FLOW AND ENGAGEMENT: DIFFERENT DEGREES OF THE SAME?

by

DISHA DEEPAK RUPAYANA

B.A., Pune University (2002)
M.A., Devi Ahilya VishwaVidhyalaya (2004)

A THESIS

submitted in partial fulfillment of the requirements for the degree

MASTER OF SCIENCE

Department of Psychology
College of Arts and Sciences

KANSAS STATE UNIVERSITY
Manhattan, Kansas

2008

Approved by:

Major Professor
Dr. Clive J.A. Fullagar

Abstract

The present study focused on empirically assessing the differences between the two flow models (FSS-II; Jackson & Eklund, 2002; WOLF, Bakker, 2005) and then their similarity or difference with the Schaufeli (2002) model of engagement. Using a 2nd order factor analysis it was found that FSS-II and WOLF measured different conceptualizations of flow while engagement as measured by the UWES did not differentiate from the flow experience. Implications and directions for future research were discussed.

Table of Contents

List of Figures

List of Tables

Acknowledgements

I take this opportunity to thank all the people who have been responsible for getting me through this process of doing and writing my thesis. First and foremost is my advisor, Dr. Clive Fullagar, for his support and tolerance of my learning curve. Dr. Ronald Downey, for his support and his belief in me even when I lacked it. Dr. Saucier for his encouragement and feedback.

My parents are instrumental in bringing me to this point and I thank my father, Deepak Rupayana and mother Dr. Yeshomati Rupayana, for their constant love, support, advice and all the nagging, it was necessary.

The data collection for this research would not have been possible without the help of Avinash Gautam, Gayathri Pidathala, John Miles, Pam Foster, Trishna Pradhan and Vishal Bahirwani. Thank you for helping me and making this process as smooth as possible.

This acknowledgement would not be complete without thanking my friends who have been there to listen, advice and support me through every step of the way. Thank you for being there for the intense discussions and the panicked phone calls. I couldn't have done it without you all.

Thank you.

CHAPTER 1 - Introduction

Job engagement and flow have been identified as important psychological constructs in understanding workers' interactions with their work. Over the last several years, an increasing body of research has identified engagement and flow as related to critical work outcomes such as performance (Harter, Schmidt & Hayes, 2002), lower stress (Salanova, Bakker & Llorens, 2006; Britt, Castro & Adler, 2005) and increased commitment toward work and the organization(Schaufeli & Bakker, 2004). Both flow and job engagement look at aspects related to a person's interactions with their work. While the construct of flow is defined as activity specific and the construct of engagement is defined at a more generalized level, both have been identified as similar concepts in the literature (Schaufeli & Salanova, 2007). To date, no studies were found looking at the similarities and differences between and among flow and job engagement. The primary purpose of this research was to assess whether the construct of job engagement can be empirically differentiated from the construct of flow. In addition to looking at the relationship between job engagement and flow, the second purpose of this research was to determine whether the two conceptually different models of flow are measuring similar constructs and which one, if either, is more closely linked to job engagement.

Background

Organizations today experience rapid changes that create trends and technologies where employees are expected to be proactive and show initiative, collaborate smoothly with others, take responsibility for their own development, and be committed to high quality performance (Schaufeli & Salanova, 2007). While an increasing number of people spend most of their waking time at work, they often perceive their work to be negative and something to be avoided. There are two major ways in which work and performance are viewed: stress and positive experiences. The first line originated with the study of stress and other negative aspects of work such as burnout (Maslach, Schaufeli & Leiter, 2001). This perspective argues that worker performance and quality of life are hindered by the negative aspects of their work (Harter, Schmidt & Keyes, 2003). A second line of research focuses on the benefits of positive experiences and perceptions in the workplace. This perspective argues that the presence of positive states and positive

appraisals of the worker and his/her relationship within the workplace accentuate worker performance and the quality of life (Harter, Schmidt & Keyes, 2003). Focusing on the negative aspects of work such as job burnout (Maslach, Schaufeli & Leiter, 2001) does not help people to adjust to their work, enjoy it, or give the organization many options for making workplaces more enjoyable. The increasing emphasis on positive psychology (Harter, Schmidt & Keyes, 2003) has provided a way for organizations and individuals to focus on what is good about their work and how it can be improved. These recent trends in psychology address the often ignored aspects of human functioning that deal with the positive aspects of human behavior.

Thus the focus on pathology, prevention and human malfunctioning that started with Freud and continued through most of the 20th century has began to shift to emphasizing the more positive aspects of human behavior and thought (Seligman, 1999). In a special issue of the American Psychologist Seligman and Csikszentmihalyi (2000) said that the purpose of positive psychology is to "… begin to catalyze a change in the focus of psychology from preoccupation only with repairing the worst things in life to also building positive qualities" (p. 5). Seligman & Csikszentmihalyi (2000) summarized the different levels of analysis for positive psychology as: the subjective level including well-being, contentment with the past, flow and happiness in the present, and hope and optimism in the future; the micro or individual level consists of positive traits such as capacity for love, courage, aesthetic sensibility, forgiveness, talent and wisdom; and the institutional or the macro level comprises characteristics such as positive civic virtues, responsibility, altruism, civility, and strong work ethic. These levels of positive psychology have been applied to the workplace in the form of positive organizational behaviors (Luthans, 2002) and positive organizational scholarship (Dutton, Glynn & Sprietzer, 2006).

Positive psychology in the workplace has been defined as the "study and application of positively oriented human resource strengths and psychological capacities that can be measured, developed and effectively managed for performance improvement in today's workplace." (Luthans 2002 p 175,). Luthans (2002) outlines three criterion in order for a positive organizational constructs to have scientific and practical utility. The constructs should be measurable, its focus should be on the state over trait and changeability of this state to effectively manage and optimize performance in the workplace (Luthans, 2002). The study of positive organizational behavior is focused on changing and/or maintaining positive work states that promote worker satisfaction as well as productivity.

An important work area is academic work. Being a college student can be conceptualized as a job (Cotton, Dollard & De Jonge, 2002). There are differences between the two in terms of economic factors such as wages, however past research has shown that students' work parallels work in many ways such as working in hierarchical structures, having to meet deadlines and having well defined job tasks (Cotton, Dollard & De Jonge, 2002; Spector, Chen and O'Connell, 2000). Therefore the tenets of Positive Organizational Behavior apply to students as well and students' positive work states need to be measured and investigated because research has shown students have higher stress levels (Cotton et al., 2002) and have lower job satisfaction and higher levels of psychological distress than other "high stress" occupations such as correction officers, teachers and social workers (Winefield & Winefield, 2001).

One such positive psychological process that fulfills the positive organizational behavior criteria and has been found to positively affect employees' satisfaction (Britt, Castro & Adler, 2005) and productivity (Harter, Schmidt & Hays, 2002) as well as student satisfaction and successful completion of college (Shernoff & Hoogstra, 2001) is engagement. Student engagement has been extensively assessed and has become a way of assessing quality of education at universities across the nation and has been identified as a critical factor in student learning and academic performance (Hu & Kuh, 2002). Hughes & Pace (2003) found a relationship between engagement and GPA, student engagement has also been found to be linked to critical thinking and grades (Carani, Kuh & Klein, 2006). Higher levels of engagement have been found to predict motivation, commitment and collegiate performance (Shernoff & Hoogstra, 2001). Despite the importance of engagement in academics, research shows that student disengagement is quite common and more than 40% of students have been found to be unengaged by the time they are in high school (Marks,2001). Clearly there is a need for improving student engagement in academic endeavors and it has been asserted that maximizing student involvement in the classroom is the best way to maximize successful school completion (Christenson, Sinclair, Lahr & Godber, 2001) Therefore an effort to measure student engagement has been made by the National Survey of Student Engagement (NSSE).

In the NSSE, student engagement is represented by variables such as time spent studying, time spent in co-curricular activities, and an overall college involvement measure typified by the Chickering & Gamson's (1987) seven categories of effective educational practices which include student-faculty contact, cooperation among students, active learning, prompt feedback, time on

task, high expectations, and respect for diverse talents and ways of learning. NSSE's measure of student engagement is primarily a measure of effort made in academic tasks (Kuh, Kinzie, Cruce, Shoup ,& Gonyea, 2007).

NSSE criteria for student engagement therefore are two fold, the first criterion includes the amount of effort students put into their studies and other academic activities and the second criterion is based on institutional characteristics such as resources, curriculum organization and support services that help students put effort into their learning. In all, student effort is assumed to represent engagement (Kuh et al., 2007).

However this is often thought to be an oversimplification of the engagement process and does not account for the quality of engagement, for example, being present in class indicates effort, but quality of effort such as listening attentively and taking notes is not indicated by this measure (Marks, 2001). At the same time, effort exerted in academic activities has often been viewed as a consequence of engagement rather than engagement itself. Research has shown that engaged students put more effort into their work (Shernoff et al., 2002) as do engaged workers (Britt et al., 2005). Effort is also viewed as a form of behavioral engagement where worker engagement is seen through the effort on task and discretionary effort, making effort a consequence of engaged workers (Macy & Schneider, 2008). The NSSE, therefore, is measures an outcome of engagement rather than engagement itself. The outcomes of engagement have been found to vary with the context (Griffith, Parker ,& Neal, 2008), so effort may not be an outcome of an engaged student every single time, indicating that the NSSE may not be accurately measuring engagement by focusing on just effort.

At the same time, there are other conceptualizations of engagement that have successfully been used in the workplace and have been found to affect important outcomes such as satisfaction (Britt, Castro ,& Adler, 2005) and productivity (Harter, Schmidt ,& Hays, 2002). Another concept that is similar to engagement and is increasingly being linked with positive outcomes in the workplace is flow (Bakker, 2005). Both these concepts offer ways of studying student engagement and developing a model of student engagement which can then drive institutional practices to increase engagement and derive benefits from its outcomes such as student involvement, commitment, motivation and effort (Shernoff et al., 2003). This study focuses on building such a model of student engagement by comparing and assessing various

conceptualizations of flow and engagement and determining which of these is a better predictor of outcomes of engagement such as student effort.

Flow and engagement have been defined in similar ways and are often used interchangeably in the literature (Shernoff, Csikszentmihalyi, Schneider ,& Shernoff, 2003; Schaufeli & Salanova (2005). For example in the study by Shernoff et al. (2003), flow was found to be an antecedent of engagement in high school students. However Schaufeli & Salanova (2005) describe flow as a peak experience of engagement, indicating that engagement causes flow. Similarly Kahn (1990) has described engagement as an underlying factor of flow. More recently, flow has been thought to be a type of state engagement and autotelic personality is thought of as trait engagement (Macy & Schneider, 2008).This indicates that there is a certain amount of confusion about the meaning and overlap between the two concepts. There is a lack of empirical evidence as to whether both flow and engagement are measures of the same positive state constructs. The main aim of this study was to explore the differences and similarities between flow and engagement. A first step in this process is to analyze the literature on flow and engagement to determine conceptual overlap and independence.

Flow

The question of what causes people to repeatedly involve themselves in activities that have no external rewards led to the development of the concept of flow by Csikszentmihalyi (1975). Flow has been defined as " the holistic sensation that people feel when they act with total involvement with their activity" (Csikszentmihalyi, 1975, p. 9) and as a phenomenon of intrinsically motivated and autotelic activity, which is rewarding in itself apart from its end product or any extrinsic reward (Nakamura & Csikszentmihalyi, 2002).

Flow is a psychological state and the two major conceptualizations of flow measure flow in different ways. Based on one approach (Csikszentmihalyi, 1988; Jackson & Eklund, 2002), nine dimensions of flow were identified and measured: challenge skill balance, action awareness merging, lack of self consciousness, complete concentration, feeling of control, time distortion, goal clarity, feedback, and autotelic experience. The other approach (Bakker. 2005) focuses on flow in work where flow has three dimensions: intrinsic motivation, enjoyment, and absorption.

Looking at the Csikszentmihalyi (1975) approach to flow, flow is made up of nine dimensions described above. First is the challenge-skill balance, which is a prerequisite for the

experience of flow, interest in the task grows as a result of matching skills to the increasing complexity of the task which leads to further involvement in the activity and results in flow (Delle Fave & Massimini, 2005). According to Csikszentmihalyi & Csikszentmihalyi, 1988) "the universal precondition for flow is that a person should perceive that there is something for him or her to do, and that she is capable of doing it" (p. 30). When one enters flow interest developed by the challenge-skill balance focuses attention upon the specific aspects of the task leading to concentration on the task to the exclusion of outside stimuli and action awareness merge to allow further concentration upon the task (Nakamura & Csikszentmihalyi, 2002). The second dimension of action awareness merging is hence a total absorption in the task. The third dimension of concentration facilitates action awareness merging and concentration is defined here as being totally focused in the present on a specific task being performed.

Fourth is a loss of self-consciousness, there are no extraneous thoughts, and there is no distractibility and no effort is required to keep one's mind on the task. Loss of self consciousness occurs as the self recedes to allow complete concentration upon the challenging task (Nakamura & Csikszentmihalyi, 2002). One is no longer thinking about the evaluation of one's work and is completely absorbed in the activity. Since attention is so fully focused on the task and there is a lack of self consciousness, time becomes distorted, it either shortens or lengthens (Jackson & Eklund, 2002). Flow is characterized by complete absorption and concentration in the task, to the exclusion of all outside stimuli, therefore it is not surprising that one forgets time as well and it seems to pass faster or slower when in flow. This time distortion is the fifth dimension of flow.

Sixth, a sense of control develops, that one can deal with the situation because one has the skills to meet the challenges of the situation (Nakamura & Csikszentmihalyi, 2002). There is a very delicate balance with the sense of control, since a person has to experience a challenge to experience flow, the possibility of control keeps the flow condition going (Jackson & Eklund, 2002).The seventh dimension of goal clarity helps the experience of flow as the person can structure the task better and have a better understanding of their skills and the corresponding challenges of the task (Csikszentmihalyi, 1988). Similarly, the eighth dimension of feedback also helps the flow experience, with appropriate feedback the person can better understand the task and optimize their responses to its challenges (Quinn, 2005). Lastly, flow is an autotelic experience, autotelic is word coined by Csikszentmihalyi (1988), *auto* is Greek for self and *telos* is Greek for goals, indicating that flow is an intrinsically motivating activity, so that the goal is

an excuse for the process (Nakamura & Csikszentmihalyi, 2002). These dimensions together define the flow experience and once an individual has experienced flow, they are more likely to experience it again, with flow inducing activities being those activities that provide a system of graded challenges which correspond to a person's growing skills (Nakamura & Csikszentmihalyi, 2002).

Therefore flow theory posits that flow consists of these nine dimensions however not all nine dimensions are assessed by all researchers. Quinn (2005) argues that flow is the merging of action and awareness and the other dimensions form the antecedents (i.e., goal clarity, concentration and feedback) and consequences (i.e., control and autotelic) of the flow experience. Chen, Wigand ,& Nilan (1999) assert a different set of dimensions as antecedents (i.e. clear goals, feedback and challenge-skill balance), the flow experience (i.e., action awareness merging, sense of control and concentration) and consequences of time distortion, loss of self consciousness and autotelic nature.

Yet another more specific work-related conceptualization of flow defines flow as "… a short term peak experience at work that is characterized by work absorption, enjoyment and intrinsic work motivation" (Bakker, 2005, p 27). It derives from the Csikszentmihalyi (1975 and 2006) work on flow which defines flow as a phenomenon of intrinsically motivated and autotelic activity, which is rewarding in itself apart from its end product or any extrinsic reward (Nakamura & Csikszentmihalyi, 2002). However, Bakker (2005) asserts that most definitions of flow have as their basis the following three dimensions that lie at the core of the flow experience. First there is absorption which is a total state of concentration where people are completely immersed in their work and time becomes distorted and there is lack of self consciousness (Bakker, 2005). Second is enjoyment which refers to the employees' enjoyment of their work and arises from the cognitive and affective evaluations of the flow experience (Bakker, 2005). Lastly intrinsic work motivation is the need to perform a work related activity for its own sake rather than for some external outcome (Bakker, 2005). This conceptualization of flow is rather limited in its nature in that it ignores important dimensions of flow, such as the challenge-skill balance which forms the core of the flow experience (Csikszentmihalyi, 1988). At the same time researchers have asserted that challenge skill balance is an important precondition of flow rather than a part of it (Quinn, 2005; Chen et al., 1999, Bakker, 2005). Thus the WOLF might be a better, more core measure of flow that takes out all extraneous antecedents and consequences of

flow measured by the FSS-II such as challenge skill balance and action awareness merging. Therefore, one of the purposes of the study was to explore which of these two conceptualizations provide a better and more stable measure of flow.

Hypothesis 1: WOLF and FSS-II measure the same latent construct of flow.

Measuring Flow.

The concept of flow emerged out of qualitative interviews investigating the experience of activities that people become completely involved in doing (Csikszentmihalyi, 1975). Currently flow is measured using a variety of methods, both quantitative and qualitative in nature. Qualitative measures of flow include interviews and the Experience Sampling Methodology (ESM) (Csikszentmihalyi & Graef, 1980; Csikszentmihalyi & Kubey, 1981)

ESM requires participants to carry some sort of a reminder system such as a pager, which beeps at random intervals over the period of the day and when the pager beeps, they fill out a set of questions about their experience of flow at that point of time. This is a popular methodology for measuring flow; however the problem with this is that it interrupts the very experience it is supposed to measure.

