

**Applying Social Cognitive Theory to the University Adjustment Process: An
Examination of Student Behaviours and the Corresponding Types of Self-Efficacy**

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DEDICATION

In memory of my father, Carl A. Nichols.

and my brother Scott C. Nichols.

I miss you both.

ABSTRACT

University students are experiencing more mental health problems than at any other time in the previous three decades. Data obtained from the Center for Disease Control National University Health Risk Behaviour Survey indicated that among the top ten health impediments to students' academic performance were excessive substance use, sleep difficulties, depression, and Internet/computer use. Based on the available literature, the following student behaviours were chosen for further investigation: depression, Internet addiction, sleep, and affect regulation. In turn, the corresponding types of self-efficacy for each of the behaviours were also selected for investigation. The three goals of the study were: 1) to examine the associations of four domains of self-efficacy (depression, Internet addiction, sleep, and affect regulation) with the corresponding behavioural domains; 2) to examine the prediction of behaviours related to depression, Internet addiction, sleep, and affect regulation on university adjustment; and 3) to examine the role of self-efficacy in the prediction of university adjustment over and above the stated domains of behaviour. First-year undergraduate students (N=164) from the University of New Brunswick-Fredericton completed self-report questionnaire packages. Through multiple regression analyses we found that several types of self-efficacy (i.e., depression, Internet addiction, sleep, and affect regulation) predicted their corresponding behaviours: depression, Internet addiction, sleep, and affect regulation. Furthermore, we found that students who are depressed, experience problematic Internet use, frequently use affect regulation strategies, and have poor sleep quality have a more difficult time adjusting to university. In particular, we found that only Internet addiction uniquely affected university adjustment. Greater insight was gained about the determinants of students' behaviours and suggestions are made regarding interventions aimed at helping emerging adults successfully transition to university.

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Chapter 1

INTRODUCTION

Overview

Students entering university for the first time are faced with a variety of challenges and novel situations (Asberg, Bowers, Renk, & McKinney, 2008; Brooks & DuBois, 1995; Chickering, 1969; Gerdes & Mallinckrodt, 1994). Many students have left their families and social networks, potentially leading to feelings of loneliness and uncontrollability. Unlike many other transitions, beginning university co-occurs with the end of adolescence and the beginning of adulthood (Arnett, 2000). Generally, most individuals experience some tension as they attempt to master the demands associated with the shift from one developmental stage to the next (Graber & Brooks-Gunn, 1996). The stress associated with beginning university likely compounds the stress already experienced as a result of moving from the adolescent to adult role (Gerdes & Mallinckrodt, 1994; Kerr, Johnson, Gans, & Krumrine, 2004). Some students may become overwhelmed, strain their coping abilities and turn to less adaptive means of coping (Schulenberg & Maggs, 2002).

Successful adjustment to university is viewed as a multifaceted process and is reflected by students' personal-emotional adjustment, social, academic adjustment, and attachment and commitment to the institution (Baker & Siryk, 1984b, 1986). The term university adjustment suggests students must adapt to new demands across a variety of contexts. Researchers have shown there are a number of factors that influence successful adjustment to university. In this study, we investigated how a number of factors (i.e., depression, Internet addiction, sleep, and affect regulation) and their corresponding types

of self-efficacy predicted university adjustment in the first year. Our intention was to add to the already existing body of literature through the examination of: a) the impact of the self-efficacy variables on their corresponding behavioural domains; b) the impact of common problematic behaviours on university adjustment and c) on an exploratory basis, the role of self-efficacy in predicting university adjustment over and above the behavioural variables.

Building on past research (Nichols, Johnson & Nicki, 2003; Nichols & Nicki, 2000, 2004), we proposed that self-efficacy domains (e.g., sleep self-efficacy) would predict students' engagement in their corresponding behaviours (e.g., sleep). In addition, we proposed that specific student behaviours (e.g., excessive Internet use) would lead to poor university adjustment. Furthermore, we examined whether self-efficacy adds directly to the prediction of university adjustment over and above the behavioural variables.

Literature Review

Emerging Adulthood

Emerging adulthood is a time of complex developmental challenges involving physical, emotional, intellectual, and social aspects (Arnett, 2000; Havighurst, 1952; Schulenberg, Bryant & O'Malley, 2004). It is defined as a developmental stage that bridges the period from adolescence to adulthood and spans the years between ages 18-25 (Arnett, 1998). According to Schulenberg, Sameroff, and Cicchetti (2004), the transition from adolescence to emerging adulthood is one of the most consequential transitions that occurs across the lifespan. Although many of these changes begin to occur during adolescence, most of these tasks are not fully resolved until the mid to late 20s (Arnett, 1998). Specific developmental changes include cognitive maturation, changes in social relationships (e.g., separation/individuation from parents), the emergence of romantic partnerships, educational transitions, transition from school to work, identity formation, and academic and physical competency (Goldscheider & Goldscheider, 1994). Broadly speaking, these tasks fall within the domains of physical, behavioural, and emotional self-regulation (see Eccles, Templeton, Barber, & Stone, 2003).

Researchers have suggested that there are a number of unique features pertaining to individuals aged 18-25 (Arnett, 1998). For example, emerging adults may be faced with uncertainty about the future and have to make difficult decisions regarding their education and career. They are also relatively independent from social (e.g., no spouse) and career roles, and the number of possibilities that are available to them is greater than at any other time in their lives. The concept of emerging adulthood as a distinct entity has

also been driven by demographic changes that have occurred during the last half-century (e.g., the median age for marriage and for childbearing has increased from the early to late 20s; Arnett, 2000; Eccles et al., 2003). These demographic changes have meant that the period of late adolescence and early adulthood is no longer viewed as a brief transitory period into adulthood (Arnett, 1998). Normative sequences of adulthood events (e.g., attending university, marriage, having children) have changed resulting in more variability in the typical sequence of roles and responsibilities and the types of roles (e.g., never marrying) that may be declining during this period. Instead, an extended period of exploration and uncertainty has become the norm (Arnett, 1998, 2000).

Beyond these developmental issues, emerging adults are experiencing an enhancement of skills related to perspective taking, self-regulation, affiliation, and achievement (Schulenberg, et al., 2004). Contrary to earlier assumptions (i.e., that adolescence was the peak developmental time for risk behaviours), researchers now assert that risky behaviours (e.g., drug use and sexual experimentation) peak during the emerging adulthood years (Hansell, White, & Vali, 1999).

The Nature of University Adjustment

Given the chronological markers associated with emerging adulthood, a substantial proportion of emerging adults are attending university (Lefkowitz, 2005). In the United States, approximately 62% of emerging adults attend some form of post-secondary education following high school (National Center for Education Statistics, 2003). Yet 30-40% of university students will drop out, suspend, or fail to complete their program of study (Smith, 1991).

One of the ways that post-secondary institutions have responded to student attrition rates is to investigate how to better retain students. Persistence in university has been linked to pre-admission variables such as parenting style and financial attitudes, academic integration variables such as faculty-student relationships and class size and psychological well-being, and institutional variables such as the student culture (see Bagayoko & Kelley, 1994 for a review; Cabrera, Castaneda, Nora, & Hengstler, 1992; Tinto, 1993; Wintre & Bowers, 2007; Wintre & Sugar, 2000). Although this research has contributed a great deal to the body of knowledge on student dropout decisions, researchers have not examined student attrition from a broader university adjustment perspective. In other words, the goal was student retention which was not necessarily synonymous with student adjustment.

It has generally been viewed that university adjustment is comprised of four major domains: academic life, social life, personal-emotional life, and attachment to the university (Baker & Siryk, 1984b, 1986). The academic domain pertains to a student's ability to cope with the varied educational demands of the university experience. The educational components include developing and maintaining educational purpose and motivation, applying one's motivation, and meeting academic requirements. Another aspect of academic adjustment relates to the effectiveness of students' academic functioning. Finally, the level of satisfaction students feel with their academic environment is also important (Flescher, 1986).

A second major domain of university adjustment is social adjustment (Baker & Siryk, 1984b, 1986; Fagan, 1994). Social adjustment relates to a student's ability to cope with the interpersonal-social demands of the university experience. Social adjustment is

comprised of four elements: 1) becoming integrated into university social life; establishing of support networks; success and general functioning; 2) involvement and relationship with others; 3) dealing with social relocation and being away from home and significant relationships; and 4) satisfaction with social aspects of the university environment (Flescher, 1986, Gerdes & Mallinckrodt, 1994).

Personal-emotional adjustment is the third major domain of adjustment. This domain consists of psychological and physical well being (Baker & Siryk, 1984b, 1986, 1999), and pertains to general psychological distress and associated somatic complaints. Finally, the fourth domain of university adjustment is institutional attachment. Generally speaking, this domain refers to the student's commitment to the institutional goals and the degree of attachment to that institution. This domain speaks to the quality of the bond that is established between the student and the university (Flescher, 1986; Switzer, Robbins & McGovern, 1993).

Each of these domains has been shown to be an important aspect of university adjustment (Baker & Siryk, 1984b; 1986, 1999). Further, the four aspects of adjustment have been demonstrated to be interrelated (Baker & Siryk, 1984b; 1986, 1999). However, researchers examining adjustment in university students have primarily focused on narrow aspects of adjustment, such as social adjustment (Cutrona, 1982), and therefore, have not measured adjustment in a more comprehensive way. Moreover, in the few studies where researchers have examined university adjustment comprehensively, they have not examined the impact of multiple behaviours and their linkages to self-efficacy (Baker & Siryk 1999; Gerdes & Mallinckrodt, 1994). For example, Pritchard and

McIntosh, (2003) only investigated the impact of measures of depression or anxiety on a comprehensive measure of university adjustment.

In order to provide a more comprehensive description of university adjustment than is currently available, in this study we assessed each of the important domains of university adjustment previously discussed by using a multifaceted measure of university adjustment. Thus, a comprehensive assessment of university adjustment was obtained.

Social-Cognitive Theory

Human behaviour has often been viewed as being unidirectional and influenced and controlled by environmental factors or by individual temperaments. However, social cognitive theory is a theoretical framework for considering how sources of behaviour function together to explain human actions (Bandura, 1986, 1997). Over the past few decades, social cognitive theory has gained considerable support in explaining much of human behaviour, particularly risky behaviours such as substance use.

One of the core components of Bandura's theory is reciprocal determinism: the view that behavior, personal factors, cognition, and environmental influences operate together bidirectionally to produce an outcome or action. Bandura holds that personal factors such as age, gender, expectations, beliefs etc., trigger different reactions in the environment. On the other hand, social influences in the environment such as proximity of people, and physical surroundings etc affect an individual's roles, beliefs etc. That is, individuals are viewed as being self-organizing, self-reflecting, and self-regulating, rather than reacting to their environments (Bandura, 2006). Furthermore, reciprocal determinism does not mean that the sources of influence operate simultaneously or that

they are of equal strength. Some influences may be stronger than others: it takes time for a determinant to exert its influence and activate the reciprocal dynamic.

In the present study, we used social cognitive theory as the context to predict the relationship of the self-efficacy variables with the corresponding behaviours. Social cognitive theory also provided a framework for understanding how various behaviours (depression, Internet use, sleep, and affect regulation) influence university adjustment and the possible influence of the self-efficacy variables (i.e., depression, Internet, sleep, and affect) on university adjustment. Although all four elements (behavior, personal factors, cognition, and environmental influences) of reciprocal determinism could have been included in the present study, in order to limit the scope of the research, and because of the importance of the influence of self-efficacy on the behavior of emerging adults, only self-efficacy and behavior were examined.

Self-Efficacy. One of the cognitive processes deemed to be important by Bandura in predicting behaviour and behaviour change is self-efficacy (Bandura, 1986). Self-efficacy is defined as a belief that one can successfully perform a particular behaviour (e.g., exercise self-efficacy; Bandura, 1977) to achieve a certain outcome (e.g., exercising continuously for 30 minutes). An individual may have a positive outcome in mind, or desire to do well in a particular task, but fail to engage in the behaviours that will contribute to success due to low self-efficacy (Bandura, 1977). For example, a student with low academic self-efficacy may desire to do well academically but fail to attend classes regularly, leading to academic failure.

According to Bandura (1994), each developmental stage of life presents distinct challenges for areas of competence that will lead to successful functioning and

adjustment. In other words, whenever there is a period of transition where new demands require learning to cope in an effective way, establishing a strong sense of self-efficacy sets the stage for future successes (Bandura, 1994). The period of emerging adulthood is an important time for the growth of self-efficacy (Bandura, 1994) because it is the last developmental stage before adulthood and it is associated with excessive levels of stress and stress related problems (Deckro et al., 2002; Kessler et al., 1994). Individuals who enter adulthood without having mastered such tasks as regulating emotions and establishing identity may move into adulthood without a strong sense of self, leading to higher distress and poorer coping (Bandura, 1994).

As noted above, self-efficacy is defined as the belief that one can successfully perform a particular behaviour to achieve a certain outcome (Bandura, 1977, 1982; Maddux, 1995). It is distinct from self-confidence and other related constructs because it is more task and situation specific. Self-efficacy can be assessed for behaviours such as social skills or drinking behaviour, where the emphasis is on the individual's perception of his/her actual capacity to carry out the behaviour (or task), control cognitions (e.g., control intrusive or depressive thoughts), or regulate emotions (Bandura, 1977).

According to Bandura (1977), "self-efficacy has important behavioural consequences. Individuals either approach or avoid a behaviour and persist in the choices that allow them to successfully carry out a desired task." Bandura's model of self-efficacy and the research supporting the role of self-efficacy in influencing outcome behaviour is robust and has been validated with respect to a wide range of specific behaviours (see Strecher, DeVellis, Becker, & Rosenstock, 1986 for a review). Bandura (1997, 1998) reviews research relating perceived self-efficacy to cognitive functioning,

academic performance, health-related behaviors, anxiety, depression, eating disorders, and alcohol and drug abuse.

For instance, Beck and Lund (1981), in one of the earlier studies that examined the influence of self-efficacy, exposed dental patients to important messages concerning periodontal disease during their dental visit that were intended to change their beliefs about the disease. They found that self-efficacy was the best predictor of dental flossing and frequency of flossing. Neither perceived severity of periodontal disease or outcome expectancy predicted flossing behavior.

Cutler (2005) examined the relationship between self-efficacy, self-care agency, social support and social adjustment of individuals with mood disorder following hospitalization (Time 1 at discharge and Time 2 two months post discharge). Participants completed two self-efficacy measures, one that assessed general self-efficacy and one that assessed social self-efficacy and a social adjustment measure which assessed adjustment to the community following psychiatric treatment. Self-efficacy emerged as the only significant predictor of social adjustment at both Time 1 and 2 (17% and 50% of the variance was explained by self-efficacy, respectively).

Choi (2005) demonstrated that self efficacy predicted academic grades in a college student sample. Ramos-Sanchez and Nichols (2007) examined the relationship of college self-efficacy with academic performance and college adjustment among undergraduate students at a private liberal arts university. The College Self-Efficacy measure assessed social efficacy, course efficacy, and roommate efficacy. High self-efficacy at the beginning of the academic year predicted better college adjustment at the

end of the academic year. Taken together, researchers have shown the broad application of self-efficacy across contexts, clinical problems and health behaviors.

Behavioural Problems and University Adjustment

Recent findings indicate that university students are experiencing more mental health problems and more serious psychological problems than at any other time in the previous three decades (Gallagher, Gill, & Sysko, 2000; Gallagher, Sysko, & Hang, 2001; Kitrow, 2003; O'Malley, Wheeler, Murphy, & O'Connell, 1990; Pledge, Lapan, Heppner, & Roehlke, 1998; Stone & Archer, 1990). According to the National Survey of Counselling Center Directors, which included 274 institutions, 85% of respondents reported an increase in severe psychological problems (e.g., depression) over the last 5 years (Gallagher et al., 2001). These findings are supported by Levine & Cureton's (1998) research that indicates that behavioural excesses (e.g., alcohol abuse and gambling) contribute to more than 60% of university students' problems. One of the most important sources of information stems from data obtained from the Center for Disease Control National University Health Risk Behaviour Survey (American University Health Association [ACHA], 2005). The findings showed that among the top ten health impediments to students' academic performance were sleep difficulties, depression, Internet/computer use, and alcohol use (ACHA, 2005).

A related source of data derives from The Canadian Community Health Survey-Mental Health and Well-being (CCHS; Statistics Canada, 2002). The researchers collected data on the prevalence of mental health problems across all provinces and territories. Of particular note are the findings related to gambling, alcohol, and depression. Overall, the age group with the highest reported percentage of major

depressive episodes, substance dependence problems, and risk of gambling problems were 15-24 year olds. In contrast, this age group was the least likely to use any resource to cope with these problems (Statistics Canada, 2002). Based on the literature in which researchers have identified a number of factors that significantly predict university adjustment, four behaviours were chosen for further investigation: depression, Internet addiction, sleep, and affect regulation.

Overview of Depression. One of the most common mental health difficulties people face during adulthood is depression (Patten, 2000; Waraich, Goldner, Somers & Hsu, 2004). Depression is a psychological disorder that is associated with a long lasting period of sadness (APA, 1994). It involves a variety of symptoms (e.g., loss of energy, loss of interest in activities, sadness, and changes in appetite and sleep patterns) that can range from mild to severe (APA, 1994). Lifetime prevalence rates of depression range between four and six percent in Canada (Patten, 2000); in the United States the rates range between five and seventeen percent (Kessler, et al., 1994). The most recent CCHS showed that depression rates are highest among 18-25 year olds (Statistics Canada, 2002). In 1998, the researchers responsible for the ACHA surveyed over 16,000 university students. They reported that 10% of university students were diagnosed with depression and approximately five percent of students were receiving psychological treatment for depression (ACHA, 2005). The ACHA reported that, 13.4% of students reported being diagnosed with depression sometime in their lifetime and of that percentage, 39.1% reported being diagnosed with depression within the past 12 months; 40% indicated they were currently taking medication for depression. Some studies (Furr, Westefeld, McConnell, & Jenkins, 2001) estimate the prevalence of depression to be as

much as 50% in the student population. For example, Furr et al. (2001) found that more than 50% of university students reported depressive symptoms early in the academic year.

Although less is known concerning the relationship between depression and impairments in university students, similar results to the general population have been found. For example, using standardized measures, Heiligenstein and Guenther (1996) conducted one of the first studies to examine depression and impairment in university students. They found students who were depressed demonstrated greater academic impairment, decreased academic productivity, and significantly more interpersonal problems. Higher depression scores were associated with greater impairment. Furthermore, Reinherz, Giaconia, Carmola, Wasserman and Silverman (1999) found considerable evidence for psychosocial impairments related to depression, in a sample of individual students which they followed longitudinally from age 9 to 21 years of age; these included poorer overall functioning, interpersonal and behavior problems, lower self-esteem, and increased suicidality. Further study is warranted to examine whether the above findings may also show that that similar types of impairment would occur among university students.

Depression and University Adjustment. Surprisingly there is very little published research linking university adjustment to depression. Most research has focused primarily on the effects of depression on narrow aspects of university adjustment (e.g., academic impairment; Haines, Norris, & Kashy, 1996) or the impact of psychopathology in general on students' academic lives (Svanum & Zody, 2001). In a study examining the effects of depression on academic adjustment among university students, Heiligenstein and

Guenther (1996) found that 92% of participants experienced academic difficulties (i.e., missed time from class, decreased academic productivity, and interpersonal problems at school) due to varying levels of depression: 9 (16%) gave evidence of mild depression, 25 (43%) showed moderate depression, and 24 (41%) had severe depression. Across all levels of depression, affect impairment (i.e., feelings of inadequacy, distress, and disinterest in school) was prevalent and higher levels of depression were linked to greater academic impairment. The results were further confirmed by the authors of the ACHA survey (ACHA, 2005), who indicated that depression and academic adjustment go hand in hand; 38% of university students reported feeling so depressed that they found it difficult to study (ACHA, 2005). Similarly, Haines, Norris, and Kashy (1996) examined the effects of depressed mood on academic performance and concentration. They found that students who were depressed performed poorer on the academic performance task relative to those who were not depressed.

