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The Role of Humor as a Character Strength in Positive Psychology

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Graduate Program in Psychology
A thesis submitted in partial fulfillment of the requirements for the degree in Doctor of Philosophy
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THE ROLE OF HUMOR AS A CHARACTER STRENGTH IN POSITIVE
PSYCHOLOGY

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by

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Graduate Program in Psychology

A thesis submitted in partial fulfillment
of the requirements for the degree of
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Abstract

In positive psychology, humor has been identified as one of twenty-four character strengths considered ubiquitously important for human flourishing. Unlike the other strengths, humor was a late addition to this classification system and its status as a strength continues to be somewhat controversial. Therefore the purpose of this thesis was to explore how humor fits within positive psychology. Four studies were conducted to achieve this goal. Study 1 involved a cross-sectional design and compared the Values in Action Inventory of Strengths - Humor Scale (the humor measure used in positive psychology, which assumes that humor is a unitary and positive construct) with the Humor Styles Questionnaire (HSQ; a widely used multidimensional measure of humor) that assesses both adaptive and maladaptive styles of humor in their ability to predict well-being. Additionally, this study and Study 2 explored the ability of humor to predict well-being over and above the effects of gratitude, another more well-studied character strength. The results indicated that the HSQ was a better predictor of happiness, resilience, and morality than was the positive psychology humor scale and that humor added further variance to the prediction of well-being beyond the effects accounted for by gratitude. Study 3 extended these findings by using a longitudinal daily diary methodology to explore the relationships between daily humor styles, gratitude, and well-being. Hierarchical linear modeling analyses revealed interesting differences in associations between positive and negative humor styles and well-being at the within-person and between-person levels and in interactions between these levels. For example, at the between-person level, self-defeating humor was correlated with all four outcome measures whereas at the within-person level, this style was unrelated to satisfaction with life, positive mood, and altruism. The cross-level interactions indicate that when this style

is used infrequently, it does not appear to be detrimental with respect to well-being. However, when used habitually, it seems to be particularly associated with negative outcomes. Finally, Study 4 involved a longitudinal experimental manipulation to test two new positive psychology humor exercises designed to improve well-being. The first exercise was a more traditional humor exercise that did not require participants to distinguish among humor types whereas the second exercise taught participants to distinguish between adaptive and maladaptive humor (with the expectation that reduced maladaptive humor use would follow). While results indicated that there were no differences among interventions (traditional humor, humor styles, and a well-studied gratitude exercise) with respect to changes in well-being, all three interventions produced significant improvements in positive mood compared to a control group. Possible explanations for these findings and implications for future research are discussed.

Keywords: Humor, Gratitude, Positive Psychology, Character Strengths, Well-Being

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Syndrome Foundation of Canada (TSFC), approached my colleague and I about becoming involved with the organization. Since I did not know anything about Tourette Syndrome, I sought out a placement at the Brake Shop (a specialized clinic for children with Tourette Syndrome and associated disorders, TS+) with Duncan and Sharon. I soon fell in love with the TS+ population. My strengths had found their niche at the Brake shop and with working with youth with TS+. Ray not only invited me into the TS+ community, he inspired me to learn more about youth with these disorders and in doing so, was key in helping me find a huge area of clinical passion. Ray helped fund conference presentations I delivered, attended future library talks I gave, and advocated for me to the executive director of the TSFC to lead a workshop at the upcoming Toronto (2013) conference. I am forever grateful for his unwavering support, his kind and gentle nature, and his encouragement. At the Brake Shop, I helped institute cheerleader awards, given to parents, guardians, teachers, hockey coaches, etc. who support youth with TS+ and make meaningful differences in their lives. I would give my cheerleader award to Ray.

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The Role of Humor as a Character Strength in Positive Psychology

Chapter 1: Introduction

For the majority of its history, clinical psychology has operated within a mental illness model, focusing on pathology, maladjustment, and disease (Peterson, 2006; Seligman & Csikszentmihalyi, 2000). However, the extensive focus on what can go wrong has resulted in limited empirical work exploring what can go right with people. In particular, the role that positive individual traits play in helping people to thrive, flourish, and overcome adversity has largely been neglected in clinical psychology (Peterson, 2006; Seligman, 2002; Seligman & Csikszentmihalyi, 2000).

Positive psychology, defined as the scientific study of positive experiences, positive emotions, strengths of character, and the institutions that assist in their development, was introduced to expand the focus of current psychological research (Duckworth, Steen, & Seligman, 2005; Seligman, Steen, Park, & Peterson, 2005). Within this framework, the definition of mental health goes beyond the absence of psychopathology, and instead involves the presence of general capacities that allow people to achieve happy and fulfilling lives (Seligman et al., 2005).

When questions emerged as to what these 'general capacities' were, positive psychologists realized the need to develop a classification system and common vocabulary to discuss "good character." In 2004 a consensus-based document was published detailing 24 character strengths, subsumed under six broad virtues thought to be ubiquitously important for human flourishing (Peterson & Seligman, 2004). The virtues include wisdom and knowledge, courage, humanity and love, justice, temperance, and transcendence. Humor was identified as one of the positive traits (along with gratitude, spirituality, hope, and appreciation of beauty and excellence) classified under

the virtue of transcendence. Transcendence strengths are defined as those that allow individuals to create and build connections to the greater universe and in doing so, provide a sense of meaning and purpose to human existence. According to Peterson and Seligman, humor is seen as one way of achieving transcendence because "it connects someone directly to troubles and contradictions in a way that produces not terror or anger but pleasure" (p. 519).

Unlike the other strengths, humor was a late addition to this classification system and is considered one of the most controversial strengths. For example, there is some debate about which of the broader virtues humor actually belongs in (Peterson & Seligman, 2004). Beermann and Ruch (2009) argued that humor could be covered, in part, by each of the six virtues. Furthermore, humor is less clearly defined than most of the other strengths, and it is not as obviously virtuous, since it is generally recognized that it can be used in detrimental as well as beneficial ways (e.g., Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). Some theorists have even argued that humor is essentially a form of aggression (see Martin, 2007 for a review). Thus, there is some uncertainty about how humor actually fits into the framework of positive psychology. Therefore, the purpose of this dissertation is to explore the role of humor as a character strength within positive psychology. Four studies were conducted, each of which addressed one or more of the following research questions:

(1) How should humor as a character strength best be conceptualized and measured?

(2) To which aspects of positive psychology is humor relevant?

(3) How does humor compare with gratitude, another more widely studied strength?

(4) Are similar associations between humor styles and well-being found within individuals (over time) as those found between individuals?

(5) Can a positive psychology intervention be developed based on the conceptualization of humor as a character strength?

Humor and Well-being

Before discussing these five questions in more detail, it is important to briefly outline the essential elements of well-being and humor as well as ways the two constructs may be related to one another.

Well-Being. Well-being is a broad, multi-faceted and complex construct. While there is no consensus around a single definition, there is general agreement that it concerns positive functioning and experience (Ryan & Deci, 2001). A distinction is made in the research literature between eudaimonic and hedonic well-being. The former is characterized by a focus on virtue, purpose in life, and meaning, whereas the latter is characterized in terms of seeking pleasure and avoiding pain (Ryan & Deci, 2001). This dissertation focuses largely on hedonic indicators (life satisfaction, affective experiences). However, studies one and two also explored elements of eudaimonic happiness (e.g., meaning) by including a number of morality variables (discussed further below).

Humor. Humor is an enjoyable universal human activity which typically occurs in social interaction (Martin & Kuiper, 1999; Provine & Fischer, 1989). It is essentially a form of play which allows people to adopt a non-serious attitude to situations in their daily lives. Humor also involves a cognitive-perceptual process whereby an event, situation, person, image, or idea is interpreted as incongruous, odd, unexpected, or surprising (Apter, 1991; Martin, 2007). Furthermore, this perception of incongruity involves diminishment, whereby the object is viewed as being less important, valuable, or worthy of esteem than initially thought. Both the notion of playful incongruity coupled with the diminishment or devaluation of the object are important determinants of whether

something is perceived as humorous (Martin, 2007). These cognitive processes evoke a specific emotional response. Martin proposed the term 'mirth' to identify the particular positive emotion associated with humor and noted that laughter and smiling are nonverbal vocal and facial expressions communicating this emotion to others.

    Relevance of Humor to Well-Being. Since humor is a complex phenomenon involving cognitive, emotional, and social aspects, it can be especially influential for psychological well-being by strengthening an individual's ability to cope with stress, inducing positive emotions, and increasing levels of social support (Martin, 2007). First, humor may moderate the adverse effects of stress on health (Kuiper, Martin & Olinger, 1993; Martin, 2004). Lazarus and Folkman (1984) have theorized that individuals' cognitive appraisals of a potentially stressful life experience are important in determining whether or not the situation will lead to adverse physiological and psychological outcomes. The humor-related phenomena of playfulness, incongruity, and diminishment may be particularly relevant to stress-related appraisals. In particular, the ability to respond to situations with a humorous outlook may allow people to more effectively cope with stress by means of shifting perspective, gaining distance from the stressful situation, and building feelings of mastery in times of adversity (Martin, 2004).

    Second, another mechanism by which humor might benefit psychological well-being is through the induction of positive emotions that accompany the perception of humor. As noted above, the cognitions associated with appraising a particular circumstance as incongruous and humorous elicit the distinct pleasant emotion which Martin (2007) termed mirth. By cultivating the emotional experiences of mirth, it is possible that improved well-being will follow.

    Finally, a third reason why humor may seem particularly relevant to positive

psychology is because it can be used as a way of enhancing relationships. As already noted, humor is inherently a social phenomenon. Individuals who are able to use adaptive forms of humor to reduce conflict, initiate personal disclosure, provide emotional support to others, and communicate a positive outlook during stressful situations, may consequently experience a richer social support network and more satisfying interpersonal relationships (Martin, 2007). In turn, this enhanced social support may further contribute to an improved ability to cope with stress (Martin, 2004).

