

2009

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**ARE WITTY PEOPLE HEALTHIER?
THE RELATIONSHIPS BETWEEN FACETS OF HUMOUR AND HEALTH**

(Spine title: ARE WITTY PEOPLE HEALTHIER?)

(Thesis format: Integrated-Article)

by

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Graduate Program in Psychology

**A thesis submitted in partial fulfillment
of the requirements for the degree of
Master of Science**

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THE UNIVERSITY OF WESTERN ONTARIO
SCHOOL OF GRADUATE AND POSTDOCTORAL STUDIES

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**Are Witty People Healthier?
The Relationships Between Facets of Humour and Health**

is accepted in partial fulfillment of the
requirements for the degree of
Master of Science

Date _____

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ABSTRACT

For decades, physicians, theorists, and members of the media have popularized the old adage that "laughter is the best medicine." Despite arguments for the beneficial effects of humour, the evidence relating humour and health is weak and inconsistent. Two understudied areas of research pertain to humour conceptualized as a creation ability (i.e., wittiness) and emotional temperament. Therefore, the purpose of this thesis was to investigate relationships between these humour dimensions (in addition to humour styles) and a series of mental health variables, illness symptoms, and health-related lifestyle behaviours. Two humour production activities and a variety of self-report questionnaires were completed by 215 university students. Correlation analyses indicated that playfulness was important for humour creation ability, but neither playfulness nor wittiness were important for mental health. Furthermore, the ability to be witty was related to general health, but overall, unrelated to lifestyle behaviours. These findings have implications for humour-health interventions.

Keywords: Humour Creation Ability, Wittiness, State-Trait Cheerfulness Inventory, Mental Health, Health-Related Lifestyle Behaviours, Health Habits.

ACKNOWLEDGEMENTS

"A teacher is a compass that activates the magnets of curiosity, knowledge, and wisdom in the pupils." (Ever Garrison)

First and foremost, I would like to thank my advisor, mentor, and teacher, Dr. Rod Martin, for his continued guidance, humour, patience, support, insightful conversations, and encouragement throughout the last two years.

I would also like to thank those who helped me collect my master's data: Taban Morshedizadeh, Sarah Kane, and Margaux Munro. Your assistance was greatly appreciated. In addition, I am especially grateful to those who spent many hours coding witty (and not so witty) responses: Simon Yalkezian, Joseph Margolick, Cristina Dovale, James Boylan, and Julia Rick.

My gratitude also goes to my friends for their help, advice, and company (especially during countless weekends and late nights working in our Westminster shared office space). A special thank you to Melanie Crutchley, Ellen Brown, and my father, Daniel Edwards, who read drafts and sections of my master's thesis and provided me with helpful suggestions and comments.

Finally, I would like to thank my family for their unconditional love and support. Daddy, Mummy, Hayley and Simon – you guys are the best fan club!

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CHAPTER ONE: General Introduction

Are Witty People Healthier?

The Relationships between Facets of Humour and Health

Claims that humour is good for one's health have been popularized by the media, journalists, and health care professionals for decades (Martin, 2007). Sense of humour is believed to beneficially influence a wide range of mental and physical health variables including stress levels, immunity from disease, pain tolerance, cardiac activity, and illness recovery (e.g., Campbell, Martin, & Ward, 2008; Martin & Lefcourt, 1983; Rotton & Shats, 1996). One of the first documented accounts of humour and healing came from Norman Cousins who claimed to cure himself from a painful arthritic disease using a combination of Vitamin C and belly laughter (Cousins, 1976; 1979). Although Cousins' testimonial is anecdotal and it is impossible to know the precise factors responsible for his recovery, Cousins' story inspired others to consider the therapeutic role of humour.

Extensive research has examined whether a connection exists between humour and health. However, sense of humour has many different aspects and these do not necessarily correlate with one another (e.g., Hehl & Ruch, 1985; Köhler & Ruch, 1996). There are a number of gaps within the humour and health literature especially with regard to which components of humour are most important for health. Therefore, in Study 1, sense of humour was systematically examined (using three different approaches) in connection with health-related lifestyle behaviours. In Study 2, the relationships between sense of humour conceptualized as a creation ability and a series of mental health variables were explored.

The term "health" is described as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity" (Preamble to the constitution of the World Health Organization, WHO, 1948). By definition, health is a multidimensional concept including mental (i.e., psychological) and physical aspects.

In the mental health field, various studies have indicated that humour can increase positive moods and reduce negative emotions (Moran, 1996; Neuhoff & Schaefer, 2002), can moderate the effects of stress (e.g., Martin & Lefcourt, 1983), and can reduce feelings of distress in interpersonal interactions (Manne et al., 2004). Other researchers have found positive correlations between a person's sense of humour, self-esteem, and strategic problem solving skills (Abel, 2002; Kuiper & Martin, 1993).

A number of studies have also investigated the impact of humour on physical health variables. With regard to immunity, these results have been inconsistent (e.g., Lambert & Lambert, 1995; Lefcourt, Davidson-Katz, & Kueneman, 1990). However, more controlled research on pain has tended to find humour-related analgesic effects (e.g., Rotton & Shats, 1996; Weaver & Zillman, 1994). Further studies have suggested that humour may provide some protection against heart disease (Clark, Seidler, & Miller, 2001), and symptoms of other illnesses (Dillon & Totten, 1989).

Another dimension of health is lifestyle behaviours. These refer to habitual behaviour patterns that impact health, either by reducing health risks (e.g., avoiding smoking) or by improving, maintaining or restoring one's health (e.g., healthy diet; Glanz & Maddock, 2002). In the last few decades, our society has seen a surge of interest in preventing death and disease through changes in health-related behaviours. However, a

study by Reeves and Rafferty (2005) found that only 3% of Americans are living a healthy lifestyle (as measured by their criteria).

Is there a link between health-related lifestyle behaviours and humour? On the one hand, one could hypothesize that people with a greater sense of humour, due to a generally optimistic outlook, may be more likely to participate in healthy behaviours. On the other hand, it is also possible that a more cheerful and nonserious view of the world may cause humorous people to engage in health compromising behaviours, because of a sense of immortality, invulnerability, and invincibility (Kerckänen, Kuiper, & Martin, 2004). The existing research on humour and health habits has demonstrated more support for the second hypothesis.

A study by Kerckänen et al. (2004) found that police officers who scored higher on sense of humour measures had greater rates of obesity, smoking, and risk for cardiovascular disease. Another study by Friedman and colleagues (1993) found that, relative to their less cheerful peers, more cheerful children (which included sense of humour) had higher mortality rates across the lifespan. A follow-up study revealed that the cheerful children grew up to consume more alcohol, smoke more cigarettes, and engage in more dangerous behaviours, than the less cheerful children (Martin et al., 2002). In summary, these studies suggest that a greater sense of humour could actually be a health risk factor by contributing to poorer health-related lifestyle behaviours.

However, the topic of humour and health habits has yet to be studied in a systematic way utilizing a sample of university students. For example, the limited research described above did not include a distinction in the humour measures between potentially beneficial and detrimental forms of humour, nor did these researchers explore humour

conceptualized as a creation ability in relation to health habits. As previously mentioned, it is important to consider that sense of humour has many different aspects and some aspects may be important for health, while others may be unimportant, or even detrimental.

Therefore, in addition to studying a number of different facets of humour in relation to health habits in Study 1, Study 2 aimed to add to the humour-health literature by focusing on humour creation ability in relation to mental health. This approach conceptualizes humour as an aptitude or skill to invent witty material and communicate humorous incongruities in ways that other people find funny, (Hehl & Ruch, 1985; Turner, 1980).

In this thesis, the terms humour creation ability, wittiness, and the ability to be funny, were used interchangeably. The word "wittiness" encapsulates the intentional and intellectual aspects of humour creation ability by suggesting that it involves "the power to evoke laughter by remarks showing verbal felicity... and swift perception especially of the incongruous" (Webster's Seventh New Collegiate Dictionary, 1967, p. 1025). In order to further understand how wittiness may relate to health, it is important to first consider what is involved in the process of humour creation.

How do People Create Humour?

The ability to produce witty material involves the mental manipulation of everyday ideas, objects, thoughts, and images in an incongruous and playful way (Martin, 2007). A number of theorists have posited that the perception of incongruity (i.e., the unexpected, illogical, exaggerated, unusual, etc.) is a basic foundation of humour and laughter. For example, Koestler coined the term *bisociation* to describe the activation of

two simultaneous, self-consistent, but incompatible frames of reference, a process that he viewed as central to humour creation ability (Koestler, 1964).

In addition to incongruity, humour requires a playful or nonserious frame of mind. Without the adoption of a frivolous or light-hearted state a person may be unable to find humour in surprising or unexpected ideas (e.g., Apter, 1991). Furthermore, in this frame of mind, contradictory concepts are most amusing and enjoyable (Martin, 2007).

Similar to humour creation ability, general creativity requires divergent and original thinking (Martin, 2007; O'Quin & Derks, 1997). In other words, as compared to when people engage in convergent thinking, a process which involves arriving at a single correct answer to a given prompt, the process of divergent thinking involves flexibly considering a number of different ideas in order to generate a range of creative and potentially novel solutions. One meta-analysis found that a moderate correlation ($r = .34$) existed between the ability to produce humour and a person's creativity, suggesting that wittier individuals are more creative in many areas of their lives (O'Quin & Derks). However, the processes of *bisociation* and incongruity, in conjunction with a playful frame of mind, indicate that the ability to be funny is also somewhat distinct from other aspects of creativity.

How might Humour Creation Ability be related to Health?

It is possible that the ability to perceive incongruity and to manipulate ideas in a playful manner may influence health by moderating the maladaptive consequences of stress. In other words, a humorous perspective may affect an individual's cognitive evaluation of a potentially threatening situation so that it is perceived as less threatening and more manageable (Kuiper, Martin, & Olinger, 1993; Lazarus & Folkman, 1984).

Such shifts in perspective may reduce the normally adverse effects of stress, protecting the cardiac and immune systems against strains and defending against negative thinking styles (Porterfield, 1987).

A basic assumption underlying the preceding mechanism is that persons who are skillful at humour creation will use this ability in their everyday lives when encountering potentially stressful situations. If this hypothesis is incorrect, a witty individual who encounters a stressful situation may not use humour to gain distance, perspective, or a sense of mastery. As such, humour creation ability by itself could be unrelated to health.

Measurement of Humour Creation Ability

In order to study individual differences in the ability to be funny, researchers have utilized divergent thinking and performance tasks. For example, the Cartoon Caption Task (CCT) requires participants to generate a series of humorous captions to a number of captionless cartoons (e.g., Babad, 1974; Köhler & Ruch, 1996). These captions are then rated for wittiness, and these scores are used as a measure of humour creation ability. The CCT is a common approach used in humour creation research. Therefore, for consistency with previous literature, this measure was also included in the current studies.

In addition to the CCT, a second measure of humour creation ability, the Frustration Situation Humour Creation Task (FSHCT), was devised for the present research. This task involves the creation of humorous responses to daily frustrating situations. The rationale for developing this measure was that it might assess the ability to create humour in contexts that are more directly relevant to the stress-coping hypothesis outlined above. Previous humour creation assessment tools, such as the CCT, may not be particularly applicable to the study of humour creation in a health-relevant context.

Therefore, by creating personally relevant mildly stressful daily hassles, the FSHCT was used to explore individuals' ability to be funny in a time of stress.

Previous research examining the relationship between humour creation ability and mental health has produced mixed results. Martin and Lefcourt (1983) found no simple correlations between humour creation ability, stressors, and mood disturbance, although they did find that humour creation ability significantly moderated the relationship between stressors and mood disturbance. In another study, Clabby (1980) found that humour creation ability was positively correlated with a measure of personal adjustment. The discrepancies in these preceding studies, in conjunction with the limited available research, make it difficult to conclude whether this humour facet correlates, in any significant manner, with well-being. Therefore, the research in Study 1 was undertaken to investigate the correlations between these two measures of humour creation ability (among other humour measures) and health-related lifestyle behaviours. In Study 2, humour creation ability was examined in relation to various mental health variables including anxiety, depression, stress, optimism, satisfaction with life, and self-esteem.

Humour as an Emotional Temperament: The State-Trait Cheerfulness Inventory (STCI-T)

In addition to further exploring humour creation ability in relation to health, the research presented in the current thesis examined humour conceptualized as an emotional temperament. Ruch, Köhler, and van Thriel (1997) proposed that *trait cheerfulness* (i.e., the habitual tendency to maintain a cheerful mood), *trait seriousness* (i.e., the tendency to act rationally and set specific goals) and *trait bad mood* (i.e., the tendency to experience sad and distressed moods) are three important factors that underlie the temperamental basis of humour. These personality characteristics are assessed using the trait form of the

State-Trait Cheerfulness Inventory (STCI-T; Ruch et al., 1997). Based on this conceptual framework, an individual with a high sense of humour would be someone with elevated scores on trait cheerfulness, and very low scores on trait bad mood and trait seriousness (indicating a tendency to be nonserious and playful).

Research using the STCI-T in relation to health is limited. One study found that cheerful individuals reported fewer psychosomatic complaints (Ruch & Köhler, 1999). A handful of other studies by Ruch (1997) noted that cheerfulness was able to moderate mood changes in response to unpleasant environments. However, no research has explored the other two STCI-T scales in relation to mood change, health habits, or mental health variables, other than mood. Therefore, in addition to the measures of humour creation ability, the present study investigated the STCI-T, as another way of assessing humour, and explored its relation to the health-related variables listed previously.

Humour Styles

The third facet of humour studied in this research was humour styles. Martin, Puhlik-Doris, Larsen, Gray, and Weir (2003) devised the Humor Styles Questionnaire (HSQ) in order to capture potentially beneficial (affiliative and self-enhancing) and detrimental (aggressive and self-defeating) uses of spontaneous humour in everyday life. The first of the humour styles, *Affiliative* humour, is characterized by witty comments used to enhance relationships. Next, *Self-enhancing* humour involves maintaining a humorous outlook on life. *Aggressive* humour refers to the tendency to use funny comments to criticize or manipulate others. Finally, *Self-defeating* humour consists of self-disparaging humour to make others laugh at the expense of one's own well-being.

Previous research examining humour styles and physical health has found that the presence of more adaptive styles, together with the absence of self-defeating humour, are important for general health (Greven, Charmorro-Premuzic, Arteche, & Furnham, 2008; Kazarian & Martin, 2004). With regard to mental health, articles have reported that greater use of self-enhancing humour with reduced use of self-defeating humour are important for emotional well-being (Dozois, Martin, & Bieling, in press; Martin et al., 2003). In addition, higher rates of affiliative humour with lower scores on aggressive humour were found to be valuable in the contexts of relationship maintenance and satisfaction (see Martin, 2007, for review).

However, the correlations between humour styles and health-related lifestyle behaviours have not previously been investigated. Furthermore, an interaction between humour styles and humour creation ability could result in increased prediction of mental health variables (beyond either facet alone). Particularly self-enhancing and self-defeating humour styles were examined in interactions with wittiness based on previous literature indicating that these styles are the most relevant to mental health variables (Martin, 2007). It is possible that wittiness may be important for mental health only when individuals score highly on these humour styles. More specifically, wittiness may be adaptive for individuals using a considerable amount of self-enhancing humour, but may be maladaptive for individuals scoring highly on self-defeating humour. However, wittiness may not affect well-being for those who self-report that they do not use much of any style of humour in their everyday lives. Therefore, the current research sought to explore these questions.

Based on the previous studies noting that humour styles significantly correlated with a number of mental health variables, examining interactions between the styles and humour creation ability in predicting well-being appeared to follow as a next step from current findings. However, research on humour and healthy lifestyle behaviours is so limited that it is unclear whether reliable relationships even exist among these topics. As a result, one goal of Study 1 was to explore whether correlations did indeed exist so that future researchers could consider the usefulness of examining interactions among humour styles and wittiness in predicting health habits.

The Current Studies

The present thesis is comprised of two studies utilizing the same sample of participants. Study 1 investigated the associations between the three approaches to measuring humour and health-related lifestyle behaviours, whereas Study 2 examined the correlations between these humour measures and mental health variables. The objectives of Study 1 included (1) the investigation of whether or not healthy lifestyle behaviours were related to several humour measures, and (2) the replication of previous published findings regarding the associations between humour, illness symptoms, and general health. The purposes of Study 2 were as follows: (1) the examination of correlations between humour creation ability and the STCI in relation to mental health, (2) the determination of whether an interaction between humour styles and humour creation ability could better predict mental health than either facet alone, and (3) the exploration of correlational patterns among the humour measures. In summary, the main purpose of the present research was to further investigate humour creation ability and health-related lifestyle behaviours (in association with humour measures).

While some research has provided evidence that certain aspects of humour may play an important role in mental and physical health (e.g., Rotton & Shats, 1996), other research has suggested that different aspects of humour may be unimportant or perhaps even detrimental for some components of health (e.g. Martin et al., 2003). Until now, humour creation ability has been understudied in the humour-health field. Furthermore humour styles, one of the more researched facets, have not been directly investigated in relation to health-related lifestyle behaviours. Therefore, the two studies described in this thesis were preliminary efforts to address correlations and interactions which have not been sufficiently explored in the currently available research.

The results of this research could have important implications for humour-based interventions. A number of current programs are designed to teach individuals to create humour with the expectation that enhanced health will follow (e.g., McGhee, 1999). However, empirical research is needed in order to identify which aspects or components of humour should be targeted in such humour training interventions. Consequently, the present thesis represents an initial attempt to investigate which aspects of humour (if any) are most important for physical health and psychological well-being.