Flow has also been quantitatively measured using surveys.. The Flow State Scale II (FSS-II) (Jackson & Eklund, 2002) and the WOrk reLated Flow scale (WOLF), (Bakker, 2005). The FSS II is based upon the Csikszentmihalyi (1988) nine dimensional approach to flow and consists of 36 items, with four items for each of the nine dimensions of flow. The scale shows high reliability and internal consistency (Jackson & Eklund, 2002).

The WOLF is a work based measure of flow, measuring Bakker (2005) conceptualization of the flow experience with the three dimensions of absorption, work enjoyment and intrinsic work motivation. While there has been limited work upon this inventory, Bakker (2005) found a high validity and reliability. In the current research, FSS II and WOLF were used to study the differences between the two approaches to studying flow.

Using both FSS –II and WOLF as well as qualitative measures such as interviews, flow has been found to be related to a variety of criterion measures and the factors facilitating the flow experience have also been investigated. These are discussed below.

8

Antecedents and consequences of flow.

One of the core components of flow is the challenge-skill balance; early research however, did not support this assertion (Massimini & Carli, 1988). Later research, based upon the combination of challenges and skills, indicated that there are three regions of experience. Flow channel, in which challenges and skills match, a boredom region where there is less challenge and a high skill is required, and an anxiety region where the skills are too low for the challenges set. Flow occurs only when both challenges and skill are above average for that individual (see Figure 1) (Massimini & Carli, 1988).

Figure 1-1: Challenge Skill Balance, from Jackson & Eklund (2002)
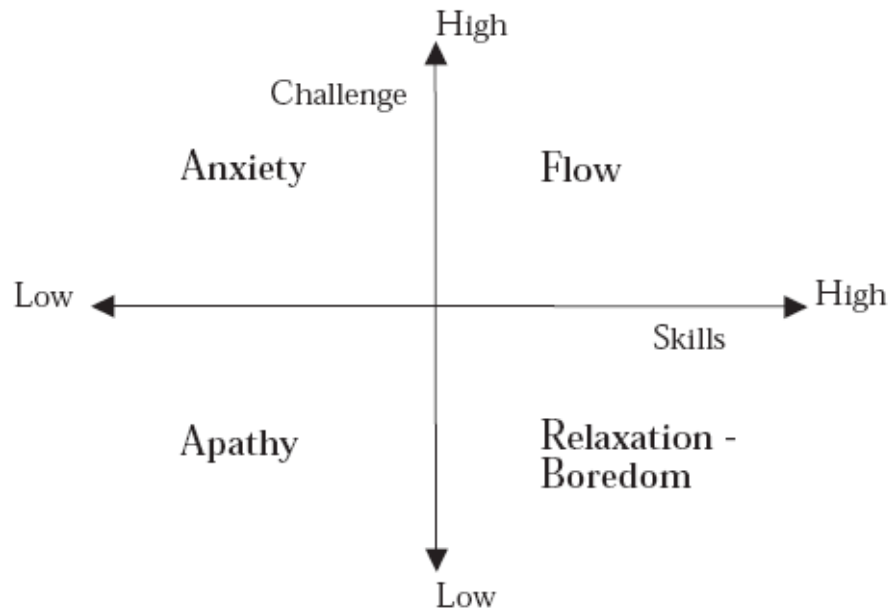
Flow has been found to be related to task orientation (Jackson & Roberts, 1992), perceived ability (Jackson & Eklund, 2002), and motivation (Kowal & Fortier, 1999). However, a majority of these results have been obtained in sport settings. In spite of the findings that flow occurs more frequently in work settings (LeFevre, 1988), flow in the workplace is still an emerging area with limited research. Allison and Duncan (1988) found that professional women experience intense flow in work settings rather than home situations and blue collar women experience more flow in home situations and attribute this to repetitiveness and lack of challenge in their work. Evidence is emerging that flow is also facilitated by high achievement motivation (Eisenberger, Jones, Stinglhamber, Shanock ,& Randall, 2005). Job resources such as autonomy, social support, coaching and feedback are important antecedents of flow for music students and

their teachers (Bakker, 2005). The core job characteristics of the Hackman & Oldham (1980) job characteristics model i.e. autonomy, task identity, skill variety, job feedback, and task significance were found to form a motivational potential score which affects the experience of flow at work (Demerouti, 2006). Autonomy, perceived control and relevance of learning task have been found to affect the flow experience of high school students (Shernoff et al., 2003). Thus flow has been associated with a wide variety of facilitators in the work settings as well as in leisure settings and therefore should also apply to academic work, a connection that is less well explored.

Consequences of Flow.

A major consequence of the flow experience is enjoyment and pleasurable absorption. Flow theory is also one of the most widely cited explanations for pleasurable absorption in leisure and sport activities and has been linked with several important outcomes in the workplace such as an increase in task interest (Csikzsentmihalyi, Rathunde ,& Whalen, 1993), positive mood (Eisenberger et al., 2005), in-role and extra-role performance (Demerouti, 2006), organizational spontaneity mediated by positive mood (Eisenberger et al., 2005) and physical and psychological wellbeing (Steele, 2006). Flow has also been found to affect work enjoyment and feelings of professional efficacy in journalists (Burke & Mattheisen, 2004).

Thus flow is related to several important outcomes in the workplace such as performance and organizational citizenship behaviors and is facilitated by job resources and characteristics which make flow a very actionable experience which can be modified in the workplace by changing job characteristics and nature of the resources available to the employee. Therefore flow in academic work should also lead to these positive outcomes and positively affect student effort due to pleasurable absorption in studies and reduce students' stress and increase well being. Research in this area is limited, however it has been found that flow is predicted by academic work characteristics and leads to better psychological and physical well being in students (Steele, 2006). Higher order thinking in the classroom has been found to make learning an enjoyable experience (Tagg, 2003), and flow is thought to be an enjoyable experience. This could be attributed to higher flow due to a balance of challenge and skills. Thus flow is an important positive experience which can help drive institutional practices to increase student involvement. Similar positive outcomes have been found for student engagement and these along with the similarities between engagement and flow are discussed next.

Engagement

Work engagement has been studied in many forms over time and is often confounded with work involvement (Kanungo, 1981) and work commitment (Morrow, 1993). Work involvement is defined as being dedicated, enthusiastic and inspired by ones work (Kanungo, 1979). Work commitment is another variable that contains elements of engagement and is characterized by being engrossed and attached to one's work (Morrow, 1993). The terms engagement, involvement and commitment have been used interchangeably (Kanungo, 1979; Meyer & Allen, 1997), however research has indicated that they are different concepts and engagement goes beyond involvement and commitment (Halleberg & Schaufeli, 2006). While involvement is a cognitive and psychological identification with work (Kanungo, 1979) and commitment is an attitudinal and affective identification with work(Meyer & Allen, 1997), engagement is a health psychology concept and is found to have components of vigor and energy which go beyond the other two concepts (Halleberg & Schaufeli, 2006). It is defined as a persistent and pervasive affective-cognitive state not focused on any particular object, event, individual or behavior (Schaufeli, Salanova, Gonzalez ,& Bakker, 2002; Schaufeli & Salanova, 2007).

There are several different conceptualizations of engagement. Kahn (1990) was the first one to discuss work involvement and commitment in the form of cognitive, affective and physical engagement. In his ethnographic study of engagement Kahn (1990) defined involvement in work as personal engagement which is "… the harnessing of organizational members' selves to their work roles" (pg. 694). Personal engagement is characterized by emergence of one's true self which is expressed within one's role. "Self and role exist in some dynamic, negotiable relation in which the person drives personal energies into role behaviors and displays the self within the role through self expression"(Kahn, 1990 ;pg. 700). When people are engaged they tend to express themselves physically, cognitively and emotionally during role performances. For engagement to occur the situation has to involve meaningfulness, safety and availability. Meaningfulness is a function of work elements such as the nature of the task, roles played by the person etc. Safety is created by the social systems such as group and inter-group dynamics and interpersonal relationships. For safety these systems need to have predictability,

consistency and should be non-threatening. The last criterion of engagement is availability. Availability is the sense of possessing emotional, physical and psychological resources necessary for investing in the work.   In an empirical study based on Kahn (1990) work, May, Gibson ,& Harter (2004) found that meaningfulness, safety, and availability enhance engagement in the workplace and concluded that engagement has three components, physical, emotional and cognitive. However Kahn's work tells us little about how engagement can be fostered in the workplace and what the outcomes of engagement for the employee and the organization are.

A similar view of engagement at work resulted from the study of burnout. Maslach & Leiter (1997) assessed that burnout is the erosion of engagement. Burnout has characteristics of exhaustion, cynicism and lack of professional efficacy and is measured by the Maslach Burnout Inventory (MBI) (Maslach, Jackson, & Leiter, 1996) as high scores on exhaustion, cynicism and low scores on efficacy. If engagement is the lack of burnout then engagement is characterized by energy, involvement and efficacy. However, these three factors did not emerge when engagement was studied as the other end of the burnout continuum (Schaufeli et al., 2002).

This resulted in a modification of the Maslach et al. (2001) view of engagement by Schaufeli et al.,2002) who defined engagement as a positive, fulfilling, work related state of mind that is characterized by vigor, dedication and absorption. According to Schaufeli, et al., vigor is similar to the Maslach & Leiter (1997) concept of energy and dedication is similar to the concept of involvement though dedication is a broader concept qualitatively (more intense involvement) and quantitatively (contains elements of cognitive involvement that were previously missing). Absorption, however, is unique to engagement and differentiates it from other concepts in the area.

Thus engagement is usually defined as a persistent and pervasive affective cognitive state not focused on any particular object, event, individual or behavior (Schaufeli, et al., 2002). Of the three dimensions, vigor at work is characterized by high levels of energy and mental resilience, the willingness to invest effort in one's work and persistence even in the face of difficulties. Dedication is characterized by a sense of significance, enthusiasm, inspiration, pride and challenge in one's work. Absorption is characterized by being fully concentrated and deeply engrossed in one's work, whereby time passes quickly and one has difficulties detaching oneself from work (Schaufeli, et al., 2002). This is the most commonly used definition and

conceptualization of engagement and forms the basis for the most commonly used measure of engagement and was utilized in this research.

Measuring Engagement.

Engagement was first studied ethnographically by Kahn (1990), he studied camp counselors and employees in an architectural firm and assessed when these employees felt involvement of their personal selves in their work and resulting outcomes from this personal involvement. He used the qualitative methods of observation, document analysis, reflection and in depth interviewing (Kahn, 1990). Kahn (1990) described three antecedents of engagement the first of which is meaningfulness in one's work, a "feeling that one is receiving a return on investment" (Kahn, 1990, p. 703-704). Also to experience engagement safety has to be present, one has to feel safe to express themselves without fear of negative consequences and lastly for engagement to occur employees must feel they have personal resources available to engage including physical energy and psychological energy. Kahn (1990), however did provide any operationalizations of engagement nor did he posit any quantitative or empirical method of assessing engagement. Based on Kahn (1990) work, engagement has been interpreted as containing physical, cognitive and emotional components. This has formed the base of many other models of engagement (e.g., May, Gibson, & Harter, 2004; Schaufeli et al., 2002)

Since engagement has been conceptualized in different ways using in part or whole of Kahn's (1990) work, there are also a number of measures of engagement. These measures can be divided into three categories. The first category consists of the measures that focus on the outcomes of engagement such as satisfaction, involvement and commitment (Harter et al., 2002, Britt, Adler, & Bartone, 2001). Amongst this category is the NSSE which was discussed earlier. The NSSE is a measure of global college experience using the Chickering & Gamson's (1987) seven categories of effective educational practices including student-faculty contact, cooperation among students, active learning, prompt feedback, time on task, high expectations, and respect for diverse talents and ways of learning. These categories influence student learning and the quality of their educational experiences (Kuh et al., 2004).

The NSSE measures student engagement based upon two criteria, one is the amount of effort students put into their studies and other academic activities and the second criteria is institutional characteristics such as resources, curriculum organization and support services. In the NSSE Engagement is measured by 21 items, including aspects of student faculty interaction,

class activities, peer interaction, academic challenge and other educational experiences. Other questions on the NSSE measure institutional characteristics such as amount of challenge in exams, co-curricular activities, class characteristics such as homework, higher thinking skills and feedback which can be conceptualized as antecedents of engagement (Laird et al., 2005). As mentioned earlier, effort is an outcome of engagement and was viewed as the same in this research. Therefore parts of the NSSE measuring student effort were used in this research as an outcome of engagement to help establish the predictive validity of flow and engagement for positive outcomes in academic work. Also parts of the NSSE measuring frequency of activities requiring use of higher order thinking skills were used as antecedents of the engagement process.

Another category of measures of engagement emerged out of the research on burnout and is the most extensively researched and was utilized in this research. Initially Maslash & Leiter (1997) advocated using the MBI (Maslach Burnout Inventory) and reverse scoring it to get patterns of engagement. However, research by Schaufeli et al. (2005) shows that the opposite of burnout is not necessarily engagement, lack of professional efficacy does not translate into any dimension of engagement and also is not correlated with the other dimensions of burnout (Lee & Ashforth, 1996). The Schaufeli et al. (2002) research defined engagement as consisting of absorption, vigor and dedication and led to the most commonly used scale of engagement, the UWES (Utrecht Work Engagement Scale). This measure was used in the current research because it is a popular scale in the engagement area and a recent metaanalysis found that UWES is the most commonly used scale to measure engagement (Christian & Slaughter, 2007). It has been used for a variety of samples such as students, managers, executives, entrepreneurs, farmers, blue collar workers, police officers and home care staff (Schaufeli & Bakker, 2004).

The last category consists of measures conceptualizing engagement as energetic resources such as Shirom's (2005) notion of vigor. The concept of engagement as characterized by energy has been labeled as "vigor" by Shirom (2005). Vigor is defined as the interconnected feelings of physical strength, emotional energy and cognitive liveliness experienced in one's own work (Shirom, 2005). Vigor is an emerging construct in the engagement literature, however there is not enough work using this concept to justify its use in the current study.

Antecedents and consequences of engagement.

Engagement has been found to be related to several components of the workplace. Engagement is facilitated by the presence of job resources such as social support from peers and

coworkers, feedback, job control, task variety and training (Demerouti et al., 2001, Salanova & Schaufeli, 2004). As with flow, engagement is predicted by job characteristics such as task variety, feedback and autonomy(Schaufeli, 2005). Engagement has also been found to be related to self-efficacy. High self efficacy predicts engagement and at the same time can lead to further high self efficacy (Llorens, Schaufeli, Bakker, & Salanova, 2007). Thus a spiral of resources and efficacy have been found to occur with engagement. Job resources and self efficacy lead to engagement and engagement fosters further conservation of resources and higher self efficacy (Llorens et al., 2007).

Engagement is a work-based concept and has been found to be related to important outcomes in the workplace and for the employee. Research has shown that people engaged at the workplace are more likely to devote attentional processes toward their work and make more effort in performing. Workers are also more absorbed in the task and experience less stress caused by long hours and increased workload (Britt, et al., 2005). Engaged employees are more satisfied with their jobs and feel more committed towards the organization and the occupation (Demerouti, Bakker, Janssen, & Schaufeli, 2001; Schaufeli & Bakker, 2004) They are also more likely to exhibit extra-role behaviors, work more overtime (Beckers, Van der Linde, Smulders, Kompler, Van Veldhoven , & Van Yperen (2004) and perform better (Harter, Schmidt , & Hayes, 2002).

Engaged workers seem to have better mental health (Demerouti et al. 2001), they are also more likely to be proactive, take initiative and have a motivation to learn. (Sonnentag, 2003). In service oriented work, the more engaged the workers the better the service climate and better the performance (Salanova et al., 2005). Another study by Harter et al. (2002) found that the level of employee engagement is positively related to business unit performance, including customer satisfaction, loyalty, profitability, productivity and safety. As described earlier engagement is also related to positive outcomes in academic work and has been found to be related to commitment, motivation, student involvement as well as grades, successful college completion and satisfaction with the college experience (Hughes & Pace, 2003).

However these measures of engagement are not theoretically grounded (Shirom, 2005). While the NSSE is a measure of the outcome of engagement and measures student effort and the UWES is derived from work on burnout and has been studied as the opposite of the same (Maslach et al., 2001) while it has been shown that engagement is not necessarily the opposite of

burnout (Schaufeli et al., 2005). This led to measuring engagement with a replacement of a dimension of burnout (professional efficacy) to that of dedication and no theoretical justification for this change has been given, also there is no theoretical justification of why these three dimensions together make up engagement (Shirom, 2005). Shirom (2005) asserts that engagement is separate from vigor and engagement should not contain elements of vigor. He also asserts that the Schaufeli (2002) measure of engagement has significant overlaps with other similar measures. For example the dimensions of absorption overlaps with psychological presence at work, defined by Kahn (1992) to include the elements of being attentive, connected, integrated, and focused on work. Dedication overlaps with work involvement which also contains elements of identification with the work and self, vigor contains elements of intrinsic motivation, resiliency as well as those of energy and is therefore not a single dimension but contains multiple dimensions and should be measured separately as a positive state (Shirom, 2005). A similar view is held by Newman & Harrison (2008) who assert that engagement as measured by the UWES does not contribute any unique variance to the study of job attitudes. This overlap and confusion in the measurement of engagement by the UWES also renders it difficult for use in the workplace (Shirom, 2005).

On the other hand, flow, which has similar positive characteristics as engagement is operationalized in such a way that is theoretically grounded. The dimensions of flow have been derived from intensive interviews and later, ESM studies to firmly establish the validity of the flow experience. Elements that can be influenced by the organization is one of the criteria of positive organizational behavior constructs and this can be better achieved with flow as a measure of engagement, this is only possible if flow and engagement are measures of the same underlying construct.