Pledge et al., (1998) examined intake data gathered from student clients at a counselling center which revealed that the main areas of concern included depression and substance abuse. Although the above studies did not examine the impact of depression in a comprehensive way it was suggested that depression is a major concern for university students. Therefore, there is a need to examine its effects more fully.

Overview of Internet Use. Advances in computer technology (e.g., the Internet) have led researchers to study whether some individuals are using this technology excessively (Davis, Smith, Rodrigue, & Pulvers, 1999; Griffiths, 1999; Kraut et al., 1998; Kraut et al., 2002; Sanders, Field, Diego, & Kaplan, 2000; Shotton, 1991) and to identify possible correlates associated with its use (Drentea, Goldner, Cotton & Hale, 2008).

Some researchers (Davis, Smith, Rodrigue, & Pulvers, 1999; Eppright, Allwood, Barry, & Theiss, 1999; Scherer, 1997; Young, 1996) have argued that excessive Internet use can be viewed as an addiction. In particular, Griffiths (1998) suggested that excessive Internet use might be considered a technological addiction that is best conceptualized as a subset of behavioural addictions, such as gambling addiction. Technological addictions are considered non-chemical addictions that involve human-machine interactions that contain reinforcing and motivating features that encourage continued use of the medium (Griffiths, 1999).

Given that increasing numbers of students are accessing the Internet, some researchers, university administrators, and clinicians have suggested that university students may be more susceptible to experiencing Internet problems (Kandell, 1998; Young, 1996). According to Kandell there are a variety of factors that may contribute to the increased risk for university students developing Internet problems. First, most post-secondary institutions require students to use the Internet for course work, email communication with faculty, and to conduct research. These expectations encourage students to use the Internet more frequently and become regular Internet users. Second, the Internet and specific Internet software (e.g., MSN) are commonly used modes of social communication among university students (Lanthier & Windham, 2004). The fact that the Internet and, to an even greater extent, some Internet software, provide immediacy and anonymity further increases students' risk for becoming problem Internet users (Kandell, 1998). Third, since university students typically have large unstructured blocks of time they may be more prone to becoming involved in problematic Internet use (Kandell, 1998).

In a number of studies researchers have examined the prevalence of Internet use among university students (Morahan-Martin & Schumacher, 2000; Scherer, 1997). In our own research using the Internet Addiction Scale (IAS; Nichols & Nicki, 2004) with a representative sample of university students, we found that 1% of the sample had a mean score greater than 3 (indicating that sometimes the item applied to them) on a Likert scale of 1-5. Therefore, 99% of the sample scored below 3 indicating that Internet addiction was not widespread. However, Scherer (1997) found the prevalence of problematic Internet use on a large U. S. university campus to be much higher with 13% of students fitting the criteria for Internet dependence. Likewise, Morahan-Martin and Schumacher found 8% of American university students met the criteria for Internet dependence. The discrepancy in findings might be linked to the use of different samples across the studies or to different definitions of Internet addiction. For example, in another study with computer science and electrical engineering students, we found the mean score to be substantially higher (i.e., $X=64.5$; Nichols et al., 2003). It is difficult to contrast the above finding with those of other research because different measures of Internet addiction were used.

Internet Use and University Adjustment. Excessive Internet use has been linked to various problems among university students. Initially, researchers found that greater Internet use among students was associated with poorer school performance, relationship problems, loneliness, and fluctuations in mood (Griffiths, 1997; Kandell, 1998; Kraut et al., 1998; Nichols & Nicki, 2000). In our own research, we examined the association of problematic Internet (addiction to the Internet with an average score of 3 or greater) use with university adjustment using the IAS and the College Adjustment Scale (CAS; Anton

& Reed, 1991). Indeed, Internet use was found to be significantly negatively correlated with seven of nine CAS subscales (e.g., Academic Problems, Interpersonal problems, and Substance Abuse). That is, higher Internet use scores were related to more academic problems, interpersonal problems and substance abuse. We also investigated whether loneliness, using the Social and Emotional Loneliness Scale (DiTommaso & Spinner, 1993), and boredom proneness, using the Boredom Proneness Scale (Farmer & Sundberg, 1986) would be related to excessive Internet use. We found that both of these variables were significantly positively related to Internet addiction (Nichols & Nicki, 2000); this finding was consistent with other studies (Morahan-Martin & Schumacher, 2000; Sanders et al., 2000) in the literature.

In another study, Lanthier & Windham, (2004) examined the association between Internet use and university adjustment. Adjustment was measured with the Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1999) and Internet use was assessed using the Internet Behaviour Questionnaire—comprised of three scales, hours online, social use, and negative aspects of use (Eggar & Rauterberg, 1996). They found that some aspects of Internet use were negatively related to university adjustment; however, hours spent online and social uses were unrelated to university adjustment.

Overview of Sleep. Sleep problems (e.g., insomnia, hypersomnia, poor sleep quality) affect virtually everyone at some point in their lifetime (Yang, Wu, Hsiehm, Liu, & Lu, 2003). Because many university students voluntarily deprive themselves of sleep through the week with the plan of catching up on sleep on the weekend (Pilcher & Walters, 1997) unstable sleep patterns emerge and in some cases can lead to the onset of delayed sleep phase syndrome (Brown, Soper & Buboltz, 2001).

Sleep may be divided into two states, rapid eye movement (REM) and non-REM (NREM) sleep. NREM sleep may be further divided into four stages corresponding to the depth of sleep, and the presence of specific electrophysiological markers (see Kushida, 2005 for a review). Previous researchers (DeKoninck, Lorrain, Christ, Proulx, & Coulombe, 1989) have shown that REM sleep is important for consolidating learning. Furthermore, DeKoninck et al. have shown that acute (i.e., one night) sleep deprivation results in impaired performance, daytime fatigue, and mood modification. Chronic sleep loss is associated with decreased attention span, difficulty concentrating, decreased reaction time, and more severe mood disturbances such as irritability and hostility (Morin, 1993).

Sleep problems are associated with several demographic variables including age, gender, socioeconomic status, and occupation (Kushida, 2005; Morin, 1993). Although the nature of sleep complaints changes with age sleep onset difficulties are more common among emerging adults and are twice as common in women than men (Brown et al., 2001; Buboltz, Brown & Soper, 2001). Increasingly, university students have been recognized as being affected by sleep difficulties (Buboltz et al., 2001; Yang et al., 2003). Supporting this finding are recent data gathered in the ACHA survey. The authors found that students ranked sleep problems among their top concerns (ACHA, 2005). Furthermore, according to Hicks, Fernandez, and Pellegrini (2001a, 2001b), the percentage of self-reported sleep problems among university students has steadily increased from 24% in 1978 to 71% in 2001. This is the only large-scale study that has examined sleep among emerging adults. Unfortunately, the study did not assess which types of sleep problems the students were experiencing. Buboltz et al. (2001) found

similar results with 73% of the students experiencing occasional sleep problems and another 15% experiencing poor sleep (i.e., poor sleep quality). The authors compared these results with previous studies where sleep problems among normal adults had been investigated. The results indicated the percentage of students reporting poor sleep (15%) was greater than the percentage of adults reporting poor sleep (9%).

Sleep and University Adjustment. Generally, the literature views the negative effects of sleep problems on the basis of three dimensions: sleep quality, sleep quantity, and sleep schedule (Gray & Watson, 2002). There is substantial research (Gillberg & Akerstedt, 1998; Pilcher & Huffcutt, 1996; Tilley & Brown, 1992) demonstrating the negative effects of sleep problems (i.e., deprivation) on cognitive and motor performance (e.g., unintended accidents, impaired physical performance on a task, diminished productivity) and on psychological dimensions (e.g., worrying, irritability, depression) in the general population.

Across all three dimensions, sleep problems have also been shown to affect emotional and behavioural problems in university students. For example, Verlander, Benedict and Hanson (1999) reported that sleep problems were associated with students' emotional response to stress. In an earlier study, they found that students who experienced increased daytime sleepiness also reported poorer moods and an increased risk for alcohol and tobacco use. Furthermore, a number of studies have investigated the epidemiology of sleep problems and the impact on academic performance in university populations (Alapin et al. 2000; Brown et al., 2001; Hicks et al., 2001a, 2001b; Kelly, 2003; Yang et al., 2003). For example, Kelly (2004) examined sleep length and life satisfaction in a university sample and found that the average sleep length for the total

sample was 6.96 hours per 24-hour period. As predicted, a shorter sleep length was significantly associated with lower life satisfaction.

In a related study, Kelly, Kelly and Clanton (2001) found a relationship between sleep length and grade point average. Undergraduate students completed a questionnaire package and reported their GPA. Sleep length was categorized into short (6 or fewer hours per sleep per night), average (7-8 hours per night), and long (9 or more hours per night). The majority of students reported being average sleepers (72.3%) and the remaining proportion of the sample was fairly evenly divided between short sleepers (15.5%) and long sleepers (12.2%). Most noteworthy, however, were the findings regarding sleep length and GPA. Long sleepers reported significantly higher GPAs ($M=3.24$) than short sleepers ($M=2.74$) while average sleepers were not significantly different from either group.

Overview of Affect Regulation. Self-regulation is concerned with how people exercise control over their level of functioning and their response to events that impact their lives (Bandura, 1997). Self-regulation involves cognitive, affect, motivation, and behavioural aspects (Kocovski & Endler, 2000). In the present study, affective aspects of self-regulation were examined.

Affect represents the conceptual umbrella for emotions, moods, and emotional episodes and refers to the feeling tone a person is experiencing at a particular time (Larsen & Prizmik, 2004). Affect influences subsequent behaviour (e.g., social behaviour), experience (e.g., learning), cognition, decision making, and provides cues as to whether something is harmful or beneficial (Clore, 1994; Frijda, 1986; Walden, 1991). Therefore, affect has an important role in helping individuals respond adaptively to

challenges in their environment. In the present study affect regulation was examined and was posited to directly predict university adjustment.

According to Eisenberg, Fabes, Guthrie, and Reiser (2000) it is reasonable to assume that even in non-clinical populations, individuals will exhibit variability in the degree of affect regulation and levels of problem behaviours. Individuals who have poor affect regulation skills are more likely to experience high levels of negative affect, lower social competence, and decreased peer acceptance (Eisenberg et al., 2000). Generally, attempts at affect regulation either support or disrupt the capacity to work, relate to others, and enjoy oneself. Therefore, an important outcome of affect regulation is its relation to physical and mental health (Eisenberg et al., 2000).

A substantial number of DSM-IV disorders appear to involve some difficulty in effectively regulating affect (APA, 1994). Thus, affect regulation (and dysregulation) figure prominently in mental health and illness (Gross & Munioz, 1995). Collectively, studies consistently show there is an important role for affect and affect regulation in psychological well-being (Gross & Munioz, 1995). Therefore, we proposed that affect regulation has an important role in university adjustment.

Researchers have shown that affect regulation influences social interactions and elicits favourable (via positive affect expression) or unfavourable responses (via negative affect expression) from others (Argyle & Lu, 1990). Moreover, individuals who are able to regulate the experience of affect arousal associated with stress and the subsequent expression of such affect are more likely to behave in socially appropriate ways (Argyle & Lu, 1990). Affect regulation may promote positive expectations for social interaction, sound decision-making under stress, flexible attentional focus, and skill acquisition for

effective social behaviour (Cunningham, 1988; Furr & Funder, 1998). In addition, the degree of success or failure in regulating affect is thought to influence both positive and/or negative expectations for social interactions, and in turn affect adjustment and well-being (Argyle & Lu, 1990). A consideration of these studies suggested that effective affect regulation is important for social interaction and can limit the negative social consequences that may have arisen from the experience or display of negative affect (Keltner & Haidt, 2001).

Researchers have also linked individual differences in regulating affect to behavioural problems such as binge eating, alcohol abuse, and problem gambling (Taylor, Bagby and Parker, 1997 for a review). Other research has demonstrated that individuals who are attempting to feel better by self-medicating via consuming alcohol (or other drugs) and binge eating often end up feeling worse and experiencing more intense negative affect (Taylor et al., 1997). Collectively, these studies suggest that the negative outcomes are often associated with poor affect regulation.

Affect Regulation and University Adjustment. There are several reasons to investigate the associations of affect regulation, and university adjustment in emerging adulthood,. First, affect regulation may be implicated in diverse forms of psychopathology which has been shown to increase in the emerging adult years (Silk, Steinberg, & Sheffield Morris, 2003). Therefore, a better understanding of affect regulation during emerging adulthood may help us understand individual differences in mental health and adjustment during this period of increased risk. Second, because of the significant developmental tasks and changes associated with this stage (e.g., changes in social relationships, identity development, and the occurrence of novelty seeking

experiences) affect regulation can enhance the successful negotiation of these tasks. Indeed, for many individuals, this is the first time they have to monitor and regulate their own behaviour (and affect) with little help from parents and teachers. Third, first year university students making the transition to university may become overwhelmed. As a group they are especially vulnerable to a variety of stressors and therefore, their capacity to self-regulate may become strained. Finally, researchers have not examined the influence of affect regulation on university adjustment in particular.

In one recent study, college students scoring higher on a measure of affect regulation reported having more positive relationships with others, less conflict and antagonism in their relationship with a close friend, greater companionship, affection, and a more supportive relationship with their parents (Lopes, Salovey, & Straus, 2003). In another study, Lopes, Salovey, Cote, and Beers (2005) examined emotion regulation abilities in relation to peer social interactions among university students. The authors found that students scoring high on affect regulation perceived themselves as more interpersonally skilled than their peers. They were also rated more favourably by their peers on these dimensions even after controlling for a number of personality traits. Clearly, affect regulation plays a strong role in social well-being, suggesting that in the proposed study, affect regulation would be important to successful social and emotional aspects of college adjustment.

Finally, Oaten and Cheng (2005) investigated the impact of academic stress on self-regulation efforts. Using a quasi-experimental design the authors tested whether academic stress would impair participants' abilities at self-regulatory behavioural control. An exam-stress group was assessed at baseline and then during the exam period; a control

group was assessed at two relatively benign (e.g., not stressful) times. They found that the exam-stress group showed impaired performance on a Stroop task following thought suppression (a form of self-regulatory behaviour). The authors also assessed changes in various health behaviours and self-care activities, and found that the experimental group showed increases in smoking and caffeine consumption, and decreases in emotional control, exercise, sleep and study habits. Overall, the research reviewed above suggests that particular affect regulation strategies used in appropriate contexts might generally be viewed positively.

Self-Efficacy and Behavioural Problems

The proposed association between self-efficacy and excessive (dysregulated) behaviours has been highlighted in the discussion on social cognitive theory. But how can self-efficacy in relation to mood states be understood, irrespective of behaviours?

Self-Efficacy and Depression. First, the reciprocal relationship between depression and self-efficacy suggests that a sense of inefficacy may contribute to a depressed mood. That is, when depression exists it may diminish already existing depression self-efficacy (Kavanaugh & Bower, 1985; Stanley & Maddux, 1986a, 1986b). This knowledge is important because it informs us about the influence of cognition (thoughts and beliefs) on depression and the potential areas for mental health treatment. Furthermore, according to Bandura (1997) three primary self-efficacy beliefs have been identified that trigger the initiation, maintenance, and course of depression. First, efficacy beliefs concerning performance will influence the type and intensity of affect. In other words, when an individual holds a belief that they will be unable to achieve a desired goal depression may emerge (Bandura, 1986). Bandura also suggests that people who

oblige themselves to achieve standards which they cannot achieve risk triggering an episode of depression. Second, an individual's perception of their ability to influence their thoughts will in part, shape their emotional response (Bandura, 1986). In other words, people can become distressed about their apparent inability to control disturbing thoughts (Kent & Gibbons, 1987). Third, studies have shown that individuals who perceive low efficacy to develop fulfilling and supportive relationship with others are also more likely to become depressed (Anderson & Arnoult, 1985). According to Bandura (1977, 1986, 1997), self-efficacy expectations influence the likelihood of individuals approaching a situation or task or whether they will avoid it. In other words, individuals will tend to avoid engaging in behaviours that they feel are beyond their capabilities and approach situations in which they feel a sense of confidence. Bandura (1982) also pointed out that self-efficacy impacts the quality of performance and whether individuals persist on a task even in the face of obstacles. Therefore, students who are depressed are likely to have lower perceived efficacy and may be less likely to engage in the behaviours and tasks that contribute to successful university adjustment (e.g., engaging in behaviours and cognitions that promote good sleep patterns, attending classes regularly).

Kanfer and Zeiss (1983) examined the relationship between self-efficacy, and interpersonal functioning among university students experiencing depression. Even though the performance ratings were not significantly different between the two groups, the self-efficacy ratings for the various interpersonal behaviours at home, school, and in social settings were significantly lower in the depressed group of university students

relative to the nondepressed group. That is, a lack of self-efficacy was related to depression.

Only one published study could be found that has examined the contributions of self-efficacy and academic success to subsequent impairment (i.e., depression) in university students (Olioff, Bryson, & Wadden, 1989). Two self-efficacy ratings were obtained: a total score and a specific self-efficacy score based on the activity students rated as most important to academic success. Automatic thoughts and specific self-efficacy together predicted depression. However, the total self-efficacy score did not significantly predict depression. It is likely that the specific self-efficacy score played a significant role because it involved students rating an activity they felt would be most predictive of academic success. We can also draw on another study that investigated whether self-efficacy mediates the relation between social support and psychological adjustment longitudinally in university students (Saltzman & Holahan, 2002). The authors found that indeed social support at Time 1 predicted level of depression at Time 2 and that self-efficacy fully mediated this relation.

Kirsch, Mearns, and Catanzaro (1990) demonstrated that the expectation that one will feel better is associated with improved mood. College students completed questionnaire measures of their expectancy of being able to alter their mood, factors such as style of coping and family support, which have been found previously to relate to depression, and self-ratings of depression symptoms. Students who expected to be able to help themselves feel better (e.g., "I can usually find a way to cheer myself up," "I'll feel okay if I think about more pleasant times," "Catching up with my work will help me calm down.") reported less dysphoric mood. Apparently, it is not enough to use adaptive

coping strategies unless one has confidence in their effectiveness. The authors recommended that interventions should include components to build expectancies, such as presenting convincing and credible rationales for behavioural treatments, referring to scientific evidence for their effectiveness, and allowing clients to choose from alternative strategies that will work best for them.

Self-Efficacy and the Internet. Using the Internet requires a set of skills more advanced than those required for computer use (Eastin & LaRose, 2000). These include establishing and maintaining a stable Internet connection, and learning how to navigate the Internet and search for relevant information. Thus, Internet self-efficacy may be distinguished from computer self-efficacy and is defined as the belief that one can successfully perform a distinct set of behaviours required to establish, maintain, and effectively utilize the Internet over and above basic personal computer skills (Eastin & LaRose, 2000). Internet self-efficacy focuses on what a person believes they can successfully accomplish online.

Research examining the association between Internet self-efficacy and university adjustment is also limited. In keeping with Bandura's (1977) suggestion that self-efficacy be task specific, researchers in Internet self-efficacy studies have focused on the performance of specific tasks such as entering a World Wide Web address, creating folders and bookmarks, and mailing pages (Nahl, 1996). In one study, Eastin and LaRose (2000) examined the construct validity of Internet self-efficacy and Internet use in a sample of undergraduate students, and found that Internet self-efficacy directly predicted Internet use (Eastin & LaRose, 2000). Researchers have also evaluated the relationship between Internet self-efficacy and Internet performance (Nahl, 1996; Staples, Hulland, &

Higgins, 1998) and prior use of the Internet (Eastin & LaRose, 2000). Their results were consistent with the previous self-efficacy literature, in that self-efficacy perceptions were positively related to task performance and prior use. Students who had little confidence in their ability to use the Internet, or who were uncomfortable using the Internet had weak self-efficacy beliefs. According to social cognitive theory, those with low Internet self-efficacy would be less likely to use the Internet than those with a high degree of self-efficacy.