There is already a considerable body of research evidence that humor is associated with the ability to cope with adverse life experiences, increased levels of positive affect, and the initiation and maintenance of a sense of closeness with others, all of which would seem to make it a particularly important topic for positive psychology (Martin, 2007). Unfortunately, many researchers in the field of positive psychology seem unaware of the extensive research on humor and well-being (McGhee, 2010). As a result humor is often ignored in positive psychology research. Therefore, the overall purpose of this dissertation is to bring attention to a character strength that may be directly relevant to the key interests of positive psychologists, by exploring the five areas below.

Defining Humor as a Character Strength

Exactly what is meant by the conceptualization of humor as a character strength is debatable. Within the positive psychology literature, a humorous individual has been defined as "one who is skilled at laughing and gentle teasing, at bringing smiles to the faces of others, at seeing the lighter side, and at making (not necessarily telling) jokes" (Peterson & Seligman, 2004, p. 530). While it is acknowledged that there are many ways in which humor can be used, positive psychologists focus on the types of humor that they believe serve a moral purpose - by allowing people to directly confront challenges, by

maintaining a positive outlook in the face of adversity, and by initiating and maintaining satisfying interpersonal relationships (Peterson & Seligman, 2004).

A 240 item questionnaire called the Values in Action Inventory of Strengths (VIA-IS) was developed to assess each of the 24 character strengths in positive psychology (Peterson & Seligman, 2004). Included in this measure is a 10 item scale designed to capture humor as a positive, fulfilling, morally-valued trait. Sample items that would be endorsed by individuals with this strength include "Whenever my friends are in a gloomy mood, I try to tease them out it", "Most people would say I am fun to be with", and "I try to add some humor to whatever I do" (p. 584).

There are four main criticisms of the VIA-IS approach to humor. First, it appears that the conceptualization and development of the measure were carried out in relative isolation from the existing body of research and theory in the field of humor and mental health. Unlike the more recent approach taken in the psychology of humor field (e.g., Martin et al., 2003), Peterson and Seligman (2004) do not acknowledge that the relative absence of aggressive forms of humor may also be important in conceptualizing humor as a strength. Therefore, the VIA-IS Humor scale does not distinguish between positive and negative uses of humor. Second, it is unclear from the wording of many VIA-IS Humor items that the scale is capturing what it is intended to measure. For example, one item makes reference to teasing which can be quite aggressive in nature. Third, since the VIA-IS measure is administered through a website, researchers are not permitted to obtain individual item scores (only total scale scores). As a result, only one publication has provided any information on the reliability and validity of the VIA-IS scales and the information provided is minimal (Peterson & Seligman, 2004). Finally, researchers are not permitted to administer the humor subscale by itself apart from the entire VIA-IS.

This proprietary control over the measure makes it difficult for researchers to investigate humor in positive psychology using this measure. Therefore, there is a need to evaluate this measure and determine whether it might perhaps be better in future research in positive psychology to employ a more established measure from the humor research field.

Among humor researchers, it could be argued that the conceptualization of humor as a character strength is best captured by the Humor Styles Questionnaire (HSQ; Martin et al., 2003). This measure, which has been widely used and validated, is based on the assumption that humor serves both adaptive (i.e., self-enhancing, affiliative) and maladaptive (i.e., aggressive, self-defeating) functions with respect to well-being (e.g., Kuiper, Grimshaw, Leite, & Kirsh, 2004; Martin, 2007). *Affiliative* humor is characterized by sharing witty comments, humorous anecdotes, and jokes to enhance relationships. S*elf-enhancing* humor involves the use of humor to cope with stress and maintain a cheerful outlook on life in the face of adversity. *Aggressive* humor refers to the tendency to use humor in the form of teasing or witty sarcasm to make fun of others. Finally, *self-defeating* humor consists of excessively self-disparaging humor to make others laugh at one's own expense. Thus, the HSQ approach defines humor as a strength by the presence of positive uses of humor as well as the relative absence of negative uses. This notion is supported by findings indicating that the lack of maladaptive styles is as important for well-being, or even more so, than the presence of adaptive styles (for a review see Martin, 2007).

Correlational Research: Humor Styles and Well-Being

Numerous studies using the HSQ have supported the idea that the four types of humor are distinct dimensions and differentially related to mental health (e.g., Chen & Martin, 2007; Erickson & Feldstein, 2007; Frewen, Brinker, Martin, & Dozois, 2008;

Kuiper, et al., 2004; Kuiper & McHale, 2009). For example, previous research has demonstrated that affiliative and self-enhancing humor correlate positively with indicators of psychological well-being such as self-esteem, optimism, adaptive coping styles, positive mood and social support; and negatively relate to measures of depression and anxiety (e.g., Chen & Martin, 2007; Martin et al., 2003). In contrast, the more maladaptive humor styles consistently show opposite patterns of associations with indicators of health. For example, aggressive humor has been found to positively relate to hostility and negatively correlate with relationship satisfaction (e.g., Martin et al., 2003). Likewise, self-defeating humor has been shown to positively correlate with anxiety, depression, and hostility; and negatively correlate with self-esteem, optimism, and social support (e.g., Frewen et al., 2008; Kuiper et al., 2004). Overall, these studies provide converging evidence for the generally stable and robust associations between the humor styles and measures of psychological health across diverse groups. These findings also indicate that the negative humor styles add to the amount of variance in well-being accounted for (e.g., Martin et al., 2003) and are therefore important dimensions to capture when exploring the relationships between humor and psychosocial functioning.

While no study has investigated the direct relationships between the VIA-IS Humor scale and the HSQ, one publication by Beermann and Ruch (2009) used both measures to explore the question: How virtuous is humor? Participants rated the extent to which items from 12 contemporary humor instruments (including the HSQ and VIA-IS Humor scale) represent vice, virtue, or neutrality. Findings indicated that the two healthy humor styles and VIA-IS Humor scale were rated as having a high degree of virtue whereas the negative humor styles were rated as having a high degree of vice. These results suggest that the VIA-IS Humor scale may capture positive uses of humor but does

not appear to measure negative ones. An important next step in determining the best

conceptualization of humor as a strength includes exploring how the HSQ and VIA-IS

Humor scale correlate with one another. In addition, research is needed to evaluate

whether the HSQ, by assessing both positive and negative uses of humor, might be a

stronger predictor of positive psychology variables than the VIA-IS Humor scale alone. If

so, this outcome would suggest that the conceptualization of humor represented by the

HSQ may be more appropriate for studying the role of humor in positive psychology.

This is one of the goals of the present studies.

Positive Psychology Variables of Interest

Another important goal in determining the role of humor in positive psychology is

to explore which of the variables that are of interest to positive psychology are related to

humor, and which are perhaps less relevant to humor. Positive psychology is particularly

concerned with constructs such as happiness, routes to happiness, resilience, and morality

(e.g., McGhee, 2010; Peterson & Seligman, 2004). Unfortunately, researchers have paid

little attention to humor despite its potential significance to these key constructs in

positive psychology (McGhee, 2010).

Happiness (also referred to in this dissertation as emotional well-being).

Happiness is often defined as an individual's own (i.e., subjective) sense of wellness,

conceptualized in terms of high satisfaction with life, frequent positive affect, and

infrequent negative affect (Diener, 1994). Scholars in the field note that happier people

have supportive social relationships, experience enhanced psychological functioning, and

exhibit certain physical sensations more frequently (e.g., laughter; Algoe & Haidt, 2009;

Busseri, Choma, & Sadava, 2012; Fowler & Christakis, 2009). Therefore, to assess the

relationships between humor and happiness, measures of positive and negative affect, satisfaction with life and optimism were used in the present research.

Routes to Happiness. Peterson, Park, and Seligman (2005) have proposed three different routes to happiness: pleasure, meaning, and engagement. The pleasure route is based on the doctrine of hedonism (maximizing pleasure and minimizing pain). The meaningful route is consistent with the principle of eudemonia - living in accordance with one's virtues. Finally, the engagement route involves seeking out activities that produce the mental state of flow (which occurs when individuals are fully motivated and involved in an activity). To assess these proposed routes, Peterson et al. developed the Orientations to Happiness Questionnaire. Researchers using this measure have found that the VIA-IS Humor scale is most strongly correlated with the pleasure route to happiness (Peterson, Ruch, Beermann, Park, & Seligman, 2007). However it is unknown how the humor styles relate to these routes, or whether the humor styles might account for more variance in routes to happiness than the VIA-IS Humor scale. Therefore, it was of interest to address these questions within this dissertation.

Resilience. Resilience is a broad concept that has been conceptualized in different ways. Masten and Gewirtz (2006, p. 1) define the term as "positive adaptation or development manifested in the context of adverse experiences." Over the past decade, the term has been broadened from "effectively negotiating, adapting to, or managing significant sources of stress" to include the capacity for positive growth and development (Windle, 2011, p. 153). Humor may be one resource within an individual that facilitates the ability to "bounce back" and effectively adapt in the face of adversity because it could mitigate the adverse effects of stress by means of shifting perspective (perception of incongruity), distancing oneself from a problem (diminishment), eliciting social support,

increasing positive emotion (mirth) and/or relieving tension through laughter (e.g., Abel, 1998; Dixon, 1980; Kuiper, 2012; Kuiper et al., 1993; Lefcourt, 2001).

In this dissertation, resilience was measured in three different ways. First, I used one of the most widely used and well validated measures of resilience, the Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003). However, this measure only examines one higher order category of resilience. Therefore, a questionnaire capturing a related construct, mental toughness, was also included.

Mental Toughness was born out of the research on human hardiness, defined as the ability to be resilient during periods of high stress (Kobasa, 1979). Kobasa, Maddi and Kahn (1982) proposed that hardiness comprised three elements: commitment, control, and challenge. Commitment measures the extent to which people actively approach and persist with a goal or event they encounter. Control is measured by the tendency to feel considerable influence over the outcomes of events (rather than feeling helpless). Challenge is defined as an individual's belief that challenge is a regular part of life and should be viewed as an opportunity rather than a threat. Mental toughness extended the construct of human hardiness by including a fourth factor, confidence, argued by Clough, Earl and Sewell (2001) to be a necessary component of resilience. Confidence is defined by a high sense of self belief to complete difficult tasks.

