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MINDFULNESS, STRESS AND COPING STYLES AMONG UNIVERSITY STUDENTS

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MINDFULNESS, STRESS AND COPING STYLES AMONG UNIVERSITY STUDENTS

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Abstract

A sample of 135 first-year university students living in residence completed questionnaires that measure individual differences in mindfulness (the Mindfulness Attention and Awareness Scale [MAAS]; Brown & Ryan, 2003), coping styles (adaptive detached coping and rational coping, or maladaptive: emotional coping and avoidant coping) (Coping Styles Questionnaire [CSQ]; Roger, et al., 1993), perceived stress (Perceived Stress Scale [PSS]; Cohen, Kamarck, & Mermelstein, 1983), and drinking behaviour. Findings revealed significant positive relationships between mindfulness and adaptive coping (rational and detached coping), and significant negative relationships with maladaptive coping (emotional and avoidant coping) and perceived stress. MANOVA analyses indicated significant effects for sex and mindfulness when grouping participants based on mindfulness scores (low, medium or high). Regression analyses revealed that avoidant coping and perceived stress predicted 38.2% of the variance of mindfulness scores. Linear regressions conducted separately for sex showed that emotional and avoidant coping and perceived stress explained 38.4% of the variance of mindfulness scores for females, and avoidant coping and perceived stress predicted 42.8% for males. Findings from this study improve our understanding of adaptive and maladaptive coping styles and increase our understanding of how mindfulness relates to coping styles, thereby suggesting potential ways to enhance counselling service and programming for first-year university students during the often difficult transition to university.

KEYWORDS: Mindfulness, stress, coping styles, students

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Mindfulness, Stress and Coping Styles among University Students

Recent publications in the domain of mind-body medicine have pointed to a growing interest in mindfulness and its role in coping with day-to-day stressors (Kabat-Zinn, 1990) as well as a basis for treatment with clinical populations (Baer, 2003; Kristeller & Hallett, 1999; Segal, Williams, & Teasdale, 2002). Conceptualizations of mindfulness and its various components are burgeoning, as are studies with varied populations (e.g., premedical and medical students, older populations, healthcare practitioners, inner-city Spanish-speaking residents). Researchers, however, have yet to investigate the relationship between mindfulness and coping. The present study will contribute to this knowledge gap.

In the current study, an explanation of mindfulness and its role in coping, along with a brief review of the literature will be provided. The theoretical underpinnings of Brown and Ryan's (2003) conceptualization of mindfulness will be presented in this regard, along with Shapiro, Carlson, Astin and Freedman (2006), suggesting an important link between mindfulness, improved self-regulation, and development. The self-regulatory benefit of mindfulness points to the potential for mindfulness to improve coping with life's difficulties. The importance of an exploration into the relationship between mindfulness and coping strategies and the practical implications of such an inquiry will, therefore, be presented.

While there is as yet no single operationalized definition of mindfulness, it is proposed as an "awareness that emerges through paying attention on purpose, in the present moment, and nonjudgmentally to the unfolding of experience moment by moment" (Kabat-Zinn, 2003, p. 145). With its roots in the Theravada tradition of

Buddhism (Hanh, 1976), mindfulness is a 2,500-year-old Eastern practice of meditation known as Vipassana, or insight meditation (Goldstein, 1976), designed to cultivate increased awareness.

Mindfulness practice may entail formal meditation, such as sitting, walking and movement, or yoga. Kabat-Zinn (1990) proposes seven attitudes that comprise the foundation of mindfulness practice: nonjudging (e.g., withholding judgment of whether one's mental, emotional or physical experience is either good, bad or neutral), patience (e.g., allowing things to unfold), beginner's mind (i.e., seeing things as if for the first time), trust (i.e., in yourself and your *own* experience), nonstriving (i.e., having no goal; not attempting to *do* anything, rather, just *be*), acceptance (i.e., seeing things as they actually are in the present moment) and letting go (i.e., nonattachment). The practitioner is to maintain attention to their breath as an "anchor" of focus, returning to it when thoughts and emotions inevitably arise (Bishop, 2002). When thoughts, emotions or sensations come into one's frame of awareness, the individual is to observe it, not judge it, for example, as being either good, bad or neutral, but accept it as it is and "letting it go" (Kabat-Zinn, 1990). Mindfulness is not restricted to formal meditation, but is practiced through activities of daily life, such as washing the dishes, eating a meal or driving a car (Kabat-Zinn, 1990; Hanh, 1976). Using breath as an anchor, one is able to enter into present-moment awareness of their daily activities. In short, practicing mindfulness, whether in formal meditation or during daily activities, is "a process of investigative awareness that involves observing the ever-changing flow of private experience" (Bishop, et al., 2004) without trying to change anything or *do* anything.

Approaching life mindfully has been shown to have positive psychological effects (Baer, 2003; Brown & Ryan, 2003). As a form of "psychological freedom" (Martin, 1997), mindfulness entails approaching situations without attachment to any particular perspective, and paying attention to one's mental thoughts, emotions and physical sensations, thus allowing a space where one's "habits of meaning, thought, behavior, or emotion are suspended, reconsidered" (p. 292). With this observant stance, one becomes "disidentified" (Marlatt & Kristeller, 1999) with objects in one's awareness, such as thoughts, feelings and images; hence mindfulness has been likened to a "deconstruction of the self" (Epstein, 1988). This deconstruction or "dis-embedding" of the self may be an avenue for developmental growth. Kegan (1982) states, "the process of disidentification is the most powerful way I know to conceptualize the growth of the mind" (p. 33-34).

The danger of not being mindful and living on "automatic pilot" lies in being unaware of when old habits such as thoughts, emotions and body sensations are activated. When or if circumstances do come into one's awareness, it may be too late to respond skillfully (Williams & Swales, 2004). This missed opportunity for conscious action is avoided through mindfulness wherein observation of internal experiences and the external situation enables the practitioner to notice the connection between making too-quick interpretations and subsequent experiencing of distress (Williams & Swales, 2004). Thus, in this "space" one is better able to choose a response, rather than reacting reflexively (Bishop, 2002; Horton-Deutsch & Horton, 2003; Langer, 1989; Kabat-Zinn, 1990; Segal, et al., 2002).

In their model of self-determination theory (SDT), Brown and Ryan (2003) buttress mindfulness as a feature to enhance self-regulation and, consequently, well-being. They contend that "the more fully an individual is apprised of what is occurring internally and in the environment, the more healthy, adaptive, and value-consistent his or her behaviour is likely to be" (Brown & Ryan, 2004, p. 114). Self-regulation is defined as "the process by which a system regulates itself to achieve specific goals" (Shapiro & Schwartz, 2000, p. 254). Based on their model of intentional systemic mindfulness (ISM), Shapiro and Schwartz (2000) propose that practicing a self-regulation technique (e.g., meditation, biofeedback, hypnosis, imagery or yoga) that includes attention characterized with the seven mindfulness qualities (Kabat-Zinn, 1990) as well as the five additional affective qualities of generosity, empathy, gratitude, gentleness, and loving kindness, leads to a sense of support and interconnectedness within oneself and within the larger, societal system, which may promote health enhancing properties.

Mindfulness as a Clinical Intervention

Studies of consciousness and the effects of meditation are not completely new. In the past, many researchers were interested in Transcendental Meditation (TM), which is a form of meditation that used recitation of a mantra that was popular in the 1970's (Goleman, 1988). Studies using TM demonstrated positive effects as a treatment for reducing alcohol (Benson & Wallace, 1972), nicotine and illicit drug use (Alexander, Robinson, & Rainforth, 1994; Benson & Wallace, 1984) as well as enhancing cognitive development, self-actualization, coping skills and defenses, and states and stages of consciousness (Alexander & Langer, 1990; Alexander, Rainforth, & Gelderloos, 1991; Emavardhana & Tori, 1997; Nidich, Ryncarz, Abrams, Orme-Johnsons, & Wallance,

1983; Travis, Arenander, & DuBois, 2004). Though mindfulness is an important feature of TM, it is different from mindfulness practice assessed in recent research efforts in the Western culture.

Research in mindfulness that has recently been conducted in the west has been predominantly modeled after the mindfulness-based stress reduction program (MBSR) that was initiated out of the University of Massachusetts Medical Center. In this 8-week program, mindfulness is practiced in weekly meetings that include sitting meditation, walking meditation, basic Hatha yoga postures, discussion and one full day of mindfulness, as well as practice meditation at home for 45 minutes, 6 days a week (Kabat-Zinn, 1990). Unlike TM, mindfulness practice does not require the recitation of a mantra, and, as it is taught through MBSR, is available to the layperson as well as the practiced meditator (Kabat-Zinn, 1990). Mindfulness simply entails a present-moment awareness of what is occurring internally and in the environment, thus can be practiced by anyone and throughout all daily activities. Mindfulness-based practice has been shown to be a beneficial treatment for a spectrum of disorders, such as chronic illness (Kabat-Zinn, 1982), depression (Segal, et al., 2002), anxiety (Kabat-Zinn et al., 1992), addictions (Marlatt, 2002), generalized anxiety disorder (Roemer & Orsillo, 2002), fibromyalgia (Kaplan, Goldenberg, & Galvin-Nadeau, 1993) and binge eating disorder (Kristeller & Hallett, 1999). The majority of research to date on mindfulness-based treatments has been conducted with clinical populations and less so with community samples.

Baer (2003) reviewed 21 studies that investigated treatments that incorporate mindfulness (e.g., MBSR, mindfulness-based cognitive therapy [MBCT], Dialectical Behaviour Therapy [DBT], Acceptance and Commitment Therapy [ACT] and relapse

prevention for substance abuse), and found that overall, mindfulness skills were proposed to be helpful for both clinical and nonclinical populations, indicated by a calculated effect size (Cohen's *d*) of medium to large (.74 overall and .59 when weighted by sample size). Baer (2003) concluded that mindfulness skills might help clinical patients in five respects, namely, exposure, cognitive change, self-management, relaxation and acceptance. The benefit of mindfulness with community populations is less known.

Components of Mindfulness and Implications for Research

The bulk of research in mindfulness is suffused with methodological problems, as the lack of operationalization makes empirically testing the construct of mindfulness challenging (Bishop, 2002). Several researchers have operationalized mindfulness in order to satisfy this void in understanding and providing direction in future methods of inquiry (Bishop et al., 2004; Shapiro et al., 2005).