In sum, researchers showed, on a preliminary basis, a positive relationship between Internet use and Internet self-efficacy (Eastin & LaRose, 2000; Staples, et al., 2000). In the studies reviewed above the results indicate that self-efficacy played an important role in predicting Internet use.

Self-Efficacy and Sleep. Only one study could be found that has examined the link between sleep and sleep self-efficacy (Fichten et al., 2001). In this study, Fichten and colleagues examined the role of cognitions in good sleepers and two groups of poor sleepers (i.e., those with high and low distress associated with insomnia). Participants completed various self-report measures including the Sleep Self-Efficacy Scale (SSE). SSE was defined as participants' beliefs about their ability to influence their own sleep-related behaviour. Fichten and colleagues reported that negative thoughts were more frequent in the poor sleeper groups. Negative thoughts were also associated with more distress concerning participants' insomnia and with overall daytime psychological adjustment. No additional studies could be found that have examined sleep problems and the causal relationship of self-efficacy and adjustment in the general population and more specifically, the linkages with university adjustment.

Self-Efficacy and Affect Regulation. Most, if not all of the research that has been conducted on the effects of self-efficacy beliefs has focused on cognitive processes, motivation, and performance. Recently, there has been some interesting research that has broadened the scope of analysis to include affect functioning and its impact on adjustment (Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli, 2003; Caprara, Regalia & Bandura, 2002; Caprara & Steca, 2005). Generally speaking, self-efficacy beliefs are powerful predictors of affect responses to life events, responses that can then influence thinking and behaviour. Individual beliefs regarding coping capabilities are associated with how much stress and depression will be experienced in threatening or difficult situations (Love, Olendick, Johnson, & Schlezinger, 1985; Schneider, O'Leary, & Agras, 1987). Affect self-efficacy refers to belief in the ability to perform actions that influence one's mood or emotional states. Affect self-efficacy is important because people with low affect self-efficacy who are distressed now also expect they will continue to be distressed. In other words, they do not have a high degree of confidence in their ability to alleviate their emotional distress (e.g., depression, anxiety, anger).

Only a few studies have examined the role of affect self-efficacy and there appears to be no published literature examining the role of this construct on university adjustment. In one study, Caprara and Steca (2005) investigated the role of affect and interpersonal self-efficacy on prosocial behaviour and life satisfaction. They found that individuals with high affect self-efficacy are more likely to have high interpersonal self-efficacy, which in turn leads to more prosocial behaviour and greater life satisfaction. In another study, Bandura et al. (2003) examined (longitudinally) among adolescents affect self-efficacy and the relation to depression, delinquency and prosocial behaviour. It was

found that affect self-efficacy mediated the effect of the behavioural forms of self-efficacy on the dependent measures (prosocial behaviour, delinquency, and depression). No further studies could be found where researchers have examined affect self-efficacy.

Self-Efficacy and University Adjustment. Researchers have examined various aspects of the university experience and how they impact on particular aspects of university adjustment (e.g., academic performance) rather than adjustment in a comprehensive way. For example, in one study, Chemers, Hu, and Garcia (2001), investigated the role of academic self-efficacy and optimism and whether academic expectations and self-perceived coping ability moderated the effect on students' adjustment, performance and commitment to remain in university. Academic self-efficacy pertained to a variety of skills including note taking, test taking, and writing papers. They found that academic self-efficacy was strongly positively related to performance and adjustment (directly on performance and indirectly through expectations). Noteworthy is the fact that the academic self-efficacy measure was a subject specific one (rather than a general measure). In addition, Solberg and Villarreal (1997) examined the role of self-efficacy and social support on stress and level of psychological distress among university students. The College Self-Efficacy Inventory was used to assess self-efficacy and measured a variety of areas that students are likely to encounter while attending university (e.g., how confident are you that you could get a date when you want one, how confident are you that you could research a term paper). They found that although self-efficacy was related to adjustment it did not moderate the relationship between stress and symptomology. The measure of self-efficacy in this study was again one that was not consistent with Bandura's theory in that it tapped a variety of

tasks and was not specific to one domain. In another study, Haycock, McCarthy & Skay (1998) investigated self-efficacy expectancies for successfully completing academic tasks, anxiety, and procrastination among university students. Indeed it was found that efficacy expectations and anxiety played a significant role in procrastination. In addition, Newby-Fraser and Schlebusch, (1997) examined the relationship of social support, self-efficacy, and assertiveness on academic performance and student stress. Self-efficacy was significantly linked to academic performance and student stress.

The studies reviewed above indicated that self-efficacy plays an important role in academic adjustment to university; however, researchers have only minimally examined the relationship of self-efficacy with other aspects of university adjustment (e.g., emotional or social adjustment) among emerging adults. Indeed, researchers have not examined the role of self-efficacy and university adjustment in a comprehensive way. Further, there has been limited research in the area of self-efficacy and more general measures of university adjustment. Nevertheless, researchers have shown that a strong sense of personal efficacy is related to better health, higher achievement, and more social integration. These findings have been found across diverse areas, such as school achievement, emotional disorders and mental and physical health.

Maddux & Lewis (1995) suggested two aspects of Bandura's theory are important in determining the relevance of self-efficacy in university adjustment. First, it is clear that strong beliefs about personal competence and ability lead to adaptive emotional states. In contrast, thoughts of inefficacy lead to distressing emotional states that can ultimately culminate in cognitive and behavioural ineffectiveness. Second, as individuals feel a greater sense of control in determining their personal outcomes they are more likely to be

well-adapted. Because the mechanism of self-efficacy is central to one's perceived personal control it follows that self-efficacy predicts psychosocial adjustment (Bandura, 1977). Therefore, the association of self-efficacy with university adjustment was examined in this study.

Statement of Purpose and Hypotheses

As previously discussed, transitions in general provide opportunities for examining the emergence of new behaviours, the discontinuation of already established behaviours, and the modification of behaviours in response to new contextual demands (Pickles & Rutter, 1991). Therefore, the university transition provides a unique opportunity to investigate a number of behaviours that are germane to emerging adulthood.

In the research reviewed above, we have shown that problems with depression, the Internet, sleep, and affect regulation are associated with a variety of negative physical and psychological effects. Although researchers, in a few studies, have examined some of these behaviours (e.g., depression) in clinical populations and to a more limited extent in the university population (e.g., Internet), they have not examined the impact of sleep or affect regulation problems on university adjustment, or the combination of these behaviours using a comprehensive measure of university adjustment.

The purpose of the present study was threefold: 1) to examine the role of four domains of self-efficacy (depression, Internet, sleep, and affect) with their corresponding behavioural domains; 2) to examine the association of behaviours related to depression, Internet use, sleep, and affect regulation with university adjustment; and 3) to examine,

the role of self-efficacy in the prediction of university adjustment over and above the stated domains of behaviour.

The following hypotheses were made;

Hypotheses

1. Higher scores on each of the depression, Internet, and sleep self-efficacy variables would be significantly associated with lower scores on each of the corresponding types of behaviours, while higher scores on affect self-efficacy would be significantly associated with higher scores of positive affect regulation and lower scores of negative affect regulation.
2. Higher scores on the behaviour variables (depression, Internet, sleep, and negative affect) would be significantly associated with lower university adjustment scores; higher scores on positive affect regulation would be significantly associated with higher university adjustment scores.
3. Higher scores on the self-efficacy variables (depression, Internet, sleep, and affect) would significantly add to the prediction of university adjustment over and above their corresponding behavioural variables. No prediction was made regarding which types of self-efficacy would be uniquely related to university adjustment.

CHAPTER 2

METHOD

Participants

Participants were 187 first-year undergraduate students from the University of New Brunswick-Fredericton. Of these, the data from 23 participants were omitted for a variety of reasons. Fourteen students reported being in their second or third year at university and therefore did not meet the first year criterion. Six students were 30 years of age or older which was disparate from the majority of the sample. Two participants were multivariate outliers and one participant had missing data across a number of items on several measures. This resulted in a final sample of 164 students.

Among the 164 undergraduate students who participated in this study, 37 (22.6%) were male and 127 (77.4%) were female. Students' mean age was 18.5 years and ages ranged from 17 to 28 ($SD=18.6$). Fifty-one (27%) were general arts students, 31 (16%) nursing students, 27 (14%) Kinesiology students, 16 (8%) business students, and the remaining came from non degree programs. With respect to students' relationship status, 87 (53.0%) reported being single and 73 (44.5%) indicated they were in a relationship (dating, common-in-law, or married). Sixty-five (39.6%) students reported part-time employment and worked an average of 11.9 ($SD=7.89$) hours per week. Approximately 50% of the students indicated they were currently living in residence, 28% reported living at home and another 18% reported living in an apartment alone or with roommates.

Measures

Demographic questionnaire. A short background questionnaire was used to determine the gender, age, and other characteristics of the participants (see Appendix B).

Behavioural Indicators. The Center for Epidemiological Studies Depression Scale. (CES-D; Radloff, 1977; see Appendix C). The CES-D was used to measure each participant's level of depressive symptomology. The 20 items (e.g., "*I did not feel like eating*"; "*My appetite was poor*") are scored on a 4-point Likert scale from 0 (rarely or none of the time, <1 day) to 3 (most or all of the time, 5-7 days). Total scores range from 0-60 and higher scores indicate the presence of more depressive symptomology. The author reports good internal consistency with alpha coefficient (α), ranging from .85 in the general population to .90 in patient samples. Strong test-retest reliability coefficients have been obtained for 2, 4, and 8-week intervals and range from $r=.51$ in healthy controls to $r=.57$ in patient samples. The CES-D also has very good construct, convergent, and discriminant validity. For example, the CES-D was highly correlated with the Profile of Mood States ($r=.54$), the Hamilton Clinician's Rating Scale ($r=.44$ to $r=.69$), the Raskin Rating Scale ($r=.54$ to $r=.75$), and ratings of depression by a nurse clinician ($r=.56$). Evidence of moderately strong discriminant validity has come from the lack of significant correlations between the CES-D and a number of variables such as positive affect. Good internal consistency of the CES-D ($\alpha=.91$) was found in the present study.

Internet Addiction Scale. (IAS; Nichols & Nicki, 2004; see Appendix D). The IAS consists of 31 items and was used to assess various aspects of Internet addiction (e.g., tolerance, withdrawal, mood modification). Scale items are rated on a 5-point Likert scale from 1 (never) to 5 (always) with higher scores representing greater Internet addiction. Total scores range from 0-155. The IAS has been shown to have very good internal consistency ($\alpha=.95$). Moreover, support for the scale's convergent validity was

demonstrated by the report of moderately strong correlations of Internet addiction with loneliness ($r=.30$, family loneliness, and $.31$, social loneliness). Furthermore, gender, Family Loneliness, and Social Loneliness were found to significantly ($p<.01$) and uniquely account for IAS scores (srs $-.16$, $.15$, and $.20$, respectively). A one-factor solution was judged to be the most appropriate accounting for a total of 46.50% of the variance. All 31 items loaded on this component, which was interpreted to represent aspects of a general factor relating to Internet addiction.

Canan, Ataoglu, Nichols, Yildirim and Ozturk (2010) found evidence of good internal consistency of the IAS ($\alpha=.92$). Principal components also revealed a one factor solution to be most appropriate which accounted for 43.2% of the variance. Evidence of construct validity of the IAS was obtained as there were significant correlations between the IAS and the Beck Depression Inventory, $r=0.49$ ($p<0.001$) and between the IAS and the Submissive Acts Scale, $r=0.34$ ($p<0.001$). Additionally, Nichols et al. (2003) reported support for IAS the concurrent validity of the, $r=.86$, $p<.01$. In the present study very good internal consistency of the IAS was found ($\alpha=.95$).

Pittsburgh Sleep Quality Index. (PSQI; Buysse, Reynolds, Monk, Berman & Kupfer, 1989; see Appendix E). The PSQI was used to measure the respondent's quality and patterns of sleep. The PSQI has 19 items (e.g., "*During the past month, how would you rate your sleep quality overall?*") and an additional 5-items if the participant has a bed partner or roommate. The PSQI assesses seven areas: sleep latency, sleep quality, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications, and daytime dysfunction. Total scores were examined in the present study and may range from 0-21 with higher scores indicating greater sleep problems. The internal consistency

is reasonably high ($\alpha = .83$). Strong test-retest reliability estimates were obtained for the global PSQI on a variety of samples including controls and clinical samples ($r = .85$ and $r = .40$, respectively). Concurrent validity was explored by comparing PSQI scores with polysomnographic measures. However, PSQI scores and PSG indices were weakly correlated, ($r = .20$). The authors of the scale report good discriminant validity. For example, on the PSQI, control groups scored lower on the global score than patient groups indicating they had fewer sleep quality problems. Somewhat weak internal consistency ($\alpha = .67$) was found in the present study. Despite having a low Cronbach alpha value, the PSQI was retained and used in all subsequent analyses because it was the only measure used to assess sleep behaviour and previous studies (Buysse et al., 1989) have shown the PSQI to be a valid and reliable measure. Nevertheless, the results should be interpreted with caution.

Internet Self-Efficacy Scale. (ISES; Eastin & LaRose, 2000; see Appendix F). The ISES is an eight-item self-report questionnaire that was used to measure Internet self-efficacy. Respondents indicate on a 7-point Likert scale from 1 (Strongly Disagree) to 7 (Strongly Agree) their confidence level in performing a specific behaviour on the Internet (higher scores represent higher confidence levels). This scale has high internal consistency with $\alpha = .93$. There is evidence of construct validity because the ISES was positively correlated with hypothesized predictor variables including Internet usage ($r = .63$) and prior Internet experience ($r = .36$). Moreover, evidence of discriminant validity was obtained from a lack of significant correlations between the ISES and a number of variables unrelated to Internet self-efficacy including depression, loneliness, perceived social support, and life stress. Due to poor internal consistency in the present study

($\alpha=.67$), the ISES was not included in further analyses. Moreover, the design of the ISES (e.g., response choices and item inclusion), in conjunction with the present sample being younger and very familiar with computer and Internet technology, may have led to a ceiling effect resulting in lesser differences among students at the upper range of the scale.

Internet Self-Efficacy Scale-Control. (ISES-C; Nichols & Nicki, 2006; see Appendix G). The ISES-C was used to assess individual self-efficacy beliefs for control in using the internet. Respondents are asked to rate their confidence on each item on a scale from 0-100, using the stem, "*I would be able to control my Internet use...*" The higher the score the more confidence an individual has in their ability to control their desire to use the Internet. In the present study very good internal consistency was found ($\alpha=.95$). Because this measure was created for the present study no psychometric data are available.

Depression Coping Self-Efficacy Scale. (DCSES; Perraud, 2000; see Appendix H). Depression self-efficacy was assessed using the Depression Coping Self-Efficacy scale. Respondents rate their individual self-efficacy beliefs related to behaviours that would help them to cope with depression on a scale from 0-100 using the stem, "*I am this percent confident that I will be able to do the following thing that may relieve or prevent the symptoms of depression.*" Scoring can be obtained by summing the responses and dividing the total score by the number of items. Strong internal consistency estimates ranged from $\alpha =.90$ to $\alpha =.96$ with clinical and nonclinical samples, respectively (Tucker, Brust, & Richardson, 2002). Test-retest reliability was obtained using a sample of volunteers (not experiencing depression) and was deemed very good ($r=.84$) to excellent

($r = .97$). Weak to moderate construct validity of the DCSES was demonstrated by negative correlations with CES-D Scale and the Derogatis Psychiatric Rating Scale (DPRS) scale for inpatient samples ranging from $r = -.25$ to $r = -.75$ and positive correlations with the Global Assessment of Functioning Scale at discharge ranging from $r = .50$ to $r = .67$. In a study that was aimed at measuring depression coping self-efficacy, Perraud found that scores on the DCSES were moderately correlated with Beck Depression Inventory-II scores ($r = -.55$) demonstrating strong divergent validity. In the present study reasonably good internal consistency was found ($\alpha = .86$).

Sleep Self-Efficacy Scale. (SSE; Lacks, 1987; see Appendix I). The Sleep Self-Efficacy Scale was used to measure participants' belief in their capacity to engage in behaviours that influence their sleep-related motivation and behaviour. Scores range from 9-45, with higher scores representing greater sleep self-efficacy. Test-retest reliability was shown to be reasonably good ($r = .77$) in an older population (Fichten et al., 2001). Data suggested that the measure is a valid one in that SSE scores increased following behavioural insomnia treatment (Cook and Lacks, 1984 as cited in Lacks, 1987). In the present study acceptable internal consistency was found ($\alpha = .81$). No additional psychometric data are available on the validity of the SSE.

Affect Self-Efficacy. (ASE; Bandura et al., 2003; see Appendix J). The ASE is a 14-item measure that concerns perceived belief in one's ability to manage emotions. The measure consists of five items that tap one's ability to manage positive affect (e.g., "*How well can you express enjoyment freely at parties?*") and nine items that tap one's ability to manage negative affect (e.g., "*How well can you get over irritation quickly for wrongs you have experienced?*"). An additional four items are used to assess perceived efficacy

to calm oneself in difficult situations (e.g., “I can calm myself in stressful situations”). The internal consistency measures was found to be high for the negative and positive affect scales ($\alpha = .88$) and ($\alpha = .82$), respectively. In the present study reasonably good internal consistency was found ($\alpha = .87$). No validity data are available for this measure.

Measure of Affect Regulation Scale (MARS; Larsen & Prizmic, 2004; see Appendix L). The MARS is a 38-item questionnaire designed to assess both trait and state conceptions of emotion regulation. A state concept was used in the present study. Seven factors comprise the MARS, Active Distraction; Cognitive Engagement to Manage the Affect; Behavioral Engagement to Manage the Affect; Venting and Expressing Affect; Passive Distraction and Acceptance; Rumination and Withdrawal; and Waiting and Reframing. Items across these seven factors are either behavioral or cognitive and target changing the context or behavior. Using a 7-point Likert scale, participants are asked to indicate the frequency they use the behaviours listed to influence their feelings (e.g., “*I use alcohol*”). Scores on all seven subscales can be obtained by calculating the mean of the ratings. However, in the present study items for the last three factors that involved the use of a negative affect regulation were summed to obtain a total score for negative affect regulation. A similar procedure was carried out for the items that involved positive affect regulation strategies to achieve a total score for positive affect regulation involving items for the first four factors. Alpha values for the seven subscales ranged from $\alpha = .34$ to $\alpha = .78$, (Z. Prizmic, personal communication, August 23, 2005).

Convergent validity was supported by positive correlations between the MARS-POS subscales and the Satisfaction with Life Scale, Fordyce Happiness Measure and the Rosenberg Self-Esteem Measure and negative correlations between the MARS-NEG

subscales and Satisfaction with Life Scale, Fordyce Happiness Measure and the Rosenberg Self-Esteem Measure.. In the present study internal consistency for the MARS-NEG was ($\alpha=.66$) and for the MARS-POS was ($\alpha=.84$).

Student Adaptation to College Questionnaire. (SACQ; Baker & Siryk, 1999; see Appendix K). The SACQ is a 67-item questionnaire. Underlying and shaping the development of this measure is the assumption that adjustment to university is multifaceted and therefore, should be assessed with a comprehensive measure of adjustment. Four sub-scales measure Academic Adjustment, Social Adjustment, Personal-emotional Adjustment, and Goal Commitment/Institutional Attachment. Students rated statements about their adjustment to university based on a 9-point Likert scale, 1 (*Applies very Closely to Me*), 9 (*Doesn't Apply to Me At All*). The full-scale score may range from 67-603 with higher scores indicating better overall adaptation to university. The SACQ full-scale score is calculated by summing the ratings across all 67 items. Subscale totals are derived by summing the ratings for the items comprising each subscale. Higher subscale scores indicate better adjustment. The SACQ total score has excellent internal consistency: $\alpha=.92$ to $\alpha=.95$ (Baker & Siryk). In the present study reasonably good internal consistency was found ($\alpha=.83$).