Finally, the Stress appraisal Measure (SAM: Peacock & Wong, 1990) was included to explore different ways in which people think about and evaluate an upcoming stressful situation. According to Lazarus and Folkman (1984) stress involves a transactional process between the environment and an individual. Stress reactions are thought to occur when a situation is appraised as overwhelming or exceeding a person's resources for coping. The SAM measures stress appraisals in two overarching ways:

primary appraisals (perception of a stressor as harmful, threatening or challenging) and secondary appraisals (perception of personal coping resources needed to deal with the stressful event). Both the dimensions of mental toughness and an individual's appraisal of the environment are thought to play an important role in resilience, particularly by mediating an individual's stress level/stress reaction.

Morality. With regard to morality, positive psychologists describe each of the 24 character strengths as morally praiseworthy, despite limited research that has attempted to evaluate whether the strengths do in fact correlate with moral constructs (Peterson & Seligman, 2004). Two studies (discussed further below) that have examined humor in relation to moral dilemmas suggest that humor may, in fact, be related to *less* moral behavior (Strohminger, Lewis, & Meyer, 2011; Valdesolo & DeSteno, 2006). It is important to note that these studies did not distinguish among different types of humor. This dissertation will therefore pursue this question further by including measures of moral identity, moral reasoning (using scenarios that place a more moral option against a less moral one), and moral behavior (i.e., an altruism scale). These measures will be discussed in greater detail in a later section.

Comparing Humor with Gratitude

In addition to exploring the definition and measurement of humor as a character strength and its relationship with positive psychology variables, a third purpose of this dissertation is to compare humor with another, more well-established character strength, namely gratitude. Gratitude is defined by Emmons (2004, p. 554), the world's leading researcher on this topic, as "a sense of thankfulness and joy in response to receiving a gift, whether the gift be a tangible benefit from a specific other or a moment of peaceful bliss evoked by natural beauty." Gratitude was chosen as a comparative strength for three

reasons. First, like humor, in positive psychology gratitude is subsumed under the virtue of transcendence. Therefore, conceptually, humor and gratitude are believed to share similar functions with respect to forging connections with the larger universe (Peterson & Seligman, 2004). Second, gratitude has been the focus of a considerable amount of applied research in positive psychology (discussed below). Third, despite their similar placement in the positive psychology classification system, there is reason to believe that gratitude and humor involve different types of emotions and may have different effects. It is therefore of interest to explore potential similarities and differences between them.

   Correlational Cross-Sectional Research on Gratitude. Relative to the humor styles literature, there appears to be less correlational research exploring the relationships between gratitude and well-being. In these studies gratitude has usually been measured using the Gratitude Questionnaire-Six Item Form (GQ-6; McCullough, Emmons, & Tsang, 2002) or the Gratitude Adjective Checklist (GAC; which is the sum of ratings on three adjectives: grateful, thankful, and appreciative; McCullough et al., 2002). Studies have generally found that gratitude is robustly related to more positive moods and greater satisfaction with life (Wood, Froh, & Geraghty, 2010). For example, Froh, Sefick and Emmons (2008) found positive associations in early adolescents between gratitude (measured using the GAC) and positive affect, satisfaction with life, optimism, social support and prosocial behavior. Similarly, in another study by Froh et al. (2011), grateful adolescents (measured using the GQ-6) had higher grade point averages, were more socially integrated (e.g., felt part of their community), and less depressed relative to less grateful participants. To examine the relationships between gratitude and resilience in the aftermath of crises, Fredrickson, Tugade, Waugh, and Larkin (2003) asked a sample of American college students to complete measures of mood, stress, and gratitude (measured

through one item on an emotion scale) in the weeks following the September 11th terrorist attacks. They found that the experience of gratitude was an important buffer against depression. These studies support the link between gratitude and emotional functioning.

Intervention Research on Gratitude. With regard to applied research, a number of studies have evaluated the effectiveness of gratitude-based exercises for increasing levels of personal well-being (e.g., Emmons & McCullough, 2003; Froh et al., 2008; Lyubomrisky, Dickerhoof, Boehm, & Sheldon, 2011; Seligman et al., 2005). These studies suggest that gratitude can serve multiple benefits with respect to well-being and are discussed in more detail in Study 4 of this dissertation.

Research Comparing Humor and Gratitude. Although gratitude has been defined in cognitive terms as an attitude or appraisal process, in much of the positive psychology literature, it is conceptualized as an emotion. Gratitude has been described as an "other-praising" emotion resulting from "others' exemplary actions" (Algoe & Haidt, 2009, p. 105). Conceptualized as a blend of admiration and joy, gratitude has also been termed an empathic emotion because its "roots lie in the capacity to empathize with others" (McCullough et al., 2001, p. 251). For example, for someone to feel grateful, they need to recognize, appreciate, and empathize with the effort expended by another person (i.e., the benefactor) to cause (at least in part) the grateful person's (i.e. the beneficiary's) good fortune (Lazarus & Lazarus, 1994).

Humor, in contrast, does not seem to fit in the categories of "other-praising" or "empathic" emotions because the experience of mirth (the emotion underlying humor) is not dependent on the perception of another person's moral actions. Three preliminary studies have evaluated humor (or conceptually similar constructs such as amusement or joy; Fredrickson, 1998) in relation to these "other-praising" emotions (e.g., admiration,

elevation). In the first two studies by Algoe and Haidt (2009), participants were asked to recall a situation or view a brief video-clip eliciting gratitude, admiration, elevation, or joy/amusement. Participants were then asked to describe their feelings, motivations and physical sensations. The results indicated that participants in the joy/amusement conditions reported light/bouncy feelings, blushing, and a faster heart rate when recalling their situation or viewing their clip. In contrast, participants in the 'other-praising' emotion conditions noted far fewer physical sensations. The results also indicated that participants in the "other-praising" emotion conditions were more motivated to behave in prosocial ways. In contrast, those in the joy/amusement group were more motivated to focus on their own goals.

In a third study by another group of researchers (Strohminger et al., 2011), participants were assigned to listen to one of three types of audio clips: humor, elevation, or neutral/control. Afterwards, participants provided permissibility ratings for the proposed action described in a number of moral dilemmas. The results indicated that participants in the humor group tended to favor socially unconventional utilitarian solutions to moral dilemmas in contrast to those in the elevation condition (e.g., they were more likely to say that one should push a person off of a footbridge to stop a trolley car from killing five other people). The authors explained that (as noted previously) the emotion of mirth underlying humor (Martin, 2007) involves a sense of diminishment, irreverence, or devaluation whereby an object, person, situation or action is seen as less important than when it first appeared (Apter, 1991; Strohminger et al., 2011). As a result, when people experience mirth, they may adopt an attitude of disregard toward social norms. In contrast, elevation may enhance moral behavior and attitudes of reverence by increasing moral antecedents such as empathy and helping. While this study did not

specifically examine gratitude, it is possible that gratitude and elevation have similar effects since they are both part of the same family of emotions.

In summary, these studies suggest that relative to other-praising emotions, when humor is experienced, the beneficiary of one's behavior is more likely the self than others, increased physical sensations are reported, and stressful situations are reappraised as less important than they initially appeared. This dissertation will expand on these hypotheses by comparing humor and gratitude in relation to other variables of interest (e.g., altruism) and by using alternative methodologies to the previous studies.

Within-Person Relationships Between Humor and Well-Being

One major limitation of the existing HSQ research is the notable dearth of information on real-time associations between humor and well-being (Martin, 2007). Although these associations involve processes that are complex and dynamic in nature, almost all the studies in this area have employed cross-sectional correlational designs (Martin, 2007; Tennen, Affleck, Armeli, & Carney, 2000). In the cross-sectional methodology, a group of participants complete trait measures of humor and well-being on one occasion, thereby taking a single, and possibly retrospective, snapshot of each individual's overall level of these variables (Puhlik-Doris, 2004). While this approach allows researchers to compare overall levels of well-being in people who generally use more of certain types of humor with those who use less, this design is limited in that it assumes that affiliative and self-enhancing humor are adaptive in all contexts and for all people, whereas self-defeating and aggressive humor style are always maladaptive (Martin et al., 2003). However, by considering different contextual influences (e.g., the role of stable individual traits in the relationships between daily humor and well-being), it

is possible that some of the more maladaptive styles can actually be beneficial for well-being.

As a result of the aforementioned limitations, a within-person process-oriented approach could add an important component to this area of research. Instead of focusing on trait differences between people, a process-oriented design investigates day-to-day changes in the uses of humor and levels of well-being within individuals independently of how much humor a person uses compared to other people. Unlike the cross-sectional approach which measures only one point in time, a process-oriented approach involves repeated daily behavior ratings of humor and well-being over time. Because these assessments involve a shorter time frame, this approach helps to minimize biases associated with retrospective reporting (Bolger, Davis, & Rafaeli, 2003).

Curran and Bauer (2011) argue that a greater focus on within-person processes is needed in the field of psychology because conceptually, patterns of association found at the within-person level may be very different, both in direction and magnitude, than those found between people. When researchers do not recognize that these effects are statistically independent from one another, errors of inference can result. Researchers might assume that the observed correlations between humor and mental health found at the between-person level may also apply at the within-person level. However, as noted, this may not necessarily be the case. The association between body mass and life expectancy in mammals is an example that helps to emphasize this point (Curran & Bauer). "On average, species that are characterized by larger body mass tend to have longer life expectancies than species with smaller body mass. So whales tend to live longer than cows who tend to live longer than ducks. However, on average, individual members within a species who are characterized by larger body mass tend to have shorter

life expectancies relative to members of their own species. So fat ducks tend to have shorter life expectancies than skinny ducks" (p. 588). Therefore, it would be a mistake to assume that the relationship between body mass and life expectancy between-species is the same as the association between these variables within-species (when in fact, the opposite relationship exists). This example highlights the need for studies that capture both within- and between-person relationships.

One reason for the potential differences with regard to the magnitude and direction of correlations between levels may be due to different theoretical constructs being measured at each level. For example, Hoffman and Stawski (2009) note that at the between-person level mental health outcomes may resemble the influence of chronic factors (e.g., personality traits, lifestyle variables). However, at the within-person level, these outcomes may be the confluence of more acute factors such as daily deviations from normal work or health routines.