This is the main aim of this study, to assess whether flow and engagement are measures of the same underlying construct of work involvement. The next section describes the preexisting evidence in the literature on the similarities between flow and engagement and then methodology to be used in this study is discussed.

Similarities Between Flow and Engagement

Kahn (1990) considered engagement to be the underlying factor of flow and said "such (engagement) underlies what researchers refer to as effort, involvement, mindfulness, flow and intrinsic motivation (p. 701). Schaufeli et al. (2005) assert that flow is a peak experience of

engagement. On the other hand Shernoff et al., (2003) suggest that engagement occurs when students experience flow in their work. Bakker (2005) states that flow transfers from music teachers to their students and culminates in engagement. Macy & Schneider (2008) have suggested that autotelic personality which is a trait manifestation of flow can be conceptualized as trait engagement. Due to the similarity between the two constructs and in the way they have been defined, there are differing viewpoints in the literature as to whether flow causes engagement or engagement results in flow, however there is no empirical evidence as to their causality and or redundancy. However the way both flow and engagement are measured is very similar in terms of their dimensions.

The dimensions of flow as measured by Jackson & Eklund (2002) bear a marked similarity to factors of engagement. One of the more crucial aspects of flow is the challenge-skill balance, without a challenge-skill balance, flow cannot occur (Jackson & Eklund, 2002). Also, dedication, one of the three dimensions of engagement is also defined to have a component of challenging work Dedication is an affective state of involvement and is characterized by feelings of significance, pride, inspiration as well as challenge in one's work(Schaufeli et al., 2005).This has been found in studies on engagement as well. Studies have shown that engaged employees tend to look for challenges in their jobs and when they no longer experience any challenge, they change their jobs (Schaufeli, Taris, Le Blanc, Peeters, Bakkar , & De Jonge, 2001). This shows that the challenge and skill balance also occurs in engagement.

Absorption in work is seen in both flow and engagement. In the engagement literature it represents the degree to which people are fully concentrated on and happily engrossed in one's work, time passes quickly and one has difficulty detaching oneself from work (Schaufeli, 2005).However, it has been suggested that absorption in engagement is more pervasive than the absorption in flow. Absorption is indirectly represented in the flow experience through loss of self consciousness, time distortion as well as concentration on the task (Jackson & Eklund, 2002). When one is completely focused on the task at hand, there is a loss of self consciousness, From the flow dimension of loss of self-consciousness comes the dimension of time distortion (Jackson & Eklund, 2002), which is also seen in absorption in the engagement literature. People experiencing flow also show concentration on the task at hand which is another facet of absorption. Thus both flow and engagement have elements of absorption and loss of self consciousness.

Flow is also characterized by unambiguous feedback, the clarity of goals and progress towards the goal is measured by feedback (Nakamura & Csikszentmihalyi, 2002). Studies on engagement have found that engagement is positively related to social factors such as feedback for performance and job control (Salanova et al., 2001). Also engaged workers value the feedback they get as an important part of their engagement (Konstantellou, 2001). So engagement also has the component of unambiguous feedback which is also a dimension of flow.

Flow is an autotelic experience and is therefore intrinsically motivated, engagement is also characterized by dedication which is defined as being strongly involved and having a sense of significance, enthusiasm and pride in one's work. Research has also found that engaged workers are more likely to identify intrinsic reasons for being in their jobs such as the nature of the job itself, its meaningfulness etc. (Schaufeli, 2005). Engaged employees show absorption because their work is intrinsically motivating. Absorption is characterized as non instrumental and for pleasure rather than for external reward oriented purposes (Schaufeli et al. 2005; Hallberg & Schaufeli, 2006). Thus both flow and engagement have a component of intrinsically motivated activity and are pleasurable experiences.

The conceptualization of flow by Bakker (2005) also has similarities with engagement. For example, the dimension absorption in WOLF includes items such as "I get carried away by my work", on the other hand, UWES has items such as "I am immersed in my work", showing that both are measuring a similar aspect of absorption. The dimension dedication from the engagement literature has overlaps with the dimension of intrinsic motivation because both dedication and intrinsic motivation are looking at work in terms of internal reasons such as pride, inspiration and challenge for working rather than because of external rewards. Therefore engagement as measured by the UWES and the WOLF model of flow have similarities as well. Flow and engagement have also been found to be related to similar antecedents in the workplace. Studies using flow and engagement as intervening variables have found similar results for both flow and engagement (Ryan & Fredrick, 1997, Ghani & Deshpande, 1994). Ryan & Fredrick (1997) found an increase in vitality (vigor) due to job resources such as autonomy, feedback and social support which increase intrinsic motivation which is a component of engagement (Schaufeli & Salanova, 2007). Similar results have been obtained with flow, flow being affected by task variety, task identity, autonomy and feedback which in turn affects the positive outcomes

obtained by a person (Ghani & Deshpande, 1994). Demerouti (2006) found similar results with job characteristics predicting flow and also in-role and out of role performance by employees. Flow and engagement are also related to similar positive outcomes for the worker and the organization. Studies with couples found that spouses' engagement crossed over from partner to partner (Schaufeli & Salanova, 2005). Flow also has similar characteristics and was found to pass from music teachers to their students (Bakker, 2005). Research has found that engaged workers have better psychological and physical well being (Hallberg & Schaufeli, 2005). Similar results have been found for flow with flow affecting physical and psychological health of students (Steele, 2006). Beckers et al., (2004) found that engagement is related to organizational citizenship behaviors and Eisenberger et al. (2005) found similar results with flow. Both flow and engagement have been found to be related to performance (Demerouti, 2006; Harter et al., 2002).

Even though flow and engagement have several similarities, they also have several conceptual differences. Flow is activity specific while engagement is more pervasive and is not focused upon any specific activity. Flow can be seen as a peak experience (Harter et al., 2002; Schaufeli & Salanova, 2005). Engagement has been found to occur predominantly in the area of work (Maslash, Schaufeli, & Leiter, 2001). Engagement is a pattern over several realms and those who are likely to experience engagement at work are also more likely to be engaged at home (Schaufeli et al., 2005) Recently, however, it has been suggested that engagement is not a persistent and pervasive state and is instead a mood like state representing an individual's current state of mind (Schaufeli & Salanova, 2006). A similar conceptualization of pervasive flow exists in terms of an autotelic personality where people who have experienced flow are more likely to experience flow again and that some people have a dispositional tendency to experience more flow (Nakamura & Csikszentmihalyi, 2004).

Of the dimensions of flow that have no parallels with engagement in the literature, one is action awareness merging. This is a component that is unique to flow because of the temporal nature of flow. Flow is short term and more acute than engagement and therefore a more intense state of absorption, which contain elements of action awareness merging where one becomes completely involved in that one activity whereas engagement contains absorption which is defined to be "like" flow but is more persistent fashion rather than a peak experience of flow (Christian & Slaughter, 2007)

Flow also causes people to experience a sense of control over what they are doing. This is a part of the flow experience and not detailed in the engagement literature. The reason for this is that flow is focused upon a specific activity while engagement is not constrained to one single task. Goal clarity is not hypothesized to be related to engagement because engagement is not goal directed and is instead a general involvement in work (Schaufeli et al., 2005).

It can be concluded from the above research that there are several similarities between the flow and engagement literature, measures and the antecedents and consequences of the two concepts. The question then remains whether these similarities make them just highly intercorrelated positive experiences or are they measures of the same underlying latent construct of work involvement.

Hypothesis 2: Flow and engagement are measures of the same underlying construct of work involvement.

Once it was established whether flow and engagement are similar underlying constructs, it was important to assess their validity. For this purpose a nomological net was established, using correlated variables to assess how well does our measure fit in with these other variables. If flow and engagement have similar outcomes and they are indeed measures of the same underlying concept of work involvement then both flow and engagement should be strong predictors of student outcomes. One such student outcome is that of student effort as measured by the NSSE. When students are engaged in their work they are more likely to put more effort into their work (Shernoff et al., 2004) also when students experience more flow in their work, they are likely to put in more effort so that they can repeat the experience of flow due to the autotelic nature of the flow experience (Csikszentmihalyi, 1988). Therefore predicting effort would be an indicator of the validity of the flow or the engagement measures.

Hypothesis 3: Flow and engagement will predict student effort as measured by the NSSE

To further establish the validity of the engagement scale, antecedents of engagement were also assessed and included in this nomological net. As indicated by the tenets of positive psychology, flow and engagement should have antecedents that can be manipulated in the

workplace to increase worker engagement. Several such antecedents for work engagement have been cited previously including job characteristics, feedback and environmental clarity (Steele, 2006). One specific antecedent of student engagement is deep versus surface learning. Deep learning focuses on the substance and also the underlying meaning of information. Characteristics of deep learning include synthesizing information with prior learning, analyzing information and making value judgments of information. Deep leaning has been found to be dependent upon the tasks being performed and the conditions under which these tasks are performed (Laird, Shoup , & Kuh, 2005). Students who use deep learning have been found to have higher grades and retain more information. Deep learning has also been associated with a more enjoyable learning experience than surface learning (Tagg, 2003). Research has also found that when students use strategies involving deep learning, they show more persistence and motivation to achieve their goals (Valle et al., 2004). It has previously been established that effort is an outcome of student engagement. Therefore it was hypothesized that class characteristics requiring higher order learning or deep learning would lead to higher levels of engagement which would then result in student effort. Also higher order thinking is harder and therefore more likely to challenge students and create a challenge skill balance that would increase flow. Thus course activities and a teaching style requiring higher order learning would affect students' use of deep learning (Biggs, 1999) and thereby affect their flow and engagement. Research on deep learning has yielded a NSSE based measure of deep learning which includes questions on frequency of class activities that encourage this higher order thinking. The higher order learning items focus on the amount students believe that their courses emphasize advanced thinking skills such as analyzing the basic elements of an idea, experience, or theory and synthesizing ideas, information, or experiences into new, more complex interpretations (Laird et al., 2005). These items were used in this study to assess the effect of class characteristics on flow and engagement.

Hypothesis 4: Class characteristics requiring higher order learning will predict   student engagement.

Another antecedent also included in the model as an antecedent of engagement was challenge skill balance. Several researchers have asserted that challenge skill balance is a

precondition of flow rather than a part of it, logically this makes sense, unless challenge skill balance occurs flow does not occur (Csikszentmihalyi, 1988). Therefore challenge skill balance is an important precondition of flow and was included in this nomological net to assess the validity of the flow/engagement measure. The final model can be seen in figure 2..

Hypothesis 5: Challenge skill balance will predict engagement.

To summarize, this study addressed the issue of student engagement and flow by first establishing which of the models of flow, namely the Csikszentmihalyi (1988) nine dimensional model and the Bakker (2005) three dimensional model of flow is a better and more parsimonious model. This was done by first establishing the construct validity of the FSS II and WOLF and then assessing which of them is a better model using various fit indices. To assess whether they are measures of the same underlying construct of flow, a two step confirmatory models approach was utilized, with nested models comparing the fit of a single latent construct model to that of a model with separate latent constructs for FSS II and WOLF.

Once it was established which of the two models of flow have a better fit, the main purpose of this study was assessed, whether flow and engagement are measures of the same constructs. To assess this, a similar modeling approach was adopted, comparing two structural equation models where model 1 was a unifactor model with a single latent construct of "Work involvement" on which all items from the flow scale as well as the engagement scale loaded, model 2 was a confirmatory factor analysis with both flow and engagement. The fit of the two models were compared to see which one provided a better fit. Predictive validity was also established by assessing the antecedents and outcomes of engagement and flow using the NSSE items measuring effort in academic activities and class characteristics. The method and analyses used in this study is further elaborated in the method section.

CHAPTER 2 - Method

The population for this study consisted of undergraduate students at a large Midwestern university. The sample was drawn from five different sources so that flow and engagement could be measured in a variety of tasks and to allow for greater generalizability of the results to students in different fields of study. For this purpose a pool of students from a marketing class at the College of Business Administration was invited to complete the survey for extra course credit. A preexisting pool of general psychology students was also asked to complete the survey for research credit. Students from the College of Architecture, College of Engineering and Department of Apparel and Textile Design were also contacted through their instructor to voluntarily complete the survey. 485 complete surveys were returned.

Since a large sample size was needed to test the Structural Equation Models, the data from these sources was aggregated to test the hypothesized models. The means for the variables of interest were first compared to check for between group differences in the major variables of interest. No significant difference was found between the variables in flow ($F= 1.24$, $p >.05$) and engagement ($F = 1.371$, $p>.05$) therefore the data from these varied sources was aggregated. In the final sample of 485 students, 49 percent of the students were female, 90.5 percent were Caucasian, 3.1 percent African American, 2.5 percent Asian and 2 percent Hispanics. The median age of the participants was 22 and ranged from 18 to 44, with 20 to 26 year olds forming 90 percent of the sample. 44 percent of the sample was in their junior year in college, 19.2 percent was freshman, 18.8 percent sophomores and 17.1 percent senior.

Participation was voluntary; students were not penalized for deciding to opt out of the survey or for leaving questions in the survey unanswered. No identifying information was collected and confidentiality of responses was maintained.

Measures

The survey was a paper survey and students were asked to respond to a variety of questionnaires. Instructions for all the scales asked the participants to think about a class they enjoyed at K-State and answer the question based upon their experience of that class.

Demographic Information. Demographic information such as age, gender, year in college grade for class and overall GPA was collected.

Flow Scales:

Flow State Scale –II (FSS- II).

One of the Flow Scales utilized for the study was the FSS-II (Flow State Scale II) developed by Jackson & Eklund (2002) (See Appendix E) It is a measure of the state concept of flow. In the FSS II, flow is defined as an intrinsically motivated and autotelic activity, which is rewarding in itself apart from its end product or any extrinsic reward (Csikszentmihalyi 1975/2007) The FSS-II uses nine dimensions to measure the flow experience, including challenge skill balance, action-awareness merging, clear goals, unambiguous feedback, time distortion, loss of self-consciousness, total concentration, feeling of control and autotelic experience. The scale comprises of a total of 36 items with 4 items each for the 9 dimensions. Sample items include "I was challenged, but I believed my skills would allow me to meet the challenge." (Challenge skill balance). "I was not concerned what others were thinking of me" (loss of self consciousness). Responses are on a 5 point likert type scale ranging from 1= "strongly disagree" to 3= "neither agree or disagree" to 5= "strongly agree".

The scale was initially used for measuring the flow experience in leisure and sports activities (Jackson & Eklund, 2002; Kowal & Fortier, 1998), recently however this scale has increasingly been used to measure flow in work activities (Eisenberger et al., 2005, Quinn, 2005; Burke & Mathessian, 2002) as well as academic activities (Brinthaupt & Shin, 2002; Lee, 2005). The 9 subscales of the FSS-II were reworded to ask students about studies related activities such as "I had the skills to meet the challenges of this activity" was modified to " I had the skills to meet the challenges of this class". The internal consistency of the subscales was high and the Cronbach's α coefficients for the dimensions ranged between .80 and .90 (see Table B-1).

WOrk ReLated Flow inventory (WOLF)

The other flow scale included in this study was the WOLF (Work related Flow Inventory; see Appendix F). It is a measure of flow as theorized by Bakker (2005). Bakker (2005) defines flow as a short term peak experience at work that is characterized by work absorption, enjoyment and intrinsic work motivation" (Bakker, 2005). Absorption is defined as a state of total concentration where people are completely immersed in their work and time becomes distorted

and there is lack of self consciousness (Bakker, 2005). Enjoyment refers to the employees' enjoyment of their work and arises from the cognitive and affective evaluations of the flow experience (Bakker, 2005). Lastly intrinsic work motivation is the need to perform a work related activity for its own sake rather than for some external outcome (Bakker, 2005). The scale consists of 14 items, with 4 items measuring absorption (When I am working, I think about nothing else), 4 items assessing work enjoyment (My work gives me a good feeling) and 6 items measuring intrinsic motivation (I do my work simply for the pleasure it brings me). Responses are on a 7 point likert scale where 1 = "never" to 7= "always". The items were modified to be more student specific and the words "work" were replaced by "studies" or classes depending on the grammatical appropriateness of the words.

This scale is a newer conceptualization of flow directed specifically at work related flow. Research utilizing this scale is limited due to its newness; however Bakker (2005) found high construct validity and reliability for this scale. It has been used in research assessing crossover of flow in music students (Bakker, 2004) and in assessing effect of flow on job performance (Demerouti, 2006). All subscales had high internal consistency and Cronbach's α coefficients for the dimensions ranged between .91 and .94 (see Table C-1).

Engagement Scales:

UWES (Utrecht Work Engagement Scale; see Appendix C). The UWES (Maslach, Schaufeli & Leiter, 2002) was used in this study to measure engagement. The student version of the scale previously used and validated by Schaufeli, Salanova, Gonzalez- Roma, & Bakker (2002) was used in this study. The UWES defines engagement as a persistent and pervasive affective, cognitive state not focused on any particular object, event, individual or behavior (Schaufeli, et al., 2002) The scale consists of three dimensions: vigor, dedication and absorption. Vigor at work is characterized by high levels of energy and mental resilience, the willingness to invest effort in one's work and persistence even in the face of difficulties. Dedication is defined as a sense of significance, enthusiasm, inspiration, pride and challenge in one's work. Absorption is characterized by being fully concentrated and deeply engrossed in one's work, whereby time passes quickly and one has difficulties detaching oneself from work (Schaufeli, et al., 2002). The UWES consists of 17 items with 6 items assessing vigor (at my work I feel I am bursting with energy). Dedication is assessed by 5 items (I find the work I do full of meaning and purpose).