The Academic Adjustment sub-scale consists of 24-items (e.g., "*I know why I'm in university and what I want out of it*") that refer to various educational demands characteristic of the university experience. This sub-scale demonstrated high internal consistency, ($\alpha = .81$ to $\alpha=.90$; Baker & Siryk, 1999). Results for its criterion-related validity showed number of significant correlations between academic adjustment and

grade point average ranging from $r=.17$ to $r=.48$ (Baker & Siryk, 1984b). In the present study weak internal consistency was found ($\alpha=.56$).

The Social Adjustment sub-scale is made up of 20 items that are relevant to the interpersonal societal demands at university. "*I have several close social ties at university*" is an example of one item. This sub-scale has good internal consistency ($\alpha = .83$ to $\alpha=.91$; Baker & Siryk, 1999). Evidence of good concurrent validity also exists. The authors of the scale reported a significant relationship between the Social Adjustment sub-scale and the Social Activities Checklist. There was also a reasonably strong and significant relationship found between this sub-scale and amount of extracurricular activity ($r = .47$; Wick & Shilkret as cited in Baker & Siryk, 1999). In the present study very good internal consistency was found ($\alpha=.75$).

The Personal-Emotional sub-scale contains 15 items (e.g., "*I have been feeling tense or nervous lately*") aimed at determining how the student is feeling psychologically and physically. It has an acceptable internal consistency ranging from $\alpha = .77$ to $\alpha = .86$ (Baker & Siryk, 1999). A significant correlation was found between scores on this sub-scale and whether students had visited a campus psychological service center ($r=-.34$; Baker & Siryk, 1984b). In the present study very good internal consistency was found ($\alpha=.71$).

The Goal Commitment/Institutional Attachment sub-scale contains 15-items that are relevant to the interpersonal societal demands at university. A sample item is "*Lately, I have been giving a lot of thought to dropping out of university altogether and for good.*" Internal consistency ranged from $\alpha = .85$ to $\alpha = .91$ (Baker & Siryk, 1999). Evidence of good criterion related validity was found between this subscale and student attrition after

one year of university; correlations ranged from $r=-.27$ to $r=-.41$ (Baker & Siryk, 1984b). In the present study weak internal consistency was found ($\alpha=.35$).

In addition, extensive evidence of strong construct validity has been obtained in numerous studies that have examined the SACQ in relation to personality characteristics and mental health characteristics. For example, moderately strong correlations between self-esteem and the SACQ across the academic, social, and personal-emotional subscales were $r=.59$, $r=.63$, and $r=.40$, respectively (Saracoglu as cited in Baker & Siryk, 1999). Savino, Reuter-Krohn, and Coaster (1987) found moderately strong and significant correlations between Psychological Coping Resources and all SACQ subscales, academic ($r=.55$ to $r=.62$); social, ($r=.47$ to $r=.45$); personal-emotional, ($r=.64$ to $r=.62$); attachment, ($r=.44$ to $r=.47$); and ($r=.66$ to $r=.67$) for the full scale score. A summary of all variables and their abbreviations is given in Table 1.

Table 1

Summary of all Variables and their Abbreviations

Variable	Abbreviation
Internet Addiction Scale	IAS
Centre for Epidemiological Studies on Depression Scale	CES-D
Measure of Affect Regulation Scale-Positive	MARS-POS
Measure of Affect Regulation Scale-Negative	MARS-NEG
Pittsburgh Sleep Quality Index	PSQI
Internet Self-Efficacy-Control	ISES-C
Internet Self-Efficacy Scale	ISES
Depression Coping Self-Efficacy Scale	DCSES
Affect Self-Efficacy	ASE
Sleep Self-Efficacy	SSE
Student Adaptation to College Questionnaire	SACQ
Student Adaptation to College Questionnaire-Academic Adjustment	SACQ-AA
Student Adaptation to College Questionnaire-Personal Emotional Adjustment	SACQ-PE
Student Adaptation to College Questionnaire –Social Adjustment	SACQ-SA
Student Adaptation to College Questionnaire-Institutional Attachment	SACQ-IA

Procedure

Following ethical approval from the Department of Psychology and the University of New Brunswick Fredericton (UNB-F) Ethics Review Board, students were recruited for participation via the Experimental Sign up Website, through class announcements in introductory psychology classes, and an e-mail announcement to Introductory Psychology students (see Appendix A). Completion of the study took place during the fall semester. Initially, participants were asked to read the study information sheet (see Appendix M) and completed an informed consent (see Appendix N). Completion of the anonymous questionnaire package took approximately 45-60 minutes in groups ranging in size from three to thirty. Participants received one bonus point for their participation. Additional questionnaires were included in the package for investigation not germane to the current study.

The demographic questionnaire was presented first. All other measures were presented in randomized pairs, i.e., each self-efficacy measure was paired with the corresponding behaviour questionnaire (e.g., CES-D and the DSECQ). Participants were seated sufficiently apart to ensure confidentiality. Following completion of the study, participants were instructed to return their questionnaire packets to the research assistant and were given a debriefing sheet (see Appendix O). The debriefing consisted of a summary outlining the aim of the study, the address and the phone numbers of the UNB-F Counselling and Health Services Centers, and the local help line. Furthermore, two references were provided for students who might be interested in knowing more about university adjustment. The email addresses of the primary researcher, the thesis supervisor, and the Departmental Ethics Chair were also provided. At the conclusion of

the study, all participants who indicated on the consent form they would like a summary of the results were e-mailed a comprehensive information sheet (see Appendix P). The variables examined in the present study and their abbreviations are shown in Table 1.

CHAPTER 3

RESULTS

Data Conditioning

Analyses were conducted using SPSS 9.0. Prior to proceeding with data analysis, the full data set was conditioned in accordance with procedures recommended by Tabachnick and Fidell (2001). Conditioning of the data involved several steps. First, variables were checked in order to ensure that all values, means, and standard deviations were within the expected range of scores for each measure. Second, missing data (i.e., incomplete or missed responses to questionnaire items) were examined. The missing data were found to be randomly distributed and accounted for less than 10% (i.e., fewer than 24 items) of the sample data. Missing data for the SACQ was handled according to the data imputation and scoring guidelines offered in the SACQ manual (Baker & Siryk, 1999). If no more than two responses were missing for a given subscale, the mean of the responses for the subscale was used. For all other remaining measures, a mean substitution of missing data was used for data analysis (Tabachnick & Fidell, 2001).

Third, the data were examined for univariate outliers by computing and examining Z scores. A univariate outlier was identified as a case with a Z score of greater or less than 3 that was discontinuous from the distribution of scores (Tabachnick & Fidell, 2001). When a univariate outlier was identified it was replaced with a score that was one unit greater or lower than the next most extreme score on that variable (Tabachnick & Fidell, 2001). After each univariate outlier was removed, Z scores were again computed and examined. This process stopped when examination of Z scores revealed no additional univariate outliers.

The data set was also assessed for multivariate outliers by examining Mahalanobis Distances. Cases were judged to be multivariate outliers if they possessed a Mahalanobis Distance significant at the .001 level and they were clearly discontinuous from the rest of the distribution (Tabachnick & Fidell, 2001). Two multivariate outliers were identified. One participant reported much higher sleep, depression and Internet problems and the other participant reported much lower depression self-efficacy and sleep problems compared to the rest of the sample. Therefore, it appeared likely that these individuals represented a different population than the majority of individuals surveyed in the current study. Consequently, these cases were omitted from all analyses to ensure that the sample was homogeneous.

In addition, normality of the variables was verified through examination of skewness and kurtosis values by computing Z scores from these variables for each variable. All variables were found to be normally distributed. Histograms and expected normal probability plots were visually inspected for normality and a measure of skewness was obtained for each continuous variable. None of the variables met criteria for skewness and they were therefore retained for analysis without transformation. All variables, examined through scatterplots of the standardized residuals and standardized predicted values, met the assumption of Homoscedasticity. Evaluation of the assumptions of linearity revealed no threats to multivariate analyses.

The bivariate correlations between behavioural variables and between self-efficacy variables were then examined to assess possible multicollinearity using a cut-off of .70 or greater, as recommended by Tabachnick and Fidell (2001). These values appear in Tables 2 and 3, respectively. The complete correlation matrix of all predictor variables and the criterion is given in Table 4.

Table 2

Bivariate Correlations Between the Behavioural Variables, Criterion Subscales and Criterion Total Score

Measure	1	2	3	4	5	6	7	8	9	10
1 IAS	---									
2 CES-D	.23**	---								
3 MARS-POS	-.04	-.20*	---							
4 MARS-NEG	.25**	.29**	.44**	---						
5 PSQI	.13	.46**	-.07	.16*	---					
6 SACQ	-.26**	-.23**	-.08	-.21**	-.15*	---				
7 SACQ-AA	-.10	.00	-.15	-.12	.00	.77**	---			
8 SACQ-PE	-.37	-.51	.10	-.27**	-.32**	.65**	.31**	---		
9 SACQ-SA	-.11	-.05	-.10	-.11	-.05	.77**	.46**	.20**	---	
10 SACQ-IA	-.14	-.03	-.10	-.08	-.02	.70**	.38**	.17*	.69**	---

Note. $n=164$. * $p < .05$ ** $p < .01$. IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression Scale; MARS-POS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative; PSQI= Pittsburgh Sleep Quality Index; SACQ=Student Adaptation to College Questionnaire; SACQ-AA= Student Adaptation to College Questionnaire-Academic Adjustment; SACQ-PE= Student Adaptation to College Questionnaire-Personal Emotional Adjustment; SACQ-SA Student Adaptation to College Questionnaire – Social Adjustment; SACQ-IA= Student Adaptation to College Questionnaire-Institutional Attachment.

Table 3

Bivariate Correlations Between Self-Efficacy Variables and the Criterion

Measure	1	2	3	4	5	6
1 ISES-C	--					
2 ISES	-.13	--				
3 DCSES	.39**	.00	--			
4 ASE	.12	.09	.37**	--		
5 SSE	.13	.27**	.31**	.34**	--	
6 SACQ	.15	-.02	.20*	.21**	.19*	--

Note. $n=164$. * $p < .05$ ** $p < .01$. ISES-C=Internet Self-Efficacy Scale-Control; ISES=Internet Self-Efficacy Scale; DCSES=Depression Coping Self-Efficacy Scale; ASE=Affect Self-Efficacy; SSE=Sleep Self-Efficacy; SACQ=Student Adaptation to College Questionnaire

Table 4

Bivariate Correlations Between all Predictor Variables and the Criterion

Measure	1	2	3	4	5	6	7	8	9	10	11
1 IAS	---										
2 CES-D	.23**	---									
3 MARS- POS	-.04	-.20*	---								
4 MARS- NEG	.25**	.29**	.44**	--							
5 PSQI	.13	.46**	-.07	.16*	--						
6 ISES-C	-.30**	.04	.14	-.12	.02	--					
7 ISES	.21**	-.05	.04	-.03	-.17*	-.13	--				
8 DCSES	-.36**	-.22**	.28*	-.10	-.16*	.39**	.00	--			
9 ASE	-.23**	-.33**	.39**	-.07	-.08	.12	.09	.37**	--		
10 SSE	-.15	-.48**	.28**	-.03	-.59**	.13	.27**	.31**	.34**	--	
11 SACQ	-.26**	-.23**	-.08	-.21**	-.15	.15	-.02	.20*	.21**	.19*	--

Note. $n=164$. * $p < .05$ ** $p < .01$. IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression Scale; MARS-POS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative; PSQI=Pittsburgh Sleep Quality Index; ISES-C=Internet Self-Efficacy Scale-Control; ISES=Internet Self-Efficacy Scale; DCSES=Depression Coping Self-Efficacy Scale; ASE=Affect Self-Efficacy; SSE=Sleep Self-Efficacy; SACQ=Student Adaptation to College Questionnaire;

In general, the variables were weakly inter-correlated with values ranging from $r=-.01$ to $r=.46$ and $r=-.08$ to $r=.48$ for the behavioural and self-efficacy variables, respectively. Given that the highest correlation was found to be $r=-.59$ multicollinearity was not considered to be a problem.

Descriptives

Descriptive statistics for the variables used in this study are reported in Table 5. As illustrated, on average, students in this study experienced high levels of depression and poor sleep quality according to the guidelines established by Husaini (1980) and Buysse, et al. (1989). On the CES-D, scores ranged from minimal to severe levels of probable depression. Using the suggested cut-off score of 23 for the general population (Husaini, 1980), 20.12% of the sample could be classified as experiencing significant symptoms of depression. Employing the more stringent criterion of 27 for probable depression, 12.19% of the present sample could be classified as experiencing significant symptoms of depression. With respect to sleep, participants' mean score on the PSQI was also considered in the high range, although the scores ranged from 1-17. Based on the scoring criteria recommended by Buysse, et al. (1989), 77.4% of the present sample was experiencing minimal to moderate poor sleep quality. With respect to positive and negative affect regulation, approximately 80% and 67% of the sample reported using affect regulation strategies moderately often to almost always overall, respectively. On the IAS, 10% of the sample reported problematic Internet use which indicates a moderately high level of Internet addiction.

The present sample experienced moderately high levels of self-efficacy across the four types of self-efficacy assessed in the current study. On the university adjustment

measure, participants' mean score ($M=4.7$) suggested moderately high levels of adjustment (range 1-9). Based on Baker and Siryk's (1999) scoring criteria, 75% of the present sample was classified as well adjusted to university yet a rather substantial percentage reported high levels of depressive symptoms and serious sleep problems.

Table 5
Means and Standard Deviations of all Variables

Variable	<i>M</i>	<i>SD</i>	Possible Range	Actual Range
IAS	65.40	18.34	0-155	31-104
CES-D	14.53	9.89	0-60	0-55
MARS-POS	93.52	18.09	0-156	45-145
MARS-NEG	33.20	9.33	0-72	10-64
PSQI	6.81	3.11	0-21	1-17
SSE	29.77	6.28	9-45	12-44
DCSES	66.08	12.72	0-2400	29.33-94.17
ISES-C	1397.07	509.27	0-2100	40-2100
ISES	34.10	10.26	0-56	8-56
ASE	84.38	12.32	18-56	53-120
SACQ	317.04 (4.7)	36.23	67-603 (1-9)	214-414
SACQ-AA	97.05	14.50	24-216	56-136
SACQ-PE	67.57	15.68	15-135	21-119
SACQ-SA	83.03	12.75	20-180	45-122
SACQ-IA	69.31	8.76	15.135	38-90

Note. $n=164$. IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression Scale; MARS-POS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative; PSQI= Pittsburgh Sleep Quality Index; SSE=Sleep Self-Efficacy; DCSES=Depression Coping Self-Efficacy Scale; ISES-C=Internet Self-Efficacy Scale-Control; ISES=Internet Self-Efficacy Scale; ASE=Affect Self-Efficacy; SACQ=Student Adaptation to College Questionnaire; SACQ-AA= Student Adaptation to College Questionnaire-Academic Adjustment; SACQ-PE= Student Adaptation to College Questionnaire-Personal Emotional Adjustment; SACQ-SA Student Adaptation to College Questionnaire –Social Adjustment; SACQ-IA= Student Adaptation to College Questionnaire-Institutional Attachment.

Demographic differences pertaining to all variables were tested using t-tests.

There was a significant effect for gender, with men receiving higher scores than women on sleep self-efficacy, $t(162, 2) = -2.84, p < .05$. However, women scored higher than men on Internet self-efficacy, $t(162, 2) = 2.28, p < .05$ and negative affect regulation, $t(162, 2) = 2.12, p < .05$.

With respect to age, only significant differences were found for Internet addiction, and Internet self-efficacy, $t(162, 2) = 2.81, p < .01$ and $t(162, 2) = -2.44, p < .01$, respectively. Participants age 17-21 years scored higher on Internet addiction whereas participants age 21-28 years scored higher on Internet self-efficacy.

Finally, with respect to relationship status, only one significant difference was found for affect self-efficacy, $t(162, 2) = 2.61, p < .01$. Participants who reported being single scored higher than participants who reported being in a common-in-law relationship.

Self-Efficacy and Behaviour (Hypothesis 1)

In accord with Hypothesis 1, we expected lower self-efficacy (i.e., depression, Internet, sleep, and affect) to be significantly correlated with higher levels of the corresponding types of behaviour (i.e., depression, Internet addiction, sleep and negative affect regulation). Lower affect self-efficacy was expected to be associated with lower levels of positive affect regulation. Thus, in order to test this hypothesis, one tailed Pearson Correlation coefficients were calculated. As noted in Table 4, the ISES-C was found to be significantly and weakly negatively correlated with the IAS, $r = -.30, p < .01$, and the DCSES to be significantly and weakly negatively correlated with CES-D, $r = -.22, p < .01$. Furthermore, ASE was found to be significantly and weakly positively correlated

with the MARS-POS, $r = .39, p < .01$; ASE was not found to be significantly correlated with MARS-NEG; and SSE was found to be significantly and moderately negatively correlated with the PSQI, $r = -.60, p < .01$.

Behaviours, Self-efficacy and University Adjustment (Hypotheses 2 & 3)

To answer Hypotheses 2 and 3, a hierarchical multiple regression was conducted. For hypothesis 2, we expected that behavioural scores (i.e., CES-D, IAS, PSQI, MARS-POS and MARS-NEG) would be directly related to university adjustment. AGE, RELATIONSHIP STATUS and GENDER served as control variables and thus were entered on the first step; the PSQI, IAS, MARS-POS, MARS-NEG and CES-D, were simultaneously entered as the predictor variables on the second step, and university adjustment (total SACQ score) as the criterion variable. These results are given in Table 6. The linear combination of the behavioural variables was found to contribute significantly to the prediction of university adjustment, accounting for approximately 12% of the variance, $F(8, 155) = 2.687, p < .01$. Examination of the zero-order correlations given in Table 4, indicated that the IAS, the CES-D, MARS-NEG, and the PSQI were significantly and negatively correlated with SACQ scores. Furthermore, semi-partial correlation values revealed that only the IAS ($sr^2 = 0.20$) contributed significantly and uniquely to the prediction of university adjustment (See Table 6).

For Hypothesis 3 we expected lower self-efficacy (i.e., DCSES, ISES-C, SSE, and ASE) would be directly related to poorer university adjustment. In order to test Hypothesis 3, as noted above, a hierarchical multiple regression was conducted. The control variables (AGE, GENDER and RELATIONSHIP STATUS) were entered into the model first. The behavioral variables (CES-D, IAS, PSQI, MARS-POS and MARS-

NEG) also served as control variables and were entered on the second step; the self-efficacy variables (DCSES, ISES-C, SSE, and ASE) were entered into the model on the third step. University adjustment (SACQ) served as the criterion variable. These results are given in Table 6.

The linear combination of the behavioural and self-efficacy variables was found to significantly predict university adjustment scores, $F(12,151) = 1.20, p < .01$. The multiple regression correlation coefficient $R = .29$ indicated that the linear combination of the twelve predictor variables accounted for approximately 16% of the variance in university adjustment scores in the sample. As indicated in Table 6, and noted above, the control variables (AGE, GENDER and RELATIONSHIP STATUS) were entered on step 1 and accounted for 0.5% of the variance in university adjustment. The behavioral variables (CES-D, IAS, PSQI, and MARS-POS and MARS-NEG) were entered at Step 2, and significantly accounted for an additional 12.2% of the variance in university adjustment. After entry of the self-efficacy variables at Step 3, the self-efficacy measures accounted for an additional 4.2% of the variance in university adjustment. However this was not a significant increment in the variance (i.e., R^2 change = .04, F change (4,151) = 1.88, $p > .05$).

Exploratory Analyses of SACQ Subscales

In addition to the evaluation of our primary hypotheses, we also examined, on an exploratory basis, whether the behavioural variables significantly predicted any of the specific university domains (i.e., academic, social, personal-emotional and institutional attachment) and whether self-efficacy significantly added to these predictions. To answer these questions, four hierarchical multiple regression analyses were conducted. In each

analysis, the demographic variables (GENDER, AGE and RELATIONSHIP STATUS) were simultaneously entered in step 1; the behavioural variables (i.e., CES-D, IAS, PSQI, MARS-POS and MARS-NEG) were simultaneously entered in Step 2 and the self-efficacy variables (i.e., DCSES, ISES-C, SSE, and ASE) were entered in Step 3. Results of these analyses are presented in Tables 7-10.