With respect to humor, it may be the case that in a longitudinal process-oriented study, at the between-person level, self-defeating humor is associated with poorer well-being whereas affiliative and self-enhancing humor are correlated with improved psychological functioning. These findings would support the wealth of cross-sectional correlational studies exploring between-person relationships (see Martin, 2007 for a review). However, it is also possible that at the within-person level, no relationships or fewer relationships may be found between humor and well-being. For example, the use of more self-defeating humor on a given day, relative to a person's norm, may not correlate with changes in psychological functioning perhaps because the use of humor at this level does not resemble a chronic habitual trait but instead the confluence of changes in daily routines. Alternatively, it may be the case that the relationship between two daily (within-

person) variables is moderated by between-person variables (e.g., trait humor styles, trait self-esteem). For example, people who use a high level of self-defeating humor overall relative to other people (i.e., on a trait level) may experience worse well-being on days in which they use more of this style compared to days when they use less. However, there may be no such day-to-day relationship between self-defeating humor and well-being for people who habitually use low levels of self-defeating humor relative to other people. These types of findings would have important implications for the way we think about the nature of humor styles and the effect of humor as a function of contextual influences (e.g., of stable individual traits). Furthermore, these results may offer practical implications for interventions. For example, if habitual use of self-defeating humor is particularly negative for well-being but daily use of this style is unrelated to fluctuations in mental health, then it may be more fruitful for humor-based interventions to target individuals with high trait (versus daily) levels of self-defeating humor.

In summary, the use of longitudinal process-oriented methodology offers the potential for new important information not obtained in cross-sectional research. As a result, one study in this dissertation made use of this approach to explore the relationships between humor and well-being (as well as between gratitude and well-being) at both the between- and within-person levels.

Humor as a Positive Psychology Exercise

Researchers suggest that approximately 40% of well-being can be influenced by intentional activity (Lyubomirsky, Sheldon, & Schkade, 2005). As a result, a more applied line of positive psychology research has focused on helping healthy individuals increase their well-being through the use of specific positive psychology interventions (PPIs). Examples of these exercises include writing letters of gratitude, cultivating sacred

moments, setting goals, and counting acts of kindness. It should be noted that unlike traditional psychotherapy, PPIs are designed to identify and develop strengths in non-clinical populations and not to repair or heal pathology (Sin & Lyubomirsky, 2009).

In 2009, Sin and Lyubomirsky conducted a meta-analysis and found that the average effect size (unweighted mean r) across all PPIs they studied was .29. They concluded that especially when the activities are cost-effective, unlikely to result in harm, require a short amount of time to complete, and involve dependent variables that are difficult to change (such as satisfaction with life), effect sizes of this magnitude can have enormous practical importance. As noted previously, PPIs involving gratitude have received a considerable amount of research attention (see Sin & Lyubomirsky, 2009 for a review). However, within this line of research, the topic of humor has consistently been overlooked as a potential PPI.

Based on the wealth of existing research with the HSQ, one would expect that the most effective humor exercises would be those that not only teach individuals to engage more frequently in humor in their daily lives, but also to distinguish between adaptive and maladaptive uses of humor. To test this assumption, research is needed to develop and evaluate humor exercises that teach individuals to distinguish between positive and negative uses of humor. Comparing this type of exercise with well-studied gratitude exercises and more traditional humor exercises that do not distinguish among humor types would be important in examining the role and conceptualization of humor in positive psychology. Finally, consistent with other PPIs, humor exercises designed to be brief, self-administered, and easily incorporated into daily life are thought to be most attractive to high-functioning individuals seeking to increase their happiness. Therefore,

the goal of the final study in the present research was to develop and test a humor exercise that fit with these aforementioned criteria.

Summary

In summary, this dissertation has five main research objectives:

(1) To clarify the definition and measurement of humor as a strength (VIA-IS Humor scale versus HSQ).

(2) To determine how humor as a strength relates to various positive psychology variables.

(3) To compare humor and gratitude in relation to measures of well-being.

(4) To explore within-person relationships over time between humor and well-being as compared to between-person findings.

(5) To develop a PPI based on humor as a strength and compare it to a gratitude PPI and a more traditional humor intervention (that does not distinguish among humor types).

Four studies were conducted to explore these goals. In particular, Studies 1 and 2 addressed objectives one, two and three using a cross-sectional approach. Study 3 focused on questions two, three and four using diary methodology. Finally, Study 4 used an experimental approach to explore the third and fifth goals.

Chapter 2: Defining Humor as a Character Strength (Studies 1 and 2)

This chapter presents the results of two correlational studies exploring the first three objectives of this dissertation. To reiterate, the first objective was to investigate which is the better measure of humor as a character strength to use in positive psychology research - the HSQ or the VIA-IS Humor scale. In order to explore this objective, correlations were examined between the two measures followed by an exploration of whether the negative humor styles add to the VIA-IS Humor scale in the prediction of positive psychology variables. The second objective was to analyze the associations between positive psychology variables and humor. Finally, the third objective was to compare humor with gratitude in the prediction of well-being.

Studies one and two are presented separately, integrating the results and discussion sections in each study. A general discussion follows exploring the conceptual and theoretical issues, relevant to both studies, in greater detail.

Study 1

One of the most important and influential projects undertaken within the field of positive psychology was the attempt to develop a classification system and common vocabulary to discuss good character. Following an extensive literature review of historical, cultural, religious, philosophical and psychological texts, a consensus-based document was published detailing 24 character strengths thought to be ubiquitously important for human flourishing (Peterson & Seligman, 2004).

Humor has been identified among the most controversial strengths within this classification (Peterson & Seligman, 2004), and the way it has been operationally defined as a subscale within the VIA-IS is consistent with the majority of traditional self-report humor scales (e.g., Multidimensional Sense of Humor Scale, MSHS, Thorson & Powell,

1993; Situational Humor Response Questionnaire, SHRQ, Martin & Lefcourt, 1984; Sense of Humor Questionnaire, SHQ, Svebak, 1996) created for the purpose of exploring the relationships between humor and well-being. Almost all these early scales were based on the assumption that humor is inherently a positive personality trait. However, over the past decade, humor researchers have questioned whether these scales adequately capture the dimensions of humor most relevant to health. For example, Kuiper and Martin (1998) reviewed data from five studies to explore the degree to which a number of commonly used self-report humor scales correlated with dimensions of positive personality (including dispositional optimism, self-esteem, and psychological well-being). The results indicated that many of the humor scales were largely unrelated to well-being. Similarly, Martin and colleagues (2003) have argued that the dimensions of humor captured by these self-report scales usually account for less than 6% of the variance in well-being. Thus, despite the popular assumption that a sense of humor is beneficial for well-being, these traditional sense of humor measures showed inconsistent and fairly weak correlations with health.

In an attempt to further understand these results, humor researchers began to revisit the findings of early personality theorists (and forerunners of positive psychology) such as Allport (1961) and Maslow (1954) who noted that humor is not always healthy. Instead, these authors argued that whether or not humor is beneficial for health and well-being depends on how it is used (and not merely how funny an individual is). They suggested that the relative absence of maladaptive forms of humor is as important, or even more important, to happiness, life satisfaction, and well-being, as is the presence of positive forms of humor.

Despite the opinions of Allport and Maslow, for many years humor researchers designed scales (e.g., SHRQ, MSHS, SHQ, and – more recently – the VIA-IS Humor scale) that did not capture the specific ways humor is used by respondents in their daily life. Furthermore, these scales did not explicitly distinguish between adaptive and maladaptive forms of humor.

Based on the limitations of these self-report humor measures, and influenced by the writings of Maslow and Allport, Martin and colleagues (2003) began working on a new conceptualization and measurement of individual differences in humor aimed to explicitly distinguish healthy from unhealthy forms of humor. They developed the Humor Styles Questionnaire (HSQ), a multidimensional measure that assesses four different uses of humor in everyday life (affiliative, self-enhancing, aggressive, and self-defeating).

While Martin and colleagues (2003) acknowledged that the HSQ was not designed to capture all components of humor, they hoped that it would allow researchers to measure those functions most relevant to psychological health. Since then, the HSQ has become the most widely used measure in the field of humor and well-being research. Considerable support has been found for the idea that each of the four humor styles are distinct dimensions (i.e., minimally correlated with each other) and differentially related to mental health (e.g., Chen & Martin, 2007; Erickson & Feldstein, 2007; Kuiper, et al., 2004; Kuiper & McHale, 2009). Furthermore, the abundance of research using this measure provides considerable evidence that (1) the four humor styles together account for more variance in well-being than did the earlier types of self-report humor scales and (2) the negative styles (especially self-defeating humor) add to the variance explained by positive humor styles (e.g., Cann & Etzel, 2008; Cann, Stilwell, & Taku, 2010; Chen &

Martin, 2007). Therefore, the negative uses of humor appear to be important dimensions to capture when exploring the relationships between humor and psychosocial functioning.

In summary, the VIA-IS approach appears out of date and represents a stage in the psychology of humor research that has been superseded by the HSQ. Given the advantages of the HSQ and disadvantages of the VIA-IS Humor conceptualization and operationalization, it could be argued that humor as a character strength should be captured by the HSQ. Accordingly, the first goal of the present study was to explore this hypothesis by (1) examining the correlations between the HSQ and VIA-IS Humor scale and (2) investigating whether the negative humor styles add to the prediction of well-being, beyond the VIA-IS Humor measure. Based on previous research with traditional self-report humor scales, it was predicted that the VIA-IS Humor scale would positively correlate with the adaptive humor styles but remain unrelated to the maladaptive ones. Likewise, consistent with previous humor research indicating the importance of measuring the maladaptive styles of humor for well-being (e.g., Martin et al., 2003), I expected that the negative humor styles would add to the VIA-IS Humor scale in predicting positive psychology outcomes.

The second purpose of this study was to examine the associations between humor and positive psychology constructs. Consistent with previous humor research (e.g., Martin et al., 2003), it was expected that the adaptive humor styles would positively correlate with measures of happiness (e.g., positive mood, satisfaction with life, optimism) and negatively correlate with measures of unhappiness (e.g., negative mood). Furthermore, based on previous findings (see Martin, 2007 for a review), it was expected that self-enhancing humor would be the most consistently correlated style with coping with stress whereas aggressive humor would remain largely unrelated to emotional well-

being, stress, and coping. Finally, consistent with previous research (Peterson et al., 2007), I hypothesized that humor (particularly the positive styles) would be most consistently linked with the pleasure route to happiness as compared to meaning and engagement.