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CHAPTER TWO

Study 1: Do Witty People Take Better Care of Their Health?

The Relationships between Sense of Humour and Health-Related Lifestyle Behaviours

The humour and health movement has a dedicated following. Significant media attention, web-based publicity, magazine articles, and even health care professionals promote and popularize the notion that humour is good for your health. For example, it is claimed that humour and laughter beneficially affect health through improvements in immune system functioning, blood circulation, pain threshold, cardiac conditioning, and the functioning of various body organs (e.g., Dillon & Totten, 1989; Fry, 1995; McGhee, 1999; Rotton & Shats, 1996; Weaver & Zillman, 1994). The well known case of Norman Cousins, who allegedly cured himself from a painful arthritic disease using daily belly laughter and Vitamin C, stimulated contemporary beliefs about the therapeutic role of humour (Cousins, 1976; 1979).

Cousins' story is extensively referenced as evidence for the medicinal benefits of humour on physical health and came at a time when the Western world was becoming increasingly interested in alternative medicine (Martin, 2007). This interest resulted in numerous experiments investigating the roles of humour and laughter. Many of these previous studies have focused on the hypothesized physiological mechanisms to explain the impact of humour on health (Martin, 2007). For example, some researchers have suggested that humour might influence health through the effects of laughter on muscular and respiratory activity, the cardiovascular system, and biochemical processes throughout the body (for review see Martin). Experimental research provides some support for positive effects (particularly analgesic ones) of humour (often induced through comedy

videotapes). However, it has been noted that some of these studies, especially those in the immunity area, contain numerous methodology problems (Martin, 2007). Similarly, conclusions from correlational research which examined sense of humour and general indicators of physical health are inconsistent, often exaggerated, and may lack substantial foundation (e.g., Fry, 1995; Ruch & Köhler, 1999).

Another potential link, apart from the hypothesized physiological mechanism, by which humour can impact health is through the facilitation and improvement of health-related lifestyle behaviours (Martin, 2007). These refer to habitual behaviour patterns that impact health, either by reducing health risks (e.g., practicing safe sex) or by promoting, maintaining, or restoring health (e.g., through regular exercise; Glanz & Maddock, 2002). Very few researchers have taken the approach of exploring humour and health habits. Therefore, the focus of the current study was to investigate, in more detail, the relationships between sense of humour (using several measures and conceptualizations) and a range of health-related lifestyle behaviours (including helmet/seatbelt use, safe sex practices, weight loss behaviours, drug use, diet, and exercise habits). Measures of general health and illness symptoms were also included in order to permit comparison with previous research on humour and physical health illness symptoms.

Why is it Important to Study Health-Related Lifestyle Behaviours in College Students?

In the last few decades, our society has seen a surge of interest in the prevention of death and disease through changes in health behaviours. A 2006 World Cancer Research Fund (WCRF) report found that the avoidance of smoking and the adoption of improved diet, exercise habits, and weight control behaviours could prevent almost one third of the most common cancers. However, a study by Reeves and Rafferty (2005),

using survey data from over 153,000 adults, found that only 3% of Americans actually live a healthy lifestyle (according to their criteria).

The college years represent an ideal period for the education of large numbers of young adults about relatively simple behaviour changes that can have major and sustained impacts on health and wellness (Sax, 1997). However, based on the results of Reeves and Rafferty (2005), education of the general population is falling far short of this desired goal.

How could Sense of Humour potentially affect Health-Related Lifestyle Behaviours?

On the one hand, one might speculate that individuals with a sense of humour, due to a generally optimistic and cheerful outlook on life, will be more likely to engage in healthy behaviours and will also be more likely refrain from unhealthy habits. However, on the other hand, one could also theorize that the more upbeat and nonserious outlook of humorous individuals causes them to engage in greater risk-taking and health compromising behaviours, due to a perception of immortality, invulnerability, and invincibility (Kerckänen, Kuiper, & Martin, 2004). If a sense of humour involves not taking things seriously, then people with a sense of humour might not take threats to their health very seriously either. The limited research on humour and associated health habits has demonstrated more support for the second line of reasoning than the first.

Interestingly, although humour is generally viewed as beneficial for health, in the specific domain of health-related lifestyle behaviours, it may actually be detrimental.

Research on Humour and Health-Related Lifestyle Behaviours

Three publications thus far have relevance to the question of how humour might

relate to healthy lifestyle behaviours. First, a study by Kerkkänen et al. (2004) found that Finnish police officers who scored higher on some subscales of the Multidimensional Sense of Humor Scale had greater rates of obesity, smoking, and risk for cardiovascular disease, a result which suggests that there is an association between humour and a less healthy lifestyle. The second study reported data from the well-known Terman Life-Cycle Study, which followed a group of 1,528 children throughout their lifetime. In this research, Friedman and colleagues (1993) found that children who, at the age of 12, had been rated by their parents and teachers as more cheerful (i.e., greater sense of humour and higher levels of cheerfulness/optimism), actually died at a younger age in ensuing decades than did other children who were rated as less cheerful. To further explore this surprising finding, Martin and colleagues (2002) conducted analyses on the same data set, and found that more cheerful children also grew up to have greater alcohol consumption, tobacco usage, and more dangerous hobbies than less cheerful children.

Taken together, these research findings suggest that humorous individuals, based on their generally playful approach to life, are less likely to take health risks seriously, underestimate the dangers associated with health compromising behaviours, fail to engage in safety precautions, and/or neglect physician recommendations. In other words, a greater sense of humour may actually be considered a risk factor, at least with regard to health-related lifestyle behaviours.

Martin and colleagues' (2002) findings also revealed an association between childhood cheerfulness and extraversion in adulthood which could offer a potential explanation for the relationship between humour and unhealthy habits. Previous studies have indicated that extraversion is correlated both with sense of humour (Mobbs, Hagan,

Azim, Menon, & Reiss, 2005; Ruch & Deckers, 1993) and with unhealthy activities, such as alcohol consumption, smoking, and overeating (Cook, Young, Taylor, & Bedford, 1998; Haellstroem & Noppa, 1981; Patton, Barnes, and Murray, 1993).

These existing studies have some limitations. The humour measures employed by Friedman et al. (1993), Kerkkänen et al. (2004), and Martin et al. (2002) assumed that sense of humour is beneficial for health. Recent research has suggested, however, that humour is used in both adaptive and maladaptive ways (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). Furthermore, other facets of humour need to be addressed, using different measurement approaches, in order to more systematically and rigorously investigate the relationships between humour and health-related lifestyle behaviours. Additionally, these studies examined only a narrow range of health habits. Therefore, the present investigation was designed to address each of these limitations by including several different measures of sense of humour in conjunction with a widely used survey for assessing health behaviours.

Humour Styles

As previously stated, earlier research examining humour and health habits did not distinguish between potentially beneficial and detrimental uses of humour. This distinction may further clarify relationships between humour and a healthy lifestyle. Perhaps unhealthy lifestyle is particularly associated with unhealthy humour styles. The Humor Styles Questionnaire (HSQ) is a self-report measure that attempts to systematically capture potentially beneficial (affiliative and self-enhancing) and detrimental (aggressive and self-defeating) uses of spontaneous humour in everyday life (Martin et al., 2003).

The first of the humour styles, *Affiliative* humour, is characterized by funny comments used to enhance relationships and reduce potential conflicts. Next, *Self-enhancing* humour involves maintaining a humorous outlook on life, especially in times of stress. *Aggressive* humour refers to the tendency to use funny comments to make disparaging judgments and remarks towards others (e.g., teasing). Finally, *Self-defeating* humour consists of markedly self-disparaging humour to entertain others and make them laugh at one's own expense (Martin, 2007; Martin et al., 2003).

Correlations between the HSQ and measures of mental health and personality traits support the idea that the four different humour styles are distinct dimensions (i.e., minimally correlated with each other and differentially related to mental health; Martin et al., 2003). Although no previous research has examined the HSQ in relation to healthy lifestyle behaviours, two recent studies looked at the associations between humour styles and general health in university students.

Greven, Charmorro-Premuzic, Arteché and Furnham (2008) found that affiliative and self-enhancing humour were positively correlated with higher levels of self-rated general health, whereas self-defeating humour was negatively correlated with this health measure. Aggressive humour had no direct relationship with general health ($N = 1038$). In the second study, Kazarian and Martin (2004) noted that that self-enhancing humour was positively correlated with perceived general health, but they found no significant correlations for any of the other humour styles ($N = 401$). These findings indicated that humour styles relate differentially to perceived general health. It is also possible that they correlate in unique ways with health habits.

Humour Creation Ability

The second approach to humour conceptualization used in this study involved an understudied aspect in the humour and health literature, namely humour creation ability. This facet is defined as the capacity to perceive humorous incongruities in situations, and then to create and communicate witty material in ways that others will find funny (Hehl & Ruch, 1985; Martin, 2007; Turner, 1980). One manner in which the ability to create humour may be either advantageous or disadvantageous for health is by way of a pathway involving cognitive shifts in perspective.

More specifically, the ability to be funny may be adaptive in allowing an individual to remain calm in a stressful situation (e.g., "The situation isn't as bad as it looks. I will be okay"). However, humour creation ability may be maladaptive when facilitating these same cognitions for a drug user or an overeater (e.g., "This isn't so serious. I will be okay"). A third possibility is that the ability to create humour is unrelated to health, if a person does not use this ability to actually be funny in daily life.

Consistent with the third assertion, Rotton (1992) conducted a series of four studies examining the cause of death of famous humorists, non-comedy entertainers (e.g., actors), and others (e.g., politicians) using obituaries from a ten year period. Rotton's findings indicated that humour creation ability did not increase longevity, suggesting that humour creation may not necessarily be related to healthier habits.

Previous studies often measured humour creation ability using the cartoon caption task (CCT) in which participants are instructed to generate funny captions for captionless cartoons (e.g., Babad, 1974; Köhler & Ruch, 1996; Turner, 1980). These captions are then rated for wittiness by the researchers, and these scores are used as an index of

humour creation ability. Although the CCT is the most commonly employed measure in research on humour creation ability, it is not necessarily relevant to an individual's skill at being funny in a mental health context. Therefore, the current study used the CCT for consistency with past research, but also included a novel task comprised of common frustrating situations (devised for the present study). The goal in developing this measure was to specifically assess individual differences in the ability to create humour to facilitate coping with everyday, personally relevant stressors.

Humour as an Emotional Temperament

The third method of conceptualizing sense of humour in this study was to treat it as a temperament trait. In this approach, a good sense of humour is seen as comprising a nonserious and playful attitude, along with a habitually cheerful and non-dysphoric mood. Relatively stable individual differences in this facet of sense of humour are measured using the trait form of the State-Trait Cheerfulness Inventory (STCI-T), consisting of three subscales (Ruch, Köhler, & van Thriel, 1996). The first of these subscales, *trait cheerfulness*, evaluates the presence of a generally cheerful mood accompanied by laughter and smiling. The second subscale, *trait seriousness*, is the inverse of playfulness and assesses the tendency to set specific goals and to act in a rational manner. Finally, the third subscale, *trait bad mood*, measures the occurrence of sadness, despair, and distressed moods in conjunction with a grumpy or grouchy interactional style, especially at times when others may be cheerful (Ruch & Köhler, 1998; 1999).

Trait bad mood is closely related to the personality dimension of neuroticism. Both concepts capture an affective personality disposition toward the experience of

negative emotions, such as anxiety or depression (Watson & Pennebaker, 1989). Unlike trait bad mood and trait cheerfulness, the trait seriousness subscale has less of an emotion (or affective) focus and more of a cognitive emphasis (Ruch & Köhler, 1999), referring to a habitual frame of mind or attitude toward life. Based on the STCI-T conceptual framework, a high sense of humour would be indicated by elevated scores on the trait cheerfulness scale and low scores on the trait seriousness and trait bad mood scales.

Very little research has examined associations between humour defined as a temperament trait and physical health variables. Ruch and Köhler (1999) found that more cheerful individuals reported fewer psychosomatic complaints in comparison to less cheerful individuals. Trait seriousness and trait bad mood have not been previously studied in relation to health symptoms, nor have associations between the STCI-T and health-related lifestyle behaviours.

It is possible that individuals who score highly on trait seriousness more reliably estimate the dangers associated with health compromising behaviours. Their tendency to plan ahead, combined with a rational frame of mind (Ruch & Köhler, 1998), may make it easier to schedule beneficial activities (e.g., exercise) into their lives and to choose healthier behaviours. If this is the case, then a greater sense of humour (defined as low seriousness) would be associated with a less healthy lifestyle. On the other hand, based on findings of a World Health Organization study (Moussavi et al., 2007) that depression is a significant predictor of poorer health, one might expect that trait bad mood (characterized as grumpy, grouchy, and distressed) relates to poorer health, whereas trait cheerfulness relates to better health, due, in part, to lifestyle behaviours. In that case, a

greater sense of humour (defined as low bad mood and high cheerfulness) would be associated with a healthier lifestyle.

In summary, the central research question addressed in the present study was to what extent health-related lifestyle behaviours, in a sample of university students, are related to several different measures of sense of humour. Secondly, correlations between humour and illness symptoms and between humour and ratings of perceived health were examined for consistency with previous literature. Young adults are an important population to study because the transition from adolescence to early adulthood is when most individuals initially establish a relatively stable pattern of life-long health behaviours (Sax, 1997). Research has clearly illustrated the benefits of engaging in a healthy lifestyle for the prevention of chronic risk factors and the reduction of morbidity and mortality rates (e.g., Reeves & Rafferty, 2005; Sax; WCRF, 2006). Therefore, the results of the current study have implications for education, health promotion, and humour-based interventions by suggesting a focus on those aspects of humour which most strongly correlate with healthier lifestyles.

Method

Participants

The present sample was comprised of 215 first-year undergraduate students (92 males, 123 females) enrolled in an introductory psychology course at The University of Western Ontario. Participants were recruited through the department research participant pool and were compensated with one research credit toward their psychology course. The mean age of participants was 18.58 years ($SD = 1.99$). Of the 215 participants, 71.6% identified themselves as European Canadian, 14% as Asian Canadian, 4.7% as South

Asian Canadian, 3.3% as African/Caribbean Canadian, 0.5% as Native Canadian, and 5.1% as members of another ethnicity. Eighty-one percent of participants were born in Canada and 81.9% indicated that English was their first language.

Materials

Demographics:

A brief demographic questionnaire was developed and administered to provide some general information about participants' age, gender, ethnicity, country of birth, and first language spoken.

Humour:

The Humor Styles Questionnaire (HSQ; Martin et al., 2003) examines four dimensions corresponding with individual differences in the spontaneous experience and expression of humour in everyday life. Self-enhancing humour (e.g., "If I am depressed I can usually cheer myself up with humour") and affiliative humour (e.g., "I laugh and joke a lot with my friends") are thought to be beneficial uses of humour. In contrast, aggressive humour (e.g., "If I don't like someone, I often use humor or teasing to put them down") and self-defeating humour (e.g., "I let people laugh at me or make fun at my expense more than I should") are thought to be negative and unhealthy humour styles. The HSQ consists of 32 items (four eight-item scales) rated on a 7-point Likert-type scale ranging from 1 (*totally disagree*) to 7 (*totally agree*).

Prior research has demonstrated that each subscale has good reliability (Martin et al., 2003). In addition, the HSQ has been validated by confirmatory factor analyses and through significant correlations between each of the subscales and theoretically predicted measures of humour, moods, self-esteem, and hostility (Dozois, Martin, & Bieling, in press; Martin, 2007; Martin et al., 2003). The internal consistency (coefficient alpha) for

the Afilliative, Self-enhancing, Aggressive and Self-defeating subscales in the present sample were .81, .84, .73, .79, respectively.

The State-Trait Cheerfulness Inventory (STCI-T; Ruch et al., 1996) is a 30-item self-report questionnaire that assesses individual differences in habitual behaviour patterns, attitudes, and moods. The STCI-T consists of three subscales and example items from each include: "I like to laugh and do it often" (*trait cheerfulness*); "In most situations, I initially see the serious aspect" (*trait seriousness*); and "When friends try to cheer me up by joking or fooling around, I sometimes become more morose and grumpy" (*trait bad mood*). Respondents indicate the extent to which they agree or disagree with each item using a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Previous studies utilizing the STCI-T (Ruch et al.; Ruch & Köhler, 1998) have demonstrated good validity for this measure. Internal consistency (coefficient alpha) for trait cheerfulness, trait seriousness, and trait bad mood in the current study were .84, .73, and .82, respectively.

The Cartoon Caption Task (CCT) required participants to generate funny captions in response to five captionless cartoons in a period of 10 minutes. The cartoons were selected from The New Yorker (2008) cartoon contest website (see Appendix A). Six volunteers (two male and four female) coded each caption attempt on a 4-point Likert-type scale designed to assess how funny the attempt was (see Appendix C). The scale ranged from 1 (*no incongruity or attempts to be funny*) to 4 (*extremely humorous attempt, considerable amounts of amusing incongruity*). Coders were blind to participant scores on the other measures. The mean rating score of all the responses of each participant on the CCT represented a measure of the quality (i.e., wittiness) of humour production, used

in subsequent analyses (Ruch & Köhler, 1998). Reliability (internal consistency) was calculated using the mean ratings of each of the six raters, averaging the responses of each participant, as equivalent to six items on a scale. Overall, reliability (coefficient alpha) among coders was .79.