Theorizing that mindfulness facilitates self-regulation, psychological health and enriched present-moment awareness, Brown and Ryan (2003) developed the Mindful Attention Awareness Scale (MAAS), a 15-item scale that focuses on one's presence or absence of attention to, and awareness of, what is happening in the present moment. The MAAS tested the distinctiveness and overlap of the MAAS with other measures of psychological dispositions of well-being. This scale was found to be related to, yet tapping into, a unique construct of well-being and psychological health, namely, self-awareness. Their findings revealed that, though the MAAS does not measure well-being directly, individuals who scored high on the MAAS were lower in neuroticism, anxiety, depression, unpleasant affect and negative affectivity, and higher in pleasant affect, positive affectivity, vitality, life satisfaction, self-esteem, optimism, self-actualization,

competence and relatedness. The researchers noted that individual differences in mindfulness as well as significant group differences when comparing beginner meditators with skilled Zen meditators, suggesting that mindfulness skills can be greatly enhanced with practice.

A second and recent theory of mindfulness and its mechanisms comes from Shapiro, Carlson, Astin, and Freedman (2006). Based on Kabat-Zinn's (1990) definition of mindfulness, Shapiro et al. (2006) put forward three central axioms or components as indicative of the building blocks of mindfulness, namely, Intention, Attention, and Attitude (IAA). Intention answers *why* one practices mindfulness, an important aspect to empirically understand (Bishop et al., 2004), as "it is not simply paying attention, but the intention behind it, that may be important for enhancing health" (Shapiro & Schwartz, 2000, p. 261). Second, Attention in their model includes the ability to sustain, shift and focus attention, which is enhanced through mindfulness practice (Shapiro, Astin, Bishop, & Cordova, 2005). Third, *how* one attends to his or her environment is paramount, hence Attitude, as the qualities one brings to attention, are the foundations of mindfulness (Kabat-Zinn, 1990). This third axiom is comparable to Bishop et al.'s (2004) "Orientation to Experience" whereby, "through intentionally bringing the attitudes of patience, compassion and non-striving to the attentional practice, one develops the capacity not to continually strive for pleasant experiences, or to push aversive experiences away." (p.5).

Shapiro et al. (2006) propose that following the practice of mindfulness as outlined by their model Intention, Attention, and Attitude, leads to a "significant shift in perspective" that results from disidentifying from one's thoughts, feelings and external

contents termed "reperceiving" (p.2), which they argue is the "hallmark of mindfulness practice" (p.6). Similar to "decentering" (Segal, Williams, & Teasdale, 2002), reperceiving is a "meta-mechanism of action" that leads to transformation and which is said to overarch other mechanisms, such as self-regulation, values clarification, cognitive, emotional and behavioural flexibility, and exposure that in turn lead to positive well-being. Self-regulation and management may be fostered through reperceiving in the ability to interrupt automatic and maladaptive habits, thus more consciously responding to and adaptively coping with threats to well-being (Brown & Ryan, 2003). Through reperceiving, and more objectively observing one's internal contents, one may be better able to act in accordance with one's true values. Support for this is evident in Brown and Ryan's (2003) study using the MAAS wherein the more mindful participants were found to act more congruently with their values and interests. By developing an improved capacity to observe one's ever-changing inner experience, reperceiving enables seeing mental-emotional content with greater clarity, thereby leading to improved cognitive, emotional and behavioural flexibility (Shapiro et al., 2005). Finally, reperceiving fosters an ability to experience strong emotions more objectively and with reduced reactivity, thus mindfulness can lead to improved functioning through exposure, most noted in studies of mindfulness and chronic pain (Kabat-Zinn, 1990) and therapeutic change (Hayes & Feldman, 2004).

Mindfulness within a Framework of Wellness, Stress and Coping

Through facilitating self-regulation, values clarification, cognitive, emotional and behavioural flexibility, and exposure (Shapiro et al., 2005), mindfulness (through reperceiving) appears to enhance one's ability to cope with life's stressors, and foster

health and wellness. Marlatt and Kristeller (1999), for instance, echo the benefits of mindfulness through meditation as "a global method of stress management, relaxation, and personal centering...to attain a balanced lifestyle" (p.74). Wellness has been defined as "a way of life oriented toward optimal health and well-being in which body, mind, and spirit are integrated by the individual to live more fully within the human and natural community" (Myers, Sweeney, & Witmer, 2000, p. 252). Based on its conceptualization above and preliminary results with both clinical and nonclinical populations, mindfulness clearly has the potential to be a wellness-enhancing state.

A common barrier to wellness is stress, a term first used by Dr. Hans Seyle (1956) and described as "the rate of wear and tear in the body" (p.274), and more recently defined as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p. 19). Humans are 'hardwired' to respond to stressful situations as a form of protection from challenges and danger (Gross, 1958). Thus, when stress is experienced, the human body undergoes a "complex pattern of physiological changes" (Miley, 1999, p. 104). Systems normally in homeostasis (blood pressure, heart rate, and hormonal systems) become overstimulated and unbalanced, triggering multiple, complex physiological and hormonal responses through the autonomic nervous system (ANS), reflected in the fight-or-flight response (Aspaugh, Hamrick, & Rosato, 1997; Miley, 1999). The parasympathetic nervous system (PNS), another subcomponent of the ANS, regulates relaxation and works to restore the body's state of balance.

Broadly, it seems logical that individuals who are more aware of their internal and external experiences, in other words, more mindful, would be better able to respond in ways that facilitate the balancing of the myriad life components that comprise their health and wellness. Goleman's (1988) study of meditation and stress points to the potential value of mindfulness, through meditation, in responding to stress. Goleman (1988) found that meditators were more relaxed than nonmeditators who showed on-going signs of tension after watching a disturbing film of shop-work accidents, hence displaying an improved and more rapid recovery from stress. Similar results were found in studies by Dr. Herbert Benson of the Harvard Medical School, who termed the physiological changes derived from TM practice "the relaxation response", which was the opposite of hyperarousal, or in other words, the stress response (Kabat-Zinn, 1990). Thus, through mindfulness practice awareness of arousal within a context is heightened, which facilitates a quicker return to a state of equilibrium (Hayes & Feldman, 2004; Kabat-Zinn, 1990). If however over time one responds automatically and without awareness, as in "automatic-pilot" (Hanh, 1976; Martin, 1997), one may be at risk of experiencing the negative impacts of stress.

Studies using mindfulness-based interventions have shown that mindfulness helps individuals cope with daily hassles (Astin, 1997; Kabat-Zinn, 1990; Shapiro, Schwartz, & Bonner, 1998) and with clinical difficulties (Linehan, et al., 2002; Segal, et al., 2002). Based on their model of self-determination theory (SDT), Brown and Ryan (2004) argue that the observant stance and self-knowledge facilitated through mindfulness enables individuals to act autonomously and consistently with their needs and values. Acting with self-determined behaviour concurrently implies that actions and responses to

environmental stressors would best meet an individual's needs, hence promote positive well-being.

Lazarus and Folkman (1984) define coping as " changing thoughts and acts an individual uses to manage the external and or internal demands of a specific person-environment transaction that is appraised as stressful" (p.34). They conceptualize two major functions of coping, namely, problem-focused coping (management of the problem) and emotion-focused coping (the regulation of emotion) (Lazarus & Folkman, 1984). Emotion-focused coping includes attempts to manage emotional reactions to stressors through regulation of emotion, expression of anger and acceptance, which is particularly important when action in a situation is not possible. Problem-focused coping includes planning and action, thus is more likely to be chosen as a strategy when action to relieve the dilemma is possible. Interestingly, recent mindfulness research has established that acceptance (Baer, 2003) and emotion-regulation (Hayes & Feldman, 2004) are two important components of mindfulness.

Lazarus and Folkman (1984) further underscore the importance of cognitive appraisal in coping with stress, which is highlighted in Segal et al.'s (2002) MBCT for relapse prevention in people with major depressive disorder. In their intervention, clients learn that it is not the content of the thought that must change, rather it is the relationship *to* thoughts that changes, thereby influencing emotional and physical reactions. Watching thoughts come and go, as well as emotional reactions and physical sensations, acts as a type of desensitization, whereby the practitioner learns that difficult or negative sensations and thoughts pass and are not inherently the self (Kabat-Zinn, 1990; Marlatt & Marques, 1977). Appraisal thus remains an inherent cognitive process; however,

mindfulness practice helps one become less reactive to appraisals, as a "general self-control coping strategy" (Marlatt & Marques, 1977) to stimuli that may be negatively stress provoking. This "desensitization" is similar to a "detached" style of coping. Detached-style coping has been shown to be adaptive to dealing with stress, and in contrast to a less adaptive, avoidant style of coping (Roger, Jarvis, & Najarian, 1993), which has been found to be in opposition to mindfulness (Brown & Ryan, 2003). Ultimately, the skill that mindfulness offers people is "being able to live in the moment you cannot control" (Horton-Deutsch & Horton, 2003, p. 193), thus the ability to adaptively cope with stress encountered in daily living.

Coping Through Substance Use

For many people, coping resources include the use of alcohol, illicit drugs and cigarettes. Self-medication theory, for example, suggests that individuals will choose a means of coping that will best reduce their negative affect, which for many individuals is substance use (Khantzian, 1985). Substance use, such as alcohol, drugs and cigarettes, is particularly prevalent among university student populations. The 2004 Canadian Campus Survey of 6,282 undergraduate students, for example, showed that 85.7% of students drank alcohol in the past year and 77% in the last month, 12.7% were currently smokers and 32.1% of students used cannabis in the last year and 16.7% in the last month (Adlaf, Demers, & Gliksman, 2005). In another study university students were found to endorse the use of substances to handle stress (McCormack, 1991). Based on their research with alcohol consumption and mindfulness meditation, Marlatt et al. (2004) propose that the probability of drinking will vary in a situation as a function of four factors: the degree of perceived stress, the degree of perceived personal control, the availability of an

"adequate" coping response to stressful situation, and the availability of alcohol. Moreover, individuals' expectations about the effectiveness of alcohol as an alternative coping response are clearly implicated in an individual's choice to use it. Marlatt et al. (2004) argue that mindfulness can be more than simply a coping strategy, acting as a satisfying replacement to addictive behaviour through meditation as a "form of counterconditioning" in "urge surfing", which allows them to identify cravings and watch them pass without acting on them (p. 269).

It may be, however, that drinking behaviour in the context of the current sample is in some way adaptive. According to Jessor's (1991) Problem-Behaviour Theory, adolescents engaging in behaviour that is deemed deviant may not be maladaptive; rather it may be functional, purposive, instrumental and goal-directed. Given that the current sample consists of first-year university students, the developmental stage of participants coincides with late adolescents/young adulthood; thus, it may be that students' alcohol consumption in the context of the university residence environment may be functional and adaptive whereby social aspects of living in residence entail drinking behaviour.