Absorption is measured by 6 items (I feel happy when I am working intensely). Responses are assessed on a 7 point likert type scales, with 1= "never" to 3="sometimes" and 7= "everyday".

The factorial validity of the UWES is high and it has been found to generalize to different samples across different countries (Schaufeli, Martinez, Marques- Pinto, Salanova, & Bakker, 2002; Storm & Rothmann, 2003). The scale is a popular scale in the engagement area and a recent metaanalysis found that UWES is the most commonly used scale to measure engagement (Christian & Slaughter, 2007). It has been used for a variety of samples such as managers, executives, entrepreneurs, farmers, blue collar workers, police officers and home care staff (Schaufelli & Bakker, 2003). The three dimensions of engagement measured by UWES have been found to be correlated and Christian & Slaughter (2007) in their meta-analysis of engagement as measured by the UWES recommend using a unidimensional construct by making a composite of scores from the three dimensions. This approach was utilized in this research, the internal consistency of the composite was high and Cronbach's α equaled .928 in this study (see Table D-1).

National Survey of Student Engagement (NSSE).

Parts of the National Survey of Student Engagement (see Appendix D) were included in the survey. The NSSE was used in this study to enable us to study the validity of flow and engagement as predictors of student outcomes like student effort and to build a model of engagement based on effort and class characteristics. NSSE is a measure of overall college experience and since the focus of this survey was engagement in studies in a specific enjoyable class, not all the NSSE items were included. Items from the NSSE measuring student effort in their studies and class characteristics were modified and utilized for this research. Specifically, questions 1 through 5 were modified to form a part of the survey.

The original survey asks participants about their overall college experience, the instructions were modified to ask them about a specific class they enjoyed taking. Question 1 consisted of 5 items measuring effort in class in terms of assigned and unassigned books read for class and papers written for class. Question 2 queried amount of time spent on homework given for the class. Question 3 measured amount of challenge experienced in examinations for the class on a 7 point likert scale where 1= "very little challenge" and 7="Very much challenged". Question 4 contained 22 items that measured effort expended for class through frequency of activities such as "making a class presentation" on a 4 point likert type scale where 1= "Never"

and 4= "Always". Question 5 measured class characteristics in terms of mental activities such as analyzing, synthesizing and memorizing ideas and was measured on a 4 point likert scale where 1= "Never" and 4= "Always".

Analysis

The purpose of the study was to establish the construct and differential validity of the flow and engagement scales. This was done in three phases, the first phase established the dimensionality of the scales used in the survey, namely UWES, WOLF and FSS –II using a confirmatory factor analysis approach. Phase two determined the differential validity of these scales. and the third phase further established validity of the scales by assessing the predictive validity of flow and engagement in predicting student effort. Similar analyses were used by Jackson & Marsh (1999) to establish construct validity of the FSS II and also by Halleberg & Schaufeli (2004) & Netemeyer, Johnston , & Burton (1990). All the analyses were conducted using Structural Equational Modeling with AMOS 5. The three phases are described below.

Phase I

This phase included a confirmatory factor analysis of the UWES, WOLF and FSS II to assess their factorial validity and confirm the number of factors measured by the various scales. This was done by nested models in which one model was a unifactor model and was compared to a model with the requisite number of dimensions or factors. Modification indices were calculated and the models compared for fit. The results from these models can be seen in the results section. A similar approach to establishing dimensionality has been used by Jackson & Marsh (1999) and is also suggested by Anderson & Gebring (1988).

Phase II

This phase of the analysis determined the differential validity of the UWES, WOLF and FSS II. Specifically this phase assessed whether the UWES measured a different construct from the WOLF and the FSS II. Similarly the distinction between FSS and WOLF scales was assessed to see whether they are both measures of flow.

First the intercorrelations of the constructs were inspected to assess the overlap between the constructs. Then confirmatory factor analyses were conducted where a uni-factor model was contrasted with model specifying separate correlated constructs. To assess the extent to which the model reproduced the underlying matrix, global fit indices including Root Mean Square Error

of Approximation (RMSEA), Goodness of Fit Index (GFI), Normed Fit Index (NFI) and Comparative Fit Index (CFI) were calculated. Values for the GFI, NFI and CFI range from 0 to 1 and values closer to 1 are indicative of good fit and .95 is considered to be the cutoff point (Hu & Bentler, 1999). For the RMSEA values below .05 indicate a good fit, values between .08 and .10 indicate mediocre fit and those above .10 indicate a poor fitting model (MacCallum et al., 1996).

Netemeyer, Johnston , & Burton (1990) used a similar approach to establishing differential validity of the role conflict and ambiguity scales, this approach was also utilized by Halleberg & Schaufeli (2004) to establish differential validity of the UWES and job involvement.

Phase III

Phase three of the analysis established a nomological net using the theoretical hypotheses described in the introduction. A model was developed to test the predictive validity of the engagement/flow scales in predicting student effort and also to assess the role of class characteristics in predicting challenge skill balance, flow as well as student effort. First correlations of UWES, WOLF and FSS II with effort were compared and a decision was made as to which scale should be included in the model on the basis of its high correlation with effort. The specifications and the results of the models can be seen in the results section.

CHAPTER 3 - Results

Data was collected as a paper survey and then entered into SPSS for the rest of the analysis. 485 complete surveys were returned. 450 business school students were invited to complete the survey, 247 surveys were returned with a response rate of 54.8 %. Of the 90 Architecture students asked, 51 completed the survey for a response rate of 56.1 %. The response rate for College of Engineering was low at 32 % with 25 students out of 77 responding to the survey. Department of Apparel and textile design had a response rate of 63% with 45 out of 70 students volunteering to complete the survey. A response rate for the psychology pool could not be calculated as students signed up for the survey to get research credit for class.

First the data was examined for data entry errors and the means of the variables were examined to check for the same. Data entry errors were corrected and the data was analyzed for missing data. Missing data was minimal and variables were examined for patterns in the missing data. No patterns were found and mean substitution from the mean of the individual's responses was used for replacing the missing data. Once this was done assumptions of the General Linear Model were tested. Specifically, tests were done to assess skewness, multivariate outliers, multivariate linearity, normality and homoscedasticity.

The data was tested for multivariate outliers, this was done by finding Mahalalobis Distance for all variables of interest. 5 multivariate outliers were found ($D (14) >= 36.12$, $p<.001$) , however their Cook's distance was less than one, indicating that they did not have much influence on the data (Tabachnick & Fidel, 2001), therefore the decision was made to keep them in the analysis. Further examination of scatterplot matrices, residual scatterplots and normal probability plots revealed no violations of multivariate linearity or normality

Skewness was tested by comparing the ratio of skewness to the standard error of skewness to determine significance. Some variables (UWES, WOLF) had some skew, however, as the questions asked in the survey were based upon an enjoyable class, some skew had been expected, also the effect of skew on the analysis is less with a larger sample size (Tabachnick & Fidel, 2001) therefore it was allowed to remain. Further normality was confirmed through non significant Kolmogorov-Smirnov tests.

The UWES subscales of dedication, absorption and vigor had some multicollinearity. Multicollinearity is indicated by high correlations between variables and low tolerance. The UWES subscales had high intercorrelations greater than .85 and had a low tolerance, therefore in the rest of the analysis, the UWES was used as a single dimension by assuming that the items in the UWES all load on to one latent construct of engagement.

Descriptive Statistics

For all the variables, a mean score was calculated by summing the items and then dividing that sum by the total number of items to get a score that could be easily understood in terms of the scale. This mean score was used in all cases (see Table A.1). Using these scores, mean of the scales and subscales was calculated. For the FSS- II, the overall flow score mean was 3.56, indicating that on the whole students reported they experienced the flow state sometimes. Specifically, for challenge and skill balance subscale of the FSS-II students' mean was 3.83 indicating that students experienced a challenge skill balance somewhat frequently. Concentration had a mean of 3.36, indicating that a state of immense concentration during the flow state was experienced sometimes. A similar mean of 3.37 was found for loss of consciousness, indicating that it was experienced sometimes. Students' mean of 3.68 for control indicated that they sometimes felt in control while doing work for this class. A similar mean of 3.47 for action awareness merging also indicated that this was felt sometimes by the students. Goal clarity had a mean of 4.01 indicating that students felt the goals for these enjoyable classes were often clear, a similar mean of 4.06 for feedback indicating that they often had immediate feedback from the instructor that helped their flow experience. Time transformation had a lower mean of 2.81 indicating that students rarely experienced time transformation during their flow experience. Lastly autotelic experience had a mean of 3.69, indicating that students were sometimes intrinsically motivated to do their work for this class due to their flow experience.

The WOLF had an overall mean of 3.83, indicating that students sometimes experienced flow. The subscale of work enjoyment had the highest mean of 4.49, indicating that students often enjoyed their work for the classes. Similar means of 3.63 and 3.52 were found for absorption and intrinsic motivation respectively, indicating that students sometimes experienced a state of absorption in their work for the class and that students were sometimes intrinsically motivated to do their work for this class.

The engagement scale was used in a unidimensional fashion due to its high multicollinearity and high inter-correlations of its dimensions. The mean of the overall engagement scale was 4.37, indicating that students often experienced engagement in terms of dedication, absorption and vigor in the classes they enjoyed.

The NSSE effort items had a mean of 2.23 indicating that overall students rarely expended effort in their classes. The class characteristic of synthesizing and organizing ideas had a mean of 2.69 indicating that on the average students felt they sometimes organized ideas and information into wholes. Similar means (2.95, 2.89, 2.99) were obtained for the class characteristics of analyzing ideas, making value judgments of ideas and application of ideas indicating that students felt they performed these activities sometimes in the courses they enjoyed.

Most variables in this study were highly correlated and the correlations of the scales and the subscales can be seen in Appendix A. Appendices B, C and D show the reliabilities and variance extracted of the subscales. Looking at specific correlations, all the FSS II subscales were significantly correlated, challenge skill balance had the highest correlation with autotelic nature of flow (r = .620) , while autotelism had the highest correlation with concentration (r= .688). The subscale of control had the highest correlation with goal clarity (.706) followed by feedback (r =.649). Loss of consciousness had lower but significant correlations with all the subscales, the highest of which was with sense of control (r= .507), feedback was strongly related to goal clarity (r=.779) and this relationship was the strongest one for goal clarity as well. Action awareness merging was strongly correlated to sense of control (r= .632) and lastly time distortion was most strongly correlated with concentration.

The WOLF dimensions showed strong intercorrelations ranging from .663 to .703. The FSS-II dimensions were also strongly correlated with the WOLF dimensions, with enjoyment being highly correlated with autotelic nature of flow (r =.764). The dimension of absorption was also strongly correlated with autotelic nature (r=.576), closely followed by concentration (r= .567). Lastly, the dimension of motivation was strongly correlated with autotelic nature of flow (r= .591).

The UWES scale has high correlations with all the subscales of FSS-II, the highest one was with autotelic nature of flow (r= .720). WOLF had very strong correlations with the engagement scale as well, with the highest correlation between enjoyment and engagement (r=

.744). The last set of correlations was computed between the NSSE effort items and WOLF and UWES. The effort items were more strongly correlated with the overall WOLF score (r=.395).

Table 3-1: Correlations of the Scales Used in Phase III

	M	SD	WOLF	UWES	C-S Balance	Class Char
Effort	2.23	.54	.395**	.301**	.302**	.508**
WOLF	3.88	1.16	---	.792**	.488**	.358**
UWES	4.37	1.01	---	---	.501**	.435**
C-S Balance	3.83	.67	---	---	---	.411**
Class char.	2.86	.656	---	---	---	--

Hypothesis Testing

Phase 1

The purpose of this preliminary phase of the analysis was to establish the factor validity of the scales used in the analysis as well as their dimensionality. This was done through a confirmatory factor analysis using Structural Equation Modeling in AMOS 5. The fit of a unifactor model was compared to that of a second order factor analysis with the items from the subscales loading on their specific latent constructs and these latent constructs loading on the same higher order latent construct. This process was undertaken for the UWES, FSS-II as well as the WOLF. Specific results are described below and Table 3-2 describes the results of all models.

Table 3-2: Structure Equation Models Fit Summary

	Model	χ^2	df	GFI[a]	CFI[a]	PGFI[a]	RMSEA[a]	Δ df	$\Delta\chi^2$
1	FSS-II unifactor	3422.093	594	0.64	0.692	0.571	0.099		
2	2nd order FSS-II	1773.95	585	0.812	0.87	0.713	0.065		
	Comparing 1 and 2							9	1648.143**
3	Unifactor WOLF	1488.809	77	0.617	0.774	0.453	0.195		
4	2nd order WOLF	284.397	74	0.922	0.966	0.65	0.077		
	Comparing 3 & 4							3	1204.412**
5	Unifactor UWES	1586.654	119	0.62	0.711	0.16	0.16		
6	2nd order UWES	1527.64	116	0.637	0.722	0.483	0.159		
	Comparing 5 & 6							3	59.014
7	FSS-II & WOLF latent	3398.737	1163	0.741	0.862	0.676	0.063		
8	FSS-II & WOLF corr.	3104.179	1162	0.768	0.88	0.7	0.059		
	Comparing 7 & 8							1	294.558**
9	UWES & WOLF corr.	2570.993	431	0.652	0.826	0.566	0.101		
10	UWES & WOLF: latent	2569.777	432	0.652	0.826	0.565	0.102		
	Comparing 9 & 10							1	1.216

[a] *GFI* = Goodness of Fit Index, *CFI* = Comparative Fit Index, PGFI= Parsimony Goodness of Fit Index, *RMSEA* = Root Mean Square Error of Approximation,

For the FSS –II, the unidimensional model (χ^2 =3422.093, df = 594, p<.001) had a worse fit than the 9 dimensional model (*χ^2 = 1773.95, df = 585, p<.001*) with *$\Delta\chi^2$ = 1648.14, Δ df= 9, p<.001*. The fit indices for the nine dimensional model were also better with a GFI of .81, a CFI of 0.87 and RMSEA of 0.065. The recommended fit values for a well fitting model are above .90 for GFI and CFI, however, a value between .80 and .90 is considered to be a moderately good fit. This indicated that FSS-II is a 9 dimensional scale and can be used as these separate dimensions. A composite reliability for the scale and its subscales was also calculated and can be seen in Appendix B. The composite reliability of the subscales were moderate and were between .52 and .69 and the variance extracted ranged from .43 to.64. The accepted level for the reliability of a scale is .70 and variance extracted is .50. Therefore the FSS-II is only a moderately good measure of the flow experience.

The UWES was used unidimensionally, however, its unidimensional model was still compared to the three dimensional model. The unidimensional model (χ^2 =1586.65, df = 119, p<.001) had a similar fit to the three dimensional model (χ^2 = 1527, df = 116, p<.001) with $\Delta\chi^2$ = 59.014 , Δ df=3, p<.001. However, the χ^2 statistic is influenced by sample size and is unstable with larger sample sizes. The three dimensional model was also unacceptable due to negative residuals which could have resulted from the multicollinearity of the three dimensions of the UWES. The fit indices were also similar with a GFI of .62 for the unidimensional model and .63 for the three dimensional model. CFI had similar values as well with .711 and .722 for the single and three dimensional models respectively. The RMSEA was the same for both the models at .16. This was taken as a further proof to use the unidimensional model of UWES rather than the three dimensional model. The composite reliability was high at 0.93 (see Appendix D) while the variance extracted was moderate at .44, indicating that more than half of the variance for this construct is not accounted for by this indicator, thereby UWES is a moderately good measure of engagement.

The WOLF was also tested similarly, the unidimensional model of the WOLF (χ^2 =1488.09, df = 77, p<.001) was a less well fitting model as compared to the three dimensional model (χ^2 =284.397, df = 74, p<.001) with $\Delta\chi^2$ =1204.41, Δ df=3, p<.001. The three dimensional model also had a better fit in terms of the fit indices with a GFI of .92, CFI of .966 and a RMSEA of 0.07. The WOLF had the highest composite reliabilities which ranged from .75 to .96 (see Appendix C) and its variance extracted for the subscales was high and ranged from .72 to .90, indicating that WOLF is a good measure of flow.

Thus the dimensionality of the WOLF and FSS-II was established and the UWES was shown to give similar results whether it is used as a single dimension or as a scale with three dimensions. Once this was established, the analysis moved on to phase II which assessed the differential validity of these two scales.

Phase II

The purpose of this phase of the analysis was to assess the differential validity of FSS-II, WOLF and UWES to assess whether they are measures of the same underlying latent constructs or they are conceptually different and measure different underlying constructs of positive work involvement. Since both FSS-II and WOLF are measures of flow, it was first assessed whether they are measuring similar conceptualizations of flow. From Appendix A it can be seen that all

the dimensions of WOLF namely absorption, intrinsic motivation and enjoyment are significantly correlated to the 9 dimensions of the FSS-II, indicating that they have some amount of overlap. This overlap was further investigated by using nested models to assess their differential validity. In Model 7 (See Figure 3-1), subscales of both WOLF and FSS were allowed to load onto the same latent construct labeled "flow". This model was compared to model 8 (see figure 3-2) where the WOLF subscales loaded only on a latent construct WOLF which was correlated to the latent construct of FSS-II where all the subscales of FSS-II loaded.