The only significant finding was related to the personal-emotional domain of university adjustment. The linear combination of the behavioural variables (CES-D, IAS, PSQI, MARS-POS and MARS-NEG) was found to contribute significantly to the prediction of personal and emotion adjustment, accounting, for approximately 42.3% of the variance, $F(12, 151) = 9.23, p < .001$. Examination of the zero-order correlations (see Table 9), revealed that Internet problems, depression, MARS-NEG and sleep were significantly and negatively correlated with the personal-emotional adjustment scores. Furthermore, semi-partial correlation values revealed that only Internet use and depression contributed significantly and uniquely to the prediction of personal-emotional accounting for approximately 2.78% and 2.27% of the variance, respectively (See Table 9). With respect to the added predictive value of the self-efficacy variables, the linear combination of the self-efficacy variables was found to add significantly to the prediction of personal and emotional adjustment scores, $F(12, 151) = 9.23, p < .001$. The self-efficacy variables accounted for an additional 7% of the variance in personal and emotional adjustment, $R^2 \text{ change} = .07, F_{\text{change}}(4, 151) = 4.72, p < .001$. However, the only significant unique individual predictor was affect self-efficacy.

Table 6

Summary of Hierarchical Regression Analysis for All Variables Predicting University Adjustment

Step	Variable	<i>r</i>	β
1	Gender	.02	.02
	Age	.01	.044
	Relationship Status	-.058	-.072
	$R^2=.005$ for Step 1, $p>.05$		
2	IAS	-.26***	-.21*
	CES-D	-.23**	-.16
	MARS-POS	-.077	-.089
	MARS-NEG	-.210**	-.068
	PSQI	-.15*	-.048
$R^2=.12$ for Step 2, $p<.01$			
3	ISES-C	.15*	.102
	DCSES	.20**	.048
	ASE	.21**	.163
	SSE	.19**	.058
$R^2 \blacktriangle =.04$ for Step 3, $p>.05$			

Note. $n=164$ * $p<.05$ ** $p<.01$ *** $p<.001$ IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression Scale; MARS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative; PSQI= Pittsburgh Sleep Quality Index; ISES-C=Internet Self-Efficacy Scale-Control; DCSES=Depression Coping Self-Efficacy Scale; ASE=Affect Self-Efficacy; SSE=Sleep Self-Efficacy.

Table 7

Summary of Hierarchical Regression Analysis for all Variables Predicting Academic Adjustment

Step	Variable	<i>r</i>	<i>B</i>
1	Gender	.11	.10
	Age	-.10	-.09
	Relationship Status	-.03	.02
	$R^2=.02$ for Step 1, $p>.05$		
2	IAS	-.10	-.13
	CES-D	.00	.01
	MARS - POS	-.15*	-.12
	MARS - NEG	-.12*	-.03
	PSQI	.00	.01
$R^2=.05$ for Step 2, $p>.05$			
3	ISES-C	.05	.04
	DCSES	.10	.10
	ASE	.04	.07
	SSE	.02	-.03
$R^2 \blacktriangle =.01$ for Step 3, $p>.05$			

Note. $n=164$ * $p<.05$. IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression; MARS-POS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative; PSQI= Pittsburgh Sleep Quality Index; ISES-C=Internet Self-Efficacy Scale-Control; DCSES=Depression Coping Self-Efficacy Scale; ASE=Affect Self-Efficacy; SSE=Sleep Self-Efficacy.

Table 8

Summary of Hierarchical Regression Analysis for All Variables Predicting Social Adjustment

Step	Variable	<i>r</i>	<i>B</i>
1	GENDER	-.125	-.13
	AGE	.04	.06
	Relationship Status	-.049	-.093
	$R^2=.02$ for Step 1, $p>.05$		
2	IAS	-.075	-.08
	CES-D	-.056	-.06
	MARS-POS	-.10	-.11
	MARS-NEG	-.046	-.046
	PSQI	-.019	-.02
$R^2=.05$ for Step 2, $p>.05$			
3	ISES-C	.185*	.19
	DCSES	-.032	-.04
	ASE	.069	.05
	SSE	.036	-.01
$R^2 \blacktriangle =.03$ for Step 3, $p>.05$			

Note. $n=164$ * $p<.05$ ** $p<.01$. IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression Scale; MARS-POS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative; PSQI= Pittsburgh Sleep Quality Index; ISES-C=Internet Self-Efficacy Scale-Control; DCSES=Depression Coping Self-Efficacy Scale; ASE=Affect Self-Efficacy; SSE=Sleep Self-Efficacy.

Table 9

Summary of Hierarchical Regression Analysis for All Variables Predicting Personal and Emotional Adjustment

Step	Variable	<i>r</i>	β
1	GENDER	.116	.118
	AGE	.056	.100
	Relationship Status	-.053	-.075
	$R^2=.02$ for Step 1, $p>.05$		
2	IAS	-.37***	-.25***
	CES-D	-.51***	-.40***
	MARS-POS	-.099	-.074
	MARS-NEG	-.273***	-.112
	PSQI	-.32***	-.11
$R^2=.35$ for Step 2, $p<.001$			
3	ISES-C	.05	-.07
	DCSES	.30***	.06
	ASE	.43***	.26***
	SSE	.41***	.14
$R^2 \blacktriangle =.07$ for Step 3, $p<.001$			

Note. $n=164$ * $p<.05$ ** $p<.01$ $p<.001$ IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression Scale; MARS-POS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative;; PSQI= Pittsburgh Sleep Quality Index; ISES-C=Internet Self-Efficacy Scale-Control; DCSES=Depression Coping Self-Efficacy Scale; ASE=Affect Self-Efficacy; SSE=Sleep Self-Efficacy.

Table 10

Summary of Hierarchical Regression Analysis for All Variables Predicting Institutional Attachment

Step	Variable	<i>R</i>	β
1	GENDER	-.128	-.128
	AGE	.059	.066
	Relationship Status	-.013	-.057
	$R^2=.02$ for Step 1, $p>.05$		
2	IAS	-.14*	-.13
	CES-D	-.03	-.051
	MARS-POS	-.098	-.129
	MARS-NEG	-.080	-.001
	PSQI	-.02	.008
$R^2=.05$ for Step 2, $p>.05$			
3	ISES-C	.19**	.18
	DCSES	.08	.007
	ASE	-.01	-.005
	SSE	.01	.02
$R^2 \blacktriangle =.03$ for Step 3, $p>.05$			

Note. $n=164$ * $p<.05$ ** $p<.01$ IAS=Internet Addiction Scale; CES-D=Centre for Epidemiologic Studies on Depression Scale; MARS-POS=Measure of Affect Regulation Scale-Positive; MARS-NEG=Measure of Affect Regulation Scale-Negative; PSQI= Pittsburgh Sleep Quality Index; ISES-C=Internet Self-Efficacy Scale-Control; DCSES=Depression Coping Self-Efficacy Scale; ASE=Affect Self-Efficacy; SSE=Sleep Self-Efficacy.

CHAPTER 4

DISCUSSION

The construct of emerging adulthood represents a relatively new understanding of the period of 18-25 years of age (Arnett, 2000). In fact, some theorists (Schulenberg et al., 2004; Hansell et al., 1999) have argued that emerging adulthood is a time of transition and involves increased vulnerability for mental health problems and engaging in risky behaviours. In view of this, it is important to understand why some students have a difficult time making the transition successfully.

Based on the results of previous studies it is known that several factors (e.g., reciprocity between parents and students, psychological well-being, alexithymia, perceived stress) are related to university adjustment (Wintre & Yaffe, 2000; Kerr, 2004). A major criticism of earlier research, however, is that researchers have continued to focus their efforts on identifying distinct factors rather than developing a cohesive psychological model of university adjustment. Guided by Bandura's (1986, 1997) social cognitive theory, as well as the existing empirical evidence examining university adjustment, our primary aim of this study was to examine associations between students' behaviours (i.e., depression, Internet, sleep, and positive and negative affect regulation) and the corresponding types of self-efficacy, and the relationship of these variables to university adjustment. We hypothesized that students who reported higher levels of self-efficacy would report lower levels of their corresponding behaviours, with the exception of affect self-efficacy where students would report higher levels of positive affect regulation and lower levels of negative affect regulation. In addition, we expected students who reported higher levels of the specified behaviours (i.e., depression, Internet,

sleep, and negative affect regulation) to have poorer university adjustment. However, students with higher positive affect regulation were expected to have better university adjustment. Finally, we expected that self-efficacy variables would significantly add to the prediction of university adjustment over and above their corresponding behavioural variables. With respect to these constructs, we had three goals: 1) to examine the relationship of four domains of self-efficacy (depression, Internet, sleep, and positive and negative affect regulation) with the corresponding behavioural domains; 2) to examine the association of behaviours related to depression, Internet, sleep, and positive and negative affect regulation on university adjustment; and 3) to examine the role of self-efficacy in the prediction of university adjustment over and above the related domains of behaviour. For each of these goals, a discussion of the findings is included below. Next, the implications of the results are discussed. Finally, limitations of this research are presented as well as directions for future research.

Students' Behaviours

As a prelude to Hypothesis 1, we first examined whether students were experiencing problems related to depression, Internet use, sleep, and positive and negative affect regulation. We expected students would report problems regarding all four variables. Consistent with previous researchers (ACHA, 2005; Furr, 2001; Gallagher, 2000; Gallagher, 2001; Kitrow, 2003; O'Malley, 1990; Pledge, 1998; Stone & Archer, 1990) who found that university students were reporting more mental health problems than in the past, students in the present study reported high levels of depressive symptomology, reported frequent use of affect regulation strategies, and reported poor sleep quality.

Consistent with previous research, students in the present study reported a rather substantial level of probable depression of 12-20% which exceeds the most recent Canadian estimate of depression of 10.8% in the general population (Statistics Canada, 2002). Yet our depression finding is comparable to one of the largest scale studies to examine depression among university students where the authors reported that 15.3% of students reported a diagnosis of depression (ACHA, 2008). It is not entirely clear why there is a higher prevalence of depression among university students relative to the general population. One possible explanation is that improvements in the diagnostic criteria for depression in general have led to more accurate assessment of prevalence (Patten 2008). It could also be related to the DSM-IV nosology where individuals are diagnosed as having a depressive disorder when full criteria are met even though the depressive symptomology is a result of a reaction to a life event and could be otherwise diagnosed with an adjustment disorder (Patten, 2008). Perhaps most likely, it is the higher prevalence of psychopathology that has been reported to occur during emerging adulthood relative to the general population (Schulenberg et al., 2004; Hansell et al., 1999).

For positive and negative affect regulation we found that 80% and 67% of the sample reported using affect regulation strategies “moderately often” to “almost always”, respectively. Problems with affect regulation occur when individuals are unable to decrease and increase negative and positive emotions. In the context of the present study, positive affect regulation involves behavioural (e.g., “I did something fun, something I really enjoy”) or cognitive efforts (e.g., “I tried to understand my feelings by thinking and analysing them”) aimed at changing the situation or the emotion. Individuals who have

difficulties regulating affect fail to take action to enhance or suppress the intensity of affect (Larsen & Prizmic, 2004).

Very few studies exist where researchers have examined the frequency and type of affect regulation strategies, especially among university populations so it is difficult to compare and interpret the present findings with those of others. Much of the research that has been carried out has focused on the period from infancy through childhood (Thompson, 1990). It is clear that a substantial percentage of students (i.e., 20%) in the present study reported “no use” to “infrequent use” of positive affect regulation strategies. This finding may be attributed to an individual difference variable. Eisenberg et al., (2000) have extended this argument by suggesting that these differences may be interpreted as dispositional differences. Gross and John (2003) suggest that affect regulation skills improve with increasing age so in this way, our finding that 20% of students do not use or infrequently use positive affect regulation strategies may not be surprising given their developmental stage of emerging adulthood. As Eisenberg et al. has pointed out, generally, attempts at affect regulation either support or disrupt the capacity to work, relate to others, and enjoy oneself. Therefore, a possible implication of our finding is that students who reported not using or infrequently using positive affect regulation strategies and students who reported using negative affect regulations strategies moderately often to frequently may also have a decreased capacity to function successfully.

Regarding sleep, 77.4% of the present sample was experiencing minimal to moderate poor sleep quality (i.e., classified as poor sleepers). Our finding is consistent with other studies such as Buboltz et al. (2001) who reported that 73% of students in their

study reported occasional sleep problems. Similar results were reported by Hicks et al. (2001) who reported that 73% of students in their sample expressed dissatisfaction with their sleep, a commonly used index of sleep problems. Other researchers (Buboltz et al., 2001) have found slightly higher results with 89% of students who expressed moderate to severe sleep complaints. Therefore, our finding supports our assertion that university students are considerably affected by sleep difficulties.

With respect to the Internet, in the present study, about 10% of students' reported that their Internet use was problematic, 10% scored 3 or above (a cutoff score of 93, 3 X 31 items being indicative of possible Internet addiction, $M=65.4$, $SD=18.34$). These findings are consistent with those of other studies (Kandel, 1998; Scherer, 1997; Young, 1996) and some of our previous research where Internet use was reported to be problematic among computer science and electrical engineering students. In that study, Nichols et al. (2003) also found approximately 10% of the sample scoring 3 or above on the IAS (i.e., ($M=64.45$, $SD=19.74$)). One possible explanation for students using the Internet excessively may be linked to the availability of Internet technology on university campuses and cultural expectations. Students are expected to use the Internet for coursework, communication with students and faculty, and to participate in social networking such as Facebook. In other words, there exists social and institutional pressure to use the Internet. In addition, students receive multiple benefits (e.g., relief of boredom, establishing social connections, etc.) from their Internet use, despite any negative benefits that might be experienced. The cultural expectations to use the Internet along with the associated benefits may be the most logical explanation for the role of the Internet found in our study.

In summary, the present findings indicated that students are experiencing problems related to sleep, depression, affect regulation, and the Internet. More research is needed to confirm our findings but it appears that the university transition during emerging adulthood is associated with increased difficulties pertaining to a number of important behaviours. In spite of the difficulties noted above, it appears the students in the present study were relatively well adjusted. The possible explanations for this finding will be discussed later (see page 73).

Relationship Between Self-efficacy and Students' Behaviours (Hypothesis 1)

In the first research question we examined the extent to which students' reports of self-efficacy (i.e., depression self-efficacy, Internet self-efficacy, sleep self-efficacy, and affect self-efficacy) were associated with their reports of behaviours (i.e., depression, Internet, sleep, and affect regulation). The hypothesis that students' self-efficacy would be negatively related to the corresponding type of behaviour, with the exception of affect self-efficacy which would be directly related to positive affect regulation and inversely related to negative affect regulation, was mainly supported. Students who had greater self-efficacy in one area were less likely to experience difficulties in the corresponding behavioural domain with one exception.

The finding that sleep self-efficacy was negatively and moderately correlated with sleep quality is particularly important because very little research has been carried out examining the association between these variables. The lack of research is somewhat surprising given that poor sleep quality is a common problem for university students (Buboltz et al., 2001; Yang et al., 2003), yet only one study, carried out by Fichton et al. (2001), examined the relationship between sleep self-efficacy and sleep behaviour. We

extended Fichton's results by showing that sleep self-efficacy and sleep behaviour are associated in a different population than the older adults sampled in Fichton's study.

Examination of the relationship between affect self-efficacy and affect regulation also revealed significant results for positive affect regulation; students who reported higher affect self-efficacy also reported greater frequency of positive affect regulation strategies, i.e., Active Distraction; Cognitive Engagement to Manage the Affect; Behavioral Engagement to Manage the Affect; Venting and Expressing Affect. We suggest that high affect self-efficacy beliefs in particular may be a domain of self-efficacy that contributes to students' decisions to stay in university. This assertion is based on Bandura's finding that a strong sense of efficacy fosters individuals to approach rather than avoid difficult tasks and to sustain their efforts despite possible challenges along the way (Bandura, 1997). Bandura et al. (2003) reported that self-efficacy to regulate affect was associated with more attempts to manage one's academic development, and in particular to resist social pressures for risky activities. No evidence was found for any relationship between affect self-efficacy and negative affect regulation.

In the present study we examined Internet self-efficacy for control. That is, we examined whether greater confidence in one's belief to control one's Internet use is associated with less Internet use (i.e., Internet addiction). Higher values of Internet self-efficacy for control were negatively and weakly associated with greater values of Internet use. The present research is the only work of which we are aware to examine Internet self-efficacy for control and Internet addiction. Eastin and LaRose (2000) examined the association between Internet self-efficacy (i.e., self-confidence in one's knowledge of how to use the Internet) and Internet use in a sample of undergraduate students, and

found that Internet self-efficacy predicted Internet use. Other researchers have also evaluated the relationship between Internet self-efficacy and Internet performance (Nahl, 1996; Staples et al., 1998) and prior use of the Internet. Their results were consistent with the previous self-efficacy literature, in that self-efficacy perceptions for Internet knowledge were positively related to task performance and prior use. Our findings also build on previous studies where other behavioural types of self-efficacy for control such as alcohol control self-efficacy and smoking control self-efficacy (see Strecher et al., 1986 for a review) were associated with the corresponding behaviours. The above findings suggest this theory also applies to Internet self-efficacy and Internet use.

Finally, similar results were obtained for depression and depression self-efficacy in that a weak but significant negative correlation was found. The results are also consistent with past research (Shikai et al., 2007; Tonge et al., 2005) where it was found that greater self-efficacy was associated with lower depression. Moreover, our data support the findings of Tucker, Brust & Richardson (2002) who reported that individuals with greater self-efficacy to cope with depression had fewer depressive symptoms. Our study extends the above findings to a younger population than has been previously studied.

We are among the first to examine the various types of self-efficacy (depression, Internet, sleep, and affect) among emerging adults and especially in relation to daily aspects of students' lives (i.e., behaviours). Overall, the significant, weak to moderate correlations between self-efficacy and the behaviours provides only modest support for Bandura's contention that self-efficacy is an important aspect of behaviour and thus, these findings provide modest support for Social Cognitive Theory and our proposed

model. That is, self-efficacy was related to students' degree of success or failure in regulating a number of important behavioural domains. Therefore, Bandura's assertion that engaging in particular behaviours is in part, a reflection of students' beliefs related to behavioural capabilities was supported by these results. Findings regarding the relationship between these types of self-efficacy and students' behaviours suggests that when students believe that they have control over their internal world (i.e., self-efficacy cognitions), they better regulate their behaviours (e.g., sleep, Internet, and depression) which results in their being less prone to becoming problematic. However, it is somewhat surprising that our correlations were not stronger given the abundance of research demonstrating the relationship between self-efficacy and the corresponding behaviours (Bandura, 1997; 1998). Therefore, our findings suggest that Bandura's assertion may not apply strongly across all types of self-efficacy and the corresponding behaviours. As previously discussed, it may be that the specific measures of self-efficacy were not closely enough linked with the measure of university adjustment used in the present study.

Relationship Between Students' Behaviours and University Adjustment
(Hypothesis 2)

In the second research question we addressed the role of students' behaviours on university adjustment. It was hypothesized that students' behaviours would be significantly associated with university adjustment (hypothesis 2). Consistent with this hypothesis, we found evidence for significant relationships between the behaviours and university adjustment.

The initial analyses showed weak yet significant negative correlations between each of the behaviours, i.e., depression, Internet, sleep, and negative affect regulation and university adjustment suggesting, as predicted, that students who reported higher scores on these variables also reported poorer university adjustment. However, positive affect regulation was not found to be significantly related to university adjustment. The simultaneous multiple regression analyses revealed a more complex relationship among these variables. That is, we found that only one of these variables, Internet addiction emerged as unique predictor of university adjustment.