Adult Development Enhanced Through Mindfulness

In a discussion of undergraduate students and coping with the transition to university, developmental life stage is a necessary consideration. A developmental approach is guided by a premise that individuals "evolve through eras according to regular principles of stability and change" (Kegan, 1982, p. 8). Notions of a higher consciousness are found in both Eastern and Western psychologies. Profound developmental transformation to "higher states of consciousness" or "levels of mind" is proposed within Eastern psychology, and is said to "represent the natural continuation of

development in adulthood" (Alexander, et al., 1990, p. 297). Western developmental theories of consciousness believe in "a preexisting disposition toward psychological development" (Brown & Ryan, 2003, p. 822) where development inherently includes a natural tendency of awareness to move toward deeper structures of mind (Alexander, et al., 1990).

Examples of Western psychologists' theories of the psychological potentials of humans include Maslow's "metamotives" to postformal operational cognition, such as Kohlberg's "postconventional morality", Fowler's "universalizing faith", and Loevinger's "integrated ego" (Walsh & Shapiro, 2006). These conceptions include features that are comparable to Eastern meditative traditions (Goleman, 1988).

An important theory of development that is proposed also as a model of coping is Gilligan's (1982) theory of a moral development of care (Puka, 1994). Gilligan (1982) differentiated women's experiences of moral development from those outlined by Kohlberg, conceptualizing Kohlberg's pattern of reasoning as the "justice voice" while that of women as a "care voice" (Evans et al., 1998). Her framework for women's moral development thus attended to an individual's growth and maturation within relationship as opposed to previous theorizing of development through acquisition of oneself as an autonomous, moral agent (Gilligan, 1982). Gilligan's (1982) theory of women's development as a moral trajectory (i.e. maturing from selfishness to care giving to universal care giving) is an example of Western theories of moral development that are grounded in the types of transpersonal experiences aimed for in meditation (Walsh & Shapiro, 2006).

A reconfigured hypothesis of Gilligan's (1982) theory of a moral development of care is that development of "care" levels, in the language of Gilligan's model, in fact represent constrained coping strategies which are particularly salient for women as an oppressed group in a patriarchal society (Puka, 1994). Though these coping strategies may vary in order of effectiveness, Puka (1994) argues that they are not completely developmental in sequence as cognitive stages in classic theories of moral development would preclude. However, "working out one's caring stance on key interpersonal situations clearly represents a moral advance in some cognitive-psychological domain" (Puka, 1994, p. 483). Within this theory of care as a coping strategy, therefore, moral development can be linked with resources and ways of coping with sociopolitical cultural demands. Moreover, when "moral progress is accompanied by increased self-awareness and confidence, learning to take control of one's life and responsibility for oneself, additional moral progress is likely to result" (Puka, 1994, p. 483). Thus, self-awareness and autonomous functioning fostered through mindfulness may indicate important connections with development and coping.

The Role of Development in Coping with the Transition to University

An important developmental life event for many individuals is entrance to university. It is perhaps not surprising that many students new to university cope using alcohol, illicit drugs and cigarettes (Adlaf et al., 2005), as the transition to university may be a significantly stressful time. Through this significant transition, students face changes that will have both short and long-term impacts on their lives (Evans, et al., 1998). Changes may include, for example, perceptions in the areas of interpersonal relations, particularly with parents, religious views, and sexuality (Lefkowitz, 2005).

The results of Jordyn and Byrd's (2003) study demonstrated that students' living arrangements during the transition to university played a role in their adjustment. Students who did not live with their parents, for instance, experienced a greater degree of problems; however, they used more direct, problem-focused coping strategies and were more likely to have established an adult identity, whereas those who still resided with their parents were more likely to be in the process of still developing an adult identity. Additional benefits to living in residence may be in developing a positive collective self-esteem, which is associated with better adjustment to college (Bettencourt, Chalton, Eubanks, Kernahan, & Fuller, 1999).

In contrast to findings that living away from home may contribute to positive development outcomes for students, research examining the links between alcohol consumption and living arrangements suggests that living in residence is associated with higher levels of drinking. For example, Adlaf et al.'s (2005) extensive survey of university undergraduates showed notable differences in drinking among students who lived on campus compared with those who lived off campus without family and off campus with family. For example, 22.8% of students who lived on campus were classified as heavy-infrequent drinkers, and 9% were heavy-frequent drinkers, whereas 20.6% of students who lived off campus without family met the criteria for heavy-infrequent drinking, and 7.5% met the criteria for heavy-frequent drinking. Drinking rates were even lower for students who lived off campus with family, with 14.6% of students classified as heavy-infrequent drinkers and 4.7% as heavy-frequent drinkers. Thus, while living in residence or on one's own in university may facilitate opportunities

for adult identity development (Jordyn & Byrd, 2003), living on campus may also entail additional risks and challenges to students' health and well-being.

The potential for mindfulness practice to help buffer some of the negative stressors associated with university has been shown in a number of studies with university student-aged populations (Astin, 1997; Baer, 2003; Shapiro et al., 1998). In their study that assessed the effects of a mindfulness-stress reduction program with medical and premedical students, for example, Shapiro et al. (1998) concluded that participation in mindfulness training can aid in reducing students' state and trait anxiety, reducing overall symptoms of psychological distress, including depression, while leading to increases in empathy and experiences of spirituality. Findings from this study show promise for mindfulness training for students in nonmedical disciplines that also experience stress, anxiety and depression at the transitional phase of university.

Studies have also demonstrated that coping styles are partly a function of moral development (Rim, 1992) and existential human needs (Lonky, Kaus, & Roodin, 1984). Perhaps increased awareness of one's thoughts, emotions and experience of disequilibrium in response to the environment (i.e., mindfulness) may lead to an improved position to cope with and meet developmental tasks. Both Shapiro et al.'s (2005) model of mindfulness (IAA) and Brown and Ryan's (2004) model of self-determination theory point to the possibility that coping may be improved through mindfulness.

Mindfulness as a practice has shown great potential in ameliorating individuals' physiological difficulties (Kabat-Zinn, 1990), and enhancing one's psychological well-being (Baer, 2003). Paying attention to one's thoughts, feelings, and sensations allows

one to cope with and better respond to stressors encountered in daily life, and act in ways that are consistent with meeting one's needs and values, promoting better health (Brown & Ryan, 2003).

The findings yielded from the current study continue our understanding of mindfulness and how it relates to coping styles in particular. Increasing our understanding of mindfulness as a state, which can be developed through practice (Brown & Ryan, 2003; Kabat-Zinn, 1990), expands possibilities for interventions or techniques that may improve client coping skills, particularly when counselling students undergoing the often difficult transition to university.

In light of the theorization of mindfulness as a feature of self-regulation, it was hypothesized that individuals who are more mindful will use more adaptive coping strategies, such as rational coping and detached coping (e.g., Roger et al., 1993). A second hypothesis stated that individuals with a high state of mindfulness will experience less perceived stress. Third, high mindfulness was predicted to be related to less frequent heavy drinking.

METHOD

Sample

The sample consisted of 135 (91 women and 44 men, mean age = 18 years) first-year students living in residence at the University of Western Ontario. The demographical characteristics of participants can be found in Table 1.

Procedure

With the cooperation of Residence Housing at the University of Western Ontario, 1000 first-year students living in residence were randomly selected to receive a questionnaire package with the option to fill out and return the completed package by November 1st, 2006. The student investigator was responsible for distributing the questionnaire packages to the managers of the residence buildings who then distributed the packages to the students, thereby ensuring participant anonymity. Participants were not required to include their names on any of the research questionnaires and were instructed to submit them without inscribing any personal information, thereby ensuring total anonymity.

The package included a letter of information (Appendix B) explaining the purpose and objectives of the study and each of the measures listed in the Appendix. The students were given the opportunity to have their names entered into a draw to win a prize. They were instructed to send in the entry-form separately to ensure that their answers to the questionnaires were not identifiable to anyone. Additionally, participants' names on the entry-forms remained confidential and known only to the researcher, and all names were destroyed once the prizewinner was identified and the prize distributed.

Table 1

Means and Standard Deviations of Measures of Perceived Stress, Coping Style, Drinks per week, and Mindfulness (N = 135).

Measure	Female (n = 91)		Male (n = 44)		Combined (n = 135)	
	Mean	SD	Mean	SD	Mean	SD
Age	17.81	1.37	18.14	.89	17.92	1.24
PSS [a]	1.71	.617	1.59	.644	1.67	.626
CSQ						
RATCOP	1.57	.45	1.71	.428	1.62	.446
DETCOP	1.06	.381	1.46	.474	1.19	.452
EMCOP	1.03	.487	.94	.597	.998	.524
AVCOP	1.27	.403	1.21	.383	1.25	.396
Drinks/week	8.49	7.05	12.47	12.53	9.80	9.35
MAAS	3.99	.875	3.86	.842	3.95	.863

[a] Female n = 90, Male n = 43, PSS = Perceived Stress Scale, CSQ = Coping Style Questionnaire, RATCOP = Rational Coping, DETCOP = Detached Coping, EMCOP = Emotional Coping, AVCOP = Avoidant Coping, Drinks/week = Number of Drinks per week, MAAS = Mindfulness Attention Awareness Scale.

Measures

Demographics. Four items identifying demographical information were included, specifically, age, sex, race and ethnicity (see Appendix C).

Perceived Stress. Participants completed the 14-item Perceived Stress Scale (PSS; Cohen, Kamarck, & Mermelstein, 1983), which assesses participants' current level of stress and the extent to which they find their lives uncontrollable, unpredictable and overwhelming (see Appendix D). Participants indicated how often they felt or thought a particular way in the last month on a Likert-type scale (0 = *never*, 1 = *almost never*, 2 = *sometimes*, 3 = *fairly often*, 4 = *very often*). Sample items include: "In the last month, how often have you felt that you were unable to control the important things in your life?" and "In the last month, how often have you felt that things were going your way?". PSS scores are obtained by reverse scoring (e.g., 0 = 4, 1 = 3, etc.) on the positive items (items 4, 5, 6, 7, 9, 10, and 13) and summing across all fourteen items. A high score indicates a high level of perceived control, hence a lower level of current stress, while a low score indicates a low level of perceived control and a higher degree of perceived stress. Mean scores for the complete PSS with males and females across two college student samples were 23.18 and 23.67, with coefficient alpha reliability reported at .84 and .85 (Cohen et al., 1983).

The PSS showed strong predictive and concurrent validity in two samples of college students, using the College Student Life-Event Scale, which is a measure of stressful life events that are characterized by adjustment to the demands of college students (CSLES; in Cohen et al., 1983). The positive relationship between perceived

stress and number and impact of life events, physical and depressive symptomology and social anxiety thereby demonstrates sufficient validity.