With regard to morality, this study was the first to explore the associations between humor styles, the VIA-IS Humor scale and two measures of morality. First, consistent with the research by Valdesolo and DeSteno (2006) and Strohminger and colleagues (2011), moral scenarios were used to examine the correlations between humor styles and moral reasoning. Second, the associations between humor and moral identity, defined as one's "self-conception organized around a set of moral traits," were investigated (Aquino & Reed, 2002, p. 1424). Moral identity is comprised of two scales: Internalization captures a more private moral identity rooted in the core of one's well-being, whereas Symbolization assesses a more public moral identity expressed through one's actions and characteristics. It was expected that the adaptive humor styles would correlate positively with measures of moral reasoning and moral identity whereas the maladaptive humor styles would correlate negatively with these constructs. This hypothesis was based on the assumption that people who use more adaptive forms of humor may be more autonomous, diligent, and/or self-regulated (and hence report higher internalization scores) as well as more socially skilled (e.g., by considering the importance of self-presentation when using humor). In contrast, people who use more negative forms of humor may not rate moral identity as central to their self-schema given their tendency to be less conscientious (Martin, 2007), and they may engage in forms of humor with opposite intentions to those of a moral individual (e.g., to manipulate others).

Similarly, these individuals may care less about how they are perceived by others (resulting in negative correlations with the symbolization scale).

I expected that increased use of aggressive humor, in particular, would be associated with lower morality scores (and perhaps be the most consistently linked style with the morality outcomes). This hypothesis was based on previous research indicating that (1) people who use aggressive humor may be impulsive and lack concern for the impact their humor use has on others, (2) aggressive humor is positively correlated with the construct of psychopathy (characterized by traits such as lack of empathy, manipulativeness, and irresponsibility) and (3) psychopathy is positively correlated with less moral behaviors (Hare, 2007; Veselka, Schermer, Martin, & Vernon, 2010).

The third and final purpose of this study was to compare the associations between humor and gratitude in relation to positive psychology constructs. First, however, the specific correlations between gratitude and positive psychology outcomes were explored. Consistent with previous research, it was expected that gratitude would positively correlate with positive mood, optimism, satisfaction with life, and resilience (e.g., Watkins, Woodward, Stone, & Kolts, 2003). However, gratitude was expected to be weakly associated or unrelated to negative mood (McCullough, Tsang, & Emmons, 2004; Watkins et al., Study 2). Furthermore, gratitude was hypothesized to correlate positively with all morality measures based on a proposal and supporting research suggesting that gratitude is a moral affect with specific moral functions (McCullough, Emmons, Kilpatrick, & Larson, 2001).

After examining the correlations between gratitude and humor, the main part of this objective involved exploring whether humor predicted more variance in the outcome measures over and above the effects of gratitude. In line with the HSQ model of humor,

Martin (2007) proposed that humor consists of a positive emotional response, a cognitive-perceptual process (important in coping with stress), a social context (e.g., joking with friends may facilitate social support), and a behavioral expression (laughter). In contrast, gratitude seems to consist of mainly cognitive (e.g., savoring) and emotional (e.g., feeling grateful) processes. Based on the hypothesis that humor may have additional features beyond gratitude (i.e., the social and behavioral benefits), it was expected that humor would add significantly to gratitude in predicting at least some positive psychology outcomes (e.g., negative mood, pleasure orientation to happiness, resilience).

Method

Participants

The sample was composed of 176 first-year undergraduate students (55 males, 112 females, 9 missing) 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 partial course credit. The mean age of participants was 18.6 years ($SD = 2.16$).

Measures

Demographics Questionnaire. A brief demographics questionnaire (see Appendix A) was administered to provide general information about participants' age, gender and ethnicity.

Humor Styles Questionnaire (HSQ; Martin et al., 2003). The HSQ examines four dimensions corresponding to individual differences in the spontaneous experience and expression of humor in everyday life. Affiliative humor (e.g., "I laugh and joke a lot with my friends") and self-enhancing humor (e.g., "If I am depressed I can usually cheer myself up with humor") are the two adaptive styles. Aggressive humor (e.g., "If I don't

like someone, I often use humor or teasing to put them down") and self-defeating humor (e.g., "I let people laugh at me or make fun at my expense more than I should") are the potentially detrimental styles. The HSQ consists of 32 items (eight for each scale) rated on a 7-point, Likert-type scale ranging from 1 (*totally disagree*) to 7 (*totally agree*). Past research has demonstrated that the HSQ is a reliable and valid measure (e.g., Chen & Martin, 2007; Kuiper et al., 2004; Martin, 2007; Martin et al., 2003).

Values in Action Inventory of Strengths – Humor and Gratitude Scales (VIA-IS Humor, VIA-IS Gratitude; Peterson & Seligman, 2004). The 10-item face-valid humor subscale and the 10-item gratitude subscale of the 240 item VIA-IS self-report questionnaire were used to measure the character strengths of humor and gratitude. While participants completed the entire VIA-IS (all 240 items, 24 subscales), only the humor and gratitude subscales were of interest in this study. Respondents indicate the extent to which they endorse each statement reflecting humor or gratitude as a strength on a 5-point Likert-type scale ranging from 1 (*not like me*) to 5 (*very much like me*). An example item from the humor subscale is "Whenever my friends are in a gloomy mood, I tease them out of it." A sample item from the gratitude subscale is "At least once a day, I stop and count my blessings." Peterson and Seligman have noted that each of the VIA-IS subscales has good reliability and consistent test-retest correlations (over a period of four months).

Connor-Davidson Resilience Scale (CD-RISC; Connor & Davidson, 2003) measures characteristics of resilience and is comprised of 25 items. Respondents are asked to indicate the extent to which they agree with the statements on a scale from 0 (*rarely true*) to 4 (*true nearly all of the time*). The item responses are summed to create one total score and higher scores indicate greater resilience. Example items include "I like

challenges" and "I am able to adapt when changes occur." The CD-RISC has sound psychometric properties (see Connor & Davidson, 2003 for more information).

Mental Toughness Questionnaire (MTQ48; Clough, Earl, & Sewell, 2001) is a 48 item scale measuring individual differences in the ability to effectively withstand stressors, pressures, and challenges in many different environments (such as in the workplace or during sports). The MT48 provides an overall score as well as four subscale scores for the different core components of mental toughness, considered to be a broader concept than resilience. These subscales include challenge (8 items), commitment (11 items), control (14 items), and confidence (15 items; defined in the general introduction). Participants rate each item on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*). Example items include "Challenges usually bring out the best in me" (Challenge), "I usually find something to motivate me" (Commitment), "I generally feel in control" (Control), and "I generally feel that I'm a worthwhile person" (Confidence). Previous research has noted that the MTQ48 is a reliable measure, with coefficient alphas ranging from .74 for challenge and control to .92 for an overall score (Horsburgh, Schermer, & Vernon, 2009).

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.

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.

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) provides two distinct scores for positive and negative aspect. Respondents are asked to indicate the extent to which they experienced a number of different emotions during a specified time period on a scale from 1 (*very slightly or not at all*) to 5 (*extremely*). The present study used a time frame of the "past two weeks." Examples of positive items include "interested", "excited" and "inspired." Examples of negative items include "upset", "ashamed", and "irritable". The PANAS is widely used in research and has been shown to have high reliability and good convergent validity with other questionnaires measuring pleasant and unpleasant moods (e.g., Kuiper, Martin, & Dance, 1992; Watson et al., 1988).

Orientations to Happiness Scale (OtH; Peterson, Park, & Seligman, 2005) consists of 18 items (6 items per subscale) measuring three different approaches to happiness: a pleasurable life, a meaningful life, and an engaged life (described in the

general introduction). Participants are asked to rate the extent to which they endorse each of the three orientations to happiness using a scale from 1 (*not at all like me*) to 5 (*very much like me*). Example items include "I love to do things that excite my senses" (Pleasurable Life), "My life has lasting meaning" (Meaningful Life), and "Regardless of what I am doing time passes very quickly" (Engaged Life). Previous research has found that the subscales are reliable and empirically distinct (Peterson et al., 2005).

The Self-Importance of Moral Identity Questionnaire (SIMIQ; Aquino & Reed, 2002) consists of 10 items measuring moral identity, defined as a "self-conception organized around a set of moral traits" (p. 1424). Moral identity can be further broken down into two subscales (with five items per each subscale): Internalization and Symbolization (described in the introduction of this chapter). Respondents are presented with nine characteristics that might describe a moral person including "caring", "compassionate", and "helpful". Participants are told to visualize someone who has these characteristics and answer the questions with this person in mind using a scale of 1 (*strongly disagree*) to 7 (*strongly agree*). Example items include "Having these characteristics is not really important to me" (Internalization) and "I often wear clothes that identify me as having these characteristics" (Symbolization). A previous study reported that each subscale has good reliability (Reed & Aquino, 2003).

Moral Scenario Questionnaire (MSQ) consists of 12 scenarios to measure moral reasoning (viewed as distinct from moral identity). Each scenario places a more moral option against a less moral one (e.g., not cheating versus cheating). Six situations were adapted from Perugini and Luigi (2009) and the other six were created for the purpose of the present study (see Appendix B for a copy of this measure). Participants were asked to rate whether they would engage in the behavior detailed in the scenario using a scale

ranging from 1 (*certainly not*) to 4 (*certainly yes*). An example situation is "Imagine that

you are riding a city transit bus in the summer (and that you have no university bus pass

during that time). As you board the bus, the bus driver is busy answering another patron's

questions. Because the bus driver is not paying attention, he would never notice if you did

not pay your bus fare. Would you pay the $2.75 fare for the bus?"

Procedure

Participants were tested in groups of 10 to 20 in a university computer lab. After

completing informed consent, they received the self-report questionnaires (on the

computer) in a randomized order as well as completed the VIA-IS using a website and

code (specific to this study) provided by the VIA Institute on Character. Completion of

the measures took approximately one hour, after which participants received a debriefing

form describing the purpose of the study.

<div align="center">

Results and Discussion

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For descriptive purposes, the means, standard deviations, ranges, and reliabilities

(Cronbach's alpha) of the humor, gratitude, and positive psychology outcome measures

used in this study are presented in Table 1.1.