The *Frustrating Situation Humour Creation Task* (FSHCT), designed specifically for the current study, involved short descriptions and illustrations of five potentially frustrating situations (see Appendix B). An example is "After spending the day shopping and running errands, you come out of the busy mall and can't remember where you parked your car." Participants were instructed to imagine that the frustrating situation had happened to them and then to consider how they would later recount the experience to a friend in as witty a way as possible. They were given 15 minutes to record as many funny statements as they could, pertaining to their feelings, reactions, or explanation of the situation. These responses were then rated for wittiness by the same six raters who rated the CCT (see Appendix C for the coding form). Like the CCT, the mean wittiness rating on the FSHCT provides a measure of the quality of humour production. Reliability was calculated for the FSHCT in the same way as the CCT. Similarly to the CCT, the reliability among coders for the FSHCT was strong at .80.

Health-Related Lifestyle Behaviours:

National College Health Assessment – Revised (NCHA-R; The American College Health Association, 2005) was developed to collect information about health habits, behaviours, and perceptions in college students. The questionnaire is time-consuming to complete and the measure was therefore revised to include only items of interest and relevance for the current study. For example, topics pertaining to mental health, credit

card debt, vaccinations received, health education on campuses, and abuse were removed, as the focus in the present study was on health behaviours (as well as general health and physical symptoms). The final modified measure consisted of 20 individual items pertaining to 10 broader question topics (see Appendix D).

An example item included "Considering your age, how would you describe your general physical health?" Higher scores indicated better general health. The next set of questions inquired about helmet, seatbelt, and substance use. Higher scores on these questions indicated a greater frequency of engaging in these behaviours.

The NCHA has been widely used and is recognized as a comprehensive health survey for research with college students. Based on a sample of over 10,000 college students, the American College Health Association (2005) reported Cronbach's alpha reliability estimates for drug-related behaviours as .75, for sex-related behaviours as .67, and for body weight as .62. This report also provided data indicating adequate construct and measurement validity.

Physical Health Symptoms:

Cohen-Hoberman Inventory of Physical Symptoms – Revised (CHIPS-R; Cohen & Hoberman, 1983) is a 33 item scale used to assess general health status and incidence of physical health symptoms experienced during the past month. Respondents indicate the frequency with which they have experienced any of the symptom items (such as dizziness, poor appetite, cold or cough) on a 5-point, Likert-type scale ranging from 0 (*never*) to 4 (*everyday*). A total score is created by summing responses across the items. Porterfield (1987) reported a coefficient alpha of .84 for a modified version of the CHIPS and Cohen and Hoberman indicated adequate reliability for the scale.

Procedure

The participants were tested in groups of 10 to 20. After reading a letter of information (see Appendix E) and signing an informed consent form (see Appendix F), they completed the CCT followed by the FSHCT. A package of self-report questionnaires was then administered to participants in randomized order. After completing the questionnaires, they were given a debriefing sheet describing the purpose of the study (see Appendix G). Any remaining questions that participants had were answered at this time. In total, the study took approximately one hour to complete.

Results

After eliminating items on the National College Health Assessment (NCHA-R) which were not relevant for the current study (see the method section for a more detailed explanation of what these items pertained to), the remaining items on the scale were factor analyzed. The purpose of this analysis was to reduce the number of variables on the revised NCHA to a more manageable number for further analyses. The principle components method with Varimax rotation was used in the statistical analysis.

An initial factor analysis revealed seven factors (using the Eigenvalue > 1 criterion). One of these was unclear and difficult to interpret, and another comprised only a single item by itself ("getting enough sleep to feel well rested"). Therefore, the sleep item was dropped from the analysis and a new factor analysis was computed forcing five factors. These five factors were supported by both Cattell's (1966) scree analysis and by eigenvalues greater than 1. Together, these factors accounted for 51% of the variance in NCHA-R responses (Factor 1 = 16%, Factor 2 = 12%, Factor 3 = 9%, Factor 4 = 8%, Factor 5 = 6%).

The first factor, labeled *Risk Avoidance*, contained items related to helmet and seatbelt use, condom use during oral, anal, and vaginal sex, use of emergency contraception (i.e., the morning after pill), and limited (or absent) consumption of tobacco (i.e., cigarettes), alcohol, and marijuana. The second factor consisted of three items (eating fruits and vegetables, aerobic exercise, and exercise to strengthen or tone muscles) and was labeled *Fitness*. The third factor, labeled *Hard Drugs*, contained items relating to use of cocaine, amphetamines, and other drugs. The fourth factor, labeled *Healthy Weight Loss*, consisted of two items (exercise and dieting to lose weight). The fifth factor, *Unhealthy Weight Loss*, included two items related to weight loss through vomiting and/or laxative use and use of diet pills.

A further factor analysis was conducted on the relatively large first factor (*Risk Avoidance*), to determine whether this factor could be further divided into several sub factors. The results revealed that three sub factors could be extracted, with eigenvalues greater than 1 (i.e., 2.77, 1.10, 1.01). The first sub factor, labeled *Safe Sex Practices*, consisted of items related to condom use during oral, anal, and vaginal sex, and use of the morning after pill. Sub factor two consisted of the cigarette, alcohol, and marijuana items and was labeled *Soft Drugs*. Helmet and seatbelt use loaded most strongly on the third factor, which was simply labeled *Helmet/Seatbelt Use*. Table 1.1 displays the factor loadings associated with the NCHA-R factors described above.

Internal consistency analyses of the five original factors revealed alpha coefficients as follows: *Risk Avoidance* (.75), *Fitness* (.70), *Hard Drugs* (.48), *Healthy Weight Loss Behaviours* (.45), and *Unhealthy Weight Loss Behaviours* (.38). The alpha coefficients for the three subfactors of *Risk Avoidance* were: *Soft Drugs* (.63),

Table 1.1

*Factor Loadings for the Revised Version of the National College Health Assessment
(NCHA-R)*

Item	Loadings				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Seatbelt	.33	.10	-.10	.43	-.13
Helmet	.48	.14	.22	.01	.02
Cigarettes	-.44	-.29	.47	.21	-.10
Alcohol	-.63	.19	.19	.11	-.19
Marijuana	-.50	-.11	.45	.01	-.24
Cocaine	-.30	-.20	.66	-.09	-.10
Amphetamines	.12	.25	.72	.05	.19
Other drugs	.07	.04	.55	-.22	.04
Oral sex	.70	-.14	.13	-.07	-.13
Vaginal intercourse	.64	-.14	-.12	.10	-.25
Anal sex	.49	.07	-.13	.05	.04
Emerg. Contraception	.54	.02	.01	.01	-.02
Exercise	-.12	.15	-.16	.62	-.04
Diet	-.02	-.06	.03	.76	.28
Vomit/laxatives	-.03	.00	-.09	-.08	.74
Diet pills	-.02	.07	.16	.25	.71
Fruits/Vegetables	.15	.50	.12	.27	.09

Item	Loadings				
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Aerobic exercise	-.05	.87	-.07	.02	-.01
Strengthening exercise	-.13	.89	-.02	-.01	.02
Sleep	---	---	---	---	---

Note. NCHA-R Items: Oral Sex, Vaginal Intercourse, and Anal Sex = condom use during each of these activities, Emerg. Contraception = Emergency Contraception (also known as the "morning after pill" on the NCHA-R).

The item pertaining to sleep was dropped from the factor analysis as it appeared to be a single factor by itself.

Bolded numbers indicate the factor that the item best loads on.

Helmet/Seatbelt Use (.33), and Safe Sex Practices (.61). Although some of these reliabilities were quite low, these factor scores were employed in subsequent analyses because they were considered more reliable than using single items from the NCHA-R. Furthermore, it may not necessarily be a weakness that some of these factor reliabilities were low because each factor encapsulates a number of different behaviours. For example, in reference to the soft drug factor, an individual could smoke a considerable amount of cigarettes but rarely use marijuana. This type of pattern may reduce the reliability of the factor without reducing the importance of correlations involving the soft drug factor.

For descriptive purposes, the means and standard deviations of all the humour and health-related measures used in this study are presented in Table 1.2. This table also presents descriptive statistics for males and females separately, as well as *t*-test results examining the differences between the two genders.

As observed in Table 1.2, the only significant gender difference on the humour measures was in regard to the aggressive humour style of the HSQ. Males reported significantly higher scores on this style of humour than did females (male $M = 33.57$, female $M = 30.03$, $t(213) = 3.31$, $p < .01$). A number of gender differences were apparent on health behaviours. Females indicated significantly poorer general physical health (male $M = 2.69$, female $M = 2.39$, $t(213) = 2.39$, $p < .05$) and significantly higher ratings of physical health symptoms (male $M = 18.26$, female $M = 26.38$, $t(213) = -3.91$, $p < .001$), risk avoidance (male $M = -.20$, female $M = .15$, $t(213) = -2.56$, $p < .05$), helmet/seatbelt use (male $M = -.24$, female $M = .18$, $t(213) = -3.12$, $p < .01$), and healthy weight loss behaviours (male $M = -.40$, female $M = .30$, $t(213) = -5.34$, $p < .001$),

Table 1.2

Means and Standard Deviations for the Humour Measures and Health-Related Behaviors and t-test Results Comparing Males and Females on the Humour and Health Measures

Variable:	Total Sample		Males		Females		t-test
	M	SD	M	SD	M	SD	
<i>Humour Measures:</i>							
CCT	2.04	.33	2.09	0.36	2.01	0.30	ns
FSHCT	2.12	.39	2.17	0.44	2.09	0.34	ns
HSQ AF	47.62	6.05	48.26	5.90	47.14	6.14	ns
HSQ SE	38.30	8.43	38.33	8.18	38.27	8.64	ns
HSQ AG	31.54	7.92	33.57	7.81	30.03	7.68	3.31**
HSQ SD	28.96	8.64	29.29	8.63	28.72	8.67	ns
Ch.	33.95	4.18	33.43	4.81	34.33	3.60	ns
Ser.	26.32	4.46	26.08	4.61	26.50	4.36	ns
BM	18.20	4.74	18.34	5.07	18.09	4.51	ns
<i>Health Behaviors:</i>							
Risk Av.	0.00	1.00	-0.20	1.04	0.15	0.94	-2.56*
H/S use	0.00	1.00	-0.24	1.11	0.18	0.87	-3.12**
Safe sex Practices	0.00	1.00	-0.08	1.07	0.06	0.94	ns
Healthy wl.	0.00	1.00	-0.40	0.79	0.30	1.04	-5.34***
Unhealthy wl.	0.00	1.00	-0.12	0.49	0.09	1.25	ns
Fitness	0.00	1.00	0.19	1.07	-0.14	0.92	2.38*
Soft Drugs	0.00	1.00	0.19	1.02	-0.14	0.97	2.48*

	Total Sample		Males		Females		t-test
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Hard Drugs	0.00	1.00	0.19	1.30	-0.14	0.66	2.47*
Sleep	2.88	1.92	3.00	1.90	2.79	1.93	<i>ns</i>
G. Health.	2.52	0.89	2.69	0.94	2.39	0.83	2.39*
CHIPS	22.91	15.57	18.26	12.13	26.38	16.94	-3.91***

Note: Humour Measures: CCT = Cartoon Caption Task, FSHCT = Frustrating Situation Humour Creation Task, HSQ AF = Affiliative Humour, HSQ SE = Self-enhancing Humour, HSQ AG = Aggressive Humour, HSQ SD = Self-defeating Humour, Ch. = Trait Cheerfulness, Ser. = Trait Seriousness, BM = Trait Bad Mood.

Health Behaviours: Risk Av. = Risk Avoidance, H/S use = Helmet/Seatbelt Use, Safe Sex = condom use (during sexual activity), Healthy wl. = Healthy Weight Loss, Unhealthy wl. = Unhealthy Weight Loss, G. Health = General Health, CHIPS = Cohen and Hoberman Inventory of Physical Symptoms.

*** $p < .001$, ** $p < .01$, * $p < .05$

in comparison to males. In addition, males had greater scores on the fitness factor (male $M = .19$, female $M = -.14$, $t(213) = 2.38$, $p < .05$), and reported higher usage of soft (male $M = .19$, female $M = -.14$, $t(213) = 2.48$, $p < .05$), and hard drugs (male $M = .19$, female $M = -.14$, $t(213) = 2.47$, $p < .05$), as compared to females. No gender differences were noted on sleep, unhealthy weight loss behaviours, and safe sex practices.

Due to a number of gender differences found on the health-related measures, Pearson partial correlations, controlling for sex, were used in subsequent analyses relating humour and health variables. This type of approach produced even more conservative results than if sex was not partialled out and ensured that the correlations that were significant were not simply explained by differences between males and females on health-related lifestyle behaviours. Table 1.3 presents the partial correlations examining relationships between the humour measures and health habits, general health, and illness symptoms. As observed in this table, there were few significant correlations between humour creation ability and any of the health measures. Interestingly, wittier responses on the FSHCT were positively correlated with the general health rating (*partial* $r = .17$, $p < .05$). Healthy weight loss behaviours were also negatively related to higher scores on the CCT (*partial* $r = -.14$, $p < .05$).

In support of the view that more beneficial styles of humour would relate to more healthy behaviour patterns, affiliative humour (*partial* $r = .17$, $p < .05$) and self-enhancing humour (*partial* $r = .19$, $p < .01$) were positively correlated with healthy weight loss behaviours. In support of the notion that more detrimental forms of humour would relate to unhealthy behaviours, aggressive humour was negatively correlated with risk avoidance (*partial* $r = -.21$, $p < .01$), helmet/seatbelt use (*partial* $r = -.17$, $p < .05$),

Table 1.3

Partial Correlations between Health-Related Lifestyle Behaviours and Scores on the HSQ, HCA, and STCI (Controlling for Sex)

Variable:	Humour Measure:								
	FS- HCT	CCT	HSQ AF	HSQ SE	HSQ AG	HSQ SD	Ch.	Ser	BM
Risk Av.	-.06	-.05	-.14*	.05	-.21**	.07	-.03	.21**	-.12
H/S use	-.03	-.02	-.09	-.03	-.17*	-.10	-.09	.19**	.00
Safe sex	.02	-.00	-.05	.10	-.15*	.06	-.03	.08	-.08
Healthy wl.	.06	-.14*	.17*	.19**	-.04	-.01	.09	.06	-.10
Unhealthy wl.	-.01	-.01	-.01	.04	-.12	-.04	.04	.01	.01
Fit. & fruits	.06	-.10	.06	.08	-.13	-.13	.04	.09	-.10
Soft Drugs	.12	.09	.18**	.00	.18**	-.10	-.01	-.24***	.15*
Hard Drugs	.02	-.05	.08	.08	.05	.05	-.04	-.08	.07
Sleep	.13	.05	-.07	.00	-.05	-.19**	.01	-.04	-.09
G. Health	.17*	-.03	.09	.07	-.01	-.15*	.10	.05	-.14
CHIPS	.00	.00	.04	-.09	.10	.09	-.08	.05	.30***

Note. Humour Measures: CCT = Cartoon Caption Task, FSHCT = Frustrating Situation Humour Creation Task, HSQ AF = Affiliative Humour, HSQ SE = Self-enhancing Humour, HSQ AG = Aggressive Humour, HSQ SD = Self-defeating Humour, Ch. = Trait Cheerfulness, Ser. = Trait Seriousness, BM = Trait Bad Mood.

Health-Related Lifestyle Behaviours: Risk Av. = Risk Avoidance, H/S use =
Helmet/Seatbelt Use, Safe Sex = condom use (during sexual activity), Healthy wl.=
Healthy Weight Loss, Unhealthy wl. = Unhealthy Weight Loss, Fit. & Fruits = Fitness
and Fruits, G. Health= General Health.

*** $p < .001$, ** $p < .01$, * $p < .05$

and safe sex practices (*partial r* = -.15, *p* < .05), and positively correlated with the use of soft drugs (*partial r* = .18, *p* < .01). In other words, individuals who report more aggressive humour are also more likely to engage in risk-taking behavior such as soft drug use and less likely to use helmets, seatbelts, and condoms. Along the same lines, self-defeating humour was negatively associated with obtaining enough sleep to feel well-rested the following day (*partial r* = -.19, *p* < .01). In contrast to the view that healthy humour styles would be expected to correlate with healthier habits, affiliative humour was negatively related to risk avoidance (*partial r* = -.14, *p* < .05) and positively associated with the use of soft drugs (*partial r* = .18, *p* < .01), indicating that like aggressive humour, individuals high on affiliative humour engage in more risk taking behaviours (e.g., greater tobacco, marijuana, and alcohol consumption).

Unlike the associations with health habits, there were no significant relationships among humour styles and illness symptoms. However, self-defeating humour correlated negatively with perceived health (*partial r* = -.15, *p* < .05), indicating that individuals with more self-defeating humour are less likely to view themselves as generally healthier than individuals with lower scores on this humour style.

Finally, in regard to the STCI-T, trait seriousness displayed significant positive correlations with risk avoidance (*partial r* = .21, *p* < .01) and helmet/seatbelt use (*partial r* = .19, *p* < .01), and displayed negative correlations with the use of soft drugs (*partial r* = -.24, *p* < .001), indicating that more serious (less playful) individuals tend to engage in more healthy lifestyle behaviours. In contrast, trait bad mood was positively correlated with soft drug use (*partial r* = .15, *p* < .05), suggesting that a grumpy or grouchy interactional style in conjunction with sad or distressed moods increases the likelihood of

self-reported drug use. Trait cheerfulness was not significantly associated with any of the health-related lifestyle variables, indicating that a cheerful mood is neither healthy nor unhealthy for lifestyle behaviours.