Coping Style Questionnaire (CSQ). Participants completed the Coping Style Questionnaire (CSQ; Roger, et al., 1993). The CSQ is a 60-item scale that measures coping styles in four factors: Rational Coping (RATCOP), Detached Coping (DETCOP), Emotional Coping (EMCOP), and Avoidance Coping (AVCOP) (see Appendix E). Participants are instructed to describe how they *typically* react to stress by circling Always (A), Often (O), Sometimes (S) or Never (N) for each item (where Always = 4 points, and Never = 1 point). Participants' scores were summed to make up a score for each of the four subscales. The RATCOP scale includes 16 items that assess an active, problem-solving type of coping, such as "Try to find out more information to help make a decision about things". The Detached Scale includes 15 items that assess participants' detached coping style; sample items include: "Feel independent of circumstances" and "Feel completely clear-headed about the whole thing". High scores on RATCOP and DETCOP indicate an adaptive style of coping.

The Emotional Coping scale entails 16 items that denote an emotion-oriented style of coping, and includes items such as "Feel worthless and unimportant" and "Feel overpowered and at the mercy of the situation". The Avoidant Coping Scale includes 13 items, and deals with avoidant-type coping behaviour, for example, "Daydream about times in the past when things were better", and "Sit tight and hope it all goes away". High scores on EMCOP and AVCOP suggest a maladaptive coping style.

Correlational analyses of the scale items with a sample of 311 university students in the Roger et al (1993) study indicated positive correlations between RATCOP and

DETCOP and between EMCOP and AVCOP. Additionally, RATCOP and DETCOP correlated significantly negatively with EMCOP, with a marginal negative relationship with AVCOP, suggesting that RATCOP and DETCOP are adaptive coping strategies and EMCOP and AVCOP are maladaptive (Roger et al., 1993). Alpha levels of internal consistency for Rational Coping are .81 (Elkit, 1996) and .85, .79 (Elkit) and .73 (Rogers et al.) for Emotional Coping, .66 (Elkit, 1996) and .69 (Rogers et al.) for Avoidant Coping, and .77 (Elkit, 1996) and .90 (Rogers et al.) for Detached Coping, which are within an acceptable range (Briggs & Cheek, 1986).

Concurrent validity for the CSQ was demonstrated using a sample of university students (N = 92) and scores on the Emotion Control Questionnaire (ECQ; Roger & Najarian, 1989 in Roger et al., 1993), a measure that has been shown to be related to indices of delayed recovery from stress, which includes scales of rehearsal and emotional inhibition, benign control and aggression control.

Drinking Behaviour. Participants' drinking behaviour was assessed using a brief questionnaire adapted from the 2004 Canadian Campus Survey (Adlaf et al., 2005) that identified the extent to which participants engage in drinking alcohol and whether this behaviour is employed to cope with stress (see Appendix F). Participants were instructed to estimate the number of alcoholic drinks they drink in one week and on one occasion (e.g., one evening), as well as rank in order of importance the top four reasons they typically drink alcohol.

Participants' drinking behaviour was calculated similarly to the typology used in the 2004 Canadian Campus Survey (Adlaf et al., 2005): *abstainers* (do not drink alcohol), *drinkers* (typically consume less than 5 drinks on days that they drink and drink less than

once a week), *light-frequent drinkers* (usually consume less than 5 drinks on days that they drink and drink at least once a week), *heavy-infrequent drinkers* (typically consume 5 drinks or more on days that they drink and drink less than once a week), and *heavy-frequent drinkers* (usually consume 5 drinks or more on one occasion and drink at least once a week). Of the 6,282 full-time university undergraduates surveyed by Adlaf and associates, 35.8 % were classified as light-frequent drinkers, 22% were drinkers, 11.7% were heavy-infrequent drinkers, and 16.1% were heavy-frequent drinkers (Adlaf et al., 2005). Heavy-infrequent and heavy-frequent drinkers are associated with "binge drinking", which Adlaf et al. (2005) classify as the consumption of 5 or more drinks on a single occasion two or more times per month and drinking 8 or more drinks in one sitting two or more times per month. In their sample 18.5% and 6.6% of participants met these criteria.

Mindfulness Attention Awareness Scale. The Mindfulness Attention Awareness Scale (MAAS; Brown & Ryan, 2003) was used to assess participants' frequency of mindfulness over time, specifically focusing on "the presence or absence of attention to and awareness of what is occurring in the present" (Brown & Ryan, 2003, p. 824). Using a 6-point Likert scale (1 = *almost always* to 6 = *almost never*), participants indicated how frequently they have experienced the description in each of 15 statements (see Appendix G). Participants' responses on each item were summed to comprise a total score, where a high score indicates high mindfulness. Sample items include: "I rush through activities without being really attentive to them", "I find myself preoccupied with the future or the past", or "I find myself doing things without paying much attention". A high score indicates a high degree of mindfulness while a low score indicates a low degree of

mindfulness. Cronbach alphas for the MAAS range from .80 to .87 across samples (Brown & Ryan, 2003).

Brown and Ryan (2003) conducted a thorough assessment of convergent and discriminant validity of the MAAS with several measures, namely, the NEO Personality Inventory (NEO-PI) and NEO Five-Factor Inventory (NEO-FFI) Openness to Experience (Costa & McCrae, 1992 in Brown & Ryan), the Trait Meta-Mood Scale (TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995), the Mindfulness/Mindlessness Scale (MMS; Bodner & Langer, 2001), the Self-Consciousness Scale (SCS; Fenigsteine, Scheier, & Buss, 1975), the Rumination-Reflection Questionnaire (RRQ; Trapnell & Campbell, 1999), the Self-monitoring Scale-Revised (Snyder & Gangestad, 1986) and Absorption (Tellegen, 1982). These measures were designed to assess factors of personality, emotional intelligence, level of mindfulness/mindlessness, self-reflectiveness and internal state awareness, self-attentiveness and rumination, self-monitoring and the tendency to enter dissociative or integrative states, respectively. As predicted, the MAAS was moderately positively correlated with the NEO-PI Openness to Experience and NEO-FFI Openness to Experience, specifically relating to subscales that touch on attentiveness and receptivity to experience (e.g., Feelings, Actions, Ideas and Values subscales) and emotional intelligence. The MAAS correlated with the Mindfulness/Mindlessness Scale (MMS), most notably related to mindful engagement, and less so to novelty seeking and producing. Also as predicted, the MAAS bore no relation to Private Consciousness of the Self-Consciousness Scale (SCS); however it did correlate with the internal state awareness aspect of the measure, which was expected. Expected negative relations were also found to Public Self-Consciousness and Social

Anxiety. In regards to the Rumination-Reflection Questionnaire, the MAAS was unrelated to Reflection and inversely related to Rumination. The MAAS was unrelated to Self-Monitoring. Absorption was inversely and only slightly related to the MAAS.

Results

Overview of the Study

The purpose of this study was to investigate the relationships among mindfulness, perceived stress, coping styles (e.g., rational coping, detached coping, emotional coping, and avoidant coping), and drinking behaviour in first-year university students living in residence. Participants' levels of perceived stress, mindfulness, drinking behaviour and styles of coping were measured through self-report.

Table 1 shows the demographic and descriptive data collected with regard to sex, age, perceived stress, coping style, drinking behaviour and mindfulness. Participants' ethnic background, previous experience with mindfulness and identification as drinkers or non-drinkers is outlined in Table 2.

Variable Calculations

Descriptive details of all variables categorized by sex are outlined in Table 1.

Perceived Stress

Participants rated their responses to 14 questions on a 5-point Likert-type scale (see Appendix D) concerning their current level of stress and the extent to which they find their lives uncontrollable, unpredictable and overwhelming. Taking the sum of all items and dividing by 14 resulted in a mean item score, which can be found in Table 1. The range of possible mean item scores would be 0 to 4. Inspections of mean scores for the current sample indicate an almost equal score (e.g., 23.45) with scores reported in previous literature. In Cohen et al.'s (1983) study involving 332 College students living in residence (M age = 19 years), mean scores were 23.18, and 23.67 in a second sample

of 114 students from a Personality Psychology class (M age = 20.75). Standard deviations were 7.31 and 7.79, respectively.

Coping Styles

Participants' coping style consists of scores summed for each of four subscales: Rational Coping (16 items), Detached Coping (15 items), Emotional Coping (16 items) and Avoidant Coping (13 items) based on the Coping Styles Questionnaire (Roger, et al., 1993; see Appendix E). The scales consist of a 4-point Likert-type scale from 1 to 4, with a range of possible scores from 1 to 4. The mean items scores for each of the subscales was calculated and may be found in Table 1. Mean scores from the original study of the Coping Style Questionnaire (Rogers et al., 1993) for rational coping were 27.26 (SD = 5.83) for males and 24.28 (SD = 6.45) for females, 18.71 (SD = 6.42) for males and 16.01 (SD = 4.87) for females for detached coping, 16.80 (SD = 6.11) for males and 18.22 (SD = 5.94) for females for emotional coping, and 15.38 (SD = 5.0) for males and 15.69 (SD = 5.37) for females for avoidant coping.

Drinking Behaviour

Drinking behaviour scores consist of the number of alcoholic drinks participants ingest per week (see Appendix F). The number of drinks per week reported by participants ranged from 0 to 30. One outlier was removed from the analysis, as it was more than 3 standard deviations above the mean. Details may be found in Table 1. Table 6 details the break down of the sample categorized by drinking behaviour, as adapted from the Canadian Campus Survey. Figure 1 offers a diagram of this variability, which, upon visual inspection, indicates a bimodal distribution. The results of undergraduate drinking patterns from Adlaf et al's (2005) Canadian Campus Survey showed 35.8% of