HSQ versus VIA-IS Humor Scale

With regard to the first research question, exploring the relationships between the

HSQ and VIA-IS Humor scale, correlation analyses indicated that the two adaptive

humor styles were positively correlated with the VIA-IS Humor scale (affiliative humor: r

$= .63$, $p < .001$, self-enhancing humor: $r = .58$, $p < .001$). As for the two negative humor

styles, self-defeating humor was unrelated to the VIA-IS Humor scale ($r = .13$, *ns*),

whereas aggressive humor was marginally positively correlated with it ($r = .16$, $p < .06$).

These findings support the hypothesis that the VIA-IS Humor scale is similar to the more

Table 1.1

Descriptive Statistics of the Humor, Gratitude, and Well-Being Measures

Category	Measure	*M*	*SD*	Range	Reliability
Humor	HSQ Affiliative	45.69	7.71	16-56	.83
	HSQ Self-Enhancing	35.45	8.53	16-53	.79
	HSQ Aggressive	28.95	7.40	8-48	.66
	HSQ Self-Defeating	28.72	9.69	9-56	.84
	VIA-IS Humor	3.87	0.58	2-5	n/a
Gratitude	VIA-IS Gratitude	3.87	0.54	2-5	n/a
Happiness	Positive Mood	34.06	7.08	11-49	.85
	Negative Mood	23.69	7.25	10-42	.84
	Satisfaction with life	24.91	6.53	8-35	.85
	Optimism	14.71	3.76	5-24	.70
OtH	Pleasure	20.53	4.56	12-30	.78
	Meaning	19.51	4.86	7-30	.78
	Engagement	17.13	3.49	9-26	.52
Resilience	MTQ Challenge	28.17	4.53	16-38	.73
	MTQ Commitment	38.04	5.84	21-55	.75
	MTQ Control	44.54	6.23	27-62	.68
	MTQ Confidence	50.77	7.58	21-73	.77
	CD-RISC	69.04	13.30	20-100	.90
Morality	MI Internalization	31.64	3.81	17-35	.78
	MI Symbolization	21.22	6.04	5-33	.81
	Moral Situation Total	33.72	5.13	18-46	.71

Note. $N = 168$ for all measures, except VIA-IS: $N = 155$. HSQ = Humor Styles Questionnaire, AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; MTQ = Mental Toughness Questionnaire; CD-RISC = Connor-Davidson Resilience Scale; OtH = Orientations to Happiness; MI = Moral Identity. n/a = Not Available (The VIA Institute only provides researchers with total scores for each scale, not individual item scores. As a result, internal consistency cannot be calculated for these scales.)

traditional humor scales, capturing humor as an overall positive trait. Thus, the VIA-IS Humor scale may be fine as a measure of positive humor styles although it apparently blends affiliative and self-enhancing humor as well as includes some elements of aggressive humor (contaminating the scale from measuring strictly positive humor uses). More importantly, these results indicate that the VIA-IS Humor scale fails to clearly distinguish between positive and negative humor styles, thus assessing only half of what the HSQ intends to capture.

To further explore whether the HSQ is a better measure of humor as a character strength, the second part of the first objective involved performing hierarchical multiple regression analyses to investigate whether the adaptive and maladaptive humor styles add to the VIA-IS Humor scale in the prediction of positive psychology variables (i.e., mood, satisfaction with life, optimism, mental toughness, resilience, orientations to happiness, morality). For each of the outcome measures, the VIA-IS Humor measure was entered first as a predictor, followed by the positive humor styles, and finally, in the third block, the negative humor styles.

As seen in Table 1.2, the positive humor styles generally do not add significantly to the VIA-IS Humor scale in the prediction of well-being, suggesting that the VIA-IS Humor scale and positive humor styles are conceptually similar. In a few cases, however, the positive humor styles did add significantly to the VIA-IS Humor scale. This occurred in the prediction of satisfaction with life, the meaning orientation to happiness, and resilience (i.e., CD-RISC, MTQ Commitment, MTQ Confidence). Therefore, while the positive humor styles may be conceptually similar to the VIA-IS Humor scale in the prediction of many variables, in some cases, affiliative and self-enhancing humor may add to the predictability above and beyond the VIA-IS Humor scale.

Table 1.2

Adding the Negative Humor Styles to the VIA-IS Humor Scale and Positive Humor Styles

in the Prediction of Positive Psychology Outcomes

Category	Positive Psychology Variables of Interest	STEP 1: VIA-IS Humor R^2	STEP 2: Change in R^2 when HSQ AF & SE are added	STEP 3: Change in R^2 when HSQ SD & AG are added
Happiness	Positive Mood	.20***	.02	.04 *
	Negative Mood	.01	.001	.19***
	Satisfaction with Life	.19***	.04*	.10***
	Optimism	.10***	.02	.13***
OtH	Pleasure	.17***	.003	.01
	Meaning	.01	.04*	.06**
	Engagement	.01	.03	.01
Resilience	MTQ Challenge	.17***	.01	.02
	MTQ Commitment	.03*	.04*	.12***
	MTQ Control	.08**	.02	.08**
	MTQ Confidence	.22***	.04*	.16***
	CD-RISC	.20***	.09***	.05**
Morality	MI Internalization	.07**	.02	.24***
	MI Symbolization	.09***	.01	.07**
	Moral Scenarios	.0001	.03	.18***

Note. HSQ = Humor Styles Questionnaire, AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; MTQ = Mental Toughness Questionnaire; CD-RISC = Connor-Davidson Resilience Scale; OtH = Orientations to Happiness; MI = Moral Identity.

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

Interestingly and consistent with hypotheses, the negative humor styles continue to add significantly, beyond the VIA-IS Humor scale and positive humor styles, to the prediction of most positive psychology variables: mood, optimism, satisfaction with life, the meaning orientation, three dimensions of mental toughness (commitment, control, and confidence), CD-RISC, and all measures of morality. These results support the view that the relative absence of negative humor may be just as important as the presence of positive styles in predicting well-being, suggesting that important information pertaining to the relation between humor and well-being could be lost by failing to measure negative humor styles in addition to positive styles. Given that the four humor styles together account for more variance in well-being variables than does the VIA-IS Humor scale alone, I concluded that the HSQ should be used in subsequent research exploring the role of humor in positive psychology. For interest, Appendix C presents the detailed results of these regression analyses (seen in Table 1.2) showing regression coefficients for each predictor in each of the analyses.

Relationships between Humor, Gratitude, and Positive Psychology Outcomes

Table 1.3 displays the correlations between the VIA-IS Gratitude scale and the humor scales. As shown in this table, there is a strong positive correlation between the VIA-IS Humor scale and the VIA-IS Gratitude scale. However, relative to this relationship, the correlations between the HSQ subscales and the VIA-IS Gratitude scale appear to be weaker. Only one subscale from the HSQ, self-enhancing humor, is strongly correlated with gratitude (at the $p < .001$ level). These findings suggest that the VIA-IS Humor scale and the VIA-IS Gratitude scale may overlap (e.g., capturing a good-natured approach toward life). However, since the correlations are far from perfect, these findings suggest that the HSQ and the VIA-IS Gratitude scale are capturing distinct concepts.

Table 1.3

Correlations between the Humor, Gratitude, and Positive Psychology Variables

Category	Measure	Character Strengths (Humor and Gratitude)					
		VIA-IS Grat.	VIA-IS Humor	HSQ AF	HSQ SE	HSQ AG	HSQ SD
Gratitude	VIA-IS	--------	.44***	.16*	.33***	-.21**	-.04
Happiness	Positive Mood	.46***	.45***	.23**	.34***	.08	-.07
	Negative Mood	-.13	-.10	-.06	-.03	.27**	.36***
	Satisfaction with Life	.44***	.43***	.11	.24**	.06	-.19*
	Optimism	.30***	.31***	.19*	.28***	-.04	-.29***
OtH	Pleasure	.20*	.41***	.24**	.18*	.12	-.03
	Meaning	.43***	.12	-.05	.16*	-.24**	-.06
	Engagement	.38***	.07	-.05	.13	-.10	-.02
Resilience	MTQ Challenge	.28**	.41***	.26**	.33***	.01	-.03
	MTQ Commitment	.29***	.17*	.05	.21**	-.16*	-.26**
	MTQ Control	.14	.28**	.17*	.28***	-.05	-.21**
	MTQ Confidence	.41***	.47***	.30***	.45***	.03	-.27***
	CD-RISC	.47***	.45***	.32***	.49***	-.01	-.12
Morality	MI Internalization	.44**	.25**	.05	.10	-.45***	-.20*
	MI Symbolization	.57***	.09	.09	.16*	-.19*	-.11
	Moral Scenarios	.36***	-.02	-.11	.09	-.40***	-.19*

Note. VIA-IS Grat. = VIA-IS Gratitude Scale; HSQ = Humor Styles Questionnaire, AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; MTQ = Mental Toughness Questionnaire; CD-RISC = Connor-Davidson Resilience Scale; OtH = Orientations to Happiness; MI = Moral Identity.

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

Therefore, it is worthwhile to study humor as separate from gratitude.

With regard to the second objective of this study, Table 1.3 also displays the results of the correlations of each of the outcome measures with the VIA-IS Humor scale and each subscale of the HSQ.

Emotional Well-Being. The findings indicate that, as with previous research (e.g., Martin et al., 2003), self-enhancing and self-defeating humor appear to be the styles most consistently linked with measures of emotional well-being. Self-enhancing humor was positively correlated with positive mood, satisfaction with life, and optimism. In contrast, self-defeating humor was negatively correlated with satisfaction with life and optimism as well as positively correlated with negative mood. Affiliative humor displayed somewhat weaker associations. This style was significantly (positively) correlated with positive mood and optimism, but unrelated to negative mood and satisfaction with life. Similarly, although aggressive humor was positively correlated with negative mood, in accordance with past studies (see Martin, 2007), it appeared to be the least relevant humor style with respect to emotional well-being.

Orientations to Happiness. As expected, humor (particularly the positive styles) appeared to be most consistently correlated with a life of pleasure. Additionally, self-enhancing humor was positively correlated with a life of meaning whereas aggressive humor displayed the inverse association. None of the humor styles were correlated with a life of engagement.