With respect to relationships between the STCI-T, illness symptoms, and perceived general health, there was one significant finding: a positive relationship between trait bad mood and the CHIPS-R (*partial* $r = .30, p < .001$). In other words, people with high scores on trait bad mood are more likely to report experiencing physical illness symptoms.

For interest, the simple correlations among the three humour measures are displayed in Table 1.4. As expected, both humour creation tasks were positively related to one another ($r = .37, p < .001$), suggesting that higher scores on the FSHCT were associated with higher scores on the CCT. Also, unlike the CCT which displayed no significant correlations with the humour styles, the FSHCT positively correlated with all four humour styles on the HSQ (AF: $r = .27, p < .001$, SE: $r = .28, p < .001$, AG: $r = .16, p < .05$, SD: $r = .17, p < .05$). In regard to the STCI, trait cheerfulness was positively correlated with affiliative humour ($r = .37, p < .001$) and self-enhancing humour ($r = .48, p < .001$), whereas trait bad mood was negatively related to the more adaptive humour styles (AF: $r = -.25, p < .001$, SE: $r = -.40, p < .001$). Interestingly, trait seriousness was negatively related to both humour creation tasks (CCT: $r = -.18, p < .01$, FSHCT: $r = -.27, p < .001$), suggesting a playful and non-serious frame of mind is important for individuals to spontaneously generate witty responses which others find to be humorous and amusing.

Table 1.4

Correlations among the HSQ, HCA, and STCI

Humour Scale:	CCT	FSHCT	HSQ AF	HSQ SE	HSQ AG	HSQ SD	Ch.	Ser.	BM
CCT	----								
FSHCT	.37***	----							
HSQ AF	.05	.27***	---						
HSQ SE	.08	.28***	.48***	---					
HSQAG	.08	.16*	.24***	.09	---				
HSQ SD	.08	.17*	.14*	.20**	.27***	---			
Ch.	-.09	.05	.37***	.48***	-.12	.02	---		
Ser.	-.18**	-.27***	-.18*	-.06	-.19**	-.10	.09	---	
BM	.00	-.09	-.25***	-.40***	.19**	.05	-.61***	.12	---

Note. Humour Measures: CCT = Cartoon Caption Task, FSHCT = Frustrating Situation Humour Creation Task, HSQ AF = Affiliative Humour, HSQ SE = Self-enhancing Humour, HSQ AG = Aggressive Humour, HSQ SD = Self-defeating Humour, Ch. = Trait Cheerfulness, Ser. = Trait Seriousness, BM = Trait Bad Mood.

* $p < .05$, ** $p < .01$, *** $p < .001$

Discussion

Health-Related Lifestyle Behaviours

The present investigation into the effects of sense of humour on various health-related lifestyle behaviours found that humour creation ability was uncorrelated with healthier habits. Although nearly all the correlations were non-significant, one result was consistent with the notion that humour creation ability may be detrimental to healthy weight loss behaviours. The findings pertaining to humour styles and humour as an emotional temperament indicated that these facets were more important for healthy lifestyle behaviours than was the ability to be funny. Overall, however, across different conceptualizations, humour appeared to be either unrelated or negatively associated with health behaviours, suggesting that witty people do not necessarily live healthier lives.

Humour Styles

The correlational analyses confirmed that the different styles of humour related to healthy lifestyle behaviours in unique ways. For example, affiliative and self-enhancing humour were both positively associated with healthy weight loss behaviours, whereas the more negative humour styles were related to unhealthy behaviours, such as a lack of helmet/seat belt use, unsafe sexual practices, use of soft drugs, and lack of sleep.

These results indicate that those persons who use humour to laugh with others, facilitate relationships, maintain a witty outlook on life, and use humor to cope in times of stress or adversity, are also more likely to lose weight by means of exercise and diet. Instead of brushing off weight concerns, more adaptive styles of humour could encourage and facilitate changes in behaviours.

However, as Martin (2007) argued, sense of humour is not inherently positive, and the present findings confirmed this idea. More specifically, individuals who used humour in self-disparaging ways, to tease or manipulate others, or to deny feelings, were less likely to wear helmets and seatbelts or use condoms. Furthermore, a person who scored highly on self-defeating humour may not obtain sufficient sleep in order to feel well-rested the following day. Together, these findings suggested that the absence of maladaptive forms of humour may be as important to physical health, or even more important, than the presence of beneficial humour styles.

One exception to the preceding conclusion was the finding that both affiliative and aggressive humour correlated positively with the use of soft drugs. These humour styles most strongly capture an interpersonal or relational component. Research has demonstrated that extraversion is associated with greater drug use, affiliative humour and possibly aggressive humour, suggesting that the extraversion link may explain why a person who scored highly on these humour styles could be at risk for drug use (Cook et al., 1998; Martin et al.; Patton et al., 1993).

The result indicating that affiliative humour was associated with greater alcohol, marijuana, and tobacco use raises some questions over whether the distinction between hypothesized beneficial and maladaptive uses of humour is applicable for health behaviour research. Future studies should explore this topic further.

Humour Creation Ability

In addition to investigating humour styles and health, a major purpose of the current study was to explore humour creation ability in relation to health behaviours. Unlike people's self reports of different uses of humour in everyday life, performance

measures capturing the ability to spontaneously create witty material which others find to be humorous was unrelated to healthy lifestyle behaviours. Overall, then, the ability to create humour "on demand" does not seem to be related one way or the other to whether a person exercises regularly, eats healthy foods, or avoids risky activities. One exception to this conclusion was a negative correlation found between the ability to be humorous on the CCT and healthy weight loss behaviours, indicating that persons who are skilled at humour creation on this task may be less likely to exercise or diet to lose weight. For example, they may make jokes about health concerns and health advice, such as the importance of going to the gym or cutting back on unhealthy food intake.

The preceding result is supported by the notion that different facets of humour correlate with health variables in different and unique ways. Whereas more adaptive humour styles appear to facilitate healthy weight loss behaviours, humour creation ability may impede such behaviours.

In general, it is important to consider that beyond healthy weight loss behaviours, there were no significant correlations between humour creation ability and health habits. It is possible that the ability to create humour on does not translate to being funny in daily life, and as such, may be unrelated to health habits. This idea is further supported by a lack of any significant correlations between lifestyle behaviours and the FSHCT, which was the measure designed for the current study to specifically to examine humour creation in a more "everyday" or interpersonally relevant context. It is also important to recognize that, although these components of humour are not related to healthy lifestyle behaviours, they could still be related to health in other ways not studied in the present investigation. For example, positive emotions elicited by humour could produce

physiological changes in cortisol levels or endorphin production, which in turn could result in analgesic or immunoenhancing effects (Martin, 2007).

Humour as an Emotional Temperament

The temperamental basis of humour was another understudied facet explored in the present study. The results obtained with respect to this measure indicated that the cognitive component of the humorous temperament was more important for healthy lifestyle behaviours than the affective or emotional dimensions. In particular, trait seriousness displayed positive correlations with risk avoidance and helmet/seat belt use, and a strong negative relationship with the use of soft drugs. In contrast, trait cheerfulness was unrelated to health habits, and trait bad mood was only positively associated with soft drug use.

These findings suggest that more serious persons (i.e., those with less of a sense of humour) actually take better care of themselves, an observation which accords with previous researchers who noted that high levels of humour were related to less healthy behaviours (Friedman et al., 1993; Kerkkänen et al., 2004; Martin et al., 2002). Serious persons may be more conscious of their general health, and attach more importance to a healthy lifestyle. Therefore, such persons, who are often planning ahead, may reliably predict or foresee the dangers associated with health compromising behaviours. As a result, they may engage in adaptive activities to maintain their health. In contrast, persons high in humour may not be as concerned about the many health risks associated with an unhealthy lifestyle.

Whereas a lack of playfulness (i.e., the presence of trait seriousness) appeared to be healthy, the results of this study indicated that habitual grumpy or grouchy feelings,

especially in situations designed to evoke cheerfulness, could be a risk factor for alcohol, marijuana, and tobacco consumption. Consistent with this finding, the link between drug abuse and feelings of depression has been well established in previous studies (e.g., Deykin, Levy & Wells, 1987; Volkow, 2004).

Overall, trait cheerfulness or trait bad mood were not as important to a healthy lifestyle as trait seriousness. When individuals engage in healthy behaviours, there may be a number of cognitive processes at work (for example, the decision to wear a seatbelt, the consideration of health risks associated with smoking, etc). In line with this viewpoint, the cognitive component of the STCI-T was more strongly related to health. By contrast, trait cheerfulness and trait bad mood have more to do with interpersonal interactions, emotions, affectivity, and coping, which suggest that these scales may be more relevant to psychological health and well-being than to physical health.

General Health and Illness Symptoms

Although the relationships between humour and health-related lifestyle behaviours was the primary objective of this research, the present study also included measures of general health and illness symptoms for consistency and for comparison with previous research. Scores on the FSHCT positively correlated with general health, suggesting that individuals skilled in humour creation perceived themselves to be healthier overall, even though they did not necessarily engage in healthier habits. In contrast, consistent with limited previous research (Greven et al., 2008; Kazarian & Martin, 2004), self-defeating humour was negatively related to general health. Using humour in self-disparaging, defensive, or ingratiating ways appeared to heighten the likelihood of poorer perceived health.

Similar to the results regarding general health, sense of humour did not demonstrate many significant relationships with illness symptoms. Only trait bad mood was positively correlated with illness symptoms. However, as previously suggested, trait bad mood might be capturing a neuroticism dimension, which has been shown to be associated with a tendency to over-report health symptoms (Watson & Pennebaker, 1989). Future research could explore whether the relationship between trait bad mood and illness symptoms is mediated by neuroticism. Regardless, persons who are grumpy or grouchy and experience habitual sad or distressed moods (a characteristic of those lacking a sense of humour) appear to report more physical health symptoms.

Overall, these findings add to the body of literature which found no consistent evidence for relationships between self-report measures of sense of humour and physical health as measured by self-rated general health and illness symptoms. In accordance with Boyle and Joss-Reid (2004), Fry (1995), and Ruch and Köhler (1999), a greater sense of humour was related to fewer physical health symptoms and medical concerns. However, inconsistent with these findings, but supportive of the present results, Anderson and Arnoult (1989) and Porterfield (1987) have not found health-enhancing effects of humour on illness symptoms.

Limitations and Future Directions

One possible reason for the general lack of significant correlations between humour, illness symptoms, and general health in the present study could be that the sample of university students was not representative of the general population. In particular, these data might be subject to the problem of restricted range because university students tend to be quite healthy, when compared to the broader population.

On the other hand, the use of university students as participants is likely a strength with regard to other areas of the current study, particularly lifestyle behaviours. Young adults display considerable variability in the overall health of their lifestyle (Patrick, Grace, & Lovato, 1992). Therefore, in contrast to general health and illness symptoms, there was not likely to be similar range restriction in healthy lifestyle behaviours.

Another limitation of the present study is the use of a correlational methodology. With correlational analyses, the direction of causality between variables cannot be determined making it difficult to ascertain, for example, whether self-enhancing humour causes healthy weight loss behaviours, whether these behaviours cause greater levels of self-enhancing humour, or whether a third variable accounts for this relationship. However, although correlation does not imply causality, causality implies correlation. Therefore, determining whether correlations exist is an important starting point to justify future investment in experimental designs. The lack of significance for many of the correlations examined in this study suggests that there is no causal relationship between these humour and health-related variables one way or the other.

A final limitation of this study is the reliance on self-report measures. The use of self-report measures of humour styles, humour as an emotional temperament, and health behaviours may have influenced the strength of correlations because of common method variance. It is possible that individuals who reported high scores on the more beneficial humour styles inflated their responses to answer in similar ways on questions regarding health habits. However, self-report methodology is also a feasible way to collect large amounts of data, and is a method of choice when asking about both public and private health behaviours.

In summary, the findings from this study cast doubt on popular claims suggesting that "laughter is the best medicine." The results provided little evidence that humour, especially conceptualized as a creation ability, is related to health-related lifestyle behaviours. The few significant correlations suggested that a sense of humour and a playful attitude are, in fact, associated with a number of *less* healthy behaviours. It is possible that sense of humour is more influential for mental health than physical health, suggesting that variables such as depression, anxiety, and self-esteem warrant future study.

This research also has potential implications for clinicians who may be interested in developing humour-based interventions aimed at improving clients' health. These clinicians should consult empirical research when deciding which aspects of humour to focus on in their training programs. Based on the current findings, teaching individuals to create humour, use humour in an affiliative way, and have a more playful and nonserious outlook on life, may be unrelated or even detrimental for health-related lifestyle behaviours. Although interventions involving laughter and humour could potentially have benefits for other aspects of physical or mental health, these results suggest that it might be important to remind those receiving such interventions that too much playfulness may be unhealthy when it comes to taking care of one's health.

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CHAPTER THREE

Study 2: Do Witty People Experience Enhanced Psychological Well-Being?

The Relationships between Sense of Humour and Mental Health

The notion that sense of humour is beneficial for mental health has been popularized by clinicians, personality theorists, and researchers for decades (Martin, 2007). Numerous studies have found that sense of humour is a character strength predictive of life satisfaction (e.g., Peterson, Park, & Seligman, 2006), a strategy for coping with stress (e.g., Martin & Lefcourt, 1983), a mechanism for increasing self-esteem (e.g., Hampes, 1999), and a valuable skill for maintaining rewarding interpersonal relationships (e.g., Campbell, Martin, & Ward, 2008).

While there has been considerable research on the association between humour and mental health, there are gaps in the literature with regard to which components of sense of humour are most important for well-being. Humour is a multidimensional concept involving a number of different conceptualizations (Martin, 2007). Previous researchers have employed self-report measures that have operationally defined humour as the tendency to laugh frequently (Martin & Lefcourt, 1984), use of humour in coping (Martin & Lefcourt, 1983), and potentially beneficial and detrimental spontaneous day-to-day styles of humour (Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). Humour can also be conceptualized as a "habitual behaviour pattern", "creation ability", "temperament trait", and "defence mechanism" (Martin, 2007, p. 194).

Prior research has indicated that these different components do not necessarily correlate with one another (e.g., Köhler & Ruch, 1996), suggesting that some facets relate strongly to well-being whereas others may be unrelated or even detrimental to

psychological health. One such facet of humour, which has received substantial research attention with respect to the role it plays in mental health, is humour styles.

However, another facet, humour creation ability, has been largely understudied in the humour-health field. Research is important on this topic because people often spontaneously engage in the creation of humorous material (and may not even realize they are doing so). Furthermore, some programs even attempt to teach people to create humour expecting improvements in mental health to follow (McGhee, 1999). However, there is limited and inconclusive research on whether the ability to be funny actually relate to well-being. Therefore, the purpose of the current study was to extend the humour styles and health literature by exploring several measures of psychological well-being (i.e., self-esteem, optimism, satisfaction with life, depression, anxiety, and stress) in relation to humour creation ability and humour as an emotional temperament (another humour conceptualization which has received limited research in the health field).

Humour Styles

Humour styles refer to individual differences in the experience and expression of humour in everyday life (Martin et al., 2003). Martin and colleagues proposed four different humour styles, two which are potentially beneficial for psychological health (affiliative, self-enhancing), and two which are potentially detrimental (aggressive, self-defeating). The first of these, *Affiliative* humour, is characterized by witty comments and jokes that are used to enhance relationships and to reduce potential conflicts. The second style, *Self-enhancing* humour, involves the maintenance of a humorous outlook on life and the use of humour as an emotion-regulation mechanism. The third style, *Aggressive* humour, refers to the tendency to use funny comments in order to make critical and

disapproving remarks towards or about others. Finally, the fourth style, *Self-defeating* humour, consists of markedly self-disparaging humour used to make others laugh at the expense of one's own well-being. Martin et al. have asserted that distinguishing between beneficial and detrimental humour styles could assist in clarifying the relationships between humour and mental health.

The Humor Styles Questionnaire (HSQ) is a self-report scale that attempts to systematically capture these four uses of humour (Martin et al., 2003). Research using the HSQ has confirmed that the styles are distinct dimensions and that they correlate in predicted ways with measures of personality and well-being (Martin et al.). In general, previous findings have suggested that higher levels of self-enhancing humour and lower levels of self-defeating humour were predictive of emotional well-being, whereas more frequent use of affiliative humour and less frequent use of aggressive humour were associated with greater relationship satisfaction (see Martin 2007, for review).

Humour Creation Ability

Another way of conceptualizing individual differences in humour is humor creation ability, which is defined as the capacity to perceive humorous incongruities and then to create and communicate witty material in ways that others will find funny (Hehl & Ruch, 1985; Turner, 1980). Similar to general creativity, humour creation ability requires the one to engage in the process of divergent thinking. In other words, in order to be witty, people must be able to flexibly consider a number of different ideas and then generate a range of creative and potentially novel solutions to a given prompt (Martin, 2007; O'Quin & Derks, 1997). Previous studies have measured humour creation ability by asking participants to create witty narratives (Lefcourt & Martin, 1986), funny captions to

captionless cartoons (e.g., Babad, 1974), comedy routines (Turner, 1980), and humorous responses to different situations (such as presidential campaign slogans; Clabby, 1980).