Figure 1

Drinking behaviour in the current sample

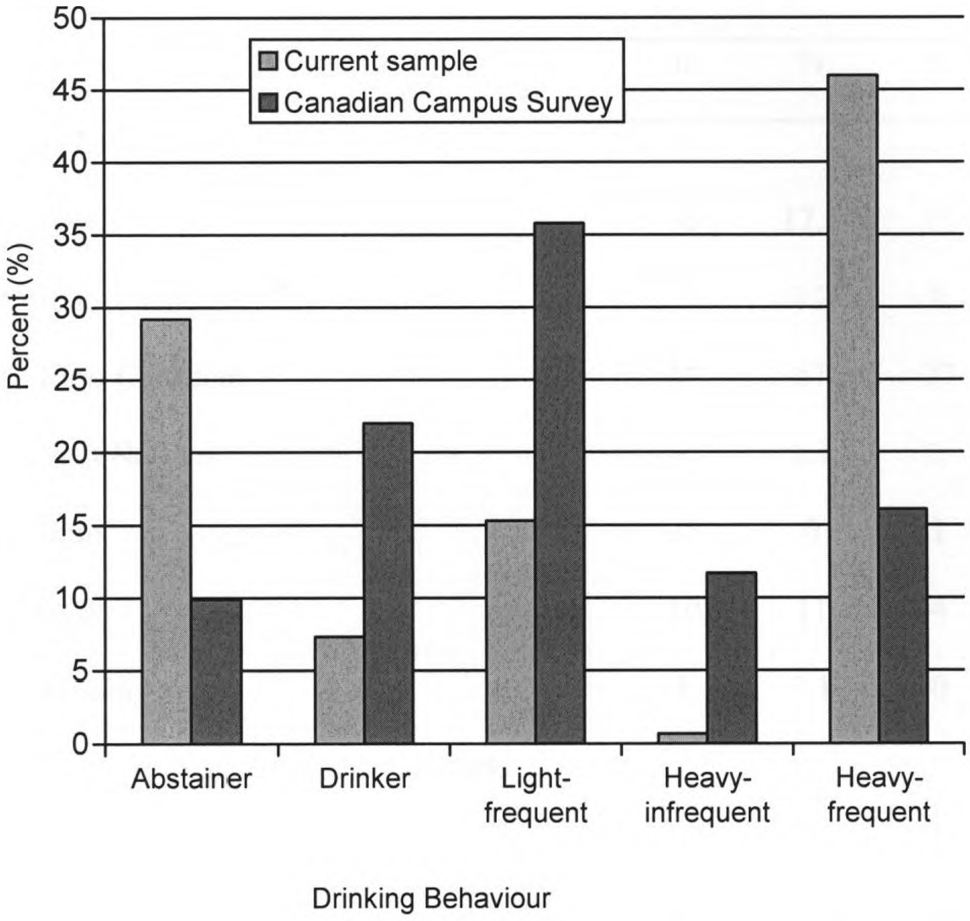

Table 2

Frequencies of Ethnic Background, Previous Experience with Mindfulness and Drinking for females (F) and males (M)

	F		M	
	n	%	n	%
Ethnic background				
Asian	16	17.6	11	25
Indo-Canadian	2	2.2	0	0
Euro-Canadian	61	67	27	61.4
First Nations	1	1.1	1	2.3
Inuit	0	0	1	2.3
Other	10	11	4	9.1
Missing	1	1.1	0	0
Previous Experience with Mindfulness				
Yes	6	6.6	1	2.3
No	85	93.4	43	97.7
Drinking				
Yes	63	69.2	32	72.7
No	28	30.8	12	27.3

undergraduates as light-frequent drinkers, 22% as drinkers, 11.7% were heavy-infrequent drinkers, and 16.1% were heavy-frequent drinkers.

Mindfulness

This score was calculated by summing participant responses on a 6-point Likert-type scale (6 = Almost Never to 1 = Almost Always) to questions regarding the tendency to remain attentive to and aware of the present moment throughout daily activities (MAAS; Brown & Ryan, 2003; see Appendix G). The scale consists of a total of 15 items and range in scores from 1 to 6. Details may be found in Table 1. Findings from Brown and Ryan's (2003) university student sample (N = 313, M age = 19.6) indicated a mean score of 3.72 on the MAAS, with a standard deviation of 1.25.

Results of Hypotheses Testing

Correlations among the major variables within the present study are detailed in Table 4. In light of the conceptualization of mindfulness as a feature of self-regulation found in the literature (e.g., Brown & Ryan, 2003; Shapiro, Carlson, Astin, & Freedman, 2006; Shapiro & Schwartz, 2000), the following hypotheses were developed with regard to first year students living in residence:

Hypothesis # 1: Individuals who are more mindful will use more adaptive coping strategies (e.g., rational coping and detached styles of coping), and less mindful individuals will use less adaptive coping styles (e.g., emotional coping and avoidant coping)

As predicted, there was a significant positive correlation between high mindfulness and rational coping ($r = .239^{*}$, $p < .05$). Significant negative correlations were detected between mindfulness and emotional coping ($r = -.486^{**}$, $p < .001$) and

mindfulness and avoidant coping (r = -.508**, p < .001); both of these were in the predicted direction.

Similar to Roger et al.'s (1993) previous findings, the present analyses identified positive relationships between rational and detached coping (r = .683**, p < .001), and emotional and avoidant coping (r = .487**, p < .001). Also reflecting results reported by Roger et al (1993), significant negative relationships were detected between rational and both emotional coping (r = -.513**, p < .001), and avoidant (r = -.224**, p < .001).

Hypothesis # 2: Individuals with a high state of mindfulness will experience less perceived stress

Pearson Product moment correlations showed a significant negative correlation between mindfulness and perceived stress (r = -.222*, p < .05), and thus confirmed this hypothesis.

Hypothesis # 3: High mindfulness will be related to less frequent heavy drinking

This analysis did not uncover the predicted negative relationship between mindfulness and drinks per week, although, the association was in the expected direction. A significant negative correlation was found, however, between rational coping and drinks per week (r = -.219*, p < .05).

1) Multivariate Analysis of Variance

In order to identify additional main and interaction effects among the variables, multivariate analyses of variance were conducted. Based on group differences attributable to gender (e.g., Adlaf et al., 2005), a MANOVA was first conducted with sex as the independent variable on the group of dependent or outcome variables, namely,

Table 3

Percentage of drinking behaviour of the current sample compared with those from the Canadian Campus Survey

Drinking Behaviour	Current sample	Canadian Campus Survey
Abstainers	29.2	9.9
Drinkers	7.3	22.0
Light-frequent	15.3	35.8
Heavy-infrequent	.7	11.7
Heavy-frequent	46.0	16.1

Note: The Canadian Campus Survey (Adlaf et al., 2005).

mindfulness, perceived stress, drinking and coping styles (rational coping, detached coping, emotional coping and avoidant coping). Using Pillai's trace as a testing method, as it is a more robust measure, a multivariate effect was detected, F (1, 128) = 7.8, $p <$ .01.

In order to identify what particular variables were contributing to this significant effect, univariate analyses were conducted, and results revealed significant effects for sex for both rational coping, F (1, 128) = 4.01, $p < .05$, and detached coping, F (1, 128) = 27.49, $p < .01$.

The second MANOVA conducted placed mindfulness as the independent variable. For the purposes of conducting these analyses, we organized the mindfulness variable into three distinct groups based on mindfulness scores. Forty-four participants met the criteria for low mindfulness (group 1), with a cut off score of 3.67 at the 33rd percentile. Forty-four participants made up the medium mindfulness group (group 2) who had scores between 3.38 and 4.39, and between the 34th and 65th percentile, while the high mindfulness (group 3) consisted of the 42 individuals who obtained a score of 4.40 or higher, and at or above the 66th percentile.

The MANOVA using 3 levels of mindfulness as the independent variable with the group of all other dependent variables (PSS, RATCOP, DETCOP, EMCOP, AVCOP, and Drinking) showed a significant effect, F (2, 127) = 6.34, $p < .01$. Univariate analyses were then conducted to identify which of the dependent variables were influenced by level of mindfulness. Using mindfulness as the independent variable, significant effects were found with all variables (PSS, RATCOP, DETCOP, EMCOP, AVCOP), with the exception of drinking (see Table 5). These results thus indicate that the level of

Table 4

Correlation Matrix for Hypotheses Variables (N = 135)

	Drinks/wk	PSS	MAAS	RATCOP	DETCOP	EMOCOP	AVCOP
Drinks/wk	1.00	.060	-.107	-.219*	-.096	.055	.002
PSS		1.00	-.222*	.186*	-.101	.151	-.014
MAAS			1.00	.239*	.162	-.486**	-.508**
RATCOP				1.00	.683**	-.513**	-.224**
DETCOP					1.00	-.449**	.033
EMCOP						1.00	.487**
AVCOP							1.00

Note: Drinks/wk = Number of alcoholic drinks consumed per week, PSS = Perceived Stress Score (Cohen, Kamarck, & Mermelstein, 1983), MAAS = Mindfulness Attention Awareness Scale (Brown & Ryan, 2003), RATCOP = Rational Coping, DETCOP = Detached Coping, EMOCOP = Emotional Coping, AVCOP = Avoidant Coping, RATCOP, DETCOP, EMOCOP, AVCOP = Coping Styles Questionnaire (Roger, et al., 1993)
*p = < .05. **p < .01.

mindfulness is, as predicted, related to levels of perceived stress, and to various styles of coping, such as rational, detached, emotional, and avoidant.

To identify specific differences in comparing the three levels of mindfulness on the dependent variables, Tukey's post hoc comparison tests were conducted with perceived stress, drinking, rational coping, detached coping, emotional coping, and avoidant coping (see Table 5 for details). The results suggest that levels of mindfulness are associated to levels of perceived stress and coping styles. As predicted, there is a significant difference between individuals with low mindfulness and high mindfulness in regards to perceived stress. With rational and detached coping, significant differences were found between the low mindfulness and high mindfulness groups and the medium and high mindfulness. The high mindfulness group is a significant factor compared with emotional coping when comparing low versus high mindfulness and medium versus high, however not so with the low versus medium group. All levels of mindfulness were significant when compared with avoidant coping.

Table 3 outlines the drinking behaviour reported in the current sample categorized based on that of Adlaf et al's (2005) Canadian Campus Survey. Table 7 presents the details of the reported reasons for engaging in alcohol consumption in the current study. Important to note is that participants rated social aspects of drinking most often as the top reason for engaging in alcohol consumption.

Table 5

Results of Univariate Analyses using MAAS as the Independent variable and all other major variables as dependent variables

MAAS	F	df	sig
PSS	15.92	2, 127	.000**
RATCOP	9.47	2, 127	.000**
DETCOP	4.86	2, 127	.009**
EMCOP	19.16	2, 127	.000**
AVCOP	21.19	2, 127	.000**
Drinking	.67	2, 127	.512

Note: PSS = Perceived Stress Score (Cohen, Kamarck, & Mermelstein, 1983), MAAS = Mindfulness Attention Awareness Scale (Brown & Ryan, 2003), RATCOP = Rational Coping, DETCOP = Detached Coping, EMOCOP = Emotional Coping, AVCOP = Avoidant Coping, RATCOP, DETCOP, EMOCOP, AVCOP = Coping Styles Questionnaire (Roger, et al., 1993).
*p = < .05. **p < .01.

Table 6

Results of post hoc tests of Mindfulness, grouped by levels, with dependent variables

	Mean	Group Comparison	Expected direction Yes = Y No = N	sig
PSS				
1	2.05	2	Y	.001**
2	1.59	3	N	.196
3	1.38	1	Y	.000**
RATCOP				
1	1.52	2	N	.935
2	1.49	3	Y	.000**
3	1.85	1	Y	.001**
DETCOP				
1	1.12	2	N	.955
2	1.09	3	Y	.014*
3	1.36	1	Y	.031*
EMCOP				
1	1.24	2	Y	.143
2	1.06	3	Y	.000**
3	.65	1	Y	.000**
AVCOP				
1	1.47	2	Y	.029*
2	1.28	3	Y	.000**
3	.99	1	Y	.000**
Drinking				
1	7.25	2	N	.993
2	7.43	3	Y	.542
3	5.69	1	Y	.611

Note: 1 = Low Mindfulness (n = 44), 2 = Medium Mindfulness (n = 44), 3 = High Mindfulness (n = 42); RATCOP = Rational Coping, DETCOP = Detached Coping, EMCOP = Emotional Coping, AVCOP = Avoidant Coping (RATCOP, DETCOP, EMOCOP, AVCOP = Coping Styles Questionnaire (Roger, et al., 1993). *p = < .05. **p < .01.