There are several possible explanations for the significant and unique relationship between Internet Addiction and university adjustment. Regarding Internet Addiction, Griffiths (1998) has suggested that excessive Internet use may be conceptualized as a technological addiction. Relating Griffith's work with that of Kandell (1998) who suggests that university students may be at increased risk for developing Internet addiction, it is not surprising that in the present study Internet addiction uniquely predicted university adjustment. According to Kandell there are a variety of factors that may contribute to the increased risk for university students developing Internet problems. First, most post-secondary institutions require students to use the Internet for course work, email communication with faculty, and to conduct research. These expectations encourage students to use the Internet more frequently and become regular Internet users. Second, the Internet and specific Internet software (e.g., MSN) are commonly used modes of social communication among university students (Lanthier & Windham, 2004). The fact that the Internet and, to an even greater extent, some Internet software, provide immediacy and anonymity further increases students' risk for becoming problem Internet

users (Kandell, 1998). Third, since university students typically have large unstructured blocks of time they may be more prone to becoming involved in problematic Internet use (Kandell, 1998). Moreover, consistent with other studies such as Scherer (1997), our finding that 10% of the sample reported using the Internet excessively, suggests that technological addiction may be a very real concern among university students.

Even though this runs counter to the above argument, Bandura (2002) has asserted that technological changes alter normative life events and the social life of individuals, and that the Internet may serve as a mechanism for students to cope with the stresses of transition to university. This suggests that students may see the Internet as important to their adjustment possibly for social and academic reasons relating to their successfully connecting with their professors and classmates, and completing academic requirements. Accordingly, students may see that the Internet allows them to achieve a sense of accomplishment, develop social networks, and build relationships, a notion that has been recently discussed by Valkenburg and Peter (2009) and Campbell, Cumming and Huges, (2006). In sum, students may find that use of the Internet provides escape from the stressors associated with the transition to university and from emotional difficulties they may experience. Although there may be some benefits to conceptualizing students' Internet use from a behavioural addiction standpoint as it was in the present study, a more realistic model may include identifying both risks and benefits to students' Internet use.

Regarding the significant zero-order correlation between depression and university adjustment, it is reasonable to expect that any level of depression would be negatively related to university adjustment. Fechner-Bates, Coyne, Schwenk, & Thomas (1994) have suggested that high scores on self-report measures of depression, in

particular the CES-D, are incorrectly identified as cases of depression when these scores would be more accurately conceptualized as cases of distress. When questionnaires are the only method by which research participants are classified as being depressed, there is the risk of false positives (i.e., individuals who score high on the CES-D but who do not meet the DSM-IV criteria for depression; APA, 1994). Therefore, in the present study, although a somewhat substantial proportion of the sample may be construed as being depressed, it might be more valid to have considered their high CES-D scores as scores of stress and not clinical depression.

Although difficulties in sleep did not account for a unique aspect of university adjustment, the fact that this variable was significantly negatively correlated with adjustment at the zero order level supported the results of previous research. That is, a number of researchers (Alapin et al., 2000; Brown et al., 2001; Hicks et al., 2001a, 2001b; Kelly, 2003; Yang et al., 2003) have amply demonstrated the negative impact of sleep problems on academic performance in university populations. However, issues with the PSQI may have also impacted our results in terms of the observed relationship between the PSQI and the total score on the SACQ. In addition to having low reliability, the PSQI may not have adequately measured students' sleep habits and sleep quality because none of the items on the PSQI assessed purposeful sleep deprivation which is a common occurrence for university students (Pilcher & Walters, 1997). In fact, an examination of several of the PSQI items suggests that some of the items target an adult population and may not be meaningful for first year university students (e.g., "During the past month, how often have you had trouble sleeping because you cannot breath comfortably or have pain?"). In retrospect, a measure designed to evaluate sleep

behaviour in the general population assessing the types of sleep difficulties students typically experience might have yielded a significant semi-partial correlational result.

Our findings at the zero order correlation level regarding negative affect regulation extend those of the literature because researchers have only examined the role of affect regulation using more general indexes such as life satisfaction (Caprara & Steca, 2005). Instead, our study examined negative affect regulation with respect to passive distraction and acceptance, rumination and withdrawal, and waiting and reframing in relation to an index of university adjustment that encompasses several specific domains of functioning. Furthermore, although researchers (Schulman et al., 2009) have posited that adaptive affect regulation may enhance the successful negotiation of the tasks associated with emerging adulthood, our data show that students in the present sample who reported frequent use of negative affect regulation also reported less adjustment to university—which is a novel finding. While it has been widely acknowledged that affect regulation is important in predicting mental health, it has only been in recent years that researchers have suggested that affect regulation (or dysregulation) may be considered the origin of many mental health difficulties (APA, 1994; Gross & Munioz, 1995). Therefore, despite the present finding that the correlation between positive affect regulation and university adjustment was not statistically significant, the finding of the significant correlation between negative affect regulation and university adjustment in the expected direction warrants future study.

Finally, the above findings related to sleep, negative affect regulation, and depression may be best understood in the context of recognizing the nature of multiple regression analysis. That is, whether each factor explains a unique aspect of the

dependent measure depends in part on the variables that are included in the analysis (Hoyt, Leierer, & Millington, 2006). It appears that Internet addiction diminished the correlation between these variables and university adjustment indicating that there is a degree of redundancy among the predictors. Therefore, the unique contribution of these factors was very small despite a significant, negative correlation with university adjustment.

Relationship between Students' Behaviours, Self-efficacy and University

Adjustment (Hypothesis 3)

According to Bandura, personal factors (e.g., self-efficacy) are one set of determinants of outcome within the framework of social cognitive theory. Accordingly, in the third research question we addressed the nature of self-efficacy and university adjustment. Based on the limited research in this area, it was hypothesized that self-efficacy would be directly related to university adjustment over and above the association that the behaviours would have with university adjustment (Hypothesis 3). Contrary to expectations, however, self-efficacy was not found to significantly predict university adjustment after controlling for the behavioural variables. The reasons for these unexpected findings are not entirely clear. Given the lack of prior research in this area (i.e., self-efficacy in relation to university adjustment) and the lack of prior research utilizing some of the research measures used in the present study, it is difficult to compare the present findings to those of other work. In the context of related research, our findings were not consistent with those of Chemers et al. (2001) who demonstrated that academic self-efficacy was a significant factor in the prediction of academic adjustment above and beyond more objective measures such as performance on academic

tasks. Likewise, Multon, Brown, and Lent (1991) concluded in a meta-analytic investigation that students' thoughts about their abilities to manage the demands of university was a better predictor of academic performance than more objective measures such as SAT scores. A possible explanation for why our results differ with those of Chemers' and Multon's in particular may be due to our using a more global index of adjustment whereas in both Chemers' study and Multon's review relatively narrow and defined aspects of adjustment were examined (i.e., academic performance).

As discussed earlier, social cognitive theory is a theoretical framework for considering how three sources (i.e., environment, personal factors such as self-efficacy and cognition) function together to explain human actions or behaviour (Bandura, 1986, 1997). To narrow the scope of the research only self-efficacy's relationship on behaviour was examined. Because the environmental and cognition variables of social cognitive theory were not examined in the present study, it stands to reason that only partial support for the application of social cognitive theory to university adjustment could be expected to be found. If these factors had been included, we may have been able to achieve a more fulsome picture of university adjustment. Thus, this study only partially informs our understanding and underscores the importance of all three aspects of social cognitive theory in gaining a complete picture of outcome or action.

Exploratory Analyses

As previously indicated, we conducted supplementary analyses to identify whether the behavioural and self-efficacy variables would be significantly associated with any of the specific domains of university adjustment (Personal-Emotional, Academic, Institutional Attachment, and Social Adjustment). We found evidence for a

direct relationship between the behaviours and personal-emotional adjustment. We also found evidence that the self-efficacy variables added to the prediction of personal and emotional adjustment above and beyond the behavioural variables. Noteworthy is the finding that the linear combination of behavioural variables were related more strongly to the personal-emotional domain of university adjustment ($R^2=.34$) than to the global index ($R^2=.12$). Similarly, Internet problems and depression were related more strongly to the personal-emotional domain of adjustment ($sr^2=.06$, $sr^2=.12$) than to the global index of university adjustment ($sr^2=.04$, $sr^2=.02$), respectively. Finally, with respect to their semi-partial correlation values, only Internet use and depression were significantly and uniquely related to the personal-emotional domain. Therefore, these findings underscore the importance of this particular domain of university adjustment for students especially with respect to problems concerning depression and the Internet.

Previous researchers have reported significant associations between measures of depression and psychological adjustment in general populations. For example, Pavot and Diener (1993) found a negative relationship between depression and life satisfaction. Similarly, Chang and Strunk (1999) found that depression was significantly associated with psychological adjustment. Among the university population, Wintre and Yaffe (2000) found that mutual reciprocity and psychological well-being variables are related to university adjustment. Our finding suggests that depression is more strongly related to personal-emotional adjustment than overall university adjustment. This finding is not surprising given the theoretical overlap that underlies these constructs; nonetheless, to our knowledge this finding has not been previously reported in the literature.

Our findings were also consistent with previous studies where it was reported that greater Internet use was associated with poorer university adjustment, personal-emotional university adjustment (Lanthier & Windham, 2004), relationship problems, loneliness, and fluctuations in mood (Griffiths, 1997; Kandell, 1998; Kraut et al., 1998). In our own research (Nichols & Nicki, 2000) we found Internet use to be significantly negatively correlated with interpersonal problems and depression on a measure of college adjustment. This finding suggests that students' use of the Internet in particular negatively affects students' moods and interpersonal relationships.

Affect self-efficacy remained the only predictor to account for a significant and unique aspect of personal-emotional adjustment above and beyond the behaviours. This result relates to the findings of Caprara and Steca (2005) who reported that individuals with high affect self-efficacy are more likely to demonstrate more prosocial behaviour and greater life satisfaction. To our knowledge this is the first study to show specifically that affect self-efficacy predicts personal-emotional university adjustment. Our finding indicates that affect self-efficacy may be particularly important to university adjustment relative to the other types of self-efficacy that were examined in the present study.

Implications

Implications for Theory and Research.

Social cognitive theory, a model that has gained considerable popularity in explaining individual accomplishment, was used to guide this study. Although the applicability of this model to numerous behaviours and tasks (e.g., exercise, smoking cessation, etc.) has been well established in the psychological literature, the value of social cognitive theory in understanding university adjustment has not received as much

attention. The present study informs our understanding of university adjustment, particularly how Bandura's social cognitive theory relates to students' behaviours and corresponding types of self-efficacy. Specifically, several implications can be drawn from the current study for theory and research on university adjustment.

However, with respect to the current findings, self-efficacy and behaviours accounted for only 15.5% of the variance in university adjustment. Therefore, the present findings along with previous research (Gerdes & Mallinckrodt, 1994; Leong, Bonz & Zachar, 1997; Wintre & Sugar, 2000) suggest that university adjustment has a multifactorial nature. That is, university adjustment might be better understood in the context of examining the interplay of environmental, behavioural and personal factors. Although the present research minimally supported that social cognitive theory is a meaningful framework for understanding the role that self-efficacy and behaviour has on university adjustment, it also revealed that a narrow interpretation of social cognitive theory was not adequate enough to provide a complete understanding, with the possible exception of the personal-emotional subdomain of university adjustment. That is, an examination of all of the key elements of social cognitive theory, i.e., behavioural (e.g., affect regulation, study skills), environmental (e.g., level of institutional integration, institutional supports offered to students,) and personal factors (e.g., self-efficacy, coping style,), are needed to substantially increase one's understanding of university adjustment.

Implications for University Programs and Clinical Interventions.

Clinical implications can also be derived from this study. Universities have implemented intervention strategies to increase student retention. Yet, much of the effort has been fairly limited in scope and consisted of mainly one-time seminars and

orientation programs. In recent years, it has become clearer that interventions must be more comprehensive and go beyond the goal of academic retention and include social and life skills components aimed at improving students' adjustment overall. Thus, the current study builds on previous research and highlights implications for programs for emerging adults making the transition to university as well as for psychoeducational programs aimed at preparing high school students planning to attend university.

Specifically, the finding that the set of students' behaviours examined in the present study predicted university adjustment suggests that students may benefit from programs that teach students about the associated problems of their behavioural choices. Therefore, it might be beneficial to integrate information regarding these common student behaviours and to incorporate the enhancement of self-regulation skills into existing university transition programs to maximize overall adjustment. Internet addiction was an especially strong predictor of university adjustment, and underscores the importance of informing students about the role of this behaviour in particular. Along with these technological advancements and added requirements to use the technology, universities might consider offering educational campaigns aimed at informing students of the potential risks of using the Internet and to offer educational programs to minimize this risk.

We replicated previous findings (Gallagher et al., 2000; Gallagher et al., 2001; Kitrow, 2003; O'Malley et al., 1990; Pledge et al., 1998; Stone & Archer, 1990) that highlighted the importance of psychological problems pertaining (e.g., depression and sleep) among emerging adults attending university. Thus, the present study illustrates the value of assessing underlying psychological difficulties in university students. These

results have implications for university counsellors who provide services in the areas of assessment, individual counselling and outreach to accurately identify students at risk for poor adjustment. Based on the depression and sleep findings from this study, students who are depressed, even at the non-clinical level, are at increased risk for poor adjustment to university. Students who are identified at risk or who show symptoms of depression should also be assessed for sleep problems and vice versa because these variables were significantly intercorrelated ($r=.47$). It may even be prudent for high school administrators, guidance counsellors and parents to be informed about the signs and symptoms of psychological difficulties so they are able to recognize and discuss these with students prior to the transition to university.

The finding that self-efficacy was significantly related to students' behaviors also has implications for university administrators and student development specialists. Based on this finding, students' self-efficacy beliefs may play a role in whether students persist at university despite the difficulties they encounter. Researchers could identify strategies to increase student self-efficacy to assist students to achieve optimal regulation of their everyday behaviours. In this regard, Bandura's social cognitive theory holds some promise that with future research the social cognitive framework may be useful for understanding the link between self-efficacy and behaviours and potentially, the impact of students' behavioural choices on adjustment among emerging adults. University programs should reflect some of the key components of social cognitive theory and target students' domain-specific as well as mood-oriented efficacy cognitions to prepare students for the challenges related to entering university. For example, university counselling centers could expand basic sleep hygiene programs to include a sleep self-

efficacy component. Given the overlap that exists between sleep and depression and their relation to university adjustment, programs should address both components. Efforts to increase various sources of students' self-efficacy could improve their ability to regulate their behaviour and as a consequence enhance their adjustment to university.

The current work also highlights the important role that affect self-efficacy has in predicting the personal-emotional subdomain of university adjustment above the corresponding behaviour (i.e., affect regulation). This finding suggests that programs might target affect self-efficacy as a core component of university adjustment programs. That is, psychoeducational program that promote skill development in the area of affect self-efficacy would help first year students to adjust more readily, personally and emotionally.

Pre-university programs help students to understand their strengths and weaknesses and to better prepare for university. Fleck (2000) noted that vulnerable students may be best helped through early identification. Students could further benefit if these programs assessed the level of self-efficacy (e.g., affect self-efficacy) of pre-university youth. Accurately predicting which students are likely to experience academic, personal and social difficulties, would allow experts to design and implement intervention programs to help students adjust and persist academically. Moreover, students who participate in pre-university programs are better prepared and experience greater success academically, socially and personally than students who do not participate (Hicks, 2005). A pre-university program might be an ideal mechanism for students to identify areas (i.e., behaviours and self-efficacy domains) where they would benefit most from knowledge and instruction to prepare them for university. Based on our present

findings (i.e., self-efficacy is significantly associated with the corresponding behaviours and the behaviours are significantly related to adjustment) and if future studies yield stronger support, this type of program is promising for enhancing students' self-efficacy which would help students to better regulate their behaviour. Increasing students' behavioural regulation would in turn enhance adjustment.

Currently, there only exist a few programs on university campuses across Canada and the United States where the focus has been preparing and easing the transition to university. One example is the PACE program at the University of Maryland-Eastern Shore where pre-university students attend a 6-week summer program. Interventions target students' perceptions, expectations, emotions and knowledge about university. Students are assessed across several university related domains pre and post program. Hicks (2005) reported that significant differences was found in the academic, personal and social expectations pre-university students who participated in the PACE program versus other first-year students. Although the focus of the PACE program is at-risk first year students, these findings provide a clear focal point for the development and implementation of prevention programs for university administrators.

In the case of more substantive programs like University 101 programs, the focus is almost exclusively on academics (Pancer, Pratt, Hunsberger & Alisat, 2004). However, one example of a more comprehensive program is the Transition to University Program (T2U) currently offered at several Canadian institutions (e.g., Sir Wilfred Laurier University, York University, Memorial University of New Foundland). The T2U was designed to provide assistance for students dealing with personal, emotional, social and academic challenges (Pancer et al., 2004). With further support for our preliminary

findings concerning the relationship between self-efficacy and university adjustment, programs like PACE and T2UP could be modified to include strategies to enhance students' self-efficacy, which in turn, would increase behavioural regulation.

Implications for Future Research.

The conception of this study was based on the tenets of social cognitive theory in which Bandura (1986) stresses the importance of personal agency in influencing how one's life unfolds. Personal agency was examined in this study by investigating behaviours relating to university adjustment and their corresponding levels of self-efficacy. According to Bandura, the course of one's life must take into account the existing social structure and other environmental circumstances, an aspect that was not examined in the present research. Therefore, in future studies, the additional factors could be included to provide a more systematic and comprehensive examination of social cognitive theory. That is, environmental variables (e.g., extending the study to include students who live off campus) and individual variables (e.g., personal expectancies about attending university) could play an important role in university adjustment.

In addition, as noted above, it would be worthwhile to investigate the association of types of self-efficacy (e.g., interpersonal self-efficacy, academic self-efficacy and social self-efficacy) that may be more relevant to the components of our measure of university adjustment. As discussed earlier, self-efficacy is defined as the belief that one can successfully perform a particular behaviour to achieve a certain outcome (Bandura, 1977, 1982; Maddux, 1995). It is task and situation specific and therefore should parallel the behaviors or tasks of interest. In the present study, self-efficacy was linked with the behaviors (i.e., sleep) rather than with the components of university adjustment (e.g.,

social adjustment). Our findings are consistent with previous arguments in the literature (Bandura, 1997) that a close correspondence is necessary between the type and specificity of self-efficacy being measured and the outcome variable. In other words, decontextualized self-efficacy is only weakly associated with outcome measures. We may have found more significant results if our study had examined the types of self-efficacy that corresponded with the various domains of university adjustment (e.g., social self-efficacy). In turn, this would mean that the behaviors would correspond to the types of self-efficacy (social skills). Closer correspondence between the behavioral variables and types of self-efficacy would be more in keeping with Bandura's social cognitive theory and therefore, a greater likelihood of finding significant associations between the behavioral and self-efficacy variables is likely. In keeping with Schunk and Pajares (2002), we may also have found significant results if we had included a global measure of self-efficacy that aligned with the global measure of university adjustment, added complexity of measuring global self-efficacy over task specific self-efficacy notwithstanding.

Future research might involve examining students' use of the Internet from a Uses and Gratifications Theoretical Model (Lasswell, 1948) which explains why people use various forms of media, their motivations when selecting among sources of media and what sources best fulfil their requirements for entertainment, social interaction and escapism (Henke, 1985; Lin, 1993; Katz, Blumler, & Gurevitch, 1999). Until recently this model has mainly been applied to print media and television. This model has not yet been widely applied to the use of the Internet and is more in keeping with SCT because of the focus on the interaction between person and media source just as SCT focused on

the interaction between person, environment and behavior. It may be that university students differ from the general population with respect to their media choices, especially because current university students are the first Internet generation. Using the Uses and Gratification approach it would be interesting to examine more specific aspects of students' Internet use such as Facebook, MySpace and MSN to identify their motivations for their Internet choices and whether students' media choices continue to be active (and interactive) or driven by classical conditioning and habit.