How could humour creation ability affect well-being? Cognitively, the ability to be funny may defend against negative thinking styles by shifting perspectives to re-appraise perceived threatening situations as less overwhelming (Lazarus & Folkman, 1984; Martin & Lefcourt, 1983). Adopting a new viewpoint may reduce stress, thereby minimizing the otherwise adverse emotional effects of stress such as depression, anxiety and anger (Porterfield, 1987). However, a basic assumption underlying this mechanism is that people who are good at creating humour do, in fact, use this ability in their everyday lives. It is possible that individuals may be very funny on behavioural tests of humour creation ability, but, when faced with an actual stressful situation, not use humour to cope, re-evaluate, and gain distance. If people do not create humour in their lives in health-enhancing ways, humour creation ability may be unrelated to well-being.

Research on the relationship between humour creation ability and mental health is sparse. Martin and Lefcourt (1983) found support for a stress-moderating role of humour creation ability (measured through comedy routines), indicating that wittier people had a weaker relationship between stress and mood disturbance than did less witty people ($N = 62$). In another study, Clabby (1980) found that humour creation ability was positively related to personal adjustment (i.e., optimistic outlook on life, flexibility in demeanour, and the capacity to get along well with others). Clabby assessed humour creation ability using research assistant ratings of the wittiness of participant responses to different items. Although not directly related to mental health, Masten (1986) noted that children ($N = 93$) who scored higher on measures of humour production (assessed using the cartoon

caption task) paid more attention to instructions, displayed greater cooperation, and were considered more cheerful by friends.

The preceding studies are limited with respect to the role of humour creation ability in mental health. Martin and Lefcourt (1983) found no simple direct correlations between humour creation and mental health; Clabby (1980) was more interested in personality than in well-being, and Masten's (1986) results have more applicability to social and academic competence than to mental health. Furthermore, the methodology used in previous studies may not adequately capture aspects of humour creation ability that are relevant to well-being. In particular, it may be that the ability to create humour in the face of adversity is more relevant to psychological health than the ability to create humorous captions to cartoons. The current study represented an initial attempt to examine this possibility.

The literature on humour styles has suggested that the manner in which humour is used has significant relevance for well-being (e.g., Martin et al., 2003). Therefore, humour creation ability on its own, without regard to how creativity attempts are used, may not relate to mental health. As a result, a secondary objective of the current study was to explore the hypothesis that an interaction between humour creation ability and self-enhancing or self-defeating humour styles (which appear to be most relevant to psychological well-being) may better account for mental health than humour use or humour creation ability considered independently. Observed correlations between humour creation ability and well-being could depend on how humour is used in daily life. For example, it is possible that for individuals who use a considerable amount of self-enhancing humour, greater humour creation ability may positively relate to well-being.

On the other hand, for individuals who score highly on self-defeating humour, the ability to generate responses perceived by others to be funny may correlate negatively with mental health. Finally, wittiness may be unrelated to well-being for individuals with low scores on the humour styles.

Based on previous research suggesting that self-enhancing and self-defeating humour are particularly relevant to mental health variables (Martin, 2007), interaction analyses in the present study focused on these two styles. If it is found that an interaction between humour styles and humour creation ability is more predictive of mental health than either one alone, this may have important implications for humour-based therapeutic interventions.

Humour as an Emotional Temperament

The present study also included a measure of humour conceptualized as an emotional temperament. Ruch, Köhler, and van Thriel (1996) proposed that cheerfulness, seriousness and bad mood are three important factors underlying the temperamental basis of humour, and that these factors influence an individual's readiness to respond to humorous stimuli with laughter and smiling. In this approach, a nonserious, cheerful, and playful attitude is considered important in order to recognize incongruities in life and is regarded as necessary for a good sense of humour.

The State-Trait Cheerfulness Inventory (trait form) consists of three subscales intended to capture the temperamental basis of humour (STCI-T; Ruch et al., 1996). The first of these subscales, *trait cheerfulness*, evaluates the presence of a generally cheerful mood accompanied by laughter and smiling. The second subscale, *trait seriousness*, is the inverse of playfulness and assesses the tendency to set specific goals and act in a rational

manner. Finally, the third subscale, *trait bad mood*, measures the occurrence of sadness, and distress, alongside a grumpy or grouchy interactional style, especially during times when others may be cheerful (Ruch & Köhler, 1998). Trait cheerfulness and trait bad mood are emotional or affective traits, whereas trait seriousness is more cognitive or attitudinal in nature. Based on the STCI-T conceptual framework, a high sense of humour would be indicated by elevated scores on the cheerfulness scale, and low scores on the seriousness and bad mood scales.

A small number of preliminary studies have examined the STCI-T in relation to mental health, specifically mood change. Ruch and Köhler (1999; $N = 72$) altered three rooms to represent cheerfulness, seriousness, and bad mood. For example, in the first room designed to elicit a cheerful emotional state, walls were painted yellow and covered with brightly coloured posters. These researchers found that for those high in trait cheerfulness, exposure to rooms representative of seriousness or bad mood did not result in mood change. However, for individuals with a less cheerful composure, exposure to more adverse situations (i.e., rooms) was followed by a reduction in cheerfulness and an increase in state bad mood. In a similar study ($N = 60$), Ruch (1997) demonstrated that among participants with low baseline rates of cheerful mood, higher scores on trait cheerfulness were associated with greater mood gains in response to a clowning experimenter. These studies suggest that trait cheerfulness moderates mood changes in response to environmental influences and therefore may be protective for mental health.

In addition to exploring humour and psychological health, the current study assessed how the different humour conceptualizations correlated with each other. When Martin and colleagues (2003) examined the STCI-T in relation to the HSQ, they found

that trait cheerfulness positively correlated with self-enhancing and affiliative humour, whereas trait bad mood correlated negatively with them. In addition, trait seriousness was negatively related to both affiliative and aggressive humour, while trait bad mood correlated positively with self-defeating humour.

Similarly, Ruch and Köhler (1998) assessed the correlations between the STCI-T and humour creation ability using fifteen caption-removed cartoons ($N = 110$). They found a negative correlation between trait seriousness and the ability to be funny. In other words, Ruch and Köhler's results confirmed that a playful and nonserious attitude is important for the ability to create humour. In addition to replicating these findings, an important aim of the present study was to explore the possibility of relationships between humour styles and humour creation ability. One assumption of the HSQ is that individuals with high scores on each of the four humour scales are wittier than people with low scores on each humour style. Significant correlations would provide further validation of this measure. However, this hypothesis has not been tested previously.

In summary, the present investigation had three main objectives. The first was to examine correlations between the three different conceptualizations of humour in relation to a number of mental health variables. While humour creation ability was the primary focus, additional concentrations included exploring the STCI in relation to mental health and replicating previous HSQ findings in this area. Specifically, there were two research questions of interest: (i) Do humour styles more strongly relate to mental health than humour creation ability? (ii) Is the affective (i.e., cheerfulness, bad mood) component of the STCI-T more important for well-being than the cognitive (i.e., seriousness) dimension? The second objective was to determine whether an interaction between

humour styles and humour creation ability better predicts mental health variables than either facet alone. In the event that results supported the presence of interactions, correlations between greater humour creation ability and health were expected to be positive for people with high scores on self-enhancing humour, but negative for people with high scores on self-defeating humour. The final objective of this study was to investigate relationships among the humour measures. In addition to replicating previous research, a question of interest was whether individuals with higher scores on each of the self-reported humour style scales are better able to objectively create humour which others find to be amusing and witty.

Therefore, the present investigation represents a preliminary and novel attempt to build upon the humour styles literature by exploring the associations between humour creation ability and humour as an emotional temperament with a variety of mental health variables. The potential links between humour (conceptualized in multiple ways) and well-being have significant implications for humour-based therapeutic interventions. Several programs currently teach individuals to be funny with the expectation that improved well-being will follow (e.g., McGhee, 1999). However, it is important to empirically investigate which aspects of sense of humour (if any) are most important to target when designing humour-related interventions.

Method

Participants

The present sample was comprised of 215 first-year undergraduate students (92 males, 123 females) enrolled in an introductory psychology course at The University of Western Ontario. Participants were recruited through the department research participant

pool and were compensated with one research credit toward their psychology course. The mean age of participants was 18.58 years ($SD = 1.99$). Of the 215 participants, 71.6% identified themselves as European Canadian, 14% as Asian Canadian, 4.7% as South Asian Canadian, 3.3% as African/Caribbean Canadian, 0.5% as Native Canadian, and 5.1% as members of another ethnicity. Eighty-one percent of participants were born in Canada and 81.9% indicated that English was their first language.

Measures

Demographics:

A brief demographic questionnaire was developed and administered to provide some general information about participants' age, gender, ethnicity, country of birth, and first language spoken.

Humour:

The Humor Styles Questionnaire (HSQ; Martin et al., 2003) examines four dimensions corresponding with individual differences in the spontaneous experience and expression of humour in everyday life. Self-enhancing humour (e.g., "If I am depressed I can usually cheer myself up with humour") and affiliative humour (e.g., "I laugh and joke a lot with my friends") are thought to be beneficial uses of humour. In contrast, aggressive humour (e.g., "If I don't like someone, I often use humour or teasing to put them down") and self-defeating humour (e.g., "I let people laugh at me or make fun at my expense more than I should") are thought to be negative and unhealthy humour styles. The HSQ consists of 32 items (four eight-item scales) rated on a 7-point, Likert-type scale ranging from 1 (*totally disagree*) to 7 (*totally agree*).

Past research has demonstrated that each subscale has good reliability (Martin et al., 2003). In addition, the HSQ was validated by confirmatory factor analyses and through significant correlations between each of the subscales and theoretically predicted measures of humour, moods, self-esteem, and hostility (Dozois, Martin, & Bieling, in press; Martin, 2007; Martin et al., 2003). Internal consistency (coefficient alpha) for the Affiliative, Self-enhancing, Aggressive and Self-defeating scales, in the present sample, were .81, .84, .73, .79, respectively.

The State-Trait Cheerfulness Inventory – Trait Version (STCI-T; Ruch et al., 1996) is a 30-item self-report questionnaire that assesses individual differences in habitual behaviour patterns, attitudes, and moods. The STCI-T consists of three subscales and example items from each include: “I like to laugh and do it often” (*trait cheerfulness*), “In most situations, I initially see the serious aspect” (*trait seriousness*), and “When friends try to cheer me up by joking or fooling around, I sometimes become more morose and grumpy” (*trait bad mood*). Respondents indicate the extent to which they agree or disagree with each item using a 4-point Likert-type scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). Studies utilizing the STCI-T have demonstrated good validity for this measure (Ruch, et al., 1996; Ruch & Köhler, 1998). Internal consistency (coefficient alpha) for trait cheerfulness, trait seriousness and trait bad mood, in the current study, were .84, .73, and .82, respectively.

The Cartoon Caption Task (CCT) required participants to generate as many funny captions as they could in response to five captionless cartoons in a period of 10 minutes. The cartoons were selected from The New Yorker (2008) cartoon caption contest website (see Appendix A). Six volunteers (two male and four female) coded each caption attempt

on a 4-point Likert-type scale designed as to produce a rating of funniness (i.e., score) for each attempt (see Appendix C). The scale ranged from 1 (*no incongruity or attempts to be funny*) to 4 (*extremely humorous attempt, considerable amounts of amusing incongruity*). Coders were blind to participant scores on the other measures. The mean rating score of all the responses of each participant on the CCT represented a measure of the quality (i.e., wittiness) of humour production, used in subsequent analyses (Ruch & Köhler, 1998). Reliability (internal consistency) was calculated using the mean ratings of each of the six raters, averaging the responses of each participant as equivalent to six items on a scale. Overall, reliability (coefficient alpha) among coders was .79.

The *Frustrating Situation Humour Creation Task* (FSHCT), designed specifically for the current study, involved short descriptions and illustrations of five potentially frustrating situations (see Appendix B). An example is "After spending the day shopping and running errands, you come out of the busy mall and can't remember where you parked your car." Participants were instructed to imagine that the frustrating situation had happened to them and then to consider how they would later recount the experience to a friend in as funny a way as possible. They were given 15 minutes to record as many funny statements as they could, pertaining to their feelings, reactions, or explanation of the situation. These responses were then rated for wittiness by the same six raters who rated the CCT (see Appendix C for the coding forms). Like the CCT, the mean wittiness ratings on the FSHCT provides a measure the of quality of humour production. Reliability was calculated for the FSHCT in the same way as the CCT. Similar to the CCT, the reliability among coders for the FSHCT was strong at .80.

Mental Health Variables:

Depression, Anxiety, Stress Scales (DASS; Lovibond & Lovibond, 1995) are three self-report scales which measure the negative emotional states of depression, anxiety and stress. The DASS consists of 42 statements, with 14 items comprising each of the three subscales. Participants rate how much the statement applies to them over the past week, using a 4-point Likert-type scale ranging from 1 (*did not apply to me at all*) to 4 (*applies to me very much, or most of the time*). Example items from each of the three subscales are "I found myself getting upset by quite trivial things" (Stress), "I was aware of dryness of my mouth" (Anxiety), and "I couldn't seem to experience any positive feelings at all" (Depression). In previous research the DASS scales were found to have excellent reliability (Lovibond & Lovibond) and good convergent and criterion validity (Nieuwenhuijsen, de Boder, Verbeek, Blonk, & van Dijk, 2003). The internal consistencies of Depression, Anxiety and Stress in this study were excellent (Cronbach's alphas = .94, .89, and .91, respectively).

Life Orientation Test – Revised (LOT-R; Scheier & Carver, 1985) assesses individual differences in optimism. This self-report scale consists of six statements plus four filler items. An example item is "In uncertain times, I usually expect the best." Respondents indicate the degree to which each statement is consistent with their own feelings on a 5-point Likert-type scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). A higher total score indicates a greater degree of optimism. The LOT-R has adequate psychometric properties. In a previous study, Scheier, Carver, and Bridges (1994) found that the test-retest reliability over the course of 28 months was .79. Scheier et al. have also shown adequate discriminant validity of the LOT-R, with moderate

correlations between this measure and instruments assessing neuroticism, self-esteem, and anxiety. The internal consistency (as measured by Cronbach's alpha) of the LOT-R in the current study was .73.

Rosenberg Self-Esteem Scale (RSE; Rosenberg, 1965) is a widely used unidimensional measure of global self-esteem that consists of 10 items. Participants rate statements describing general feelings of self-worth and self-acceptance on a 4 point Likert-type scale ranging from 1 (*strongly agree*) to 4 (*strongly disagree*). An example item is "I feel that I have a number of good qualities." Half the scale items are reverse coded. Total scores range from 0 to 30, but scores between 15 to 25 are considered within the normal range. In a sample of college students, Silbert and Tippett (1965) noted a two week test-retest reliability of .85. The internal consistency of the RSE in this study was strong (Cronbach's alpha = .86).

Satisfaction with Life Scale (SLS; Diener, Emmons, Larsen, & Griffin, 1985) includes five statements which assess overall cognitive judgments regarding life satisfaction. Participants rate each statement using a 7-point Likert-type scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Total scores range from 5 to 35 and a score above 20 indicates that an individual is satisfied with his/her life. An example item is "The conditions of my life are excellent." Diener and colleagues found that internal reliability estimates for the scale ranged between .86 to .90 and that moderately strong correlations existed between this measure and others assessing well-being. The internal consistency of the SLS in this study was strong (Cronbach's alpha = .85).

Procedure

The participants were tested in groups of 10 to 20. After reading a letter of

information (see Appendix E) and signing an informed consent form (see Appendix F), they completed the CCT followed by the FSHCT. A package of self-report questionnaires was then administered to participants in a randomized order. After completing the questionnaires, they were given a debriefing sheet describing the purpose of the study (see Appendix G). Any remaining questions that participants had were answered at this time. The total study took approximately one hour to complete.

Results

The means and standard deviations of scores on the mental health and humour measures are presented in Table 2.1. In addition to presenting data on the total sample, this table also displays the *t*-test results comparing the differences between male and female participants on all the scales and variables.

As indicated in this table, the only significant gender difference on humour measures occurred with respect to the aggressive humour style. Males showed significantly higher scores on aggressive humour than females (male $M = 33.57$, female $M = 30.03$, $t(213) = 3.31$, $p < .01$). A number of gender differences were also apparent on mental health variables. In particular, females reported significantly lower feelings of optimism (male $M = 15.13$, female $M = 13.88$, $t(213) = 2.23$, $p < .05$) and self-esteem (male $M = 23.22$, female $M = 21.63$, $t(213) = 2.39$, $p < .05$), and significantly higher ratings of anxiety (male $M = 5.58$, female $M = 8.16$, $t(213) = -2.63$, $p < .01$) and stress (male $M = 9.18$, female $M = 12.64$, $t(213) = -3.15$, $p < .01$), in comparison to males. No gender differences were found for depression or satisfaction with life.

