakker, A. B., & Schaufeli, W. B. (2006). Burnout and work engagement among teachers. *Journal of School Psychology*, 43, 495-513.
- Halbesleben, J. R. B., & Buckley, R. M. (2004). Burnout in organizational life. *Journal of Management*, 30, 859-879.
- Hobfoll, S. E. (1989). Conservation of resources: A new attempt at conceptualizing stress. *American Psychologist*, 44(3), 513-524.
- Houkes, I. (2002). *Work and Individual Determinants of Intrinsic Work Motivation, Emotional Exhaustion and Turnover Intention*. Doctoral thesis. Maastricht University. Maastricht, The Netherlands: Datawyse.
- Judge, T. A., Thoresen, C. J., & Pucik, V. (1996, August). *Managerial coping with organizational change: A dispositional perspective*. Paper

presented at the Academy of Management Annual Meeting, Cincinnati, OH.

- Kahneman, D., Diener, E. & Schwarz, N. (Eds.). (2003). *Well-being: The foundations of hedonic psychology*. New York: Russell Sage Foundation.
- Karasek, R. A. (1979). Job demands, job decision latitude, and mental strain: implications for job design. *Administrative Science Quarterly*, 24, 285-308.
- Kohn, M. L., & Schooler, C. (1982). Job conditions and personality: A longitudinal assessment of their reciprocal effects. *American Journal of Sociology*, 87, 1257-1286.
- Lazaro, L., Shinn, M., & Robinson, P. E. (1985). Burnout, performance and job withdrawal behavior. *Journal of Health and Human Resources Administration*, 7, 213-234.
- Lazarus, R. S. & Folkman, S. (1987). Transactional theory and research on emotions and coping. *European Journal of Personality* 1(3), 141-169
- Lee, R. T. & Ashforth, B. E. (1996). A meta-analytic examination of the correlates of the three dimensions of job burnout. *Journal of Applied Psychology*, 81, 123-133.
- Lindsley, D. H., Brass, D. J., & Thomas, J. B. 1995. Efficacy-performance spirals: A multilevel perspective. *Academy of Management Review*, 20, 645-678.
- Linnenbrink, E. A., & Pintrich, P. R. (2003). The role of Self-efficacy beliefs in Student Engagement and Learning in the classroom. *Reading & Writing Quarterly*, 19, 1197137.

- Llorens, S., Salanova, M., Schaufeli, W. B. & Bakker, A. (2007). Does a positive gain spiral of resources, efficacy beliefs and engagement exist? *Computers in Human Behavior*, *23*, 825-841.
- Locke, E. A., Frederick, E., Lee, C., & Bobko, P. (1984). Effect of self-efficacy, goals and task strategies on task performance. *Journal of Applied Psychology*, *69*, 241-251.
- Maslach, C. (2003). Job Burnout: New Directions in Research and Intervention. *Current Directions in Psychological Science*, *12*(5), 189-192.
- Maslach, C., & Leiter, M. P. (1997). *The truth about burnout*. San Francisco, CA: Jossey Bass.
- Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job Burnout. *Annual Review of Psychology*, *52*, 397-422.
- Multon, R., Brown, S., & Lent, R. (1991). Relation of self efficacy beliefs to academic outcomes: A meta analytic investigation. *Journal of Counseling Psychology*, *38*, 30-38.
- Pajares, F. (1996). Self-efficacy beliefs in academic settings. *Review of Educational Research*, *66*(4), 543-578.
- Pintrich, P. R., & Schunk, D.H. (1995). *Motivation in education: Theory, research, and Applications*. Englewood Cliffs, N.J.: Prentice-Hall.
- Rafferty, J. P., Lemkau, J. P., Purdy, R., & Rudisill, J. R. (1986). Validity of the Maslach Burnout Inventory for family practice physicians. *Journal of Clinical Psychology*, *42*, 488-492
- Roelofs, J., Verbraak, M., Keijsers, G. P, De Bruin, M. B., & Schmidt, A. J. (2005). Psychometric properties of a Dutch version of the Maslach

Burnout Inventory – General Survey (MBI-DV) in individuals with and without clinical burnout. *Stress and Health*, 21, 17-25.

Salanova, M., Agut, S., & Peiró, J.M. (2005). Linking Organizational Resources and Work Engagement to Employee Performance and Customer Loyalty: The Mediation of Service Climate. *Journal of Applied Psychology*, 90, 1217-1227.