According to Bandura (1997), self-efficacy is primarily influenced by four factors. First, is the opportunity for individuals to master experiences. As individuals practice and gain competency over a task or activity their self-efficacy increases. Mastery experiences are more important when individuals are faced with obstacles and overcome the challenges. Second, is the power of observation. When individuals observe another successfully carry out a task or activity, the observation helps to create a more favourable appraisal that they can also carry out the task successfully. The greater the similarity between the observer and the observed the more favourable the appraisal. A third route to developing self-efficacy is social persuasion. According to Bandura, verbal encouragement is a valid method of increasing individuals' appraisal of their own self-efficacy. For example, consider the power of education report cards. Students' self-doubt may be positively impacted by a teacher commenting that they have the ability to succeed. A fourth avenue of increasing self-efficacy is awareness of our own psychological responses. In other words, how a person appraises their abilities in a particular situation is influenced by their moods, emotional states, physical reactions, and stress levels. However, Bandura (1994) also notes "it is not the sheer intensity of

emotional and physical reactions that is important but rather how they are perceived and interpreted". As individuals learn ways of reducing stress and elevating mood while faced with difficult tasks, they can improve their self-efficacy. Bandura, Adams and Beyer (1977) demonstrated the effect of observation on self-efficacy, experimentally.

Individuals diagnosed with snake phobia observed a therapist handling a snake. The control group reported no change in perceived capabilities to handle snakes; however, participants in the experimental group reported significant improved perceived capabilities to handle snakes. The authors concluded that active experience may change one's perceptions of capabilities, but also one's performance of the task. A similar paradigm could be applied with respect to university adjustment and self-efficacy. For example, first year students could observe more senior students engage in a particular task related to university adjustment (e.g., academic note taking, attending a first time social club meeting, regulating Internet use) or receive feedback on ways to improve their adjustment to university (e.g., initiating social conversations). The implications of significant findings are substantial because it is clear that when individuals incorrectly underestimate their capabilities to perform a task they are likely to avoid the task, terminate the task prematurely, or give insufficient effort. Studies of this nature could have numerous applications such as Internet coaching for students, individual and group counselling and peer mentor programs. Additional studies (e.g., Schunk and Rice, 1987) have shown that multiple sources of influence are more effective than only one method of changing self-efficacy perception so this knowledge could also be applied in the university adjustment context.

A more complex theoretical model of university adjustment might be developed by including variables such as social support, gender and coping style either as moderators or mediators. In addition, a more heterogeneous sample than the one used in this study could be targeted which would allow for generalization to a broader sample of university students. Diversifying the sample would permit an examination of a full range of efficacy beliefs, and how these predict behaviours and affect university adjustment.

Limitations

Although our findings are encouraging because they show the usefulness of understanding the association of students' behaviour and corresponding types of self-efficacy with university adjustment, they must be considered in the context of several limitations. One possible limitation pertains to the absence of significant findings for self-efficacy predicting university adjustment. These results may have stemmed from a lack of congruence between our measures of self-efficacy and components of university adjustment. That is, in view of the empirical literature (Natvig, Albrektsen, & Qvarnstrom, 2003), and Bandura's contention that self-efficacy should be measured and conceptualized in the context of specific behaviours, situations, or contexts (Bandura, 1986), it may have been more appropriate in this study to have assessed domains of self-efficacy that directly corresponded to the components of the measure of university adjustment (i.e., academic self-efficacy, emotional self-efficacy, social self-efficacy and institutional attachment self-efficacy).

Another limitation of this study is that because students' adjustment was assessed late in the first semester (i.e., almost three months into the semester), some students may have already successfully navigated the adjustment process. Researchers have suggested

that the first few weeks of the transition are crucial to long term adjustment (Pratt et al, 2000). Administering the surveys earlier in the semester (i.e., late September or early October) when students were in the early days and weeks of the transition may have provided a more fulsome or valid picture (i.e., more variability in adjustment scores) of the adjustment process. In addition, this study could have been strengthened by using a longitudinal design in which a measure of students' adjustment was obtained during the first semester and again during second semester. Two time points would have made a good comparison and allowed for earlier measures of self-efficacy at Time 1 to predict behaviours and university adjustment at Time 2. One of the most important questions which remains unanswered relates to the extent to which behaviour is a function of pre-existing individual differences and experiences or whether behaviour is entirely related to the present context.

Another limitation in this study is that all measures involved self-report using a battery of questionnaires. Multiple assessment methods including behavioural ones may have provided a more valid determination of the variables investigated in this study. Furthermore, the patterns and relationships that have been found are based on correlational analyses and therefore, causal inferences may only be implied. Also it is difficult to gauge the degree of generalizability of the findings of the current study since the majority of the participants in this study were primarily women of European–Canadian heritage, and information was lacking with respect to race, ethnicity or immigrant/generational status.

Volunteer bias is always a potential problem within survey research, which relies on participants who are self-selected. It is possible that the students demonstrated a social

desirability response set in that they had a tendency to give socially approved answers to questions related to university adjustment but perhaps showed less social desirability on the more specific measures of depression and sleep. Finally, the ISES-C was constructed especially for this study and its psychometric properties are unknown. Conclusions based on its use should be qualified ones. On the other hand, strong psychometric properties of all of the other measures used in this study are attested to in the literature and in this study more importantly.

Conclusions

In the present study the findings of prior research regarding university adjustment was extended in a number of significant ways. First, preliminary support was found for the use of social cognitive theory, a framework that had not been applied to university adjustment. In particular, specific kinds of self-efficacy were found to be significantly and inversely correlated with their corresponding behaviours, depression, Internet use, sleep, and significantly and directly correlated with positive affect regulation. Second, in this study findings were broadened regarding the association of student behaviours with university adjustment. That is, students, who are depressed, have problematic Internet use, poor sleep quality, and negative affect regulation skills, have a more difficult time adjusting to university. At the same time, problematic Internet use was found to be especially important with regard to university adjustment. Third, our more comprehensive investigation of university adjustment led to the identification of the personal-emotional domain as being particularly important for university adjustment.

In light of these findings, we conclude that the proposed relationship among self-efficacy variables, behaviours, and university adjustment continues to have heuristic

value without alteration. At the same time, further studies examining the role of self-efficacy on university adjustment, in particular personal-emotional university adjustment, are warranted. Our findings provided preliminary insight into the determinants of students' behaviours and provided directions for interventions aimed at helping emerging adults successfully transition to university. These interventions may be ones designed to bolster students' beliefs in their own capabilities to manage their behaviours. In turn, as students gain better control over the behavioural aspects of their lives, university adjustment could be improved. In this study important steps were taken towards understanding the roles that self-efficacy and behaviour play in predicting functioning during the emerging adulthood experience of university adjustment.

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Appendix A

Class Announcement and Email

You are being invited to participate in an important research study.

Title: Examining university adjustment.

Introduction: The purpose of the present study is to investigate factors that relate to adjustment in university students. The investigator for this study is Laura Nichols, a Ph.D. graduate student from the department of psychology at the University of New Brunswick, under the supervision of Dr. Richard Nicki.

Procedure: This study requires you to complete a series of questionnaires asking about your thoughts, feelings and behaviours throughout the last several months since coming to university. The study should take approximately 30-45 minutes to complete. Your answers will be anonymous (your name will not appear anywhere on the questionnaires) and will be strictly confidential.

Risks and Benefits of Participation: The benefits of participating in this study are that you will earn 1-bonus point toward your Psychology 1013 and Psychology 1023 course grade. You will also have the option of receiving an explanation of the study summary of the results. It is not anticipated that you will experience any discomfort or any risks by participating in this study.

Ethics Approval: The Research Ethics Board, University of New Brunswick, approved this project.

IF YOU ARE INTERESTED IN PARTICIPATING OR HAVE ANY QUESTIONS

YOU CAN CONTACT LAURA NICHOLS AT Z77AZ@UNB.CA

Appendix B

Demographic Questionnaire

INSTRUCTIONS: Please provide the following background information.

1. **What is your gender? (please check one)**
Female _____ Male _____
2. **How old are you? _____**
3. **Are you currently employed?**
Yes _____ No _____
4. **What year of university are you currently enrolled in? _____**
5. **If so, do you work please estimate how many hours per week you work?**

6. **Which of the following best describes your living situation?**
 - a. Living in residence _____
 - b. Living in an apartment by myself _____
 - c. Living in an apartment with roommates _____
 - d. Living at home with parents _____
 - e. Other (please describe) _____
7. **What is your relationship status?**
 - a. Single _____
 - b. Dating (in a monogamous relationship) _____
 - c. Living together _____
 - d. Married _____
 - e. Other (please describe) _____
8. **What degree program are you currently enrolled in?**

Appendix C

Center for Epidemiological Studies Depression Scale

Radloff, 1977

INSTRUCTIONS: Below is a list of the ways you might have felt or behaved. Please tell me how often you have felt this way during the past week.

During the Past Week...

For the Following 20 items, please select what best describes how you have felt over the past week	Rarely or none of the time (<1day)	Some or a little of the time (1-2 days)	Occasionally or a moderate amount of the time (3-4 days)	Most of all the time (5-7 days)
1. I was bothered by things that usually don't bother me.				
2. I did not feel like eating; my appetite was poor.				
3. I felt that I could not shake off the blues even with the help from my family and friends.				
4. I felt that I was not as good as other people.				
5. I had trouble keeping my mind on what I was doing.				
6. I felt depressed.				
7. I felt that everything I did was an effort.				
8. I felt hopeless about the future.				
9. I thought my life had been a failure.				
10. I felt fearful.				
11. My sleep was restless.				
12. I was unhappy.				
13. I talked less than usual.				
14. I felt lonely.				
15. People were unfriendly.				
16. I did not enjoy life.				
17. I had crying spells.				
18. I felt sad.				
19. I felt that people disliked me.				
20. I could not get "going".				

Appendix D

Internet Addiction Scale

Nichols & Nicki, 2004

INSTRUCTIONS: The following questions are written in the form of statements. Please read each statement carefully and completely. Indicate the extent to which each statement applies to you by circling the number that best reflects the strength of your response. Be sure to respond to the total item and not just a certain part of it. Internet use refers to anything you do online (e.g., email, world wide web, chat rooms, games, cybersex, cyberporn, newsgroups, multi-user dungeons, list serves, Internet Relay Chat etc.).

1. When I attempt to cut back or stop using the Internet I find that the irritability that I experience is relieved by going back on the Internet.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

2. When I use the Internet now, I do not feel as good as I used to.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

3. I have stayed on the Internet longer than I intended to.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

4. I would like to spend less time on the Internet.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

5. At times I have tried to conceal how long I have been on the Internet.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

6. I have given up a particular recreational activity in order that I would have more time on the Internet.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

7. My grades/work have suffered because of my Internet use.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

8. I have said to myself “just a few more minutes on the Internet.”

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

9. I have lost sleep because of my Internet use.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

10. I see my friends less often because of the time that I spend on the Internet.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

11. I feel that life without the Internet would be boring and empty.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

12. I have neglected things, which are important and need doing.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

13. I find that I need to use the Internet more to get the same enjoyment as before.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

14. The more time I spend away from the Internet, the more irritable I feel.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 15. When I use the Internet, I experience a buzz or a high (i.e., feeling elated).**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 16. I have missed class/work so that I would have more time to spend on the Internet.**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 17. The Internet has affected my life in a negative way.**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 18. Once I am on the Internet, I seem to stay on for a long time.**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 19. I have attempted to spend less time on the Internet but I have been unable to do so.**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 20. After being on the Internet late into the night in sleep late the next morning because of my Internet use.**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 21. I find myself doing more things on the Internet than I had intended to.**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 22. I use the Internet as a way of escaping the “real world.”**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

- 23. I find myself thinking/longing about when I will go on the Internet again.**

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

24. I enjoy the pleasure/excitement of being on the Internet.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

25. I feel distressed when I am unable to spend as much time on the Internet as I usually do.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

26. I have tried unsuccessfully to restrict my Internet use because of previous over use.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

27. Since I first began using the Internet I would say that the amount of time I spend on line has increased but not the satisfaction.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

28. I find myself accessing more information on the Internet than I had planned to.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

29. I have felt a persistent desire to cut down or control my use of the Internet.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

30. When I feel lonely, I use the Internet to talk to others.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

31. I am on the Internet so much that I have to make up for the lost time.

1	2	3	4	5
Never	Rarely	Sometimes	Frequently	Always

Appendix E

The Pittsburgh Sleep Quality Index**Buysse, Reynolds, Monk, Berman, & Kupfer, 1989**

INSTRUCTIONS: The following questions relate to your usual sleep habits during the past month only. Your answers should indicate the most accurate reply for the majority of the days and nights in the past month.

Please answer all questions.

1. *During the past month, when have you usually gone to bed at night?*
USUAL BED TIME _____
2. *During the past month, how long (in minutes) has it usually taken you to fall asleep each night?*
NUMBER OF MINUTES _____
3. *During the past month, when have you usually gotten up in the morning?*
USUAL GETTING UP TIME _____
4. *During the past month, how many hours of actual sleep did you get at night? (This may be different than the number of hours you spend in bed.)*
USUAL GETTING UP TIME _____

INSTRUCTIONS: For each of the remaining questions, check the one best response. Please answer all questions.

<i>5. During the past month, how often have you had trouble sleeping because you....</i>	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week
a. Cannot get to sleep within 30 minutes				
b. Wake up in the middle of the night or early morning				
c. Have to get up to use the bathroom				
d. Cannot breath comfortably				
e. Cough or snore loudly				
f. Feel too cold				
g. Feel too hot				
h. Had bad dreams				
i. Have pain				
j. Other reason(s), please describe:				

6. **During the past month, how would you rate your sleep quality overall?**
Very good _____
Fairly good _____
Fairly bad _____
Very bad _____
7. **During the past month, how often have you taken medicine (prescribed or over the counter) to help you sleep?**
Not during the past month _____
Less than once a week _____
Once or twice a week _____
Three or more times a week _____
8. **During the past month, how often have had trouble staying awake while driving, eating meals, or engaging in social activity?**
Not during the past month _____
Less than once a week _____
Once or twice a week _____
Three or more times a week _____
9. **During the past month, how much of a problem has it been for you to keep up enough enthusiasm to get things done?**
Not during the past month _____
Less than once a week _____
Once or twice a week _____
Three or more times a week _____
10. **Do you have a bed partner or roommate?**
No bed partner or roommate _____
Partner/roommate in other room _____
Partner in same room, but not same bed _____
Partner in same bed _____

<i>11 .If you have a roommate or bed partner, ask him/her how often in the past month you have had...</i>	Not during the past month	Less than once a week	Once or twice a week	Three or more times a week
a. Loud snoring				
b. Long pauses between breaths while asleep				
c. Legs twitching or jerking while you sleep				
d. Episodes of disorientation or confusion during sleep				
e. Other restlessness while you sleep; please describe:				

Appendix F

Internet Self-Efficacy Scale**Eastin & LaRose, 2000**

INSTRUCTIONS: How much do you agree or disagree with the following statements by circling the number that best reflects the strength of your response.

1	2	3	4	5	6	7						
Strongly Disagree						Strongly Agree						
1.	I feel confident understanding terms/words relating to Internet hardware.					1	2	3	4	5	6	7
2.	I feel confident understanding terms/words relating to Internet software.					1	2	3	4	5	6	7
3.	I feel confident describing functions of Internet software.					1	2	3	4	5	6	7
4.	I feel confident trouble shooting Internet problems.					1	2	3	4	5	6	7
5.	I feel confident explaining why a task will not run on the Internet.					1	2	3	4	5	6	7
6	I feel confident using the Internet to gather data.					1	2	3	4	5	6	7
7	.I feel confident learning advanced skills within a specific Internet program					1	2	3	4	5	6	7
8.	I feel confident turning to an on-line discussion group when help is needed.					1	2	3	4	5	6	7

Appendix G

Internet Self-Efficacy Scale-Control**Nichols & Nicki, 2006**

A number of situations are described below that can make it difficult to control your Internet use. Please rate each statement and indicate in the blank beside the item how confident you are that you can regulate your Internet use on a regular basis in each of the situations.

Rate your degree of confidence by recording a number from 0-10 using the scale given below.

0	10	20	30	40	50	60	70	80	90	100
Not Confident At All					Extremely Confident					

I would be able to control my Internet use

1. If I felt I needed more time online. _____
2. If I had an urge to go online. _____
3. If I skipped classes because of my use. _____
4. If I failed to do school work because of time online. _____
5. If my real-life relationships suffered because of my time online. _____
6. If I lost sleep because of time online. _____
7. If my mood changed because of time online. _____
8. If I felt irritable because of my time online. _____
9. If I felt others were concerned about my Internet use. _____
10. If my Internet use charges exceeded the hours of my plan. _____
11. If I felt irritable because I had not been online in a while. _____
12. If I felt lonely. _____

13. If I felt bored. _____
14. If I felt depressed. _____
15. If I wanted to prove to myself that I could limit my time online without losing control. _____
16. If I had the urge to go online that catches me unprepared. _____
17. If I had an argument with a friend or loved one. _____
18. If I felt rejected by a friend or loved one. _____
19. If I were at a place where other people were online. _____
20. If I had not been online in a while. _____
21. If I cannot sleep. _____

Appendix H

The Depression Coping Self-Efficacy Scale**Perraud, 2000**

INSTRUCTIONS: The following measure describes coping activities that may be helpful in treating the symptoms of depression. Using a pen or pencil, under the column headed CONFIDENCE, mark how confident you are that you could do each activity using a number from 0-100. These numbers mean that you are not at all confident or sure (0%) to completely confident or sure (100%) that you can do each of these things listed. You may use any number from 0-100%.

I am this percent confident that I will be able to do the following things that may relieve or prevent the symptom of depression...

SELF-EFFICACY STEM	Confidence 0-100%
<i>I am THIS PERCENT confident that I will be able to do the following things they may relieve or prevent the symptoms of depression.</i>	↓ ↓ ↓
1. Tell others how I feel in a socially acceptable manner.	
2. Be aware of my behaviour and how it affects others.	
3. Refuse requests of others when I do not wish to do something that someone else wants me to do, including authority figures and strangers.	
4. Go to bed and get up at the same time every day.	
5. Plan pleasant things to do for my free time.	
6. Limit naps to 20-30 minutes during the day.	
7. Ask for help when I am having trouble understanding something because I am not concentrating well (like income tax, legal documents etc.).	
8. Eat four servings of fruits and vegetables daily.	
9. Drink 6-8 glasses of water daily.	
10. Recognize when I am blaming myself for my symptoms and try to stop.	
11. Engage in some sort of creative activity like writing, reading, drawing, playing music, or working on projects.	
12. Get together with at least one very close person when I am feeling lonely.	
13. Get up and do something relaxing if I cannot sleep, before trying again.	

14. Question whether it is reasonable to think this way each time I think about myself in a negative way or assume that I am no good.	
15. Take a bath or do some other soothing activity before bedtime.	
16. Take medication the way my doctor recommends.	
17. Exercise or do something active every day.	
18. Be aware of when I am thinking about myself in a negative way or assuming that I am no good.	
19. Laugh and try to find humour in my situation, in spite of my problems.	
20. Challenge the thought that suicide is the only way I can deal with my problems.	
21. Attempt to understand why I am anxious when I have anxiety.	
22. Keep a journal describing my mood or how I feel emotionally each day.	
23. Meditate or do relaxation exercises at least one a day.	
24. Become aware of those feelings that bother me so I can work on not letting them bother me.	

Appendix I

Sleep Self-Efficacy Scale**Lacks, 1987**

INSTRUCTIONS: For the following 9 items, please rate (by circling a number from 1 to 5 your ability to carry out each behaviour. If you feel able to accomplish a behaviour some of the time but not always, you should indicate a lower level of confidence.