Objective 1: Correlations between Humour and Mental Health

Because gender differences were found on many mental health measures, sex was

Table 2.1

Means and Standard Deviations for the Humour and Mental Health Variables and t-test Results Comparing Males and Females on these Measures

Variable:	Total Sample		Males		Females		t-test
	M	SD	M	SD	M	SD	
<i>Humour Measures:</i>							
CCT	2.04	.33	2.09	0.36	2.01	0.30	ns
FSHCT	2.12	.39	2.17	0.44	2.09	0.34	ns
HSQ AF	47.62	6.05	48.26	5.90	47.14	6.14	ns
HSQ SE	38.30	8.43	38.33	8.18	38.27	8.64	ns
HSQ AG	31.54	7.92	33.57	7.81	30.03	7.68	3.31**
HSQ SD	28.96	8.64	29.29	8.63	28.72	8.67	ns
Ch.	33.95	4.18	33.43	4.81	34.33	3.60	ns
Ser	26.32	4.46	26.08	4.61	26.50	4.36	ns
BM	18.20	4.74	18.34	5.07	18.09	4.51	ns
<i>Well-being variables</i>							
Dep.	6.59	7.59	5.89	7.07	7.11	7.94	ns
Anxiety	7.06	7.22	5.58	5.99	8.16	7.87	-2.63**
Stress	11.16	8.14	9.18	6.99	12.64	8.64	-3.15**
Optim.	22.31	4.86	15.13	4.32	13.88	3.89	2.23*
Self-esteem	14.41	4.11	23.22	5.02	21.63	4.64	2.39*
Sat. w/ life	25.82	5.52	25.79	5.78	25.84	5.34	ns

Note. Humour Measures: CCT = Cartoon Caption Task, FSHCT = Frustrating Situation Humour Creation Task, HSQ AF = Affiliative Humour, HSQ SE = Self-enhancing Humour, HSQ AG = Aggressive Humour, HSQ SD = Self-defeating Humour, Ch. = Trait Cheerfulness, Ser. = Trait Seriousness, BM = Trait Bad Mood.
Mental Health Variables: Dep. = Depression, Optim. = Optimism, Sat. w/ life = Satisfaction with life

* $p < .05$, ** $p < .01$, *** $p < .001$

controlled for by conducting Pearson partial correlations in the subsequent analyses. The partial correlations between the humour and mental health measures are presented in Table 2.2¹. There were no significant correlations between the humour creation ability and well-being measures. In contrast, different patterns were found in regard to the STCI-T and HSQ.

The trait cheerfulness subscale of the STCI-T was negatively correlated with depression (*partial r* = -.37, *p* < .001), anxiety (*partial r* = -.17, *p* < .05), and stress (*partial r* = -.29, *p* < .001), and positively correlated with self-esteem (*partial r* = .34, *p* < .001), optimism (*partial r* = .38, *p* < .001), and satisfaction with life (*partial r* = .34, *p* < .001). The trait bad mood subscale was positively correlated with the more unhealthy variables (i.e., depression: *partial r* = .56, *p* < .001, anxiety: *partial r* = .41, *p* < .001, and stress: *partial r* = .50, *p* < .001), and negatively correlated with the more healthy ones (i.e., self-esteem: *partial r* = -.40, *p* < .001, optimism: *partial r* = -.40, *p* < .001; and satisfaction with life: *partial r* = -.37, *p* < .001). The trait seriousness subscale demonstrated fewer significant relationships in comparison to the other STCI-T subscales (i.e. only positive correlations were found with anxiety: *partial r* = .16, *p* < .05 and stress: *partial r* = .15, *p* < .05).

In regard to the HSQ, the two more psychologically healthy humour styles, self-enhancing (SE) and affiliative (AF) humour, demonstrated significant negative

¹ Analyses were also conducted investigating the maximum (i.e. best) wittiness measured by the average of the best response from each cartoon or situation. As none of these analyses produced significant results, best wittiness was not reported and instead, the current study focussed on mean wittiness (the measurement most consistently used in previous research).

Table 2.2

Partial Correlations between Mental Health Variables and Scores on the HSQ, STCI, and Humour Creation Tasks (Controlling for Sex)

Humour		Mental Health Variables					
		Dep.	Anxiety	Stress	Self-Esteem	Optim.	Sat. w/ life
Scale:	Subscale:						
CCT		.08	-.05	.00	-.03	-.03	-.06
FSHCT		.00	-.07	-.09	.08	.08	.12
HSQ	AF	-.14*	-.14*	-.19**	.05	.03	.10
	SE	-.25***	-.19**	-.23***	.27***	.26***	.26***
	AG	.19**	.18**	.25***	-.20**	-.25***	-.12
	SD	.14*	.15*	.13	-.31***	-.16*	-.03
STCI	Ch.	-.37***	-.17*	-.29***	.34***	.38***	.34***
	Ser.	.01	.16*	.15*	.11	.05	.05
	BM	.56***	.41***	.50***	-.40***	-.40***	-.37***

Note. Humour Measures: CCT = Cartoon Caption Task, FSHCT = Frustrating Situation

Humour Creation Task, HSQ AF = Affiliative Humour, HSQ SE = Self-enhancing

Humour, HSQ AG = Aggressive Humour, HSQ SD = Self-defeating Humour, Ch. = Trait

Cheerfulness, Ser. = Trait Seriousness, BM = Trait Bad Mood.

Mental Health Variables: Dep. = Depression, Optim. = Optimism, Sat. w/ life =

Satisfaction with life

* $p < .05$, ** $p < .01$, *** $p < .001$

correlations with depression (SE: *partial r* = -.25, $p < .001$, AF: *partial r* = -.14, $p < .05$), anxiety (SE: *partial r* = -.19, $p < .01$, AF: *partial r* = -.14, $p < .05$), and stress (SE: *partial r* = -.23, $p < .001$, AF: *partial r* = -.19, $p < .01$). However, self-enhancing humour, unlike affiliative humour, also displayed significant positive correlations with self-esteem (*partial r* = .27, $p < .001$), optimism (*partial r* = .26, $p < .001$) and satisfaction with life (*partial r* = .26, $p < .001$). Both aggressive (AG) and self-defeating (SD) humour were positively correlated with depression (AG: *partial r* = .19, $p < .01$, SD: *partial r* = .14, $p < .05$) and anxiety (AG: *partial r* = .18, $p < .01$, SD: *partial r* = .15, $p < .05$), as well as negatively correlated with self-esteem (AG: *partial r* = -.20, $p < .01$, SD: *partial r* = -.31, $p < .001$) and optimism (AG: *partial r* = -.25, $p < .001$, SD: *partial r* = -.16, $p < .05$). In addition, aggressive humour was positively correlated with stress (*partial r* = .25, $p < .001$).

Objective 2: Are there Interactions between Humour Creation Ability and Humour Styles in Predicting Mental Health Variables?

In order to investigate Objective 2, hierarchical multiple regression analyses were conducted to predict each of the different mental health variables from humour styles, humour creation ability, and the interaction between these two variables. All predictor variables included in the analyses were centered. For each mental health variable, two regressions included self-enhancing humour and self-defeating humour interacting with the CCT, and another two used the same two positive humour styles interacting with the FSHCT. Each of these four regressions were performed using depression, anxiety, stress, satisfaction with life, self-esteem, and optimism, totaling twenty-four analyses. Overall,

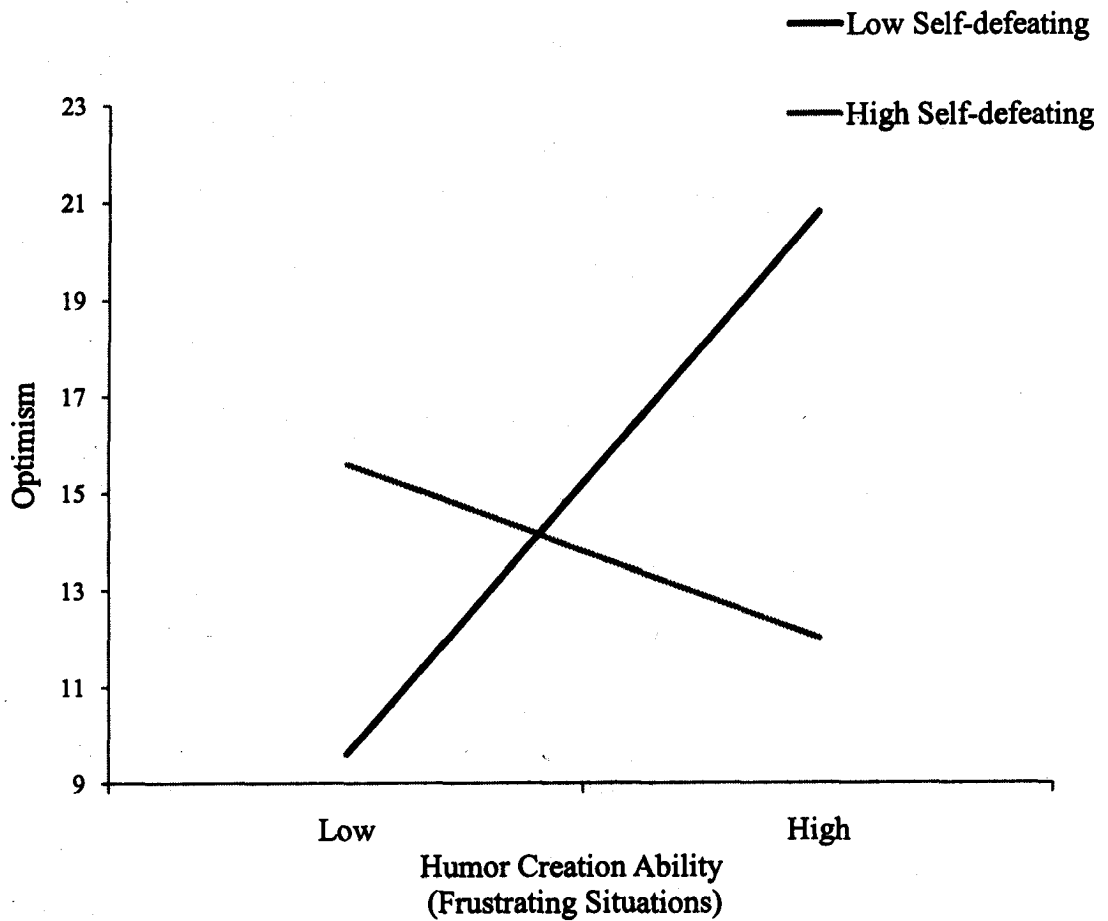
two regressions out of these analyses produced significant interactions between humour styles and humour creation ability.

Using the FSHCT as the measure of humour creation ability, a significant R^2 increment of .04, $F(1, 211) = 4.01, p < .01$, was obtained with the product of this humour creation score and self-defeating humour in the prediction of optimism. This finding indicated that self-defeating humour had a moderating effect on the relationship between humour creation ability and optimism. To clarify the direction of the effect, two separate regression lines predicting optimism from humour creation ability were plotted on a graph, one for individuals scoring high on self-defeating humour, and the other for those scoring low. These lines were computed using the regression weights produced in the regression equation and entering scores one standard deviation above and below the mean on the self-defeating humour scale. The results of this analysis are displayed in Figure 2.1. This figure demonstrates that the strength of the correlation between humour creation ability and optimism changes as a function of self-defeating humour scores. More specifically, with high scores on self-defeating humour, humour creation ability negatively related to optimism, but with low self-defeating humour scores, more humour creation ability relates positively to optimism.

Using the product of self-enhancing humour and mean wittiness, measured by means of the CCT, to predict life satisfaction resulted in an R^2 increment of .09, $F(1, 211) = 7.09, p < .01$. This result indicated that self-enhancing humour had a moderating effect on the relationship between humour creation ability and life satisfaction. To clarify the direction of the effect, the same procedure described in the previous regression was

Figure 2.1

Association between Humour Creation Ability (as measured by the FSHCT) and Optimism as a Function of High versus Low Self-defeating humour



Note. FSHCT = Frustrating Situation Humour Creation Task. High and Low humour creation ability was determined using the mean of all responses for each participant (on all five situations).

used to plot two separate regression lines predicting life satisfaction scores from humour creation ability for individuals one standard deviation above and below the mean on self-enhancing humour. The results of this analysis are displayed in Figure 2.2, which demonstrates that the strength of the correlation between humour creation ability and satisfaction with life changed as a function of self-enhancing humour. More precisely, consistent with predictions, for individuals with high scores on self-enhancing humour, humour creation ability positively related to satisfaction with life, but with low self-enhancing humour scores, more humour creation ability related to less satisfaction with life.

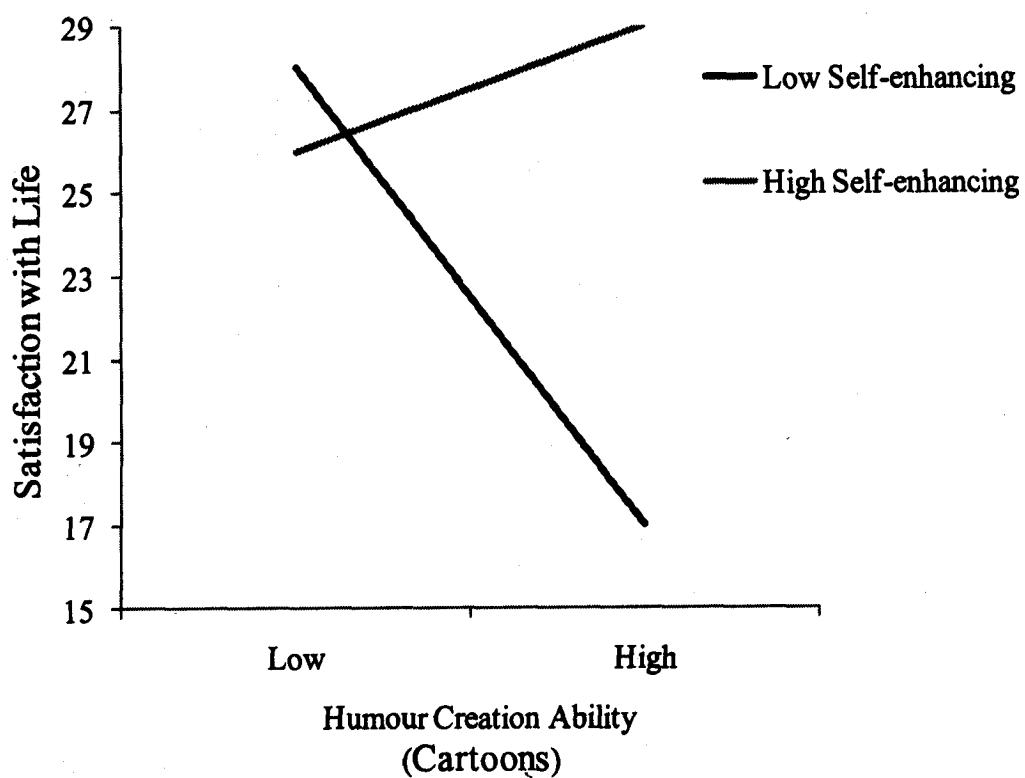
Objective 3: Correlations Among Humour Measures

Table 2.3 displays the simple correlations among the humour measures used in this study. The CCT was positively related to the FSHCT ($r = .37, p < .001$). Both the CCT ($r = -.18, p < .01$) and the FSHCT ($r = -.27, p < .001$) were negatively correlated with the trait seriousness subscale of the STCI-T. In addition, the FSHCT was positively correlated with all four humour styles on the HSQ (AF: $r = .27, p < .001$, SE: $r = .28, p < .001$, AG: $r = .16, p < .05$, SD: $r = .17, p < .05$) whereas the CCT showed no significant correlations with humour styles.

In regard to associations with humour styles, affiliative humour correlated positively with the other three humour styles (SE: $r = .48, p < .001$, AG: $r = .24, p < .001$, SD: $r = .14, p < .05$) as well as positively with trait cheerfulness ($r = .37, p < .001$). In addition, affiliative humour was negatively related to trait seriousness ($r = -.18, p < .05$) and trait bad mood ($r = -.25, p < .001$). Self-enhancing humour was positively correlated with self-defeating humour ($r = .20, p < .01$) and trait cheerfulness ($r = .48, p < .001$), and

Figure 2.2

Association between Humour Creation Ability (as measured by the CCT) and Satisfaction with Life as a Function of High versus Low Self-enhancing humour



Note. CCT = Cartoon Caption Task. High and low humour creation ability reflects the mean of all responses (on all five cartoons) for each participant.

Table 2.3

Correlations among the HSQ, HCA, and STCI

Humour Scale:	CCT	FSHCT	HSQ AF	HSQ SE	HSQ AG	HSQ SD	Ch.	Ser.	BM
CCT	---								
FSHCT	.37***	---							
HSQ AF	.05	.27***	---						
HSQ SE	.08	.28***	.48***	---					
HSQAG	.08	.16*	.24***	.09	---				
HSQ SD	.08	.17*	.14*	.20**	.27***	---			
Ch.	-.09	.05	.37***	.48***	-.12	.02	---		
Ser.	-.18**	-.27***	-.18*	-.06	-.19**	-.10	.09	---	
BM	.00	-.09	-.25***	-.40***	.19**	.05	-.61***	.12	---

Note. Humour Measures: CCT = Cartoon Caption Task, FSHCT = Frustrating Situation Humour Creation Task, HSQ AF = Affiliative Humour, HSQ SE = Self-enhancing Humour, HSQ AG = Aggressive Humour, HSQ SD = Self-defeating Humour, Ch. = Trait Cheerfulness, Ser. = Trait Seriousness, BM = Trait Bad Mood.

* $p < .05$, ** $p < .01$, *** $p < .001$

negatively associated with trait bad mood ($r = -.40, p < .001$). With respect to the more hypothesized detrimental styles, aggressive humour was positively associated with self-defeating ($r = .27, p < .001$) humour and trait bad mood ($r = .19, p < .01$), but negatively correlated with trait seriousness ($r = -.19, p < .01$). Self-defeating humour did not relate significantly to any of the STCI-T subscales.