Figure 3-1: Model 7: Latent Factor Model of FSS-II and WOLF
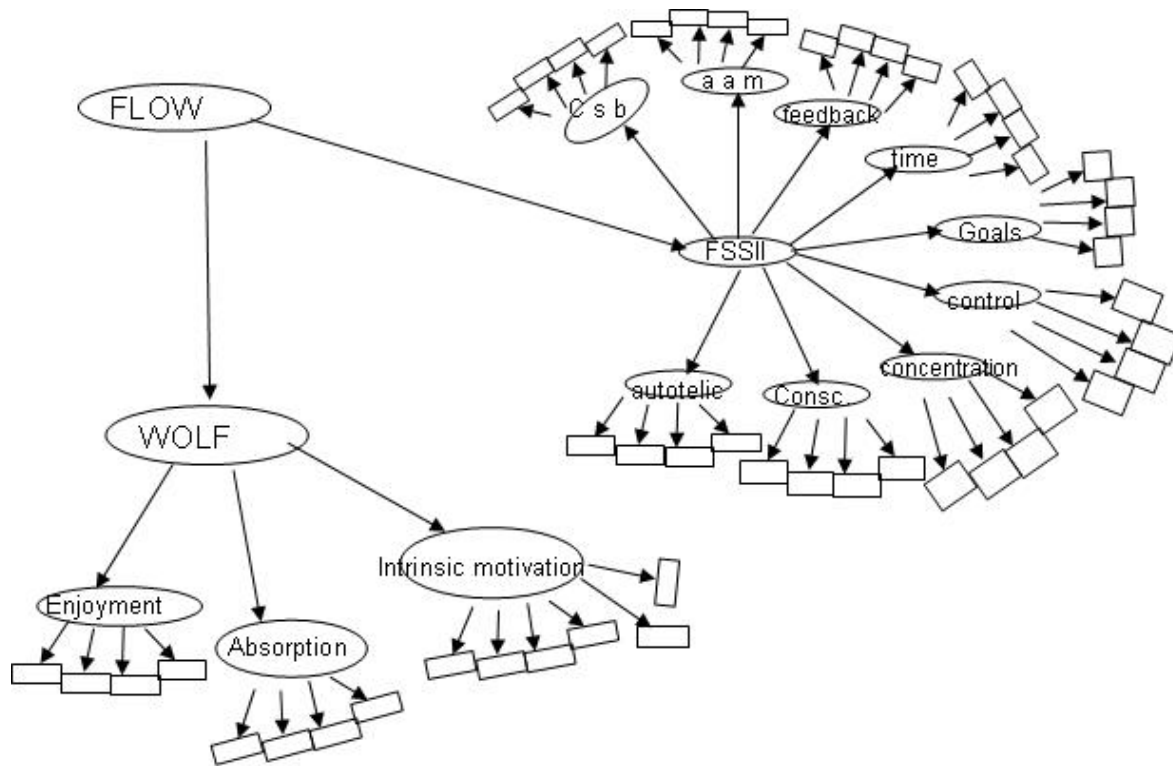
Figure 3-2: Model 8 Correlated Factors Model for WOLF and FSS-II
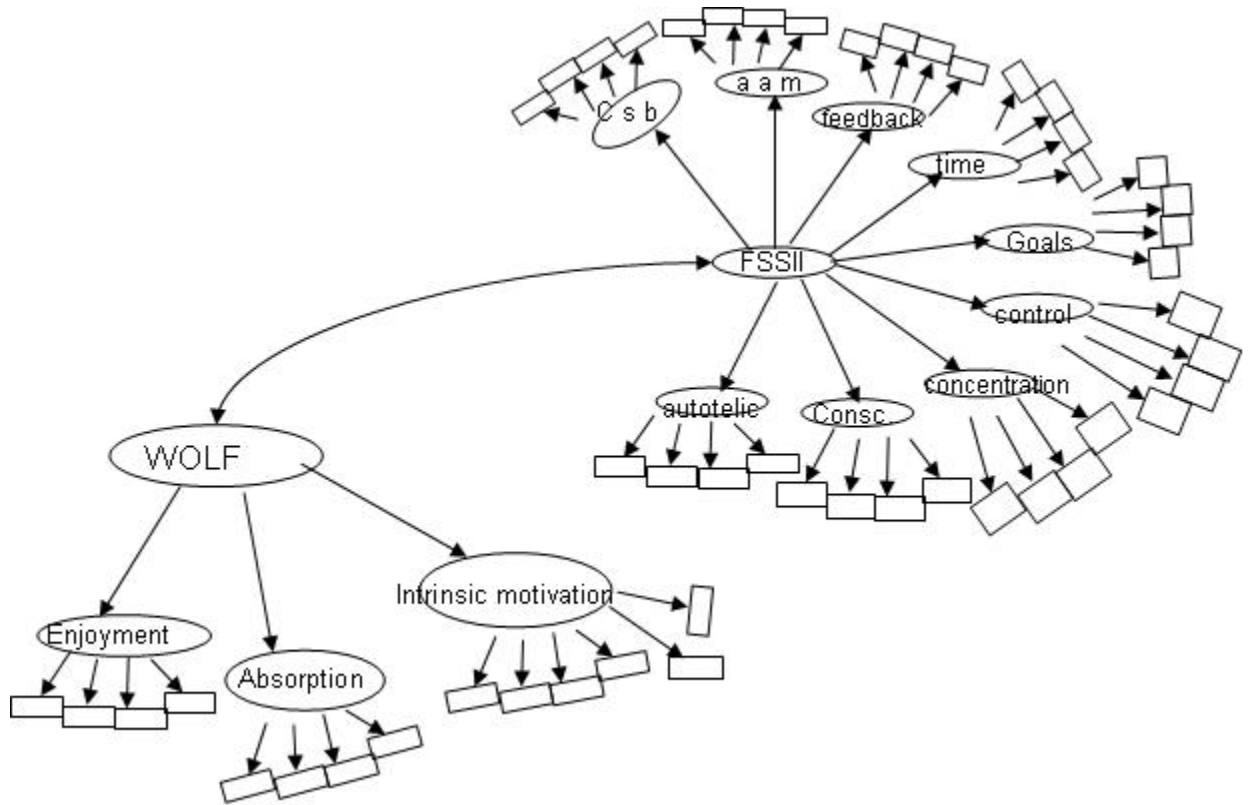
Model 7 had a reasonable fit at $(\chi^2 =3398.737, df = 1163, p<.001)$ but Model 8 had a better fit $(\chi^2 =3104.179, df = 1162, p<.001)$. The change between the two models was also significant at $\Delta\chi^2 =294.558, \Delta df=1, p<.001$. The fit indices were also better for Model 8 with a GFI of .768, CFI = 0.88 and RMSEA of .059. This indicated that the WOLF measured a different conceptualization flow than the FSS-II. Since the WOLF model had a better fit with the data and the scale had higher reliability and variance accounted for, the WOLF was chosen as the representative of the flow experience in the rest of the analysis.

The next step was to establish the difference between flow and engagement by repeating a similar process for the UWES and WOLF, model 9 (See figure 3-3) had both UWES items and the WOLF items loading on one latent construct, while model 10 (see figure3-4) had them as correlated latent constructs.

Figure 3-3: Model 9: Latent Construct Model for UWES and WOLF

:
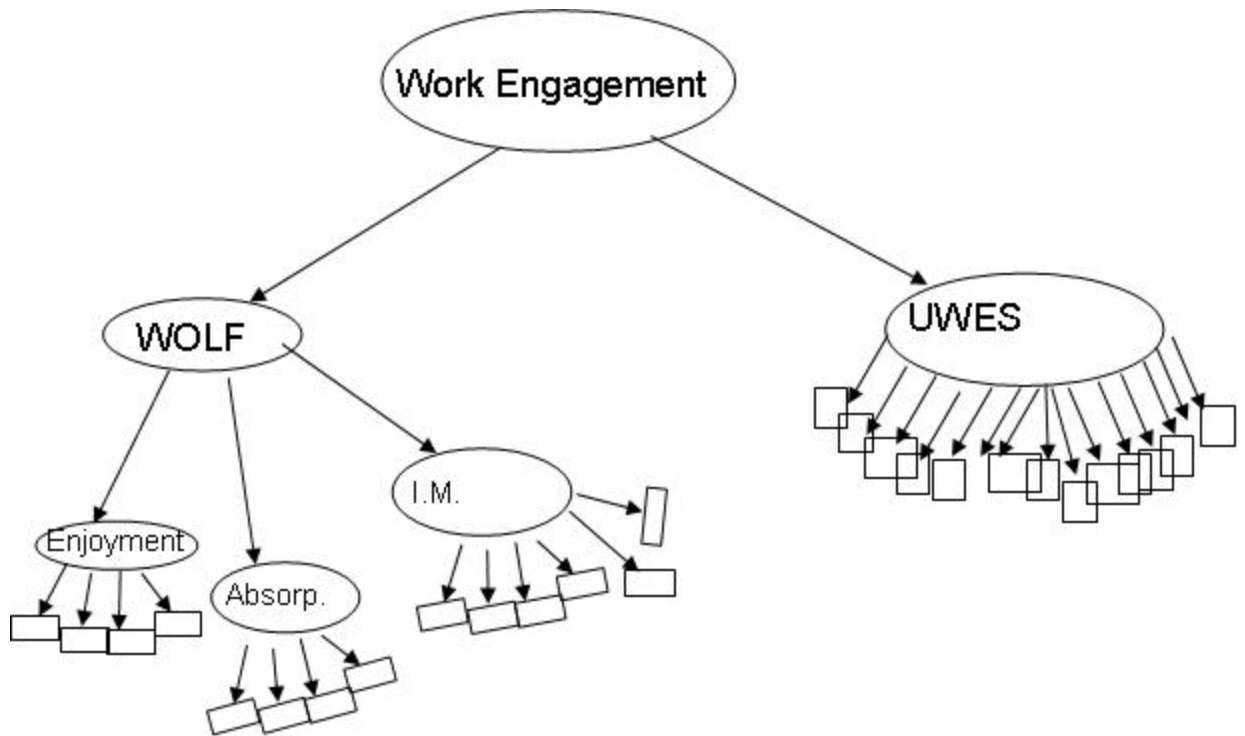
Figure 3-4: Model 10: Correlated Factors Model for UWES and WOLF
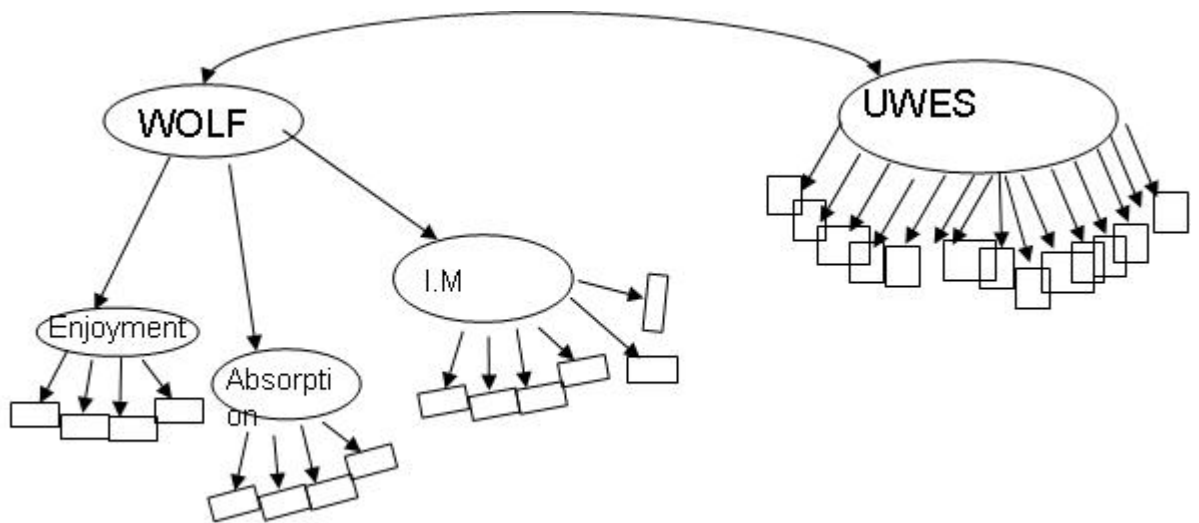
The fit of model 9 (χ^2 =2569.77, df = 431, p<.001) was similar to that of model 10 (χ^2 =2570.99, df = 430, p<.001). The fit indices for the two models were the same with GFI= 0.652, CFI= .826 and RMSEA of .101 and $\Delta\chi^2$ =1.21, Δ df =1, p>.05), indicating the differential validity of UWES and WOLF is low (see Table 3-2).

Therefore we established that UWES has low discriminant validity from WOLF, however WOLF and FSS-II seem to be measuring different conceptualizations of flow with their high discriminant validity. The next step in establishing validity was to assess predictive validity of the WOLF in predicting student effort. WOLF was used over the UWES because it had higher correlations with the effort items (see Table 3-1) and also had better psychometric properties. Therefore a model of class characteristics and their prediction of engagement and effort was developed using the WOLF as a predictor of the NSSE effort items. This is described in Phase III.

Phase III

A nomological network of relationships was established and tested using Structural Equation Modeling (see Figure 3-5) where class characteristics were found to predict challenge skill balance (β= .52, p<.001) and challenge skill balance was found to be a strong predictor of WOLF ((β= .67, p<.001) and WOLF was a strong predictor of effort (β= .23). Class characteristics predicted effort both directly (β= .47, p<.001) and through WOLF (see Table 3-3 for fit indices).

Figure 3-5: Phase III: Predicting Flow and Effort
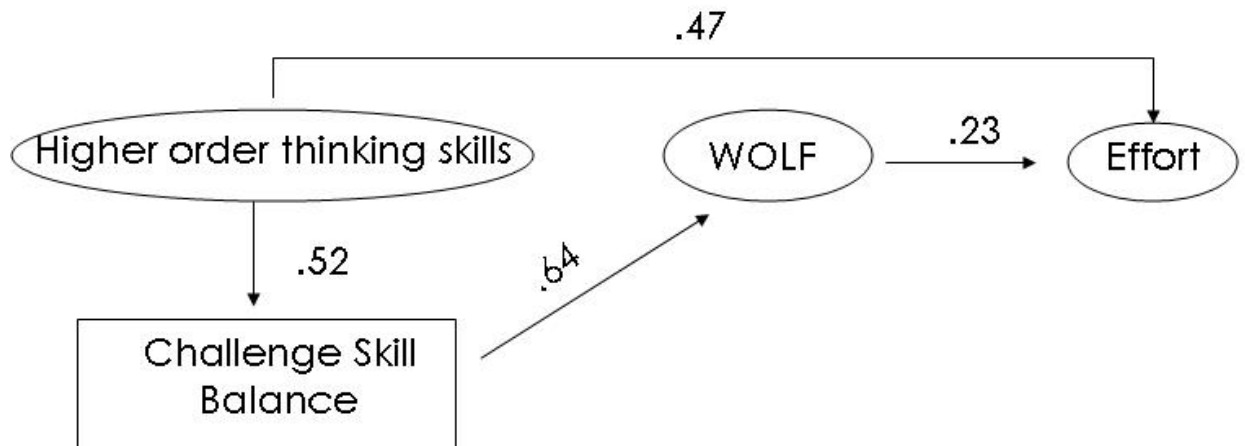
Table 3-3: Fit Statistics for Phase III model

Model	χ^2	df	GFI	CFI	PGFI	RMSEA
Class Characteristics	158.8	51	.947	.954	.619	.066

To conclude, WOLF was found to be the best measure of engagement amongst the three because of its parsimonious fit (see Table 3-2) and also because of its high reliability and higher variance extracted than the other two scales. WOLF has also shown better results as a predictor of effort, allowing us to build a parsimonious and well fitting model of class characteristics, flow and the resulting effort made by the students. These results are further discussed in the discussion section.

CHAPTER 4 - Discussion

The rapid pace of organizational change have made employees susceptible to higher levels of stress, lower performance, low commitment towards the organization as well as lower job satisfaction (Schaufeli & Salanova, 2005). Similar patterns of low satisfaction and performance, high stress and attrition rates have been noted in students (Winefield & Winefield, 2001). Two positive constructs that fulfill the tenets of Positive Organizational Behavior and have been found to be related to positive outcomes such as increased productivity, satisfaction and commitment in the workplace as well as academics are flow and engagement. As discussed earlier, flow and engagement are highly correlated and similar concepts, often used interchangeably in the literature and have been used as antecedents or consequences of each other(Schaufeli & Salanova, 2005; Shernoff et al., 2003). Also there are several conceptualizations of flow as well as of engagement. Due to this confusion in the literature, these positive constructs have not been used to their full potential to improve workplace outcomes such as satisfaction, productivity as well as student effort (Shirom, 2005). .

The present study addressed these problems by empirically testing the construct validity of the flow (FSS-II, WOLF) and the engagement (UWES) as well as by determining whether flow and engagement are indeed separate constructs or are they just different conceptualization of engagement. This research therefore offers some understanding of the relationships between flow and engagement and also how these constructs can be used in an academic setting to study student engagement and to enhance it. The present work also sheds some light on antecedents of student engagement, therefore providing some insight for increasing engagement in the classroom.