Prior to these results, previous studies (e.g., Peterson et al., 2007) found that humor is significantly correlated with a life of pleasure but is unrelated to meaning (and engagement). Although the VIA-IS Humor scale was not correlated with meaning, the present study indicates that the relative absence of certain forms of humor may be very

important for creating a life of meaning. Therefore, these results add to those from objective 1 and highlight the need for humor measures to assess negative forms of humor. In some cases (e.g., a life of meaning) the relative absence of negative humor may be as, or even more, important than the presence of positive uses.

       Coping with Stress/Resilience. The presence of self-enhancing and affiliative humor as well as the relative absence of self-defeating humor appeared to be most consistently linked with dimensions of mental toughness and CD-RISC. Interestingly, consistent with previous research (see Martin, 2007 for a review) and what self-enhancing humor entails (i.e., generally humorous outlook even in the face of adversity), this style was the only one to significantly correlate (positively) with all four mental toughness dimensions and the general measure of resilience (CD-RISC). Therefore, the use of humor to enhance the self in a way that is not detrimental toward others might be especially important in coping with stress.

       Morality. In contrast to the relationships with happiness/emotional well-being variables, out of all the humor styles, aggressive humor was most consistently (negatively) correlated with measures of morality. This finding accords with hypotheses and suggests that people who use humor to tease or manipulate others are less likely to define themselves by moral traits including fairness, kindness, and compassion. They are also less likely to respond in socially conventional and moral ways to scenarios placing a more moral response against a less moral option.

Comparing Humor and Gratitude in Predicting Outcomes

       Before comparing humor and gratitude, it is first important to consider the correlations between gratitude and positive psychology outcomes. As seen in Table 1.3, gratitude is positively associated with most well-being variables (e.g., positive mood,

satisfaction with life, resilience, morality) with the exception of negative mood and mental toughness: control subscale. In general, these findings suggest that people who are more habitually thankful experience greater well-being. These findings accord with previous research (McCullough et al., 2004; Watkins et al., 2003) and will be discussed further in the general discussion.

To explore whether the HSQ humor styles add to the VIA-IS Gratitude scale in the prediction of positive psychology variables, hierarchical multiple regressions were conducted. For each outcome measure, the VIA-IS Gratitude scale was entered as a predictor in the first step of the analysis. Then the HSQ scales were entered as a block of predictors in the second step. In total, 15 regressions were completed (one for each outcome measure). The results are presented in Table 1.4. As shown in this table, the humor styles significantly add to the prediction of most positive psychology variables (i.e., mood, satisfaction with life, optimism, the pleasurable approach to happiness, all aspects of mental toughness, CD-RISC, the internalization dimension of moral identity, and moral reasoning) over and above the contribution of gratitude.

The only variables for which humor did not add significantly to the prediction beyond gratitude were the meaning and engagement approaches to happiness as well as the symbolization aspect of moral identity. The results pertaining to the orientations to happiness are not surprising given the research discussed by Peterson et al. (2007) and the simple correlations presented in Table 1.3 (i.e., lack of significant associations between humor and engagement). Furthermore, humor may not add to the variance in meaning beyond gratitude because the perception of humor involves playful incongruity coupled with diminishment. These processes may result in an object or situation becoming less meaningful than it initially appeared. Therefore, the results from Table 1.4 suggest that

Table 1.4

Adding Humor to Gratitude in the Prediction of Positive Psychology Outcomes

Category	Positive Psychology Variables of Interest	STEP 1: VIA-IS Gratitude R^2	STEP 2: Change in R^2 when HSQ scales are added to VIA-IS Gratitude
Happiness	Positive Mood	.21***	.12***
	Negative Mood	.02	.18***
	Satisfaction with Life	.20***	.14***
	Optimism	.09***	.17***
OtH	Pleasure	.04*	.08*
	Meaning	.19***	.04
	Engagement	.15***	.02
Resilience	MTQ Challenge	.08**	.08*
	MTQ Commitment	.09***	.12***
	MTQ Control	.02	.14***
	MTQ Confidence	.17***	.26***
	CD-RISC	.22***	.18***
Morality	MI Internalization	.19***	.16***
	MI Symbolization	.33***	.02
	Moral Scenarios	.13***	.14***

Note. MTQ = Mental Toughness Questionnaire; CD-RISC = Connor-Davidson Resilience Scale; OtH = Orientations to Happiness; MI = Moral Identity.

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

grateful individuals have more meaning and engagement in their lives and are considerably more concerned with presenting themselves as moral. Humorous people may be more carefree, less self-disciplined and goal-oriented, and overall may not care one way or another about trying to outwardly act in a way that reflects or expresses their moral traits. Previous results pertaining to the associations between humor styles and the big five personality factors support this assertion (e.g., lack of significant relationships between positive humor styles and conscientiousness, Martin et al., 2003).

Table 1.4 also indicates that the only variables that gratitude did not significantly predict were negative mood and the control dimension of mental toughness. In both of these cases, humor was a significant predictor suggesting that the relative absence of negative forms of humor (as seen in Table 1.3) is important for reduced negative mood (as compared to gratitude). Similarly, the presence of self-enhancing humor as well as the relative absence of self-defeating humor are especially important for feeling that stressful situations are in a person's control. Therefore, these results indicate that while humor may add to the prediction of many positive psychology variables beyond gratitude, it may also predict some variables completely unrelated to gratitude. (More detailed results on the regression coefficients for each predictor in each of the analyses shown in Table 1.4 can be found in Appendix D).Conceptual and theoretical reasons for the different associations between gratitude and humor are offered in the general discussion of this chapter.

In summary, with regard to objective 1, based on the correlations in text presented between the HSQ and the VIA-IS Humor scale and the results of the regression analyses presented in Table 1.2, the HSQ, compared to the VIA-IS Humor scale, appears to be the better measure of humor as a character strength. These findings suggest that the HSQ should be the measure employed in future research on the role of humor in positive

psychology. Consequently, the HSQ was the only measure of humor used in the

remaining studies of this dissertation. With regard to objective 2, exploring the

associations between humor and positive psychology outcomes, the results presented in

Table 1. 3 indicate that humor is relevant to almost every outcome explored in this study.

The presence of self-enhancing and affiliative humor, in addition to the relative absence

of self-defeating humor, appear to be most consistently related to emotional well-being

and coping with stress. In contrast, self-defeating humor was unrelated to the orientations

to happiness whereas the adaptive humor styles were positively correlated with a life of

pleasure. Aggressive humor appeared to be most consistently linked with morality

measures (in the negative direction). Finally the results, comparing humor with gratitude,

indicate that humor significantly predicted every outcome variable beyond gratitude with

the exception of meaning, engagement, and symbolization. In some cases, humor

predicted variables completely unrelated to gratitude (e.g., negative mood and mental

toughness - control). These results suggest that humor may be an even more important

construct for positive psychology than gratitude.

Study 2

This study was designed as a follow-up to Study 1. The first purpose was to

explore the relationships between humor and two additional positive psychology

constructs not included in Study 1: altruism and stress appraisals. While Study 1 explored

the ability of humor to predict mood, life satisfaction, resilience, and morality, there was

no measure capturing the trait of altruism (i.e., people who are "consistently more

generous, helping, and kind than others," Rushton, Chrisjohn, & Fekken, 1981, p. 296).

Therefore, in Study 2, the Self-Report Altruism Scale (Rushton et al., 1981) was included

to follow up the findings by Algoe and Haidt (2009) indicating that humor, unlike

gratitude, is not associated with increased motivation to behave in prosocial ways towards others.

To study the effects on prosocial behavior, Algoe and Haidt (2009) used video clips that induced humor and gratitude in participants. However, one limitation of their methodology is that they did not distinguish between positive and negative uses of humor. While it is possible that altruism is completely unrelated to all types of humor, it is also possible that altruism is positively correlated with more adaptive forms of humor but unrelated or negatively related to more maladaptive types of humor. To examine these hypotheses, humor was measured in the present study using the Humor Styles Questionnaire (HSQ; Martin et al., 2003).

In addition to exploring the relationships between humor styles and altruism it was also of interest to follow up some of the Study 1 findings related to mental toughness. The Stress Appraisal Measure (SAM; Peacock & Wong, 1990) captures different ways in which people think about and evaluate an anticipatory stressful situation. One advantage of the SAM is that it breaks down the dimension of control (one aspect of mental toughness which, in Study 1, was correlated with humor but not gratitude) into three subscales: controllable-by-self, controllable-by-others, uncontrollable-by-anyone. As a result, further exploration could occur about how and if humor relates to these specific ways of evaluating a stressful situation.

In the development of the SAM, Peacock and Wong (1990) instructed participants to appraise stressors including an upcoming examination, future job loss, the possibility of contracting AIDS and the possibility of facing a natural disaster. In the present study, participants were asked to appraise the event of an upcoming and difficult examination

because it was decided that this stressor was likely the most pertinent and realistic in their lives.

Since scholars in the field of positive psychology are concerned with which character strengths foster resilience and successful coping, studying the relationships between humor and the way individuals perceive stressful events could have important implications. Some previous research has found that individuals with higher scores on measures of sense of humor are more likely to appraise potentially situations as more of a challenge rather than a threat (Kuiper et al., 1993; Kuiper, McKenzie, & Belanger, 1995).

Research has indicated that responses to adversity are mediated by two types of appraisals about a situation (Lazarus & Folkman, 1984). Primary appraisals are those that evaluate the importance of a situation for well-being (i.e., is the situation threatening, dangerous, beneficial, stressful, or irrelevant?). Secondary appraisals involve the assessment of one's capabilities to handle a difficult situation (i.e., coping options). The SAM, used in the present study, captures a number of different dimensions within each type of appraisal category, in addition to providing an overall stressfulness score. It was expected that people who use more positive types of humor (particularly self-enhancing) view stressful situations as more challenging, less threatening, and less important (central) to their overall well-being, whereas inverse relationships would be found with people who use more negative types of humor.