Table 7

Frequency rates of participants' responses to reasons for alcohol consumption

Reasons	Ranking								
	1	2	3	4	5	6	7	8	9
To be sociable	56	16	10	4	4	1	1		
To add enjoyment to a meal	2	5	7	8	5	17	14	22	1
To help me relax	5	9	14	17	20	11	8	1	
To forget my worries	6	7	8	6	10	15	15	15	1
To feel less inhibited or shy	7	23	15	13	11	7	7	2	1
To get high or drunk	8	16	18	10	10	7	3	12	2
To celebrate	19	21	23	8	6	6	6	1	
To enjoy taste	2	6	10	12	9	11	17	10	1
Other	1		3	3	1		1		43

Note: Reasons for alcohol consumption presented in the current study are based on those used in Adlaf et al's (2005) Canadian Campus Survey.

2) *Regression*

Having confirmed the important role of mindfulness in relation to perceived stress and coping styles using the multivariate and univariate analyses, regression analyses were completed using mindfulness as the independent variable in order to ascertain whether knowledge of levels of perceived stress and particular styles of coping (RATCOP, DETCOP, EMCOP and AVCOP) can predict level of mindfulness. Using a Stepwise method, as it incorporates only variables that have a significant contribution to the regression equation, results showed that AVCOP alone explains 24.3% of the variance of mindfulness scores, and was significant, F (1, 128) = 42.42, $p < .001$. Adding PSS scores to AVCOP showed a significant increase in R^2, with an additional 13.9% of the variance of mindfulness scores, F (2, 127) = 40.83, $p < .001$.

Given that sex was a significant factor in the MANOVA analyses, linear regressions were executed for females and males separately in order to identify any differences in patterns between sexes in predicting mindfulness scores. Using a Stepwise method, with mindfulness as the dependent variable and examining only females' scores, EMCOP, AVCOP and PSS explained 38.4% of the variance of mindfulness scores, and was significant, F (3, 84) = 19.08, $p < .01$. Using males' scores on mindfulness, a Stepwise method was conducted for a regression and revealed AVCOP as predicting 32.5% of the variance in mindfulness scores, a significant result, F (1, 41) = 21.24, $p < .01$. A significant increase in R^2 was found with the inclusion of PSS scores, with an additional 9.9% of variance of mindfulness scores, F (2, 40) = 16.45, $p < .01$. These separate analyses by sex suggest differences in the prediction path of mindfulness scores where EMCOP is a significant predictor for females alone.

Discussion

The statistical analyses presented here revealed significant relationships between mindfulness and rational coping, and significant negative relationships with maladaptive coping styles, as in emotional and avoidant coping, and perceived stress. While not reaching significance, results also indicated a relationship in the expected direction between mindfulness and detached coping. These findings thus provide support for the conceptualization of mindfulness as in opposition to autopilot, with which individuals cope more reactively and less adaptively. Moreover, these findings corroborate Brown and Ryan's contention (2003) that enhanced mindfulness may allow individuals to act more congruently in their environments, hence, are better able to meet their needs and act consistently with their values, and experience less stress as a result. Additionally, the present findings may bolster Shapiro et al's (2005) theory of reperceiving as a core component to mindfulness, a concept that speaks to cognitive, emotional and behavioural flexibility, which is certainly important for adaptive coping.

The results of this study further reinforce the proposition that mindfulness may enhance resilience to stress given the finding that individuals with a high level of mindfulness scored significantly lower on the PSS. The role of mindfulness in recovering from stress was demonstrated in Goleman's (1988) study where meditators showed faster recovery after watching a distressful video. The present results may provide additional insight into the way in which mindfulness may affect how one perceives his or her experience of personal control and stress.

Levels of Mindfulness

Results of the post hoc analyses were helpful in identifying differences between individuals based on their level of mindfulness (e.g., grouped in either low, medium, or high mindfulness, see Table 6). With regard to perceived stress, significant differences were found only between the low mindfulness group and both medium and high mindfulness groups, but not between medium and high. These results suggest that perhaps there is little difference between medium and high mindfulness with respect to one's level of perceived personal control and the extent to which one experiences stress. Important to note here is the possibility that low mindfulness is a potential indicator of risk for perceived stress.

Level of mindfulness with rational, detached and emotional coping showed a similar pattern in post hoc analyses, namely, significant differences between medium and high and high and low mindfulness, but not between low and medium. This pattern between the medium and high mindfulness groups suggests a notable difference between those in the medium or high mindfulness group, while less so between low and medium mindfulness groups. While these results were in the expected direction for mindfulness and emotional coping, the failure to detect significant differences between low and medium mindfulness groups found in rational and detached coping was not anticipated. It appears that there may be little difference whether one is grouped in low or medium mindfulness in regard to maladaptive coping, and that in using adaptive coping styles, such as rational and detached coping, a higher level of mindfulness is necessary to influence one's experiencing.

Post hoc results with avoidant coping were all in the expected direction, with individuals who are more mindful reporting that they engage in less avoidant coping, which is congruent with the conceptualization of mindfulness as in opposition avoiding one's experiences (Brown & Ryan, 2003; Kabat-Zinn, 1990).

Mindfulness and Drinking

Though the statistical analyses did not reveal a significant relationship between level of mindfulness and drinking behaviour, the direction of the findings suggested that those who were higher on the MAAS engaged in less heavy drinking, a relationship that was initially hypothesized. An interesting outcome in this regard, however, was a significant relationship between rational coping and number of drinks per week. This suggests that those who engage in a rational coping style, which is considered adaptive, are engaging in less heavy drinking. Given that mindfulness is positively associated with adaptive coping styles (rational and detached coping), it may be that further research will better elucidate a relationship between mindfulness, detached coping and drinking behaviour.

Important to note is the variation in drinking behaviour in the present sample from that of Adlaf et al's (2005) that comprised 6,292 university undergraduates in the Canadian Campus Survey. In their study, for instance, they found 9.9% of the sample classified as abstainers, compared with 29.2% in the current sample. Differences in drinking behaviour between the current sample and that of the Canadian Campus Survey are found in Table 3. Most striking is the bimodal distribution representative of the notable high number of abstainers and heavy-frequent drinkers in the current study (see Figure 1). Thus, the lack of significant findings with respect to mindfulness and drinking

behaviour may be due to the unique pattern of drinking behaviours of the current sample. Further research is needed to clarify this potential explanation.

Though findings from the current study fail to elucidate questions about student drinking behaviour and mindfulness, the four criteria of Marlatt et al's (2004) study of the probability of drinking behaviour (which is based on their research of mindfulness and addiction) were successfully measured. These criteria are: perceived stress and degree of perceived personal control (measured by the PSS), availability of "adequate" coping response (assessed with the CSQ), and availability of alcohol. With regard to the availability of alcohol, the mean age of the current sample was 18 years, which is under the legal drinking age for Ontario. Considering the number of students under 18 who report drinking alcohol, availability of alcohol is, therefore, high among this population.

Furthermore, Marlatt et al (2004) contend that individuals' choices to use alcohol to cope with negative stressors is likely tied to their expectations about the effectiveness of alcohol as a coping response. Indeed, studies with university students have shown that students endorse the use of substances to cope with stress (McCormack, 1991). Given that individuals will choose a method of coping that reduces negative affect, as in Self-medication theory (Khantzian, 1985), and the apparent ease with which students under the legal age to consume alcohol can access alcohol, it is not surprising to find the high levels of drinking behaviour reported in the current sample, and the use of alcohol to cope with stress associated with the transition to university.

It is important to note that Marlatt et al.'s (2004) research in mindfulness is based on treatment of clinical addiction, where mindfulness is proposed as a satisfying replacement to addictive behaviour through meditation as a "form of

counterconditioning" in "urge surfing" (p. 269), in which individuals are able to identify cravings and watch them pass without acting on them. Given that the current sample consists of university students, hence, not a clinical sample, the benefit of mindfulness as a treatment of "urge surfing" is not generalizable. In fact, according to Jessor's (1991) Problem-Behaviour Theory, the drinking behaviour demonstrated by the current sample may not be maladaptive; rather it may be functional, purposive, instrumental and goal-directed. In the context of the transition to university and the social environment in university residence, it may be that a level of alcohol consumption is adaptive. In light of the finding that social aspects were ranked as the top reason participants engaged in drinking (see Table 7), it may be that social norms around drinking among university students in residence are a factor in investigations connecting drinking behaviour, mindfulness and coping. Thus, further research is needed in order to clarify whether mindfulness may be a beneficial alternate coping behaviour to drinking among a university population.

Gender Considerations

The significant effect for sex revealed in a MANOVA suggests differences in coping styles of males and females. The appearance of emotional coping as a predictor for females and not males in regression analyses further demonstrates this difference. Examination of these differences is necessary, however, as additional factors may be in need of consideration, such as conceptual formation or differences in gender socialization. For instance, while in Rogers et al's (1993) CSQ emotional coping is deemed maladaptive, emotion-focused coping as outlined in Folkman and Lazarus's (1984) Ways of Coping Checklist (WCCL) is not construed as such. In the WCCL,

emotion-focused coping, which entails acceptance and emotion regulation, is incorporated when a stressful situation is thought to be unchangeable, while the alternate coping style, problem-focused coping, is deemed useful when a situation is considered alterable. In this conceptualization of coping, both emotion-focused and problem-focused may be adaptive.

Interesting revisions of the WCCL indicate that emotion-focused coping is reliably factored into 4 separate factors: Seeks Social Support, Blamed Self, Wishful Thinking, and Avoidance (Vitaliano, Russo, Carr, Maiuro, & Becker, 1985). This construct classification is important when comparing emotional coping in the CSQ, as the CSQ includes items that resemble several of those in the WCCL that entail Avoidance and Blamed Self (e.g., 'Keep thinking it over in the hope it will go away', 'Feel that no-one understands', and 'Avoid family and friends in general'). Only one item in the CSQ appears similar to the WCCL's Seeks Social Support: 'Look for sympathy and understanding from people'. This is important in that Seeks Social Support may be conceptualized as a positive coping strategy, which, in previous research has been found to be commonly used by females (Ptacek, Smith, & Dodge, 1994).