Hypothesized findings

The first part of this study focused upon confirming the factor structure of the flow and engagement scales. As can be seen in the results section, the FSS-II showed a good nine dimensional fit as compared to a unidimensional fit. Some researchers have used the FSS-II in their research by producing a global flow score by totaling up the flow dimensions (Allison &

Duncan, 1988, Bryce & Hayworth, 2002), yet others have used all nine dimensions (Marsh & Jackson, 1999; Martin & Cutler, 2002). Some researchers have also argued that flow is not nine dimensional and some dimensions are antecedents and consequences of the flow experience (Quinn, 2005; Chen et al., 1999). These results show that the 9 dimensional model has an acceptable fit and can be satisfactorily used to measure flow experiences. Originally FSS-II was developed for use with peak athletic experiences (Jackson & Eklund, 2002) and has been widely used to do so (Kowal 7 Fortier, 1999, Jackson & Kimieck, 2002). However, there has been limited use of this scale with work samples, most researchers use parts of this scale to assess flow, such as Eisenberger and collegues, 2005 used the challenge skill balance component of the scale to measure flow, others have used the overall flow score (Steele, 2006) and to date, no study could be found that uses all nine dimensions to assess the flow experience. This study was the first to apply all nine dimensions of flow to academic work. The results of the confirmatory factor analysis also showed that this scale has a reasonably good fit with academic work and all nine dimensions are applicable to work settings as well.

When testing the other flow model, a three factor structure was found to be a good fit for the WOLF. The WOLF is a recent measure of the flow experience and is beginning to be utilized by researchers (Bakker, 2005; Demerouti, 2006).Initial research by the author supports the validity of the WOLF (Bakker, 2005), however it has not been cross validated. The present research confirmed this factor structure asserting that the WOLF indeed has a three dimensional structure measuring the three dimensions of absorption, intrinsic motivation and enjoyment.

A three factor structure could not be confirmed for the UWES. As discussed in the results section, the three dimensional model had negative residuals indicating multicollinearity issues which could also be seen in the high intercorrelations between the engagement subscales. At the same time, the fit of the three factor structure was not much of an improvement over the fit of the unidimensional model and the difference in χ^2 was not significant. Therefore the decision to use the UWES unidimensionally was justified. The fit of the unidimensional model was moderately good, indicating that it was a moderately good fit with the data. This result is also in line with recent research on the UWES. A recent metaanalysis on studies using UWES and its correlates found that the three dimensions of absorption, dedication and vigor are strongly correlated to each other and recommended scoring the UWES as a unidimensional composite rather than as three separate scales (Christian & Slaughter, 2007). The present work supports their

recommendations by showing that the fit of a unidimensional model is not different from the fit of a three dimensional model and makes the problem of multicollinearity between the scales less pertinent.

The second part of the study was concerned with establishing whether the two measures of flow are measures of the same underlying conceptualization of flow or they measure different conceptualizations of flow. Even though the two scales were significantly correlated, the two factor second order factor model had a better fit than a unidimensional model, indicating that the FSS-II and the WOLF are measuring different conceptualizations of flow. However, since the scales have different dimensions and items, nested models of the scales could not be compared. At the same time, as can be seen in the results from Phase I, in comparison to the FSS-II the WOLF had a better fitting model, the subscales had higher reliability and variance extracted from them met the recommendations for variance extracted. This indicates that the WOLF fit the data better and has higher reliability and internal consistency which makes it a better way to measure flow, at least in the academic context. The WOLF is also a work specific scale, that is, it was developed to assess workplace flow (Bakker, 2005) which makes it ideal for measuring flow in the academic context as well as the work place and understanding the underlying structure of the flow experience. If we compare WOLF with FSS-II, researchers have argued that flow, as measured by the FSS-II is not nine-dimensional and some dimensions of this experience are antecedents and others are consequences of the flow experience (Quinn, 2005; Chen et al., 1999). Quinn (2005) has argued that Csikszentmihalyi's original conceptualization of flow never asserted 9 dimensions; instead it argued that challenge skill balance is a precondition of flow. Similarly, Bakker (2005) argues that underlying all definitions of flow are the essential aspects of intrinsic motivation, enjoyment and absorption and the WOLF taps into these essential components of flow and does not focus on the extraneous aspects that are measured by FSS-II. For this reason and because the WOLF fit the data better, indicating that the WOLF is more appropriate for measuring academic engagement than FSS-II, it was concluded that the WOLF is a better measure of flow and the decision was made to use it as a comparison point to the engagement scale in the rest of the analysis.

Another part of phase II of the analysis was to assess whether flow and engagement measured the same underlying construct of engagement. As mentioned earlier, there is some confusion in the literature over the emergence of flow and engagement. Researchers have

asserted that flow is an outcome of engaged workers (Kahn, 1990, Schaufeli et al., 2005) while others have asserted that flow causes engagement and people become engaged in order to experience the state of flow again (Shernoff et al., 2002). To date, no studies have empirically tested the difference between flow and engagement. The present study found that flow (as measured by the WOLF) and engagement were found to measure the same underlying construct. This can be seen from Model 9 in Table 5 which is a second order factor analysis, has a similar fit to the single factor model (Model 10), indicating that engagement and flow are measures of the same underlying construct of engagement. This is not a surprising finding. Researchers in the past have asserted that flow is a peak form of engagement (Christian & Slaughter, 2007; Schaufeli et al., 2005). Research by Shernoff and colleagues (2004) found that students who experience flow in their academic work are also engaged. Schuafeli et al. (2002) and Christian & Slaughter (2007) have asserted that the dimension of absorption in the UWES is a representation of the flow experience. Since the dimensions of the UWES, namely absorption, dedication and vigor are so highly intercorrelated, it was to be expected that if absorption is a representation of flow, then due to this high correlation between dimensions, the entire measure of engagement is related to flow, as can be seen from the results significant correlations were also found in the present research. Also, most researchers assert that the difference between flow and engagement is their pervasive nature. Flow is a peak experience while engagement is spread over time and activities. However, as stated earlier, recent research has asserted that engagement is not necessarily as pervasive an experience as was thought earlier and is dependent upon the characteristics of the situation the individual finds themselves in(Schaufeli et al., 2005). So if engagement and flow both are peak experiences that have similar dimensions, we can conclude that the WOLF and UWES are measures of the same underlying construct of student engagement which was supported by the confirmatory factor analysis of this study.

The third phase of the analysis further explored the predictive validity of the WOLF and established a model of student engagement. Phase III developed a model with a nomological net to establish the predictive validity of the WOLF as a measure of engagement. WOLF was used as a measure of engagement over the UWES because of its high reliability, higher extracted variance and also higher correlations with the criterion (effort) and the antecedent of class characteristics. The nomological net consisted of antecedents of engagement that is class characteristics. Class characteristics were defined as frequency of mental activities in class such

as analyzing information, synthesizing information from various sources, making value judgments of ideas and also applying information. Such higher thinking skills have been found to increase student involvement, persistence, enjoyment and effort (Tagg, 2003; Laird et al., 2005).

Even though the study was correlational in nature, logically it can be expected that classroom situations would affect challenge skill balance rather than the other way round with challenge skill balance affecting classroom activities defined by the teacher. These higher order thinking skills will result in a challenge skill balance because they are inherently challenging and by controlling their occurrence in the classroom, the instructor creates a balance between these challenges and skills. A similar logic can be proposed for engagement/flow leading to effort. Effort will result from being involved in the activity rather than in the opposite direction. Therefore, it was hypothesized that class characteristics will predict challenge skill balance and challenge skill balance was hypothesized to predict engagement which resulted in students' effort. As discussed earlier, effort is an outcome of engagement, engaged students make more effort in their work, therefore to test the validity of WOLF as a measure of engagement, effort was used as a criterion variable. All of these hypothesized relationships were found to be true. As can be seen from the results, flow was a strong predictor of student effort as an outcome of engagement. This further validates the use of the WOLF as a measure of student engagement because it predicts student effort which is an outcome of student engagement.

Also, class characteristics significantly predicted student effort and predicted challenge skill balance and challenge skill balance was a strong predictor of flow. If causality can be logically assumed, because challenge skill balances cannot logically affect the work required in the classroom, the current finding indicates that challenge and the balance of skills used to meet this challenge are affected by the characteristics of the class such as analyzing, synthesizing and making value judgments of ideas and application of knowledge to new situations, namely deep thinking skills. Therefore challenge skill levels are dictated by what is done in the classroom and this challenge skill balance in turn predicts flow.

Challenge skill balance as a strong predictor of flow is in accord with what some researchers have proposed, Quinn (2005) suggested that challenge skill balance is an antecedent or precondition to flow rather than a part of the flow experience. Quinn (2005) has suggested that challenge skill balance along with feedback and goal clarity; make it possible to experience flow which is made up of concentration and action awareness merging which leads to the

44

consequences of flow, namely, autotelic experience, time transformation as well as sense of control and loss of self-consciousness. This can be argued to be true, because Csikszentmihalyi (1988) has also asserted that flow cannot occur without challenge skill balance, making it an important precondition of flow rather than a part of it. The present study also confirmed this finding and showed that challenge skill balance is a precondition of flow rather than a part of the flow experience.

Overall, class characteristics of frequency of analyzing, synthesizing, making judgments and application, affected flow and effort and challenge skill balance which predicted flow and flow was a predictor of student effort as measured by NSSE using the frequency of activities the student did for the class, such as reading for class, preparing presentations, interacting with people outside of class for class activities etc.. This entire model indicates that challenge skill levels can be modified in the classroom and also that challenge skill balance is a precondition of flow, giving us a direct method of influencing the flow experience in the classroom which is a predictor of positive outcomes such as effort. Other research has established that student effort is related to academic success, student commitment and motivation (Hu & Kuh, 2005; Carani, Kuh & Klein, 2006; Hugh & Pace, 2003).Student engagement/flow has also been found to be related to psychological and physical student well being (Steele, 2006). Therefore influencing flow in the classroom by modifying class characteristics could affect the overall student learning experience and improve student outcomes and foster positive psychological states.

To summarize, the present study found that the FSS-II is a nine dimensional and adequate measure of the flow experience; however, WOLF was a better fit with the data and was therefore a more reliable and internally consistent measure of flow. It was also concluded that WOLF and UWES are measures of the same underlying construct of engagement and the WOLF was a predictor of student effort in the classroom and was predicted by class characteristics as well as challenge skill balance. These findings have theoretical and practical implications which are discussed next.

Theoretical Implications

This study was aimed at studying several theoretical issues. The first and most important contribution of the present research was the conceptualization of student engagement. As mentioned earlier, student engagement is an important aspect of academic work and is

increasingly becoming a way of assessing institutional quality (Hu & Kuh, 2005). However, current measures of student engagement such as the NSSE measure engagement in an oversimplified manner by measuring engagement as time spent on the activity which does not account for the quality of actions and can be argued to be a consequence of engagement rather than a symptom (Marks, 2001). The NSSE is also an overall, broad measure of educational experience rather than just focusing on engagement itself. This conceptualization misses the underlying psychological processes involved in engagement such as involvement, absorption and enjoyment of the work and assumes that all engagement is overtly observable. Also, the Schaufeli et al. (2002) conceptualization of engagement which defines engagement as consisting of vigor, dedication and absorption is atheoretical as it was created in response to looking at the opposite of job burnout (Maslash & Leiter, 1999).On the other hand, flow is a strongly theoretically grounded concept based upon extensive qualitative interviews and ESM studies to establish its components.

The current research empirically assessed the relationship between the constructs of flow and engagement. As noted earlier, there is contradictory evidence as to whether flow is an outcome of engagement (Steele, 2006; Schaufeli et al., 2005). Other researchers have asserted that flow is a peak experience of engagement (Schaufeli, 2002). Shernoff et al. (2004) have asserted that flow culminates in engagement. The current research, using a second order factor analysis, where it was found that both flow and engagement load on the same underlying construct, has shown that flow as conceptualized and measured by the WOLF is the same as engagement measured and conceptualized by the UWES. This is an important implication because it can help consolidate the literature in the flow and engagement areas and also give researchers a more theoretically grounded and strong measure of student engagement.

Another theoretical issue was concerned with establishing flow as a valued positive organizational construct. Luthans (2002) said that constructs in the area of positive organizational behavior should have the characteristics of being empirically measurable, changeable and state like. This research shows that flow is such a construct. The ability of class characteristics to influence flow through challenge skill balance shows that flow is changeable by influencing classroom characteristics in terms of increasing the frequency of mental activities such as analyzing, applying concepts and making value judgments. This further establishes flow

as a valid predictor of positive workplace outcomes and as a positive organizational behavior construct.

Demerouti (2006) asserted that research examining positive work related experiences such as flow is one way of studying organizational health psychology in a positive fashion. At the same time, flow has mainly been explored in the area of sports and leisure activities and work on flow in the area of work and academics is limited (Exceptions, Massimini & Carli (1988); Shernoff et al. (2004)). This study assessed the existence of flow in academic work and showed that this flow can be modified in the classroom and that flow also predicts important outcomes such as effort.

A fourth implication of the current work is the conceptualization of flow and how it is measured. A criticism of flow theory is that flow is often conceptualized and measured in different ways. The current research compared the nine-dimensional model of flow to the three dimensional model. Even though the nine-dimensional model had moderately good fit to the data, the three dimensional model had a much better fit and established that academic flow is better measured by the WOLF. The current research also supported previous assertions that challenge skill balance is a precondition of flow rather than a part of the flow experience (Quinn, 2005, Chen et al., 1999, Bakker, 2005) indicating that the nine-dimensional model requires change and contains some antecedents and consequences of the flow experience rather than measuring the core experience of flow itself The three dimensional model also seems more appropriate because it measures the basic experience of flow rather than focusing on other extraneous aspects which may or may not be experienced in every flow situation such as time transformation, loss of self consciousness etc, making it more likely that we are measuring the flow experience correctly, rather than relying on aspects such as time transformation that may not have occurred even though flow occurred.

The fifth and final contribution of the present research was in establishing the construct validity of the WOLF as a measure of flow. The WOLF is a newer measure of the flow experience and its construct validity and dimensionality has not been tested extensively, this research established that it is a strong, reliable measure of flow containing the three dimensions of intrinsic motivation, enjoyment and absorption. It was found through the second order factor analysis that these dimensions of engagement are very similar to the three dimensions of WOLF.

Practical Implications

Engagement is gaining importance as a measure of instructional quality and success. The current study cited previous research on the importance of engagement in the academic arena and also the burgeoning lack of student engagement (Shernoff et al., 2003). Increasing flow is suggested as a solution to increasing student engagement in academic activities. A key component of flow is intrinsic motivation, intrinsic motivation is defined as doing something for its own sake, which implies that it is self generated and also affected by challenge skill balance, which was found in the present research to affect classroom mental activities. By modifying mental activities used in the classroom such as increasing frequency of activities requiring analysis of ideas, application and value judgments of ideas, could challenge students more and thereby increase flow and engagement in academics. In turn, engagement has been found to have positive outcomes for students, research has also shown that students who experience flow continue to develop their talents (Delespaul, 2004). Also flow is autotelic in nature (Csikszentmihalyi, 2000) and students once experiencing flow are likely to seek to it out and thereby continue to put in effort, which has been shown to predict outcomes such as student commitment, grades motivation and successful college completion (Carani, Kuh , & Klein, 2006) as well as physical and psychological well being (Steele, 2006).

Therefore, if causality can be established with non-correlational data, increasing flow through modifying classroom characteristics can have a far reaching impact on student well-being (Steele, 2006)and success (Hu & Kuh, 2006). Modifying classroom characteristics is a noteworthy precursor to flow, challenge skill balance is not overtly perceived by the instructor, however, changing the nature of mental activities (to encourage deep learning) in the class has the effect of changing the challenge skill balance which in turn affects flow. All this indicates changing situational characteristics in the classroom will increase student engagement as defined by flow.

Changing classroom characteristics is relatively easy and can be trained and there has already been a shift towards encouraging deep learning over surface learning (Laird, Schwarz, Shoup , & Kuh, 2005). Other academic antecedents to flow have been studied, such as instructor autonomy supportive teaching style, feedback clarity and environmental clarity (Steele, 2006). These factors, although not studied in the present study, can also be utilized to improve student flow. This can be done by providing frequent feedback, clearly communicate goals and clear

expectation and instructions for assignments and projects (Steele, 2006). Therefore an important implication of this research is that increasing flow by changing situational characteristics can result in positive outcomes.

As mentioned earlier, student engagement is becoming an important factor in assessing institutional quality. However, the current measure of student engagement (NSSE) is atheoretical and measures consequences of engagement (effort) and does not measure the underlying process of engagement. By assessing the relationship between a preexisting measure of engagement and WOLF as well as testing the validity of the WOLF using a nomological net, this research established that the WOLF is a measure of student engagement, and due to its higher reliability as well as correlations with criterion variables, it may be beneficial to use this measure of student engagement over other measures to assess academic engagement in a way that is theoretically consistent with the underlying psychological process of engagement and would also allow researchers to better assess the relationship of engagement with other psychological constructs.

To sum, the major implications of this research include the conceptualizations of flow, engagement and the consolidation of their literatures. The present study also contributes to the literature by providing a strong and theoretical way of measuring student engagement using the WOLF and further extending the work on antecedents and consequences of this student engagement drawing from both the engagement and flow literatures.

Limitations

This study like any other has certain constraints and limitations. One possible cause of bias could have been priming effect. Because students were primed to think about their most enjoyable college course and answered the survey based upon their experience of that course. Due to this positive priming, it is possible that students would have rated their experiences more positively than they would have otherwise, thus inflating the relationship between class characteristics and flow. Since class characteristics as well as the effort scales were normally distributed, effect of priming was thought to be minimal. Even though there was some skew in the flow and engagement scales, this was deemed acceptable because of the relationship between enjoyment, flow and engagement. People who enjoyed a course would logically be expected to

experience high flow and engagement. Therefore the effect of priming was thought to be negligible.