Finally, within the STCI-T, trait cheerfulness negatively correlated with trait bad mood ($r = -.61, p < .001$). However, trait seriousness was unrelated to the other two scales, supporting the notion that there is something common to trait cheerfulness and trait bad mood (i.e., a more affective or emotional component) that is different from trait seriousness (i.e., a more cognitive dimension).

Discussion

The present investigation was the first study to examine relationships among three different conceptualizations of sense of humour and a series of mental health variables (i.e., depression, anxiety, stress, optimism, self-esteem, and satisfaction with life). Interactions between humour creation ability and humour styles in predicting mental health have also not been previously explored. The results of the current study indicated that humour styles and humour as an emotional temperament were more important for mental health than humour creation ability or the interaction between wittiness and humour styles.

Objective 1

Humour Creation Ability

With regard to the ability to be funny, neither the CCT nor the FSHCT significantly correlated with mental health. The lack of associations suggests that the

aptitude to invent witty cartoon captions or responses to frustrating situations is not associated with mental health. It may be that individuals who have the ability to create humour do not necessarily use this ability in their daily lives in health-enhancing ways (such as in times of stress). The significant results with the Humor Styles Questionnaire suggest that the way an individual uses his or her humour creation ability is more important for psychological well-being than how witty he or she is able to be.

Nevertheless, these findings may appear surprising to the public, who are often taught through the media or otherwise that sense of humour is a unidimensional construct, important for one's health. As mentioned, research has demonstrated that humour is a multidimensional concept (Martin, 2007). If sense of humour is understood in this way, it is not surprising that some aspects may be related to health, whereas others, such as humour creation ability, may be unrelated. As Martin (2008) noted, different humour dimensions are not highly correlated with each other, and as a result, researchers must undertake the challenge of identifying which components are relevant for well-being.

Before humour creation ability is dismissed with respect to *any* role in mental health, it is important to recognize that this aspect of humour may simply not relate to the health variables examined in the current study. It would be interesting to examine if the ability to be funny correlates significantly with externalizing behaviours (such as hostility or aggression). In support of this possibility, previous research has demonstrated that humour creation ability is positively associated with extraversion (Köhler & Ruch, 1996; Koppel & Sechrest, 1970), and that extraversion is related to externalizing variables (Shiner, 2006). Therefore, although persons who are adept at creating humour might not

be expected to have more psychological dysfunction than the average individual, when witty people do experience health concerns, they may be more prone to externalizing than internalizing problems. Future research is warranted to explore this possibility.

Humour Styles

Unlike humour creation ability, humour conceptualized as styles and as an emotional temperament both displayed correlations with well-being. Consistent with previous research (Martin et al., 2003), the results pertaining to the HSQ indicated that the hypothesized beneficial humour styles correlated negatively with depression, anxiety and stress. Self-enhancing humour also displayed positive correlations with self-esteem, optimism and satisfaction with life. The more detrimental humour styles correlated positively with anxiety and depression and related negatively to self-esteem and optimism.

These findings support the importance of distinguishing between positive and negative uses of humour in mental health. Psychological health involves not only the presence of adaptive styles of humour, but also the absence of negative or unhealthy forms. This conclusion should be integrated in future humour-based therapeutic intervention programs when deciding which aspects of humour to train. The results of the present investigation suggest that it is more important to teach people to use humour in certain ways and not to use it in others, than simply to teach people to be particularly witty or creative in producing humour.

Humour as an Emotional Temperament

Unlike the HSQ, previous research has never examined the correlations between

the STCI-T and depression, anxiety, stress, self-esteem, optimism, or satisfaction with life. Therefore, one contribution of the present study to currently available literature was the finding that the affective component (i.e. trait cheerfulness and trait bad mood) of a temperament approach to humour is more important for mental health than the cognitive component (i.e., trait seriousness). Specifically, the results demonstrated that trait cheerfulness positively correlated with self-esteem, optimism and satisfaction with life, but negatively correlated with depression, anxiety and stress. Trait bad mood displayed an inverse pattern of results to those of trait cheerfulness. However, trait seriousness was only moderately correlated with anxiety and stress, and was not associated with any of the other mental health variables. In other words, a good-humoured interaction style, positive moods, and a propensity to smile and laugh, are important for psychological well-being, whereas the playful and nonserious tendency to avoid planning ahead, setting goals, and acting in a rational manner (i.e., low scores on seriousness) may not be important.

Consistent with these results, previous studies have observed that persons with high scores on trait cheerfulness are less likely to display depressed mood following tasks designed to induce negative emotions (Ruch & Köhler, 1998; 1999). Therefore, the present findings, considered in conjunction with previous research, suggest that cheerful individuals are more likely to experience positive moods and better psychological health than highly playful but less cheerful persons.

Objective 2

Another focus of the current investigation was to examine whether humour styles served as a potential moderator of the relationships between humour creation ability and

mental health variables. Regression analyses revealed that self-defeating humour significantly moderated the relationship between optimism and humour creation ability (measured by the FSHCT) such that for individuals with high amounts of self-defeating humour, this relationship was negative whereas for individuals with low amounts of self-defeating humour, this relationship was positive. Similarly, the correlation between humour creation ability (measured by the CCT) and satisfaction with life was moderated by self-enhancing humour, indicating that for people high on self-enhancing humour, more humour creation ability is related to higher satisfaction with life but for people low on self-enhancing humour, more humour creation ability is related to less satisfaction with life.

These findings supported the hypothesis that the associations between humour creation ability and some mental health variables may depend on how humour is used. More specifically, greater humour creation ability is associated with well-being, but only when humour is used in adaptive ways.

Despite the preceding findings, it is important to recognize that significant moderating effects were found only in two of 24 analyses, and these may simply have been due to chance. Therefore, as an overall conclusion, humour styles did not moderate the relationship between humour creation ability and mental health variables.

Objective 3

The third and final purpose of the current study was to investigate relationships among humour styles, humour creation ability, and humour as an emotional temperament. Correlations between humour styles and scales of the STCI-T were almost identical to those which Martin and colleagues (2003) have demonstrated. For example,

the present study found that trait cheerfulness was positively correlated with self-enhancing and affiliative humour, whereas trait bad mood was negatively associated with these humour styles. In addition, both humour creation tasks were negatively related to trait seriousness (i.e., the inverse of playfulness), replicating the previous findings of Ruch and Köhler (1997) and supporting commonly held assertions that humour is a playful activity (Martin, 2007; Ruch & Carrell, 1998). The results of the present study suggest that individuals need to adopt a light-hearted and even silly attitude in order to be successful at creating humour.

The observed negative correlations between humour creation ability and trait seriousness may be understood by the notion that cognitive commonalities underlie both of these activities. To some degree, playfulness and creativity involve aspects of spontaneity, exaggeration, irony, divergent thinking, and originality. Furthermore, without a playful frame of mind, individuals may not necessarily react to incongruities humorously (Ruch & Carrell, 1998). Similarly, serious persons could engage in rational and productive activities rather than spending time on more shallow and frivolous tasks such as creating humour (Ruch & Köhler, 1997).

Another interesting finding is that humour creation ability, assessed by the FSHCT, related significantly and positively to all four humour styles. This result provides further validation for the HSQ. Individuals with high scores on each of the four humour styles are particularly adept at creating humour on an objective performance measure which coders find to be witty and amusing, regardless of whether these styles are potentially beneficial or deleterious for psychological health. This finding also provides additional support for the notion that humour creation ability, by itself, is not necessarily

advantageous for mental health, since some persons have the ability to be very funny but use their humour in a detrimental rather than beneficial way. As a result, the manner in which individuals use humour in their daily lives is more important to mental health than how witty they are able to be.

In the future, it would be interesting to code the humour styles involved in humour creations (on behavioural tasks) in order to determine whether one style is used more frequently than others, and in order to determine whether certain styles are considered wittier than others. Surprisingly, humour creation ability, assessed through the CCT, did not correlate with any of the humour styles, suggesting that there might be something about the FSHCT that is more relevant to the use of humour in everyday life, regardless of whether it is healthy or not.

Limitations and Future Directions

It is important to note that the correlational methodology used in this research precludes inferences with regard to the direction of causality among variables. For example, it is unclear if having more adaptive forms of humour causes enhanced well-being or if greater mental health causes humour to be used in more beneficial and less maladaptive ways.

Another weakness of this study pertains to the reliance on self-report questionnaires used to measure all mental health variables and two of the humour conceptualizations. This type of methodology is often subject to a number of biases, such as the propensity for a participant to respond in socially desirable ways. As a result, the observed correlations between variables could be due to sharing an association with social desirability. Despite these limitations, however, the present study had a number of

contributions, including the utilization of a novel task to assess humour creation ability, as well as further validation of the HSQ (by demonstrating that high scores on all four humour styles are considered funny).

Future researchers should make use of experimental designs to determine the direction of relationships between mental health and humour styles. Furthermore, future studies may consider other ways to measure mental health variables beyond self-report measures (such as physiological indicators of anxiety, stress, etc.) or peer ratings.

The use of hand-held computers (e.g., Palm Pilots) also has exciting prospects for data collection by allowing participants to record different instances (and the social context) of humour creation in "real time" as these behaviours occur in their daily lives. For example, in order to determine whether witty persons actually use their humour in everyday life, the ability to be funny in a laboratory setting could be compared with humour creation ability measured using Palm Pilot devices.

In summary, the aim of the present study was to overcome gaps in previous research by examining mental health in association with a comprehensive battery of humour measures. Unique contributions of this investigation include the finding that playfulness was important for humour creation ability, but neither playfulness nor the ability to be funny were important for mental health. Instead, the factors which appeared to be particularly salient for mental health were trait cheerfulness and humour styles. As a result, humour-based interventions aimed at improving well-being should target these aspects of humour. For example, if participants in humour-health programs recognized that certain uses of humour may have disadvantages, then more beneficial humour styles can be practiced. In turn, outcome studies of such interventions may ultimately provide

an experimental test of the direction of causality by determining whether the implementation of more adaptive humour styles impacts psychological well-being.

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CHAPTER FOUR: General Discussion

The present investigation had two main goals: (1) To explore the relationship between different facets of sense of humour and health-related lifestyle behaviours and (2) To examine whether certain aspects of sense of humour (particularly humour creation ability) were more important than others (i.e., humour styles and humour as an emotional temperament) for mental health. As a whole, the findings presented here, pertaining to both goals, run counter to the idea that the humour creation ability relates to well-being and to positive health habits. Instead, it appears that healthier individuals use humour in more adaptive ways. Furthermore, the current findings provide evidence that the tendency to adopt a serious frame of mind, as opposed to the playful outlook associated with a sense of humour, is related to engagement in healthy lifestyle behaviours. In contrast, a cheerful outlook and lack of habitual feelings of sadness or distress appear to be more relevant to psychological well-being than to physical health.

With regard to a secondary purpose of the current research, correlations among humour conceptualizations provided evidence that a playful, nonserious approach to life is particularly relevant for humour creation ability. In addition, these findings further validated the Humor Styles Questionnaire, by demonstrating that each style was significantly correlated with the ability to create humour in everyday life. Specific contributions of the current thesis, pertaining to mental health and health-related lifestyle behaviours, are discussed in more detail below.

Health-Related Lifestyle Behaviours and Sense of Humour

In Study 1, the first systematic examination of the relationships between humour measures and a variety of health-related lifestyle behaviours was conducted. Other than

wittiness on the cartoon caption task which negatively correlated with healthy-weight loss behaviours, humour creation ability was unrelated to health behaviours. Thus, wittier people may dismiss weight concerns and the importance of exercising. Consistent with previous research on humour and health habits (Friedman et al., 1993; Kerkkanen et al., 2004; Martin et al., 2002), this particular result suggested that humour creation ability is a potential risk factor at least with regard to healthy weight loss behaviours. In general, though, people's ability to be witty seems to have little relationship one way or the other with their tendency to take care of their health.

Although the humour and mental health literature has made strong arguments that self-enhancing and affiliative humour are the more beneficial uses of humour, while aggressive humour and self-defeating humour may be more detrimental (e.g., Martin, 2007; Martin et al., 2003), the present results questioned whether this distinction is valid when it comes to health-related lifestyle behaviours. As expected, the potentially maladaptive uses of humour, taken together, correlated positively with the use of soft drugs and negatively with helmet/seat belt use, a tendency to obtain enough sleep to feel well rested, and condom use. However, higher rates of affiliative humour correlated positively with the use of soft drugs and negatively with avoidance of risky behaviours. These findings indicate that the use of beneficial humour styles, particularly affiliative humour, is maladaptive for some health habits.

Regarding the relationships between health and humorous temperament, a serious and non-playful attitude or mental outlook was more important for healthy lifestyle behaviours than trait cheerfulness and trait bad mood. Although there were limited significant correlations, trait seriousness was positively associated with helmet and

seatbelt use and negatively related to the use of soft drugs. A serious state may allow persons to be more conscious and attendant of their physical health, and less likely to laugh off health concerns and physician recommendations. More serious persons may regularly schedule behaviours (such as exercise) ahead of more frivolous activities (such as watching television). In contrast, more playful individuals may not take health risks as seriously, laughing off important health concerns or minimizing certain behaviors necessary for the improvement or maintenance of their health (Martin, 2007). This finding adds further support to previous research suggesting that, contrary to popular belief, a greater sense of humour may actually contribute to a less healthy lifestyle (Friedman et al. 1993; Kerkkänen et al., 2004; Martin et al, 2002).

Mental Health and Humour Creation Ability

In addition to exploring humour and health-related lifestyle behaviours, the current study examined the association between mental health and the ability to spontaneously create witty and amusing material. The findings indicated an absence of any significant relationships between humour creation ability and well-being variables. Contrary to popular notions, not all aspects of humour are associated with mental health. In particular, the ability to be funny does not appear to be inherently detrimental or beneficial for self-esteem, satisfaction with life, optimism, depression, anxiety, and stress. One explanation for these findings is that persons who are skilled at creating humour may not necessarily use this ability in their everyday lives in health-enhancing ways. Therefore, consistent with more recent research (Martin, 2007), how humour is used appears to be more relevant to well-being than the ability to create it.

In the present study, data on humour styles confirmed that the distinction between positive and negative uses of humour has important mental health implications. In particular, self-enhancing and affiliative humour positively correlated with well-being variables, whereas aggressive and self-defeating humour positively associated with depression and anxiety, and negatively correlated with self-esteem and optimism. Although a considerable amount of previous research has investigated relationships between humour styles and mental health variables (e.g., Martin et al., 2003), the current results corroborated the notion that sense of humour is not always used in beneficial ways. In summary, the ability to be funny may be essentially neutral with reference to well-being. However, the presence of adaptive humour styles, together with the absence of more maladaptive forms, appears to be particularly important to psychological health.

A question that may have arisen from the preceding conclusions was whether humour styles moderated the relationship between humour creation ability and mental health variables. It was hypothesized that correlations between wittiness and well-being would be particularly strong for people who use humour in adaptive ways. However, for individuals who do not use much of any style of humour in daily life, humour creation ability was theorized to be less influential for well-being. In general, with certain exceptions (i.e., self-defeating humour and optimism; self-enhancing humour and satisfaction with life), the results did not support the idea that an interaction between humour style and creation ability predicted well-being beyond the influence of humour styles alone.

Data obtained on the conceptualization of humour as a temperament indicated that trait cheerfulness correlated positively with more adaptive mental health variables and

correlated negatively with the more detrimental ones, while trait bad mood displayed inverse relationships to trait cheerfulness. In contrast, trait seriousness, overall, was unrelated to mental health. These findings suggest that emotional or affective components of humorous temperament are more influential for well-being than are cognitive or attitudinal ones. Ruch and Köhler (1998, p. 206) have described trait cheerfulness using terms such as "composed view of adverse life circumstance" and "generally cheerful interaction style" and trait bad mood as the "prevalence of sadness" and "grumpy or grouchy feelings." Therefore, one explanation for the health-enhancing effects of trait cheerfulness and trait bad mood is that inherent in these conceptualizations are ideas of emotional well-being, interpersonal interactions, and coping, concepts which are also pertinent to mental health.

Limitations and Future Directions

Limitations of this research included the reliance on self-report methodology and correlational analyses. All measures, apart from humour creation ability tasks, involved self-report, which may be subject to a number of biases including social desirability. Thus, the correlations between humour styles, the STCI, and health may have been inflated due to common method variance. Individuals who report better mental and physical health may also indicate greater use of humour styles because of a tendency to respond in socially desirable ways on self-report measures. As a result, future research should examine health using different measurement approaches. For example, objective ratings of physical health could include measures of blood pressure, cardiovascular fitness, immune system functioning, and body mass index.

Another limitation of the present study was the inclusion of correlational analyses, which made it impossible to determine the direction of causality between the different facets of humour and the various measures of health. Although correlation does not imply causality, causality implies correlation. Therefore, the failure to find significant correlations between certain humour and health variables suggests that there is no causal relationship between them. When correlational research does provide evidence for significant relationships, future studies could use an experimental design to investigate, for example, how humour styles relate to health. Alternatively, cross-lagged panel correlations could be examined in a longitudinal design to see if correlations between humour measures at Time 1 and health measures at Time 2 are stronger than those between health measures at Time 1 and humour measures at Time 2. This sort of research could be conducted in "real time" using hand-held computer technology to examine day-to-day or even hour-by-hour changes in humour use and health status.