In the current study, females scored slightly higher on emotional coping than males; the conceptualization of emotional coping as maladaptive in standards outlined in the CSQ, yet adaptive in those of the WCCL, demands examination. Important here may be Gilligan's (1982) theory of moral development and Jordan's (1997) notions of mutuality and self-in-relation which suggest that females develop and interact foundationally different from men. Gilligan points to females' development as a moral ethic of care, thus, in pursuit of the benefit of relationships, while Jordan's self-in-relation

theory proposes that females grow and develop within relationships and not independently of them. Seeking support from others may, therefore, be construed as positive, and not maladaptive.

Further, items for emotional coping on the CSQ may be reflective of stereotypically 'feminine' traits and characteristics. For example, items 'Cry, or feel like crying', and 'Look for sympathy and understanding from people' are behaviours that are characteristically associated with females. Hence, the measures used in the current study may contribute to gender bias in the findings.

While some studies have shown that women do engage in more emotion-focused coping to a larger extent than men who use more problem-focused coping strategies, concluding that "men and women are socialized to cope with stress in different ways" (Ptacek & Dodge, 1994, p. 421), others have found differences in problems reported in daily life, with little difference between coping styles between men and women (Porter & Stone, 1995). Porter and Stone (1995) point to differences in type and appraisal of stressors and methodological issues as responsible for mixed results in previous research on differences in coping between men and women. Other authors, however, have suggested that women's coping through caring is reflective of their oppressed social position in society (Puka, 1994).

The differences in coping between females and males found in the current and aforementioned studies point to the need for continued research into alternate factors that impact differences in coping styles between females and males. For instance, the current findings may be clarified through research that attends to issues of power and the impacts

of oppression, and to the differences in appraisal and problems experienced by females compared with males.

Implications for Practice

The findings from the current study convey several practical implications for student development. Providing support for adaptive qualities of rational and detached styles of coping and their association with mindfulness, the current findings imply that the ability to remain aware of one's present moment experiencing is an adaptive approach for coping with stress, which may be particularly relevant during the transition to university.

Adjusting to university can be a particularly stressful time, as moving from adolescence to the demands and responsibilities in university can be challenging, particularly for students who live in residence and away from family. High rates of illicit drug, nicotine and alcohol use among university students (Adlaf, et al., 2005) may reflect students' reliance on these substances to cope through this difficult stage.

Alternate associations, however, may be the social aspects in residence life and frequency of students' alcohol consumption. For instance, in Adlaf et al's (2005) Canadian Campus Survey, rates of heavy-infrequent drinkers and heavy-frequent drinkers were 2.2% and 1.5% higher, respectively, among students who live in residence. Drinking behaviour is even lower among students who live off campus and with family, with 8.8% lower rates among heavy-infrequent drinkers and 4.3% lower for heavy-frequent drinkers. These findings suggest that drinking behaviour is more common among students adjusting to university who live in residence.

Theses high drinking rates may not necessarily identify solely negative coping and maladjustment, however, as, although students living away from parents in Jordyn and Byrd's (2003) study demonstrated increased problems, they showed increased use of direct, problem-focused coping and earlier establishment of adult identity. Other studies have shown that living in residence may lead to higher collective self-esteem, which is associated with adjustment to college (Bettencourt et al., 1999). Thus, further research is needed to clarify the relationship between residence living, drinking and coping styles.

The positive relationship shown in the present study between mindfulness and adaptive coping supports the potential for mindfulness to ameliorate individuals' physiological difficulties (Kabat-Zinn, 1990) and enhance one's psychological well-being (Baer, 2003). Further, the current findings endorse Shapiro et al.'s (2005) model of mindfulness (IAA) and Brown and Ryan's (2004) model of self-determination theory that propose health enhancing and stress-buffing features of mindfulness. That these results were found with a university student population adjusting to the transition to university (students completed the measures within the first three months of university), they adjoin the aims of previous studies that have shown that the practice of mindfulness can decrease stress in university students (Astin, 1997; Baer, 2003; Shapiro et al., 1998).

That mindfulness can be taught and enhanced through practice (Brown & Ryan, 2003; Kabat-Zinn, 1990) is particularly important in regard to practical applications of the current findings. Identifying that mindfulness is an adaptive approach to coping with stress holds important implications for counselling students who experience the transition to university as particularly stressful. Incorporating and teaching mindfulness techniques and practices to clients of university counselling centers may be an avenue for

counsellors working with this population, efforts of which are supported by the current findings.

Given the high rates of perceived stress in the current study, and in light of participants' completion of the measures in the first term of university, implications of the present findings point to the potential that mindfulness courses and instruction may best aid students sooner than later in their first year of university. Future studies assessing differences in perceived stress and coping styles in the second university term compared with the first term may shed light on students' adaptation to the transition to university, hence, the best time to offer instruction in mindfulness practice.

In addition, the implementation of mindfulness courses, currently offered at some Canadian universities, may benefit students living in residence as well as off campus by learning adaptive approaches to coping with stress. Previous studies have shown that learning mindfulness practice may lead to reduced stress and anxiety associated with academic demands (Astin, 1997; Baer, 2003, Shapiro et al., 1998), as well as general psychological difficulties (including depression), while enhancing positive states such as empathy and spirituality (Shapiro et al, 1998).

Strengths and Limitations

Strengths of the present study include the use of standardized measures and randomized selection of the sample, which allows for a level of rigor necessary to confidently draw conclusions about the relationships between the variables. In addition, the results from the current study can be compared with other university samples, and with Canadian populations in particular, which is also a benefit of the current study.

While the number of the final sample was sufficient, a larger number of participants may have elucidated conclusions, particularly with respect to relationships between drinking behaviour. The notable differences between drinking behaviour of the participants in the present study and that in the Canadian Campus Survey (Adlaf et al., 2005) suggest that there may be something particular about the current sample. For instance, the large numbers of abstainers and heavy-frequent drinkers in the current sample compared with that of the Canadian Campus Survey suggests that there may be something unique and unidentified about the current sample. Further research may be needed to increase understanding about abstainers; for example, are religious principles a factor in abstaining from alcohol? Alternatively, this pattern may reflect rigidity to this frequent behaviour among university student populations, which may be less adaptive than previously considered (Jessor, 1991; Jessor, Donovan, & Costa, 1991).

Additional limitations of the current study are that attention to mindfulness, perceived stress, coping styles and drinking may entail an omission of other factors that influenced the results. Finally, the distinctiveness of the sample in the current study results in an inability to generalize the findings outside of a university student population, and a resident student population in particular.

Summary and Conclusions

The results of the study demonstrated that, as predicted, mindfulness is positively associated with rational coping, and, though it did not reach significance, is related in the expected direction with detached coping. As such, conceptualizations of mindfulness as a practice or trait (Brown & Ryan, 2003) that positively enhances well-being and psychological health are supported. That mindfulness was significantly negatively related

with less adaptive coping styles, such as avoidant and emotional coping, is further evidence of the beneficial properties of mindfulness in reducing stress. Moreover, the association found in the analyses between lower perceived stress among those in the high and medium mindfulness group indicates the important relationship between mindfulness and stress.

As discussed above, these findings are particularly important for the university student population, which undergoes considerable stress during the often-difficult transition to university. While these results provide further support for our understanding of the psychological and therapeutic benefits of mindfulness, these findings bolster speculation around the potential for mindfulness to minimize perceptions of stress and maladaptive coping among students.

Directions for Future Research

Though the analyses provided useful information, future studies are needed to fill in the gaps that remain in the present findings. As mentioned above, research is needed to clarify the relationship between mindfulness and drinking among university students. Moreover, because drinking was not associated with perceived stress in the present study, the question remains, what is? Perhaps there is another pathway of variables or additional factors that need to be included in order to ascertain meaningful connections. A replication of this study with a different, perhaps larger sample may clarify these relationships. Further, as mentioned above, studies that clarify the relationship between gender and coping are needed.

Continued research may also uncover important factors in regard to development. For instance, there was little variation in age in the current sample, thus future studies

may seek to include samples that vary based on age and perhaps year in university. This design would perhaps elucidate differences between students based on developmental stage and course in adjustment to university. Moreover, comparison of samples of students who live in residence versus off campus in regard to coping, development and mindfulness may further our understanding of these relationships.

While pointing to the need for continued research to strengthen our understanding of mindfulness as it relates to stress and drinking among university students, the findings from the current study nonetheless illuminate important positive relationships between mindfulness and rational coping styles, and negative relationships with maladaptive coping styles, as in emotional and avoidant coping. These findings additionally bolster support for mindfulness as a state that may foster resilience against the negative impacts of stress, particular as it relates to the transition to university. The current study is, therefore, a positive contribution to the burgeoning research that conceptualizes mindfulness as a state and practice that may lead to improved health and psychological well being.

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Appendix A

Ethics Form

APPROVAL OF MEd THESIS PROPOSAL FORM A

If the proposed research does not involve human subjects or the direct use of their written records, video-tapes, recordings, tests, etc., this signature form, along with ONE copy of the research proposal should be delivered directly to the Graduate Education Office for final approval.	If the proposed research involves human subjects, this signature form, along with ONE copy of the research proposal and THREE copies of the Ethical Review Form must be submitted to the Graduate Education Office for final approval.

IT IS THE STUDENT'S RESPONSIBILITY TO PROVIDE A COPY OF THE RESEARCH PROPOSAL (INCLUDING REVISIONS) TO THE THESIS SUPERVISOR AND ALL MEMBERS OF THE ADVISORY COMMITTEE.

Student's Name: Angela Palmer

Field of Study: Counselling Psychology

TITLE OF THESIS: Mindfully Responding to Stress: Mindfulness and Coping Styles among University Students.

DOES THIS RESEARCH INVOLVE THE USE OF HUMAN SUBJECTS: YES ☑ NO ☐

Name of Thesis Supervisor: Susan Rodger

Name(s) of Members of the Thesis Advisory Committee: Anne Cawings

Alan Leschied

APPROVAL SIGNATURES:

Graduate Student: [signature]

Thesis Supervisor: [signature]

Advisory Committee: (at least one) [signature]

Ethical Review Clearance:

Review #: 0607-11 Date: July 25/06

Chair of Graduate Education: [signature] Date: 26 July 2006

A STUDENT MAY PROCEED WITH RESEARCH WHEN A COPY OF THIS FORM CONTAINING ALL APPROVAL SIGNATURES HAS BEEN RECEIVED.

A COPY OF THIS PROPOSAL WILL BE MADE PUBLIC AND KEPT ON A TWO-HOUR RESERVE IN THE FACULTY OF EDUCATION LIBRARY.