One major limitation of the present work is its empirical nature. The results are empirically based making sample specificity of the results a concern. However, since the sample size required by the study was quite large, cross validation could not be attempted in the current study.

Due to the focus of the study on an enjoyable academic experience, class characteristics from classes students did not enjoy could not be compared to those that they did enjoy. Consequently, the occurrence or lack of flow and engagement in other classes not cited as enjoyable could not be studied. This limits the generalizability of the results from this study to some extent. However, since this study was a beginning step in understanding the relationship between flow and engagement, giving students some common platform for both the scales was important. Also, since students from different disciplines and areas of study were a part of the study, enjoyable classes meant different things for different participants, which implies that different class characteristics were interesting for the participants, thus minimizing the restriction of the instructions on the participants' recall of the class characteristics.

A potential monomethod bias was also explored. A monomethod bias may exist when the same source is used to collect all the information, making the effects an artifact of the method, in this case, surveys. At the same time, recent research has asserted that monomethod bias is exaggerated in the literature and the problem is not as widespread as claimed (Spector, 2006). However in the present research, mono method bias was tested for using Harman's single factor test. The Harman's single factor test is one of the most commonly used techniques for testing the occurrence of common method variance. One can load all variables into an exploratory factor analysis with the logic being that if a substantial amount of common method variance is present a single factor will emerge or that there will be one general factor accounting for most of the variance (Podsakoff et al., 2003). The present study yielded a multiple factor solution, with more than one factor accounting for large portions of the variance, indicating mono method bias may not be a problem.

One important limitation of the study is its cross-sectional nature and thereby an inability to establish causality. Even though Structural Equational modeling is thought to be a strong method for assessing hypothesized causal relationships using correlational data, it is still possible

that the direction of causality was different from hypothesized. However, all hypotheses were strongly grounded in theory and follow logic. For example, it is logical that class characteristics would lead to a perception of challenges and skills rather than the other way round.

The final limitation of the current study is that the study was limited to a single university and the validity of the results to other universities, community colleges and other academic settings as well as organizational settings is unknown. However, the results are promising and indicate directions for future research.

Directions for future research

Currently there is extensive debate on the nature of engagement and how it is measured. Researchers assert that it is a case of old wine in new bottles (Newman & Harrison, 2008) and others argue that it is a powerful positive workplace outcome. The current study has added to the debate by showing that the WOLF is a good measure of at least student engagement. However, this was preliminary work which needs to be extended further to assess whether WOLF is a viable measure that uniquely contributes to worker engagement and the measure of job attitudes.

The current study provides a good way of studying student engagement in terms of the WOLF, however, this is preliminary work and WOLF was designed to measure work engagement. Therefore modifications and further validation is needed to use WOLF in an academic setting.

One direction that continuing research in this area could take is to explore more antecedents of engagement and flow in the academic setting. This study indicated that flow and engagement occur in the presence of certain class characteristics. Other factors that can be explored are institutional characteristics such as resources, student support, feeling of belonging to the university. From the perspective of the student factors that could affect current student involvement include previous academic experiences, expectations from college as well as individual factors such as socio economic status and personality factors including introversion, conscientiousness and openness to experience.

All the variables in the current study can be studied in an industrial setting. The concept of engagement in the workplace is not a new concept, as stated previously WOLF was originally designed to measure workplace flow, more work is needed to assess its validity as a measure of workplace engagement. Characteristics of the workplace can also be hypothesized to affect

engagement. Research on antecedents and outcomes of workplace engagement does exist (Schaufeli et al., 2005), however it can now be further extended by consolidating work on flow and engagement and by using the WOLF as a measure of this positive experience.

Lastly, the findings from this study can be applied to academic settings, assuming that the results can be validated by further research. Research can then focus upon training instructors to structure classes to maximize deep thinking and balance challenges and skills. Such training would result in students mentally involved in academic endeavors who enjoy the results of the positive experience of flow and engagement in the classroom.

Conclusions

To summarize, this study addressed the issue of student engagement and flow by establishing that the WOLF is a more reliable measure of the flow experience and flow and engagement are measures of the same underlying latent constructs. WOLF was also found to be affected by higher order thinking skills and by challenge skill balance which suggested a way for changing the engagement of students in the classroom by increasing the frequency of activities requiring higher thinking skills. The current research also suggests another way of measuring work engagement through the WOLF to aid the ongoing debate on engagement and its measurement. The current research also suggests consolidating the research on engagement and flow, enriching understanding of both concepts and reducing some of the jangle in the area of job attitudes.

References

Allison, M.T. & Duncan, M.C. (1988). Women, work and flow. In Csikszentmihalyi, M.,Csikszentmihalyi, I. (Eds.). *Optimal experience: Psychological studies of flow in consciousness*. Cambridge: Cambridge University Press.

Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103, 411-423.*

Bakker, A.B. (2005). Flow among music teachers and their students: The crossover of peak experiences *Journal of Vocational Behavior, 66,* 26-44.

Beckers, D.G.J., Van der Linden, D., Smulders, P.G.W., Kompier, M.A.J., Van Veldhoven, M.J.P.M. & Van Yperen, N.W. (2004). Working overtime hours: Relations with fatigue, work motivation, and the quality of work. *Journal of Occupational and Environmental Medicine, 46*, 1282-1289.

Biggs, J.B. (1989). Approaches to the enhancement of tertiary teaching. *Higher Education Research and Development*, 8, 7-25.

Britt, T.W., Castro, C.A. & Adler, A.B. (2005). Self-Engagement, Stressors and Health: A longitudinal Study. *Personality Social Psychological Bulletin*, 11, 1475-86.

Byrne, B.M. (2001). Structural Equation Modeling with AMOS: Basic Concepts, Applications and Programming. Lawrence Earlbaum Associates Publishers, NJ.

Campbell, D T & Fiske, D W. (1959). Convergent and discriminant validation by the multitrait-multimethod matrix. *Psychological Bulletin*, 56, 81-105.

Carani., R.M., Kuh, G.D., & Klein, S.P. (2006). Student Engagement and student learning: Testing the Linkages. *Research in Higher Education*, 47, 1-32.

Carini, R. M., Kuh, G. D., and Klein, S. P. (2004, April). *Student Engagement and Student Learning: Insights From a Construct Validation Study.* Paper presented at the annual meeting of the American Educational Research Association, San Diego, CA.

Chen, H., Wigand, R.T., & Nilan, M.(1999). Optimal experience of web activities. *Computers in Human Behavior, 15*(5), 585-608.

Chickering, A. W. & Gamson, Z. F. (1987). Seven principles for food practice in undergraduate education. *AAHE Bulletin*, 39(7), 3-7.

Christenson, S.L.,Sinclair, M.F., Lahr, C.A., & Godber,Y.(2001). Promoting successful school completion: Critical conceptual and methodological guidelines. *School Psychology Quarterly, 16* (4). 468-484.

Christian, M.S., & Slaughter, J.E. (2007, August). Work engagement: A meta-analytic review and directions for research in an emerging area. Paper presented at the sixty-seventh annual meeting of the Academy of Management, Philadelphia, Pennsylvania.

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.

Csikszentmihalyi, M. & Graef, R. (1980). The Experience of Freedom in Daily Life. *American Journal of Community Psychology*, 8, 401-414.

Csikszentmihalyi, M. & Kubey, R. (1981). Television and the Rest of life: A Systematic Comparison of Subjective Experience. *The Public Opinion Quarterly*, 45, 317-328.

Csikszentmihalyi, M. (1975). *Beyond boredom and anxiety*. San Francisco: Jossey Bass.

Csikszentmihalyi, M. (1988). The Flow Experience and its Significance for Human Psychology. In Csikszentmihalyi, M., & Csikszentmihalyi, I. (Eds.). (1988). *Optimal experience: Psychological studies of flow in consciousness*. Cambridge: Cambridge University Press.

Csikszentmihalyi, M., Rathunde, K., & Whalen, S. (1993). *Talented Teenagers: The Roots of success and failure.* New York: Cambridge University Press.

Delespaul, P.A.E.G., Reis,H.T., & Devries, M.W.(2004). Ecological and motivational determinants of activation: Studying compared to sports and watching tv. *Social Indicators Research, 67*, 129-143.

Delle Fave, A., & Massimini, F.(2005). The Investigation of Optimal Experience and Apathy: Developmental and psychosocial Implications. *European Psychologist*, 10, 264-274.

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.

Demerouti, E.(2006). Job Characteristics, Flow, and Performance: The Moderating Role of Conscientiousness. *Journal of Occupational Health Psychology,* 11, 266-280.

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.

Dutton, J., Glynn, M.A. Spreitzer, G. 2006. Positive Organizational Scholarship. In J. Greenhaus and G. Callahan, (Eds.) *Encyclopedia of Career Development*, Thousand Oaks, Ca. Sage.

Eisenberger., R, Jones, J.R., Stinglhamber, F., Shanock, L. & Randall, A.T.(2005). Flow Experiences at Work: for high needs achievers alone? *Journal of Organizational Behavior*, 26, 755-775.

Ghani, J.A., Deshpande, S.P.(1994). Task Caracteritsics and the experience of optimal flow in human-computer interaction. *The Journal of Psychology*, 128, 381-391.

Griffin, M.A., Parker, S.K. & Neal, A. (2008). Is Behavioral Engagement a Distinct and Useful Construct?. *Industrial and Organizational Psychology*,1,48-51.

Hackman, J.R., & Oldham, G.R. (1980). *Work redesign.* Reading, MA: Addison-Wesley

Hallberg, U., Schaufeli, W.B. (2006). "Same same" but different: Can work engagement be discriminated from job involvement and organizational commitment? *European Psychologist, 11, 119-127*.

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.

Harter, J,K., Schmidt, F.L. & Keyes, K.L.M. (2003). Well- Being In the Workplace and its Relationship to Business Outcomes: A review of the Gallup Studies.In *Flourishing: The Positive Person and the Good Life*. American Psychological Association.

Hu, L., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6,* 1–55.

Hu. S., & Kuh, G.D. (2002). Being disengaged in educationally purposeful activities: The influence of student and institutional characteristics. *Research in Higher Education*, 43, 555-575.

Hughes, R., and Pace, C. R. (2003). Using NSSE to study student retention and withdrawal. *Assessment Update,* 15,1—2

Jackson S.A. & Roberts, G.C. (1992). Positive performance states of athletes: Toward a conceptual understanding of peak performance. *The Sport Psychologist, 6,* 156-171.

Jackson, S.A., & Eklund, R.C. (2002). Assessing flow in physical activity: The Flow State Scale-2 and Dispositional Flow Scale-2. *Journal of Sport and Exercise Psychology, 24*, 133-150.

Jackson, S.A., & Eklund, R.C. (2002). Assessing flow in physical activity: The Flow State Scale-2 and Dispositional Flow Scale-2. *Journal of Sport and Exercise Psychology, 24*, 133-150.

Jackson, S.A., & Marsh, H.W.(1996). Development and validation of a scale to measure optimal experience. The Flow State Scale. *Journal of Sport and Exercise Psychology,* 18, 17-35.

.Kahn, W.A. (1990). Psychological conditions of personal engagement and disengagement at work. *Academy of Management Journal, 33*, 692-724.

Kanungo, R. N. (1982). Measurement of job and work involvement. *Journal of Applied Psychology*,67, 341–349

Konstantellou, E (2001). *An Exploratory Investigation of Enjoyment at Work: A Cross-National Approach* (Unpublished Master Thesis). Department of Psychology, University of Surrey, UK.

Kowal, I. & Fortier M.S. (1999). Motivational Determinants of flow: Contributions from Self Determination theory. *Journal of Social Psychology*, 139, 355-368.

Kuh.G.D., Kinzie, J., Curce, T., Shoup, R. & Gonyea, R. *Connecting the Dots: Multifaceted Analyses of the Relationships between student Engagement Results from the NSSE, and the institutional Practices and Conditions That Foster Student Success.*

Laird, T.F.N., Shoup, R. & Kuh, G.D. (2005). Measuring Deep Approaches to Learning Using the National Survey of Student Engagement. Paper presented at the Annual Meeting of the Association for Institutional Research, May 14 – May 18, 2005.

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, 123-33.

LeFevre, J. (1988). Flow and the quality of experience during work and leisure. In Csikszentmihalyi, M., & Csikszentmihalyi, I. (Eds.). *Optimal experience: Psychological studies of flow in consciousness*. Cambridge: Cambridge University Press.

Llorens, S., Schaufeli, W.B. & Bakker, A. & Salanova, M. (2007). Does a positive gain spiral of resources, efficacy beliefs and engagement exist? *Computers in Human Behavior*,23,825-41.

Luthans F. (2002). The Need For And The Meaning Of Positive Organizational Behavior. *Journal Of Organizational Behavior*,23, 695-706.

Macy, W. H. & Schneider, B. (2008). The Meaning of Employee Engagement. *Industrial and Organizational Psychology. Perspectives on science and practice, 1,*3-30.

Marks, H.M. (2000). Student Engagement in Instructional Activity: Patterns in the Elementary, Middle and High School Years. *American Education Research Journal*, 37, 153-184.

Marsh H.W. & Jackson, S.A. (1999). Flow Experience in Sport. Construct Validation of Multidimensional, Hierarchical State and Trait responses. *Structural Equation Modeling*, 6, 343-71.

Maslach, C. & Leiter, M.P. (1997). *The truth about burnout: How organizations cause personal stress and what to do about it.* Jossey Bass.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *Maslach Burnout Inventory – Manual* (3rd revised edition). Palo Alto, CA: Consulting Psychologists Press.

Maslach, C., Schaufeli, W.B., & Leiter, M.P. (2001). Job burnout. *Annual Review of Psychology, 52,* 397-422.

Massimini, F. & Carli, M. (1988)The Systematic Assessment of flow in daily experience. In Csikszentmihalyi, M., & Csikszentmihalyi, I. (Eds.). *Optimal experience: Psychological studies of flow in consciousness*. Cambridge: Cambridge University Press.

May, D.R., Gilson, R.L. & Harter, L.M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology, 77*, 11-37.

Meyer, J. P., & Allen, N. J. (1997). *Commitment in the workplace: Theory, research, and application.* Newbury Park, CA: Sage.

Morrow, P.C (1993). *The Theory and Measurement of Work Commitment*, JAI Press, Greenwich, CT.

Muis, K.R., Winne, P.H. & Jamison-Noel, D. (2007). Using a multitrait-multimethod analysis examine conceptual similarities of three self regulated learning inventories. *British Journal of Educational Psychology*, 77, 177-195.

Nakamura, J. & Csikszentmihalyi, M. (2002). The Concept of Flow. In C.R. Snyder & S.J. Lopez (Eds.).*Handbook of Positive psychology*. (pp 89-105) New York. Oxford University Press.

Netemeyer, Richard G., Mark Johnston and Scot Burton (1990), "An Analysis of Role Conflict and Role Ambiguity in a Structural Equations Framework," *Journal of Applied Psychology*, 75 ,148-157.

Newman, D.A. & Harrison, D.A. (2008). Been There, Bottled That: Are State and Behavioral Work Engagement New and Useful Construct "Wines"? *Organizational Psychology. Perspectives on science and practice, 1*,31-36.

Podsakoff, P.M., MacKenzie, S.B., Lee, J.Y., & Podsakoff, N.P.(2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88, 879-903.

Quinn, R.W. (2005). Flow In Knowledge Work: High Performance Experience In The Design Of National Security Technology. *Administrative Science Quarterly*, 50, 610-641.

Salanova, M., Bakker, A.B. & Llorens (2006). Flow at Work: Evidence for an Upward Spiral of Personal and Organizational Resources. *Journal of Happiness Studies*, 7,1, 1-22.

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. & Salanova (2007). Work Engagement: An Emerging Psychological Concept and Its Implications for Organizations. Gilliland, S.W., Steiner, D.D. & Skarlicki, D.P. (Eds.), *Research in Social Issues in Management (Volume 5): Managing Social and Ethical Issues in Organizations.* Greenwich, CT.

Schaufeli, W.B. Taris, T.W.,Le Blanc, P. Peeters, M. Bakker, A. & De Jonge, J. (2001). Maakt arbeid gezond? Op zoek naar de bevlogen werknemer [Does work make happy? In search of the engaged worker]. *De Psycholoog, 36,* 422-428.

Schaufeli, W.B., Martinez, I., Marques Pinto, A. Salanova, M & Bakker, A.B. (2002b). Burnout and Engagement in university students: A cross national study. *Journal of Cross- Cultural Psychology, 33,* 464-481.

Schaufeli, W.B., Martinez, I., Marques Pinto, A. Salanova, M & Bakker, A.B. (2002b). Burnout and Engagement in university students: A cross national study. *Journal of Cross- Cultural Psychology, 33,* 464-481.

Schaufeli, W.B., Salanova, M., Gonzalez-Roma. V. & Bakker, A.B. (2002a). The measurement of Engagement and burnout: A confirmative analytic approach. *Journal of Happiness Studies, 3,* 71-92.

Seligman, M. E. P., & Csikszentmihalyi, M. (2000). Positive psychology: an Introduction. *American Psychologist, 55,* 5-14.

Shernoff, D.J. & Hoogstra, L. (2001). Continuing motivation beyond the high school classroom. *New directions in Child and Adolescent Development, 93,* 73-87.