In summary, contrary to popular claims (e.g., Cousins, 1976; Fry, 1994), the present research indicated that not all aspects of humour are important for health. Specifically, the data obtained regarding Study 1 provides little support that a sense of humour is related to healthier habits. In other words, a sense of humour seems to be more deleterious than beneficial when it comes to health-related lifestyle behaviours. Pertaining to Study 2, the results indicated that humour creation ability was unrelated to well-being but the results provided some support that humour styles and trait cheerfulness are important for mental health. In both studies, humour styles appeared to be the most promising sense of humour facet examined to follow-up in relation to health habits and well-being variables. Therefore, future research could explore the health impacts of

therapeutic interventions designed to teach persons to implement more adaptive humour styles in their everyday lives, while recognizing and avoiding more detrimental uses.

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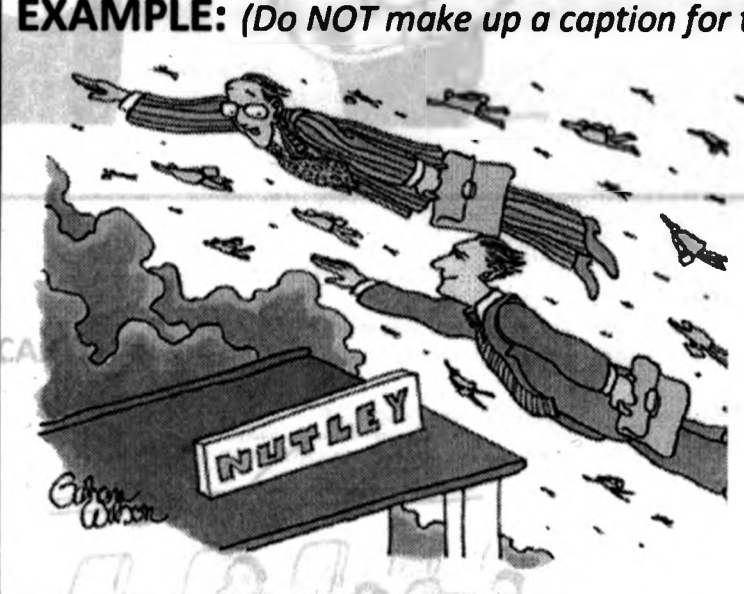
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- Ruch, W., & Köhler, G. (1998). A temperament approach to humor. In W. Ruch (Ed.), *The sense of humor: Explorations of a personality characteristic* (pp. 203-228). Berlin, Germany: Walter de Gruyter.

Appendix A: Cartoon Caption Task

Below are five caption-removed cartoons. Within a period of 10 minutes, create as many **funny punch lines** as possible for each cartoon. Please write the punch lines in the space provided, underneath or next to the cartoon.

An example cartoon and punch line is provided below:

EXAMPLE: (Do NOT make up a caption for this cartoon!)



One caption for this cartoon might be:

"Hold my hand and we can use the car-pool lane."

CARTOON # 1



CARTOON # 2



PLEASE TURN OVER.....

CARTOON # 3 Appendix II Frustrating Situation Humor: Creation Task (FSHC1)



Frustrating Situations

Below are brief descriptions and cartoons of several potentially frustrating situations. For each situation, please imagine the situation as if it happened to you, and the next day you were telling a friend about it. You can use words the situation to make a joke out of it or relaying it in a humorous way.

Within a period of 15 minutes, create as many funny statements as possible for each situation. Please write your responses in the space provided, underneath each situation or next to the cartoon.

An example situation and humorous comments are provided below:

EXAMPLE

Situation: You are in a shop and looking for a shirt but the only one you like is gone.

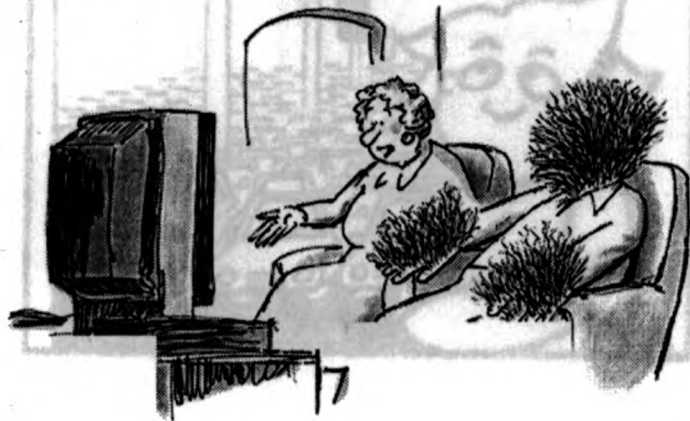
Humorous Comments:

- It smelled like a rotten banana a couple of days ago. I got the shirt because it was a shirt, my wife's diaper after it hasn't been changed for 3 days, and my mother's undergarments.
- My roommate thought it was a science project and I was supposed to give it to him.

CARTOON # 4



CARTOON # 5



Appendix B: Frustrating Situation Humour Creation Task (FSHCT)

Frustrating Situations

Below are brief descriptions and cartoons of several potentially frustrating situations. For each situation, please imagine that it happened to you, and the next day you were telling a friend about it. You want to describe the situation by making a joke out of it or relaying it in a humorous way.

Within a period of 15 minutes, create as many funny statements as possible for each situation. Please write the statements in the space provided, underneath each situation or next to the cartoon.

An example situation and humorous comments are provided below:

EXAMPLE

Situation: You are in a rush one morning and realize that the milk in your fridge has gone moldy.

Explanation to friend later:

- It smelled like a mixture between a dead rat, my 15 year old sister's closet, my niece's diaper after it hasn't been changed for 5 hours, and my brothers' early morning breath!
- My roommate thought it was a science project and I was expecting to grow Penicillin!

SITUATIONS:

1. After spending the day shopping and running errands, you come out of the busy mall and can't remember where you parked your car.



2. You send an email complaining very negatively about a professor to your best friend, but accidentally also send it to your professor.



PLEASE TURN OVER...

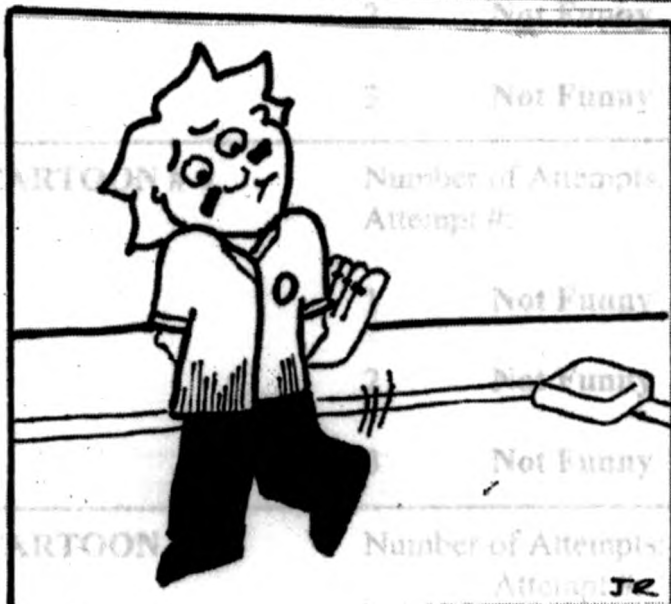


3. Just as you step into the shower, the building fire alarm goes off.

4. You are running late. As you wait for the traffic lights to change so you can cross the street to the bus stop where you wait, you see the bus you need to take go by.



5. You are the last one to be picked for teams during your annual work baseball game.



Appendix C: Humour Creation Ability Coding Forms

CARTOON CAPTIONS

Name of Coder: _____ Participant Number: _____

NUMBER OF ATTEMPTS: explicitly different attempts to come up with different captions/explanation

RATINGS: Not Funny – no incongruity, no attempts to be witty
Smile – some incongruity, some attempt to be humorous
Chuckle – definite incongruity, statement or word is funny
Laugh out Loud – extremely humorous attempt, very original humor, extremely creative and incongruous

CARTOON # 1	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
CARTOON # 2	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
CARTOON # 3	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
CARTOON # 4	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
CARTOON # 5	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud

FRUSTRATING SITUATIONS

Name of Coder: _____ Participant Number: _____

NUMBER OF ATTEMPTS: explicitly different attempts to come up with different captions/explanation

RATINGS: Not Funny – no incongruity, no attempts to be witty
Smile – some incongruity, some attempt to be humorous
Chuckle – definite incongruity, statement or word is funny
Laugh out Loud – extremely humorous attempt, very original humor, extremely creative and incongruous

SITUATION # 1	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
SITUATION # 2	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
SITUATION # 3	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
SITUATION # 4	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud
SITUATION # 5	Number of Attempts:	0	1	2	3
	Attempt #:				
	1	Not Funny	Smile	Chuckle	Laugh out Loud
	2	Not Funny	Smile	Chuckle	Laugh out Loud
	3	Not Funny	Smile	Chuckle	Laugh out Loud

Appendix D: National College Health Assessment-Revised (NCHA-R)

The following questions ask about various aspects of your health.

To answer the questions, circle the word(s) that correspond to your response, and select only one response, unless instructed otherwise.

1. Considering your age, how would you describe your general physical health?

Excellent Very good Good Fair Poor Don't know

2. Within the last school year, how often did you:

(N/A = didn't do this within the last school year)

Wear a seatbelt when you rode in a car? N/A Never Rarely Some-
times Most Always
of the
time

Wear a helmet when you rode a bicycle? N/A Never Rarely Some-
times Most Always
of the
time

3. Within the last 30 days, how many days did you use:

1 = Never used

2 = Have used, but not in the last 30 days

3 = 1-2 days

4 = 3-5 days

5 = 6-9 days

6 = 10-19 days

7 = 20-29 days

8 = all 30 days

Cigarettes	1	2	3	4	5	6	7	8
Alcohol (beer, wine, liquor)	1	2	3	4	5	6	7	8
Marijuana	1	2	3	4	5	6	7	8
Cocaine	1	2	3	4	5	6	7	8
Amphetamines (diet pills, speed, meth, crank)	1	2	3	4	5	6	7	8
Other drugs	1	2	3	4	5	6	7	8

Please continue on the next page....

4. Within the last school year, if you are sexually active, what percentage of time did you or your partner(s) use a condom during: (N/A = not applicable)

Oral sex?	N/A	0	10	20	30	40	50	60	70	80	90	100
Vaginal intercourse?	N/A	0	10	20	30	40	50	60	70	80	90	100
Anal intercourse?	N/A	0	10	20	30	40	50	60	70	80	90	100

5. Within the last school year, if you are sexually active, have you or your partner(s) used emergency contraception ("morning after pill")?

No Yes Don't Know Not sexually active

6. How would you describe your weight? (please check one box)

- Very underweight Slightly overweight
 Slightly underweight Very overweight
 About the right weight

7. Are you trying to do any of the following about your weight? (please check one box)

- I am not trying to do anything about my weight Lose Weight
 Stay the same weight Gain weight

8. Within the last 30 days, did you do any of the following? (Please select every box that applies)

- Exercise to lose weight Take diet pills to lose weight
 Diet to lost weight I didn't do any of the above
 Vomit or take laxatives to lose weight

Please continue on the next page....

9. How many servings of fruits and vegetables do you usually have **per day** (1 serving = 1 medium piece of fruit, ½ cup chopped, cooked or canned fruits/vegetables, ¾ cup of fruit/vegetable juice, small bowl of salad greens, or ½ cup dried fruit)? (please check one box)

I don't eat fruits and vegetables.

3-4

1-2

5 or more

10. On how many of the **past 7 days** did you:

(Number represents number of days)

Participate in vigorous exercise for at least 20 minutes or moderate exercise for at least 30 minutes? 0 1 2 3 4 5 6 7

Do exercises to strengthen or tone your muscles, such as push-ups, sit-ups, or weight lifting? 0 1 2 3 4 5 6 7

Get enough sleep so that you felt rested when you woke up in the morning? 0 1 2 3 4 5 6 7

Appendix E: Letter of Information**Project Title:** Humour, Personality, and Well-being**Investigators:** Kim Edwards (M.Sc. Student) and Dr. Rod Martin

The first part of this study involves making up funny punch lines to go with several cartoons. You will then be asked to create some humorous responses to different frustrating situations. Finally, you will be asked to complete several questionnaires about your health habits, moods and personality traits. This study will not last more than 1 hour in total, and you will receive 1 credit for your participation. The information obtained in this study will be kept confidential and will be used for research purposes only. The only place that your name will appear is on the consent form, and it will be kept separate from the questionnaires and cartoon task. You may terminate the experiment at any time or refuse to answer any questions without the loss of the promised research credit. There are no known risks to participating in this study. You will receive written feedback when you have completed the study and you will have a chance to ask any questions you may have.

Appendix F: Consent Form

I have read the Letter of Information, have had the nature of the study explained to me and I agree to participate. All questions have been answered to my satisfaction.

Participant's Name (print) _____

Signature _____

Date _____

Experimenter's Name (print) _____

Signature _____

Appendix G: Debriefing Form

This study is being conducted by Kim Edwards (M.Sc. Candidate), under the supervision of Dr. Rod Martin. The purpose of this study is to examine which aspects of humour creation, if any, are beneficial for mental and physical health. Previous studies have examined how humour may buffer the effects of stress and frustration as well as improve coping through a change in perspective and a reappraisal of a potentially threatening situation. However, little research has looked specifically at humour ability/creation and the relationship with different aspects of health. Therefore, the present study involves two different humour creation tasks – one regarding the creation of funny captions on cartoons and the second involving humorous responses to everyday frustrating situations. Examining humour in frustrating situations is a newer method of studying humour creation ability which may be more valid than previous methods in understanding how humour works as a potential coping skill in a *social context*. We hypothesize that the humour creation task involving frustrating situations will be a unique aspect of humour creation, that unlike other humour creation tasks (such as the cartoon caption activity), will be related to improved perceived social support, self-esteem, physical health, positive health habits, and decreased feelings of stress, depression and anxiety.

Humour has important implications for both mental and physical health as well as overall well-being. Although some humour-based interventions have been developed, the empirical research on the effect of humour in the therapeutic process is quite limited. Therefore, if this research supports the relationship between humour creation and positive mental and physical health, then the idea of incorporating humour into therapy, workshops, and interventions, will be further encouraged.

Thank you for participating in this study! Your involvement is greatly appreciated. If you have any questions, please do not hesitate to contact Kim Edwards or Dr. Rod Martin.

If you would like to learn more about this topic, please refer to the following research:

- Köhler, G., & Ruch, W. (1996). Sources of variance in current sense of humor inventories: How much substance, how much method variance? *Humor*, 9, 363-397.
- Lefcourt, H. M. (2001). *Humor: The psychology of living buoyantly*. New York: Kluwer Academic.
- Martin, R. A. (2007). *The psychology of humor: An integrative approach*. San Diego, CA: Academic Press.

Martin, R.A., Puhlik-Doris, P., Larsen, G., Gray, J., & Weir, K. (2003). Individual differences in the uses of humor and their relation to psychological well-being: Development of the Humor Styles Questionnaire. *Journal of Research in Personality, 37*(1), 48-75.

If you have questions about your rights as a research participant, you should contact the Director of the Office of Research Ethics at ethics@uwo.ca or 661-3036.

Appendix H: Ethics Approval



Department of Psychology The University of Western Ontario
 Room 7418 Social Sciences Centre,
 London, ON, Canada N6A 5C1
 Telephone: (519) 861-2067 Fax: (519) 861-3961

Use of Human Subjects - Ethics Approval Notice

Review Number	08 01 04	Approval Date	08 01 20
Principal Investigator	Red Martin/ Kim Edwards	End Date	08 04 30
Protocol Title	Humor, personality and well-being		
Sponsor	n/a		

This is to notify you that The University of Western Ontario Department of Psychology Research Ethics Board (PREB) has granted expedited ethics approval to the above named research study on the date noted above.

The PREB is a sub-REB of The University of Western Ontario's Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement and the applicable laws and regulations of Ontario. (See Office of Research Ethics web site: <http://www.uwo.ca/research/ethics/>)

This approval shall remain valid until and date noted above assuming timely and acceptable responses to the University's periodic requests for surveillance and monitoring information.

During the course of the research, no deviations from, or changes to, the protocol or consent form may be initiated without prior written approval from the PREB except when necessary to eliminate immediate hazards to the subject or when the change(s) involve only logistical or administrative aspects of the study (e.g. change of research assistant, telephone number etc). Subjects must receive a copy of the information/consent documentation.

Investigators must promptly also report to the PREB:

- a) changes increasing the risk to the participant(s) and/or affecting significantly the conduct of the study;
- b) all adverse and unexpected experiences or events that are both serious and unexpected;
- c) new information that may adversely affect the safety of the subjects or the conduct of the study.

If these changes/adverse events require a change to the information/consent documentation, and/or recruitment advertisement, the newly revised information/consent documentation, and/or advertisement, must be submitted to the PREB for approval.

Members of the PREB who are named as investigators in research studies, or declares a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

CC: UWO Office of Research Ethics

This is an official document. Please retain the original in your files

Appendix H: Ethics Approval



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Society for Personality and Social Psychology Conference

Passley, J., Jacobson, J. A., Edwards, K., & Hickey, S. C. (2008).

Relationship of Causal Uncertainty to Adult Attachment Orientation and

Relationship Quality. Poster presented at the 9th annual Society for

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 This is an official document. Please retain the original in your files

Canadian Psychological Association (CPA) Annual Conference

Edwards, K., Craig, W., Patten, D., & Connors, J. (2008).

The Effects of Dating Behaviors and Perceived Intimidation on

and Two Risk Factors. Poster presented at the 88th annual CPA