Appendix B

Letter of Information
Mindfully Responding to Stress: Mindfulness and Coping Styles among University Students

You have been selected to take part in a research study being conducted by a Master's student in Counselling Psychology at the Faculty of Education at the University of Western Ontario that is designed to measure first-year students' levels of mindfulness, stress, drinking behaviour and coping styles. By 'mindfulness' we mean awareness and acceptance of what is happening in the present moment in one's environment and internally (e.g., thoughts, feelings, and body sensations).

Students living in residence have been randomly selected to participate in this study (every student had an equal chance of receiving a questionnaire package). To participate in this research, you are invited to fill out the four questionnaires found in this package, as well as a few questions about demographical information. The questionnaires are designed to measure people's levels of perceived stress, ways of coping with stressful events, drinking behaviour and mindfulness. It will take approximately 30 minutes to complete all questionnaires.

If you choose to participate in this research, your name will not be required on any of the questionnaires; therefore, your participation in this research is completely anonymous. Any information provided in the questionnaires is for research purposes only. The completed questionnaires will be stored in a locked filing cabinet in a locked office at the Faculty of Education and will be kept for five years after the conclusion of the project. If you choose to complete and return the questionnaires, this will signify your consent to participate in the study. You do not give up any legal rights by choosing to participate in this research.

Participation in this research study is voluntary; you will not be paid to take part in this study. However, an entry-form is included in the research package for individuals who choose to take part in this study, and have their names entered into a draw to win a prize. If you would like your name to be entered into the draw, put the completed form in the small envelope provided and send it in separately from the completed questionnaire package. Mailing the small envelope separately ensures that the information provided in the questionnaires remains anonymous and cannot be linked with a research participant. The names of individuals who enter the draw will be known only to the researcher and will remain confidential, and will be destroyed once the winner is drawn and the prize is distributed. Please send in the self-addressed completed questionnaire package and entry-form no later than November 1, 2006. This letter of information is yours to keep.

Should you have any further questions regarding this study, please contact Angèle Palmer, student investigator, at apalme3@uwo.ca, or Dr. Susan Rodger, faculty supervisor, at srodger2@uwo.ca. If you have any questions about the conduct of the study or your rights as a participant you may contact The Director, Office of Research Ethics, University of Western Ontario at 519-661-3036 or by email at ethics@uwo.ca.

Thank you very much for your participation in this study.

Angèle Palmer Student Investigator	Susan Rodger Faculty Supervisor	Date

Appendix C

Demographic Information

Please answer the following questions by checking the box and/or filling in the answer that best describes you.

1. Sex

- ❑ Male
- ❑ Female

2. Age: _____

3. Ethnic background

- ❑ Asian
- ❑ Indo-Canadian
- ❑ African-Canadian
- ❑ Hispanic
- ❑ Caribbean-Canadian
- ❑ Euro-Canadian
- ❑ Metis
- ❑ First Nations
- ❑ Inuit
- ❑ Other: _____

4. Is English your first language?

- ❑ Yes
- ❑ No

Appendix D

Perceived Stress Scale

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate, *in the last month, how often* you felt or thought a certain way. For each question choose from the following alternatives:

|----------|----------|----------|----------|----------|

never almost never sometimes fairly often very often

0. never
1. almost never
2. sometimes
3. fairly often
4. very often

In the last month, how often have you ...

1. been upset because of something that happened unexpectedly?	0 1 2 3 4
2. felt that you were unable to control the important things in your life?	0 1 2 3 4
3. felt nervous and "stressed"?	0 1 2 3 4
4.[a] dealt successfully with irritating life hassles?	0 1 2 3 4
5.[a] felt that you were effectively coping with important changes that were occurring in your life?	0 1 2 3 4
6.[a] felt confident about your ability to handle your personal problems?	0 1 2 3 4
7.[a] felt that things were going your way?	0 1 2 3 4
8. found that you could not cope with all the things that you had to do?	0 1 2 3 4
9.[a] been able to control irritations in your life?	0 1 2 3 4
10.[a] felt that you were on top of things?	0 1 2 3 4
11. been angered because of things that happened that were outside of your control?	0 1 2 3 4
12. found yourself thinking about things that you have to accomplish?	0 1 2 3 4
13.[a] been able to control the way you spend your time?	0 1 2 3 4
14. felt difficulties were piling up so high that you could not overcome them?	0 1 2 3 4

[a] Reversed score

Appendix E

Coping Styles Questionnaire

Instructions: although people may react in different ways to different situations, we all tend to have a characteristic way of dealing with things that upset us. How would you describe the way you *typically* react to stress? Circle Always (A), Often (O), Sometimes (S), or Never (N) for each item below:

Always |----------|----------|----------| Never
Often Sometimes

1. Feel overpowered and at the mercy of the situation.	A	O	S	N
2. Work out a plan for dealing with what has happened.	A	O	S	N
3. See the situation for what it actually is and nothing more.	A	O	S	N
4. See the problem as something separate from myself so I can deal with it.	A	O	S	N
5. Become miserable or depressed.	A	O	S	N
6. Feel that no-one understands.	A	O	S	N
7. Stop doing hobbies or interests.	A	O	S	N
8. Do not see the problem or situation as a threat.	A	O	S	N
9. Try to find the positive side to the situation.	A	O	S	N
10. Become lonely or isolated.	A	O	S	N
11. Daydream about times in the past when things were better.	A	O	S	N
12. Take action to change things.	A	O	S	N
13. Have presence of mind when dealing with the problem or circumstances	A	O	S	N
14. Avoid family or friends in general.	A	O	S	N
15. Feel helpless – there's nothing you can do about it.	A	O	S	N
16. Try to find out more information to help make a decision about things.	A	O	S	N
17. Keep things to myself and not let others know how bad things are for me.	A	O	S	N
18. Think about how someone I respect would handle the situation and try to do the same.	A	O	S	N

19. Feel independent of circumstances.	A	O	S	N
20. Sit tight and hope it all goes away.	A	O	S	N
21. Take my frustrations out on the people closest to me.	A	O	S	N
22. 'Distance' myself so I don't have to make any decision about the situation.	A	O	S	N
23. Resolve the issue by not becoming identified with it.	A	O	S	N
24. Assess myself or the problem without getting emotional.	A	O	S	N
25. Cry, or feel like crying.	A	O	S	N
26. Try to see things from the other person's point of view.	A	O	S	N
27. Respond neutrally to the problem.	A	O	S	N
28. Pretend there's nothing the matter, even if people ask what's bothering me.	A	O	S	N
29. Get things into proportion – nothing is really that important.	A	O	S	N
30. Keep reminding myself about the good things about myself.	A	O	S	N
31. Feel that time will sort things out.	A	O	S	N
32. Feel completely clear-headed about the whole thing.	A	O	S	N
33. Try to keep a sense of humor – laugh at myself or the situation.	A	O	S	N
34. Keep thinking it over in the hope that it will go away.	A	O	S	N
35. Believe that I can cope with the most things with the minimum fuss.	A	O	S	N
36. Try not to let my heart rule my head.	A	O	S	N
37. Eat more (or less) than usual.	A	O	S	N
38. Daydream about things getting better in the future.	A	O	S	N
39. Try to find a logical way of explaining the problem.	A	O	S	N
40. Decide it's useless to get upset and just get on with things.	A	O	S	N
41. Feel worthless and unimportant.	A	O	S	N

42. Trust in fate – that things have a way of working out for the best.	A	O	S	N
43. Use my past experience to try to deal with the situation.	A	O	S	N
44. Try to forget the whole thing.	A	O	S	N
45. Just take nothing personally.	A	O	S	N
46. Become irritable or angry.	A	O	S	N
47. Just give the situation my full attention.	A	O	S	N
48. Just take one step at a time.	A	O	S	N
49. Criticize or blame myself.	A	O	S	N
50. Simply and quickly disregard all irrelevant information.	A	O	S	N
51. Pray that things will change.	A	O	S	N
52. Think or talk about the problem as if it did not belong to me.	A	O	S	N
53. Talk about it as little as possible.	A	O	S	N
54. Prepare myself for the worst possible outcome.	A	O	S	N
55. Feel completely calm in the face of adversity.	A	O	S	N
56. Look for sympathy and understanding from people.	A	O	S	N
57. See the thing as a challenge that must be met.	A	O	S	N
58. Be realistic in my approach to the situation.	A	O	S	N
59. Try to think about or do something else.	A	O	S	N
60. Do something that will make me feel better.	A	O	S	N

Appendix F

Drinking Behaviour Questionnaire

Please answer the following questions by marking a check for the response that best corresponds to your experience.
For the purpose of this questionnaire 1 drink = 1 341 ml (12 ounces) bottle of beer or cooler, 1 150 ml (5 ounces) glass of wine, 1 45 ml ($1^{1/2}$ ounces) liquor

1. Please estimate the number of alcoholic drinks you typically drink each week

(e.g., from Monday to Sunday): _____

_____ None (if you check here, go to the next questionnaire)

2. Please estimate the number of alcoholic drinks of alcohol that you typically drink on one occasion (e.g., a Friday or Saturday night). _____

3. Please indicate the number of times you drink on a weekly basis.

Less than once a week ____

Once a week ____

Twice a week ____

Three times a week ____

Four times a week ____

Five times a week ____

Six times a week ____

Everyday ____

4. Please rank order the most important reasons why you usually choose to drink alcohol (1 = most important, 2 = second most, 3 = third most, etc.).

To be sociable _____

To add to the enjoyment of a meal _____

To help me relax _____

To forget my worries _____

To feel less inhibited or shy _____

To get high or drunk _____

To celebrate _____

To enjoy the taste _____

Other _____

Appendix G

Mindfulness Attention Awareness Scale

Below is a collection of statements about your everyday experience. Using the scale below please mark a check in the box that corresponds with how frequently or infrequently you currently have each experience. Please answer according to what *really reflects* your experience rather than what you think your experience should be.

	Almost Always	Very frequently	Somewhat Frequently	Somewhat Infrequently	Very infrequently	Almost Never
1. I could be experiencing some emotion and not be conscious of it until some time later.						
2. I break or spill things because of carelessness, not paying attention, or thinking or something else.						
3. I find it difficult to stay focused on what's happening in the present.						
4. I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.						
5. I tend to not notice feelings of physical tension or discomfort until they really grab my attention.						
6. I forget a person's name almost as soon as I've been told it for the first time.						
7. It seems I am "running on automatic" without much awareness of what I'm doing.						
8. I rush through activities without being really attentive to them.						
9. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.						
10. I do jobs or tasks automatically, without being aware of what I'm doing.						
11. I find myself listening to someone with one ear, doing something else at the same time.						
12. I drive places on "automatic pilot" and then wonder why I went there.						
13. I find myself preoccupied with the future or the past.						
14. I find myself doing things without paying much attention.						
15. I snack without being aware that I'm eating.						