Shernoff, D.J., Csikszentmihalyi, M., Schneider, B., Shernoff, E.S.(2003). Student Engagement in High School Classrooms from the perspective of Flow theory. *School Psychology Quarterly*, 18, 158-176

Shirom, A. (2003). Feeling vigorous at work? The construct of vigor and the study of positive affect in organizations. In D. Ganster & P. L. Perrewe (Eds.), *Research in organizational stress and well-being.* (Vol. 3, pp. 135-165). Greenwich, CN: JAI Press

Sonnentag, S. (2003). Recovery, work Engagement, and proactive behavior (2003): A new Look at the interface between non-work and work. *Journal of Applied Psychology, 88*, 518-528.

Spector, P.E. (2006). Method Variance in Organizational Research. Truth or legend. *Organizational Research Methods*,9, 221.

Spector, P.E., Chen, P.Y. & O'Connell,B.J.(2000). A longitudinal study of the relations between job stressors and job strains while controlling for prior negative affectivity and strains. *Journal of Applied Psychology*, 85, 211-218.

Steele, J.P. (2006). Flow Among Students: Antecedents & Consequences. Unpublished Master's Thesis, Kansas State University, Kansas.

Tabachnick, B.G. & Fidell, L.S.(2006). *Using Multivariate Statistics* (5th ed.) Allyn and Bacon. Boston.

Tagg, J. (2003). *The learning paradigm college*. Boston, MA: Anker.

Widaman, K.F. (1985). Hierarchically Nested Covaraince Structure Models for Multitrait

Multimethod Data. *Applied Psychological Measurement*, 9, 1-26.

Appendix A - Means, Standard Deviations and Correlations Amongst Measures

Table A-1: Means, Standard Deviations and Correlations

Measure	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1.C Skill Balance	3.83	.67	--															
2. Action A Merge	3.47	.70	.566**	---														
3. Goal Clarity	4.04	.67	.622**	.595**	---													
4. Feedback	4.06	.67	.556**	.540**	.772**	---												
5. Concentration	3.36	.77	.55**	.604**	.575**	.526**	---											
6. Sense Of Control	3.68	.76	.53**	.632**	.706**	.649**	.603**	---										
7. Loss Of Consciousness.	3.37	.81	.299**	.459**	.370**	.375**	.395**	.507**	---									
8. Time Distortion	2.81	.83	.224**	.364**	.211**	.147**	.444**	.255**	.255**	---								
9. Autotelic	3.69	.79	.620**	.584**	.643**	.534**	.688**	.541**	.541**	.428**	---							
10. Engagement	4.37	1.01	.573**	.438**	452**	.360**	.643**	.402**	.217**	.452**	.720**	--						
11. WOLF Absorption	3.63	1.25	.403**	.381**	.340**	.239**	.567**	.330**	.330**	.559**	.576**	.721**	---					
12. WOLF I. M.a	3.52	1.37		.419**	.326**	.246**	.551**	.351**	.351**	.411**	.591**	.687**	.700**	--				
13. WOLF Enjoyment	4.49	1.25		.551**	.537**	.465**	.633**	.504**	.504**	.375**	.764**	.744**	.663**	.732**	---			
14. Effort			.302**	.258**	.179**	.132**	.252**	.122**	.116*	.232**	.373**	.391**	.307**	.378**	.366**	---		
15. Analyzing	2.69	.84	.327**	.257**	.231**	.178**	.249**	.165**	.053	.170**	.373**	.379**	.290**	.285**	.351**	.500**	--	
16. Synthesizing	2.95	.81	.347**	.251**	.254**	.213**	.165**	.162**	.140**	.111*	.310**	.353**	.283**	.203**	.309**	.385**	.575**	--
17. Judgments	2.81	.85	.308**	.257**	.236**	.193**	.219**	.147**	.122**	.189**	.299**	.321**	.276**	.212**	.287**	.381**	.473**	.536**
18. Application	2.99	.82	.317**	.202	.240	.228**	.195**	.172**	.079	.132**	.275**	.320**	.202**	.160**	.291**	.337**	.430**	.523

N= 485; [a]I.M.: Intrinsic Motivation; ** p<.01

Appendix B - Measurement Properties of FSS-II

Table B-1: Measurement Properties of FSS-II

Dimensions	Standardized Loadings	Reliability	Variance Extracted Estimates
Concentration	---	.62*	.64
λ1	0.757	0.57	
λ2	0.746	0.56	
λ3	0.729	0.53	
λ4	0.709	0.50	
Control	---	.69*	.64
λ1	0.846	0.71	
λ2	0.843	0.71	
λ3	0.797	0.63	
λ4	0.695	0.48	
Loss of consciousness	---	.52*	.43
λ1	0.851	0.72	
λ2	0.543	0.29	
λ3	0.336	0.11	
λ4	0.758	0.57	
Time transformation	---	.58*	.50
λ1	0.666	0.44	
λ2	0.703	0.49	
λ3	0.76	0.58	
λ4	0.692	0.48	
Autotelic	---	.64*	.57
λ1	0.804	0.64	
λ2	0.789	0.62	
λ3	0.689	0.47	
λ4	0.735	0.54	
Feedback	--	.65*	.59
λ1	0.804	0.64	
λ2	0.775	0.60	
λ3	0.767	0.59	
λ4	0.717	0.51	
Goal Clarity	---	.60*	.53
λ1	0.762	0.58	
λ2	0.729	0.53	
λ3	0.773	0.59	

λ4	0.626	0.39	
Action Awareness			
merging	---	.57*	.49
λ1	0.642	0.41	
λ2	0.785	0.61	
λ3	0.547	0.29	
λ4	0.792	0.63	
Challenge Skill			
Balance	---	.56*	.47
λ1	0.694	0.48	
λ2	0.688	0.47	
λ3	0.78	0.60	
λ4	0.56	0.31	

Appendix C - Measurement properties of WOLF

Table C-1: Measurement Properties of WOLF

	Standardized Loadings	Reliability	Variance Extracted Estimates
Absorption		0.75*	.72
$\lambda1$	0.766	0.586	
$\lambda2$	0.856	0.732	
$\lambda3$	0.894	0.799	
$\lambda4$	0.875	0.765	
Enjoyment		0.82*	.80
$\lambda1$	0.772	0.595	
$\lambda2$	0.922	0.850	
$\lambda3$	0.954	0.910	
$\lambda4$	0.915	0.837	
Intrinsic Motivation		0.96*	.90
$\lambda1$	0.877	0.769	
$\lambda2$	0.85	0.722	
$\lambda3$	0.908	0.824	
$\lambda4$	0.733	0.537	
$\lambda5$	0.778	0.605	
$\lambda6$	0.779	0.606	

* indicates composite reliability

Appendix D - Measurement Properties of UWES

Table D-1: Measurement Properties of UWES

Construct and Indicators	Standardized Loadings	Reliability	Variance Extracted Estimates
UWES	---	.928*	.439
$\lambda 1$	0.518	0.268	
$\lambda 2$	0.711	0.505	
$\lambda 3$	0.489	0.239	
$\lambda 4$	0.516	0.266	
$\lambda 5$	0.541	0.292	
$\lambda 6$	0.656	0.430	
$\lambda 7$	0.448	0.200	
$\lambda 8$	0.675	0.455	
$\lambda 9$	0.728	0.529	
$\lambda 10$	0.687	0.471	
$\lambda 11$	0.748	0.559	
$\lambda 12$	0.692	0.478	
$\lambda 13$	0.711	0.505	
$\lambda 14$	0.784	0.614	
$\lambda 15$	0.706	0.498	
$\lambda 16$	0.753	0.567	
$\lambda 17$	0.766	0.586	

* indicates composite reliability

Appendix E - Flow State Scale II (FSS II)

From Jackson & Eklund (2002)

_____

We would like you to think about a class you have taken (or are currently taking) at K-State that was really enjoyable. One in which you evaluated the instructor very highly. This assessment asks about the frequency of thoughts and feelings that you may or may not have experienced in that class. There are no right or wrong answers. Think how frequently you experienced these feelings and thoughts when doing work for that class. Circle the number that best matches your experience from the options to the right of each question.

1	2	3	4	5
Never	Infrequently	Sometimes	Frequently	Always

1. I was challenged, but I believe my skills allowed me to meet the challenges of this class	1	2	3	4	5
2. I made the correct decisions and actions without thinking about trying to do so.	1	2	3	4	5
3. I knew clearly what I should be doing for this class.	1	2	3	4	5
4. It was really clear to me when I was doing well.	1	2	3	4	5
5. My attention was focused entirely on the work that I was doing for the class.	1	2	3	4	5
6. I felt I was in total control of what I was doing.	1	2	3	4	5
7. I was not concerned with what others may have been thinking of me.	1	2	3	4	5
8. Time seemed to alter (either slowed down or speeded up).	1	2	3	4	5
9. I really enjoyed working for this class.	1	2	3	4	5
10. My abilities matched the high challenge of class.	1	2	3	4	5
11. When working for this class, things just seemed to happen automatically.	1	2	3	4	5
12. I had a strong sense of what I needed to do to perform well in that class.	1	2	3	4	5
13. I was aware of how well I was doing in class.	1	2	3	4	5
14. It was no effort to keep my mind on what I was doing when working in class.	1	2	3	4	5

	1	2	3	4	5
15. I felt like I could control what I was doing.	1	2	3	4	5
16. I was not worried about my performance while working in class.	1	2	3	4	5
17. The way time passed seemed to be different from normal when I was studying for class.	1	2	3	4	5
18. I loved the feeling of working well in class and will try to capture it again.	1	2	3	4	5

	1	2	3	4	5
19. I felt I was competent enough to meet the high demands of this class.	1	2	3	4	5
20. In working for class I felt that I performed almost automatically.	1	2	3	4	5
21. I had a clear idea of what I wanted to achieve in class.	1	2	3	4	5
22. I had a good idea while I was working for class about how well I was doing.	1	2	3	4	5
23. I had total concentration when studying for this class.	1	2	3	4	5
24. I had a feeling of total control in class.	1	2	3	4	5
25. I was not concerned with how I was presenting myself in class.	1	2	3	4	5
26. I felt like time stopped when I was working in class.	1	2	3	4	5
27. My class experiences left me feeling great.	1	2	3	4	5
28. The challenge of class and my skills were at an equally high level.	1	2	3	4	5
29. I did things spontaneously and automatically without having to think when working for class.	1	2	3	4	5
30. My goals were clearly defined in class.	1	2	3	4	5
31. While working for class I could tell how well I was doing.	1	2	3	4	5
32. I was completely focused on the work that I had to do for class.	1	2	3	4	5
33. I felt in total control of what I was doing in class.	1	2	3	4	5
34. I was not worried about what others in class might have been thinking about me.	1	2	3	4	5
35. At times, it almost seemed like things happened in slow motion while working for class.	1	2	3	4	5
36. I found the experience of that class extremely rewarding.	1	2	3	4	5

Appendix F - The Work-Related Flow Inventory (WOLF)

Modified from Bakker (2005)
The following statements refer to the way in which you experienced your academic work for a class that you enjoyed. Please indicate how often you experienced each of the statements. (1 = never, 7 = always)

1	2	3	4	5	6	7
Never	Almost Never	Rarely	Sometimes	Often	Very Often	Always

1. When I am working, I think about nothing else	1	2	3	4	5	6	7
2. I get carried away by my work	1	2	3	4	5	6	7
3. I am working, I forget everything else around me	1	2	3	4	5	6	7
4. I am totally immersed in my work	1	2	3	4	5	6	7
5. My work gives me a good feeling	1	2	3	4	5	6	7
6. I do my work with a lot of enjoyment	1	2	3	4	5	6	7
7. I feel happy during my work	1	2	3	4	5	6	7
8. I feel cheerful when I am working	1	2	3	4	5	6	7
9. I do my work simply for the pleasure that it brings me	1	2	3	4	5	6	7
10. I find that I also want to work in my free time	1	2	3	4	5	6	7
11. I work because I enjoy it	1	2	3	4	5	6	7
12. When I am working on something, I am doing it for myself	1	2	3	4	5	6	7
13. I would still do this work, even if I received less pay	1	2	3	4	5	6	7
14. I get my motivation from the work itself, and not from the reward for it	1	2	3	4	5	6	7

Appendix G - Utrecht Work Engagement Scale (UWES)

Modified from Schaufeli et al., (2007)
We would like you to think about a class you have taken (or are currently taking) at K-State that was really enjoyable. One in which you evaluated the instructor very highly. Listed below are statements that represent possible opinions that YOU may have about that class. Please indicate the degree of your agreement or disagreement with each statement by circling the number that best represents your point of view. Please choose from the following answers:

1	2	3	4	5	6	7
Never	Almost Never	Rarely	Sometimes	Often	Very Often	Always

	1	2	3	4	5	6	7
1. When I get up in the morning, I felt like going to class.	1	2	3	4	5	6	7
2. When I was doing my work for this class, I felt bursting with energy.	1	2	3	4	5	6	7
3. As far as my studies in this class were concerned I always persevered, even when things did not go well.	1	2	3	4	5	6	7
4. I continued studying for very long periods of time for this class.	1	2	3	4	5	6	7
5. I was very resilient, mentally, as far as my studies in this class were concerned.	1	2	3	4	5	6	7
6. I felt strong and vigorous when I was studying or going to this class.	1	2	3	4	5	6	7
7. To me, my studies for this class were challenging.	1	2	3	4	5	6	7
8. My studies in this class inspired me.	1	2	3	4	5	6	7
9. I was enthusiastic about my studies.	1	2	3	4	5	6	7
10. I was proud of my studies.	1	2	3	4	5	6	7
11. I found my studies full of meaning and purpose.	1	2	3	4	5	6	7
12. When I was studying, I forgot everything else around me.	1	2	3	4	5	6	7
13. Time flew when I was studying.	1	2	3	4	5	6	7
14. I got carried away when I was studying.	1	2	3	4	5	6	7
15. It was difficult to detach myself from my studies.	1	2	3	4	5	6	7
16. I was immersed in my studies.	1	2	3	4	5	6	7
17. I felt happy when I was studying intensely.	1	2	3	4	5	6	7

Appendix H - Modified NSSE items used in survey

In this course how much reading and writing have you done?

a. Number of assigned textbooks, books, or book-length packs of course readings

☐   ☐   ☐   ☐
None   1 to 2   3 to 4   5 or more

b. Number of books read on your own (not assigned) for personal enjoyment or academic enrichment

☐   ☐   ☐   ☐
None   1 to 2   3 to 4   5 or more

c. Number of written papers or reports of 20 pages or more

☐   ☐   ☐   ☐
None   1 to 2   3 to 4   5 or more

d. Number of written papers or reports between 5 and 19 pages

☐   ☐   ☐   ☐
None   1 to 2   3 to 4   5 or more

e. Number of written papers or reports of fewer than 5 pages

☐   ☐   ☐   ☐
None   1 to 2   3 to 4   5 or more

In a typical week, how many homework problem sets do you complete for this class?

a. Number of problem sets that take you more than an hour to complete

☐   ☐   ☐   ☐
None   1 to 2   3 to 4   5 or more

b. Number of problem sets that take you less than an hour to complete

☐   ☐   ☐   ☐
None   1 to 2   3 to 4   5 or more

Circle the number that best represents the extent to which your examinations during this class have challenged you to do your best work with 1= very little and 7= very much

Very Little						Very Much
1	2	3	4	5	6	7

Now thinking about the same class, please circle how frequently did you do the following activities with 1 as never and 4 as very often

1	2	3	4
never	Sometimes	Often	Very Often

	1	2	3	4
1. Made a class presentation	1	2	3	4
2. Asked questions in class or contributed to class discussion	1	2	3	4
3. Prepared two or more drafts of a paper or assignment before turning it in	1	2	3	4
4. Worked on a paper or project that required integrating ideas or information from various sources	1	2	3	4
5. Included diverse perspectives (different races, religions, genders, political beliefs, etc.) in class discussions or writing assignments	1	2	3	4
6. Come to class without completing readings or assignments	1	2	3	4
7. Worked with other students on projects during class	1	2	3	4
8. Worked with classmates outside of class to prepare class assignments	1	2	3	4
9. Put together ideas or concepts from different courses when completing assignments or during class discussions	1	2	3	4
10. Tutored or taught other students (paid or voluntary)	1	2	3	4
11. Participated in a community-based project (e.g., service learning) as part of a regular course	1	2	3	4
12. Used an electronic medium (listserv, chat group, internet, instant messaging etc) to discuss or complete an assignment	1	2	3	4
13. Used email to communicate with an instructor	1	2	3	4
14. Discussed grades or assignment with an instructor	1	2	3	4
15. Talked about career plans with a faculty member or advisor	1	2	3	4
16. Discussed ideas from your readings or classes with instructor outside of class	1	2	3	4
17. Received prompt written or oral feedback from instructor on your academic performance	1	2	3	4

18. Had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values	1	2	3	4
19. Had serious conversations with students of a different race or ethnicity than your own	1	2	3	4
20. Discussed ideas from your readings or classes with others outside of class (students, family members, co-workers, etc.)	1	2	3	4
21. Worked with faculty members on activities other than coursework (committees, orientation, student life activities, etc.)	1	2	3	4
22. Worked harder than you thought you could to meet an instructor's standards or expectations	1	2	3	4

Now we would like you to think about the same class you have taken at K-State that was really enjoyable. Please circle how frequently you did the following *mental activities*.

1	2	3	4
never	Sometimes	Often	Very Often

1. Synthesizing and organizing ideas, information, or experiences into new, more complex interpretations and relationships	1	2	3	4
2. Analyzing the basic elements of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components	1	2	3	4
3. Making judgments about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions	1	2	3	4
4. Applying theories or concepts to practical problems or in new situations	1	2	3	4
5. Memorizing facts, ideas, or methods from your courses and readings so you can repeat them in pretty much the same form	1	2	3	4