Salanova, M., Llorens, S., Cifre, E., Martínez, I., & Schaufeli, W. B. (2003). Perceived collective efficacy, subjective well-being and task performance among electronic work groups: An experimental study. *Small Groups Research*, 34, 43-73.

Schaufeli, W. B. (2003). De Psychologie van Arbeid en Gezondheid [Occupational health psychology]. In W. Schaufeli, A. Bakker, J. de Jonge (Eds.), *De psychologie van arbeid en gezondheid* (pp.15-40). Houten: Bohn Stafleu Van Loghum.

Schaufeli, W. B., & Bakker, A. B. (2001). Schaufeli, W. B., & Bakker, A. B. (2001). Werk en welbevinden: Naar een positieve benadering in de 349 Arbeids-en Gezondheidspsychologie [Work and well-being: Towards a positive approach in Occupational Health Psychology]. *Gedrag & Organisatie*, 14, 229-253.

Schaufeli, W. B., & Bakker, A. B. (2004a). Job demands, job resources, and their relationship with burnout and engagement: a multi-sample study. *Journal of Organizational Behavior*, 25, 293-315.

Schaufeli, W. B., & Bakker, A. B. (2004b). Bevlogenheid: Een begrip gemeten [Work engagement: The measurement of a concept]. *Gedrag & Organisatie*, 17, 89-112.

- Schaufeli, W. B., & Enzmann, D. (1998). *The burnout companion to study and research: A critical analysis*. London: Taylor & Francis.
- Schaufeli, W. B., Martínez, I., Marqués-Pinto, A., Salanova, M., & Bakker, A. (2002a). Burnout and engagement in university students: A cross-national study. *Journal of Cross-Cultural Studies*, *33*, 464-481.
- Schaufeli, W. B., Salanova, M., González-Romá, V., & Bakker, A. (2002b). The measurement of burnout and engagement: A confirmatory factor analytic approach. *Journal of Happiness Studies*, *3*, 71-92.
- Schaufeli, W. B., & Taris, T. W. (2005). The conceptualization and measurement of burnout: Common ground and worlds apart. *Work & Stress*, *19*, 256-262.
- Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: an Introduction. *American Psychologist*, *55*(1), 5-14.
- Shirom, A. (2003). Job related burnout: A review. In J. C. Quick & L. E. Tetrick (Eds.), *Handbook of occupational health psychology* (pp. 245-264). Washington, DC: American Psychological Association.
- Spector, P. E. (1992). A consideration of the validity and meaning of self-report measures of job conditions. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 123-151). Chichester, England: Wiley.
- Spector, P. E. (2006). Method Variance in Organizational Research. *Organizational Research Methods*, *9*(2), 221-232.
- Tesluk, P. E., & Mathieu, J. E. (1999). Overcoming roadblocks to effectiveness: incorporating management of performance barriers into models of work group effectiveness. *Journal of Applied Psychology*, *84*(2), 200-202.

- Wood, R. E., & Bandura, A. (1989). Social cognitive theory of organizational management. *Academy of Management Review*, *14*, 361–384.
- Xanthopoulou, D. (2007). A Work Psychological Model that Works. Doctoral Thesis. Utrecht University.
- Xanthopoulou, D., Bakker, A. B., Demerouti, E. & Schaufeli, W. B. (2007). The role of personal resources in the Job Demands-Resources Model. *International Journal of Stress Management*, *14*, 121-141.
- Zimmerman, B. (2000). Self-efficacy: An Essential motive to Learn. *Contemporary Educational Psychology* *25*, 82–91.

Curriculum Vitae

Edgar Bresó Esteve was born on 28th November 1978 in Algemesi, Valencia, (Spain). In 2001, and still as an undergraduate student, he got a grant in order to collaborate in a research project about the Well-being Assessment and Promotion among University Students. Meanwhile, he finished his degree and began his career as a researcher with the support of professor Salanova, his mentor. In 2002, he went to Belgium in order to collect data and design his PhD. project. He graduated in Psychology in 2003 at Universitat Jaume I (Castellón, Spain) and after this he immediately began the writing of his PhD. He also joined the WoNT research team at Universitat Jaume I in Castellón. In 2004 he was granted a scholarship from the Spanish Ministry of Education in order to carry out his PhD; right then his lecturing activities began. Since 2006 he works as a lecturer in the department of Social Psychology at Universitat Jaume I in Castellón.

His gaining interest in the assessment and improvement of students' well-being and performance is described in his doctoral dissertation which has been finished as planned in January 2008 with the supervision of professor Marisa Salanova (Universitat Jaume I) and Wilmar B. Schaufeli (Utrecht University).