Indicate how confident you are that you can:

1. Lie in bed, feeling physically relaxed.

1	2	3	4	5
Not Confident				Very
At all				Confident

2. Lie in bed, feeling mentally relaxed.

1	2	3	4	5
Not Confident				Very
At all				Confident

3. Lie in bed with your thoughts “turned off.”

1	2	3	4	5
Not Confident				Very
At all				Confident

4. Fall asleep at night in under 30 minutes.

1	2	3	4	5
Not Confident				Very
At all				Confident

5. Wake up at night fewer than 3 times.

1	2	3	4	5
Not Confident				Very
At all				Confident

6. Go back to sleep within 15 minutes of waking in the night.

1	2	3	4	5
Not Confident				Very
At all				Confident

7. Feel refreshed upon waking in the night.

1	2	3	4	5
Not Confident				Very
At all				Confident

8. Wake after a poor night's sleep without feeling upset about it.

1	2	3	4	5
Not Confident				Very
At all				Confident

9. Not allow a poor night's sleep to interfere with daily activities.

1	2	3	4	5
Not Confident				Very
At all				Confident

Appendix J

Affect Self-Regulatory Efficacy**Bandura, Caprara, Barbaranelli, Gerbino, & Pastorelli (2003)**

INSTRUCTIONS: The statements below describe some common experiences. Please indicate your opinions about each of the statements below by circling the appropriate number. Your answer will be kept strictly confidential and will not be identified by name. Please give your frank judgment.

1. How well can you rejoice over your successes?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

2. How well can you feel happy over a friend's success?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

3. How well can you feel gratified over achieving what you set out to do?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

4. How well can you express joy when good things happen to you?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

5. How well can you show your liking toward a person to whom you are attracted?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

6. How well can you have fun with casual acquaintances?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

7. How well can you express enjoyment freely at parties?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

8. How well can you become enthusiastic when you listen to a music that you like?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

9. How well can you avoid getting upset when others keep giving you a hard time?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

10. How well can you get over irritation quickly for wrongs you have experienced?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

11. How well can you keep from getting discouraged by strong criticism?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

12. How well can you reduce your upsetness when you don't get the appreciation you feel you deserve?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

13. How well can you avoid flying off the handle when you get angry?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

14. How well can you manage negative feelings when reprimanded by your parents?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

15. How well can you stay calm in stressful situations?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

16. How well can you calm yourself in stressful situations?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

17. How well can you keep from getting discouraged in the face of difficulties?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

18. How well can you keep from getting dejected when you are lonely?

1	2	3	4	5	6	7
Not well at all		Not too well		Pretty well		Very well

Appendix K

Student Adaptation to College Questionnaire**Baker & Siryk (1986)**

For each statement, please encircle one number at the point along the continuum which best represents your judgment concerning how closely the statement applies to you at the present time (i.e., within the last several days). Please be sure to answer every item and do not circle more than one number per item.

Note: Item subscales are identified by the letter at the end of the sentence.

Applies very closely to me	Doesn't apply to me at all
1 2 3 4 5 6 7 8 9	

S= Social Adjustment; P= Personal/Emotional; A=Academic Adjustment;
AA=Attachment

1. I feel that I fit in well as part of the college environment. (A)
2. I have been feeling tense or nervous lately. (P)
3. I have been keeping up to date on my academic work. (AA)
4. I am meeting as many people, and making as many friends, as I would like at college. (S)
5. I know why I'm in university and what I want out of it. (AA)
6. I am finding academic work at college difficult. (AA)
7. Lately I have been feeling blue and moody a lot. (P)
8. I am very involved in social activities in university. (S)
9. I am adjusting well to college. (S)
10. I have not been functioning well during examinations. (AA)
11. I have felt tired much of the time lately. (P)
12. Being on my own, taking more responsibility for myself, has not been easy. (P)
13. I am satisfied with the level at which I am performing academically. (AA)
14. I have had informal personal contact with college professors. (S)
15. I am pleased now about my decision to go to college. (A)
16. I am pleased now about my decision to attend this college in particular. (S)
17. I am not working as hard as I should at my coursework. (AA)
18. I have several close social ties at college. (S)
19. My academic goals and purposes are well-defined. (AA)
20. I haven't been able to control my emotions very well lately. (P)
21. I am not really smart enough for the academic work I am expected to be doing now. (AA)
22. Lonesomeness for home is a source of difficulty for me right now. (S)
23. Getting a college degree is very important to me. (AA)
24. My appetite has been good lately. (P)
25. I haven't been very efficient in the use of study time lately. (AA)

26. I enjoy living in a college residence (please omit if you do not live in a residence; any university housing should be regarded as a residence). (S)
27. I enjoy writing papers for courses. (AA)
28. I have been having a lot of headaches lately. (P)
29. I really haven't had much motivation for studying lately. (AA)
30. I am satisfied with the extracurricular activities available at college. (S)
31. I've given a lot of thought lately to whether I should ask for help from the Psychological Counselling Services Center or from a psychotherapist outside of college. (P) or from a psychotherapist outside of the college. (P)
32. Lately, I have been having doubts regarding the value of a college education. (AA)
33. I am getting along very well with my roommate(s) at college. (Please omit if you do not have a roommate). (S)
34. I wish I were at another college or university.(A)
35. I've put on (or lost) too much weight recently. (P)
36. I am satisfied with the number and variety of courses available at college. (A)
37. I feel that I have enough social skill to get along well in the college setting. (S)
38. I have been getting angry too easily lately. (P)
39. Recently, I have had trouble concentrating when I try to study. (AA)
40. I haven't been sleeping very well. (P)
41. I'm not doing well enough academically for the amount of work I put in. (AA)
42. I am having difficulty feeling at ease with other people at college. (S)
43. I am satisfied with the quality or calibre of courses at college. (AA)
44. I am attending classes regularly. (AA)
45. Sometimes my thinking gets muddled up too easily. (P)
46. I am satisfied with the extent to which I am participating in social activities at college. (S)
47. I expect to stay at college for a bachelor's degree.(A)
48. I haven't been mixing too well lately with individual's I might normally be attracted to. (S)
49. I worry a lot about my university expenses. (P)
50. I am enjoying my academic work at college. (AA)
51. I have been feeling lonely a lot at college. (S)
52. I am having a lot of trouble getting started on homework assignments. (AA)
53. I feel I have good control over my life situation at college.*
54. I am satisfied with my program of courses for this semester. (AA)
55. I have been feeling in good health lately. (P)
56. I feel I am very different from other students at college in ways I don't like. (S)
57. On balance, I would rather be at home than here. (S)
58. Most of the things I am interested in are not related to any of my coursework at college. (AA)
59. Lately, I have been giving a lot of thought to transferring to another college.(A)
60. Lately, I have been giving a lot of thought to dropping out of college altogether and for good. A)
61. I find myself giving considerable thought to taking time off from college and finishing later. (A)
62. I am satisfied with the professors I have now in my courses. (AA)

63. I have some good friends or acquaintances at college with whom I can talk about any problems I may have. (S)
64. I am experiencing a lot of difficulty coping with the stresses imposed upon me in university. (P)
65. I am quite satisfied with my social life at college. (S)
66. I am quite satisfied with my academic situation at college. (AA)
67. I feel confident that I will be able to deal in a satisfactory manner with future challenges here at college.*

***Items 53 and 67 only contribute to the total score.**

Appendix M

Study Information Sheet

Title: Examining university adjustment.

Introduction: The purpose of the present study is to investigate factors that relate to adjustment in university students. The investigator for this study is Laura Nichols, a Ph.D. graduate student from the department of psychology at the University of New Brunswick, under the supervision of Dr. Richard Nicki.

Procedure: This study requires you to complete a series of questionnaires asking about your thoughts, feelings and behaviours throughout the last several months since coming to university. The study should take approximately 30-45 minutes to complete. Your answers will be anonymous (your name will not appear anywhere on the questionnaires) and will be strictly confidential in that individual responses will not be made public. Your name will not appear anywhere other than on the consent form. This form will be stored separately from your questionnaires so there is no way to link your responses to your name. The researcher is interested in group data rather than individual data.

Risks and Benefits of Participation: The benefits of participating in this study are that you will earn 1-2 bonus points toward Psychology 1013 or 1023 course grade. You will also have the option of receiving an explanation of the study summary of the results. It is not anticipated that you will experience any discomfort or any risks by participating in this study.

Ethics Approval: The Research Ethics Board, University of New Brunswick, approved this project. If you have any questions or concerns about your rights of treatment as a research participant, you may contact:

Dr. Daniel Voyer (Chair of the Psychology Research Ethics Committee), at (506) 453-4974 or at voyer@unb.ca

Dr. Sandra Byers (Chair of the Psychology Department), at (506) 458-7697 or at byers@unb.ca

Results of the study: If you are interested in receiving a description of the study along with a summary of the results upon completion of the study, please include your e-mailing or mailing address on the attached consent form. Please note that individual results cannot be provided, as your answers are anonymous and confidential. Results will not be available until the summer of 2006.

Appendix N

Informed Consent Form

I understand that I am being given the opportunity to participate in a study conducted by Laura Nichols, under the supervision of Dr. Richard Nicki. I have received a copy of the information and consent form for this study, have read and understood this information, and agree to voluntarily participate. I understand that I will be asked to complete anonymous questionnaires during a one-time meeting, which will last approximately 30-45 minutes. I understand that the information on the questionnaires will be numerically coded to ensure confidentiality. I understand that the data obtained in this study will be maintained in a locked and secure office in the psychology department. I am aware that any questions that I feel uncomfortable answering I may leave blank and that once I begin the study I may withdraw from it at any time without consequence to me. It has been explained to me that this study has been reviewed and received ethics approval by the Research Ethics Board, University of New Brunswick. If I have any questions or concerns about my involvement in this study I may contact:

Dr. Daniel Voyer (Chair of the Psychology Research Ethics Committee), at (506) 453-4974 or at voyer@unb.ca

Dr. Sandra Byers (Chair of the Psychology Department), at (506) 458-7697 or at byers@unb.ca

PARTICIPANT'S NAME:	_____
PARTICIPANT'S SIGNATURE:	_____
DATE:	_____

OPTIONAL:

Please check the following box if you would like further information regarding and a summary of the results regarding this study upon completion of this research. Please provide an email address to which this information can be sent:

- Yes, I would like to receive more detailed information regarding the study as well as a summary of the results upon completion of this research.

E-mail address: _____

OR

Mailing address: _____

Appendix O

Debriefing Sheet

When students do not adapt well to university they are at risk for several psychological and physical difficulties (e.g., depression). The current project proposed that various behaviours when done in excess would lead to poor university adjustment. Previous research has suggested that each of these behaviours is important to understanding this relationship. In addition, the proposed study aimed to examine whether self-efficacy would add to the prediction of university adjustment over and above the behaviours. Self-efficacy is defined as a belief that you have the capacity (ability) to engage in a particular behaviour or task successfully. It is a bit like confidence but is aimed at a specific behaviour or task (e.g., self-efficacy to do statistics successfully or self-efficacy to do kick boxing). Although a number of factors and their relation to university adjustment have been previously examined by other researchers, very few studies have investigated these behaviours using a comprehensive measure of university adjustment. If you are interested in knowing more about university adjustment two references are listed below which you may find helpful.

American University Health Association (2005). The American university health association national university health assessment (ACHA-NCHA), *Spring 2003 Reference Group Report*, 53(5), 199-210.

Kadison, R. & Foy Digeronimo, T. (2004). *University of the Overwhelmed. The Campus mental health crisis and what to do about it.* Jossey-Bass, San Fransisco, CA.

If you have questions regarding this study please send an email to Laura Nichols (z77az@unb.ca). Please note that individual results cannot be provided as your answer is anonymous and confidential. If I have any questions or concerns about my involvement in this study I may contact: Dr. Daniel Voyer (Chair of the Psychology Research Ethics Committee), at (506) 453-4974 or at voyer@unb.ca or Dr. Sandra Byers (Chair of the Psychology Department), at (506) 458-7697 or at byers@unb.ca

Research Personnel and Contact Information:

Primary Researcher:	Supervisor:
Laura Nichols, Ph. D. Candidate	Dr. Richard Nicki, Professor Emeritus
Department of Psychology	Department of Psychology
University of New Brunswick	University of New Brunswick
447-4707	452-
z77az@unb.ca	nicki@unb.ca

Some participants may wish to discuss issues that arise as a result of participation in this study with a supportive person. Below is a list of resources.

UNB Counselling Services.....453-4820
CHIMO Provincial Helpline.....450-4357
UNB Health Center.....453-4837

THANK YOU FOR YOUR PARTICIPATION!

Appendix P

Research Summary Sheet

When students do not adapt well to university they are at risk for several psychological and physical difficulties (e.g., depression, anxiety, etc.). The current project proposed that various behaviours (Internet use, sleep, affect regulation, depression) when done in excess would lead to poor university adjustment. Previous research has suggested that each of these behaviours is important to understanding this relationship. In addition, the current study examined whether the self-efficacy variables would predict university adjustment. Self-efficacy is defined as a belief that you have the capacity (ability) to engage in a particular behaviour or task successfully. It is a bit like confidence but is aimed at a specific behaviour or task (e.g., self-efficacy to do statistics successfully or self-efficacy to do kick boxing). In addition, the proposed study aimed to identify factors that would moderate the relationship between the specified behaviours and adjustment. The moderating variables examined in this study were stress and emotion regulation. Although a number of factors and their relation to university adjustment have been previously examined by other researchers, very few studies have investigated these behaviours using a comprehensive measure of university adjustment.

In order to achieve this, you completed several questionnaires:

1. A demographic questionnaire. This questionnaire will give us some general information about you.
4. A questionnaire used to assess depression.
5. A questionnaire asking about various aspects of Internet use.
6. A questionnaire asking about sleep. This questionnaire assessed several areas related to sleep (e.g., sleep quality, sleep duration, sleep disturbances).
7. A questionnaire asking about affect regulation.
8. A questionnaire asking about self-efficacy beliefs related to behaviours that would help to cope with depression.
10. A questionnaire used to assess how confident about performing a specific behaviour (e. g., using the Internet effectively).
11. A questionnaire used to assess beliefs about the capacity to engage in behaviours that influence your sleep behaviour.
12. A questionnaire asking about perceived belief in one's ability to manage emotions, one's ability to manage positive emotion (e.g., happiness), one's ability to manage negative emotion (e.g., sadness) and, perceived efficacy to calm oneself in difficult situations.

13. A questionnaire used to assess university adjustment. This questionnaire measured five areas of adjustment including academic adjustment, personal-emotional adjustment, social adjustment, attachment to the institution and a comprehensive assessment of adjustment.

Findings from this study may aid university administrators, university counsellors and other university personnel to assist first year students in their adjustment to university.

A SUMMARY OF THE FINDINGS WILL BE INSERTED HERE.

If you have questions regarding this study please send an email to Laura Nichols (z77az@unb.ca). Please note that individual results cannot be provided as your answer is anonymous and confidential. If I have any questions or concerns about my involvement in this study I may contact: Dr. Daniel Voyer (Chair of the Psychology Research Ethics Committee), at (506) 453-4974 or at voyer@unb.ca or Dr. Sandra Byers (Chair of the Psychology Department), at (506) 458-7697 or at byers@unb.ca

Research Personnel and Contact Information:

Primary Researcher: Laura Nichols, Ph. D. Candidate Department of Psychology University of New Brunswick 447-4707 z77az@unb.ca	Supervisor: Dr. Richard Nicki, Professor Emeritus Department of Psychology University of New Brunswick 452- nicki@unb.ca
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Some participants may wish to discuss issues that arise as a result of participation in this study with a supportive person. Below is a list of resources.

UNB Counselling Services.....453-4820
CHIMO Provincial Helpline.....450-4357
UNB Health Center.....453-4837

Selected References:

American University Health Association (2005). The American university health association national university health assessment (ACHA-NCHA), *Spring 2003 Reference Group Report*, 53(5), 199-210.

Kadison, R. & Foy Digeronimo, T. (2004). *University of the Overwhelmed. The Campus mental health crisis and what to do about it.* Jossey-Bass, San Francisco, CA.

THANK YOU FOR YOUR PARTICIPATION

Curriculum Vitae

- Candidate's full name: Laura Anne Nichols
- Universities attended: University of New Brunswick, 1998-2011, Doctor of Philosophy
Saint Mary's University, 1995-1998, Honours Equivalency
University of Maine, 1987-1990, Master of Education
Dalhousie University, 1983-1987, Bachelor of Arts
- Publications: Ataoglu, A, Canan, F., Nichols, L, Yildirim T., & Ozturk, O. (In Press). Evaluation of Psychometric Properties of the "Internet Addiction Scale" in a Sample of Turkish High School Students. *Cyberpsychology, Behaviour and Social Networking*.
- Nichols, L. A. & Nicki, R. M. (2004). Does Internet addiction really exist? A need to develop a psychometrically sound assessment scale. *Psychology of Addictive Behaviours, 18*, 381-384.
- Gusella, J., Butler, G., Nichols, L.A., & Bird, D. (2003). A brief questionnaire to assess readiness to change in adolescents with eating disorders: its applications to group therapy. *European Eating Disorders Review, 11*, 58-71
- Research Reports: Nichols, L., Bakerman, D., Davis-Marchand, H., & Aubry, T. (2007). *Identifying Best Practices for Charting Counselling Services in Community Health Centres in Ottawa*. Center for Research on Educational and Community Services, Faculty of Social Sciences, University of Ottawa, Ottawa, Ontario.
- Conference Presentations: Nichols, L.A & Nicki, R. (2010, June). *An Examination of Factors that Impact University Adjustment*. Poster presented at the World Congress of Behaviour and Cognitive Therapy. Annual Meeting of the Canadian Psychological Association, Boston, MA.
- Nichols, L.A & Nicki, R. (2008, June). *An Examination of Factors that Impact University Adjustment*. Poster presented at the Annual Meeting of the Canadian Psychological Association, Halifax, N.S.

Kowal, J., Aubry, T., Royle, M., MacPhee, C., Davis, H., Nichols, L., A. Swenson, R. (2007, June). *The Urgent Consultation Clinic of the Ottawa Hospital-General Campus: Implementation and Outcome Evaluation Frameworks*. Poster presented at the Annual Meeting of the Canadian Psychological Association, Ottawa, ON

Nichols, L.A., Johnson, S., & Nicki, R. (2005, June). *The relationship between Internet addiction, Internet gambling addiction and adjustment to university*. Poster presented at the Annual Meeting of the Canadian Psychological Association, Montreal, QC.

Nichols, L.A., Johnson, S., & Nicki, R. (2004, March). *An examination of university student behaviours and psychological well-being*. Poster presented at the Biennial Meeting of the Society for Research on Adolescence, Baltimore, MD

Nichols, L.A., Johnson, S., & Nicki, R. (2003, November). *Toward a better understanding of college adjustment: An examination of students' behaviours*. Poster presented at the 1st Emerging Adulthood conference, Harvard University, Cambridge, MA

Nichols, L.A. & Nicki, R. M. (2003, June). *A closer look at students' Internet usage patterns*. Poster presented at the Annual Meeting of the Canadian Psychological Association, Hamilton, ON.

Nichols, L. A. & Nicki, R. M. (2002, June). *Is students' Internet use related to college adjustment?* Poster presented at the Annual Meeting of the Canadian Association of College and University Student Services. University of New Brunswick-Fredericton, NB

Nichols, L. A. & Nicki, R. M. (2001, June). *Is students' Internet use related to college adjustment?* Poster presented at the Annual Meeting of the Canadian Psychological Association, Quebec City, QC. * Also presented at the 2nd Annual Emerging Issues-Psychology Conference, Department of Psychology, University of New Brunswick, NB

Nichols, L. A. & Nicki, R. M. (2001, May). *Does Internet addiction really exist? A need to develop a psychometrically sound assessment scale*. Poster presented at the Annual Meeting of the College of Psychologists of New Brunswick Annual Meeting, Fredericton, NB

Nichols, L. A. & Nicki, R. M. (2000, July). *Does Internet addiction really exist? A need to develop a psychometrically sound assessment scale*. Poster presented at the Annual Meeting of the Canadian Psychological Association, Ottawa, ON

Nichols, L.A. & Stinson, V. (1999, May). *The role of authority and misinformation on memory*. Poster presented at the Annual Meeting of the Canadian Psychological Association, Halifax, NS. * Also presented at the IWK Health Centre for Children, Women & Families Staff -Research Day. Halifax, NS