In addition to studying simple correlations between humor, altruism, and stress appraisals, it was also of interest to explore whether humor added to gratitude in the prediction of these outcomes. Gratitude was assessed using a measure developed by McCullough and colleagues (2002) in which participants are asked to rate the extent to which they generally feel thankful, appreciative, and grateful. This approach is different

than the VIA-IS Gratitude measure employed in Study 1. The reason for the use of a different measure is that the developers of the VIA-IS require that the entire measure (all 24 subscales) be administered as part of its use. Researchers are not permitted to isolate and administer only the subscales of interest. As a result, in Study 1, participants completed the entire VIA-IS; however, only the humor and gratitude scales were of interest. The entire measure requires approximately 40 minutes to complete. Given time constraints and the results of Study 1 indicating that the HSQ is a better measure of humor than the VIA-IS Humor scale, a decision was made to use a measure in Study 2 that was designed specifically to assess gratitude.

It was expected that humor would increase the variance explained, beyond gratitude, in stress appraisals, particularly for the control subscales. In contrast, consistent with the findings by Algoe and Haidt (2009), humor was not expected to add significantly to gratitude in the prediction of altruism.

Method

Participants

The sample was composed of 211 first-year undergraduate students (70 males, 141 females) recruited in the same way as participants in Study 1. The mean age of participants was 18.53 years ($SD = 2.76$).

Measures

Consistent with Study 1, a **Demographics Questionnaire** and the **Humor Styles Questionnaire** (HSQ; Martin et al., 2003) were administered. For descriptions of these measures, please see the measures section in Study 1. Three additional measures were administered:

Gratitude Adjective Checklist (GAC; McCullough et al., 2002). The GAC is used to measure gratitude as a disposition. Respondents are asked to indicate the degree to which they generally experience the following emotions: thankful, appreciative, and grateful, using a scale from 1 (*very slightly or not at all*) to 5 (*extremely*). The scores from these terms were then aggregated to derive a single gratitude score.

Self-Report Altruism Scale (SRA; Rushton et al., 1981). The SRA consists of 20 items capturing prosocial behavior. Participants are asked to indicate the frequency with which they have carried out a number of prosocial activities using a 5-point Likert-type scale ranging from *never* to *very often*. A sample item is "I have delayed an elevator and held the door open for a stranger." Studies have demonstrated that the SRA is psychometrically stable and correlated positively with peer ratings of altruism, as well as self-report measures of moral reasoning, empathy, and social responsibility (Rushton et al., 1981).

Stress Appraisal Measure (SAM; Peacock & Wong, 1990) is a 28 item multidimensional measure of stress that assess both primary and secondary appraisals of stress related to a specified anticipated stressor. For the purpose of the current study, participants were told: "Imagine that you have an important upcoming university examination in a course that you find difficult. You need a really good mark on this examination to get into your university major (or program) of choice. Please answer the questions below according to how you would view the situation if you were in it right now." Primary appraisals involve evaluating the importance of a situation for one's own well-being and include three dimensions: threat (e.g., "Does this situation make me feel anxious?"), challenge (e.g., "Is this going to have a positive impact on me?"), and centrality (e.g., "Does this situation have serious implications for me?"). Secondary

appraisals primarily assess what can be done about a situation and include the dimensions of controllable-by-self (e.g., "Do I have the ability to do well in this situation?"), controllable-by-others (e.g., "Is there help available to me for dealing with this problem?"), and uncontrollable-by-anyone (e.g., "Is this problem unresolvable by anyone?"). One additional general scale measures overall perceived stressfulness. Items are rated on a scale from 1 (*not at all*) to 5 (*extremely*). Peacock and Wong have reported that the SAM has adequate convergent validity, internal consistency, and construct validity.

Procedure

The procedure was consistent with that of Study 1. A number of additional measures, not of interest in the present study, were also completed during the Study 2 testing session.

<div align="center">Results and Discussion</div>

For descriptive purposes, the means, standard deviations, and reliabilities (Cronbach's alpha) of the humor, gratitude, altruism, and stress appraisal measures used in this study are presented in Table 2.1.

Relationships between Humor, Altruism and Stress Appraisals

The correlations between humor, gratitude, stress appraisals and altruism are displayed in Table 2.2. Similar to Study 1, Table 2.2 displays the correlations between gratitude and humor styles. Consistent with Study 1 findings, out of all the humor styles, gratitude is most strongly correlated with self-enhancing humor. Table 2.2 also indicates that the humor styles were unrelated to altruism. Therefore, using more or less of any humor style has no relationship with prosocial behavior.

Table 2.1

Descriptive Statistics of the Humor, Gratitude, and Well-Being Measures

Measure	*M*	*SD*	Reliability
HSQ AF	45.84	6.92	.81
HSQ SE	35.72	8.38	.80
HSQ AG	29.20	7.42	.67
HSQ SD	27.20	9.02	.80
Gratitude	11.52	2.51	.85
SAM Threat	12.68	3.04	.73
SAM Challenge	13.64	3.18	.63
SAM Centrality	17.12	2.61	.76
SAM Controllable-by-self	16.23	2.71	.84
SAM Controllable-by-others	15.54	3.16	.86
SAM Uncontrollable	7.45	3.18	.72
SAM Stressfulness	14.59	2.70	.62
Altruism	50.71	11.18	.85

Note. $N = 211$. HSQ = Humor Styles Questionnaire, AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; SAM = Stress Appraisal Measure.

Table 2.2

Correlations between the Humor, Gratitude, Altruism and Stress-Appraisal Measures

Measure	Character Strengths (Humor and Gratitude)				
	Grat.	HSQ AF	HSQ SE	HSQ AG	HSQ SD
Gratitude	------	.11	.28***	-.22**	-.07
SAM Threat	-.12	-.14*	-.18**	-.01	.15*
SAM Challenge	.22**	.06	.19***	-.22**	-.07
SAM Centrality	-.06	.17*	.08	.02	-.04
SAM. Cont.-by-self	.20**	.30***	.24***	-.08	-.24***
SAM Cont.-by-others	.24***	.26***	.28***	.02	-.10
SAM Uncontroll.	-.01	-.30***	-.23***	-.12	.18**
SAM Stressfulness	-.05	-.06	-.20**	-.06	.13
Altruism	.15*	-.003	.07	-.08	.03

Note. Grat. = Gratitude; HSQ = Humor Styles Questionnaire, AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; SAM = Stress Appraisal Measure, Cont. = Controllable, Uncontroll. = Uncontrollable.

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

With regard to stress appraisals, the findings support the results of previous research indicating that the presence of self-enhancing and affiliative humor, in addition to the relative absence of self-defeating humor, are most important for coping with stress (see Martin, 2007). Consistent with the conceptualization of self-enhancing humor as the use of humor to cope with stress (Martin et al., 2003), it appeared to be most consistently linked with stress appraisals. In particular, the use of this style was correlated with the evaluation of stressful situations as challenging, controllable-by-self, and controllable-by-others, as well as generally not overly threatening, stressful and uncontrollable-by-anyone. Likewise, affiliative humor was positively correlated with appraising a situation as controllable-by-self and others as well as negatively correlated with appraising a situation as threatening and uncontrollable. In contrast to these styles, the presence of self-defeating humor appeared to be a significant risk factor for appraising a situation as uncontrollable, threatening and not controllable-by-oneself. Finally, aggressive humor was generally unrelated to stress appraisals with the exception of one negative correlation between this style and evaluating a situation as challenging. These findings accord with previous research (e.g., Martin et al., 2003).

Comparing Humor and Gratitude in Predicting Outcomes

Table 2.2 indicates that unlike humor, gratitude was positively (albeit weakly) correlated with altruism. This finding provides support for the conclusions of Algoe and Haidt (2009) and Strohminger et al. (2011) who suggested that in contrast to humor, the experience of gratitude is associated with a motivation to behave in prosocial ways.

Similarly, in contrast to humor, gratitude was unrelated to the following stress appraisal dimensions: threat, uncontrollable-by-anyone, overall stressfulness. These findings suggest that despite their similar placement in the classification of strengths and

virtues, gratitude and humor may have different functions, at least with respect to some outcomes (e.g., altruism).

However, gratitude and humor also displayed some consistent relationships. For example, both gratitude and self-enhancing humor were positively correlated with three stress appraisal subscales: challenge, controllable-by-self and controllably-by others.

Hierarchical multiple regressions were conducted to investigate whether the humor styles add to gratitude in the prediction of altruism and stress appraisal subscales. For each outcome measure displayed in Table 2.3, scores on the GAC were entered as a predictor in the first step of the analysis. Then the HSQ scales were entered as a block of predictors in the second step. In total, 8 regressions were completed (one for each outcome measure) and the results of these analyses are displayed in Table 2.3. (More detailed results on the regression coefficients for each predictor in each of the analyses shown in this table can be found in Appendix E).

Not surprisingly (based on the simple correlations), humor did not add to the prediction of altruism after first entering gratitude. However, humor was significantly predictive over and above the effects of gratitude for all primary and secondary stress appraisal dimensions with the exception of centrality (in which there was no significant relationship). Overall, these results highlight that, as with Study 1, humor helps to explain the variance in positive psychology outcomes beyond gratitude. Humor may also be especially important for some aspects of well-being which are unrelated or less related to gratitude (e.g., coping with stress). Differences between gratitude and humor that might make humor more relevant for coping with stress are provided in the general discussion.

Table 2.3

Adding Humor to Gratitude in the Prediction of Stress-Appraisal Dimensions and

Altruism

Positive Psychology Variables of Interest	STEP 1: Gratitude R^2	STEP 2: Change in R^2 when HSQ scales are added to Gratitude
SAM Threat	.01	.05*
SAM Challenge	.05**	.06**
SAM Centrality	.004	.04
SAM. Cont.-by-self	.04**	.14***
SAM Cont.-by-others	.06***	.08**
SAM Uncontroll.	.00	.15***
SAM Stressfulness	.002	.07**
Altruism	.02*	.01

Note. HSQ = Humor Styles Questionnaire, SAM = Stress Appraisal Measure.

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

General Discussion

The research described within this chapter had three main objectives. The first of these (covered in Study 1) was to explore the relationship between the positive psychology humor measure, the VIA-IS Humor scale, and the most widely used measure in research on humor and well-being, the HSQ. These results suggest that the VIA-IS Humor scale correlates positively with the adaptive humor styles, is somewhat contaminated with aggressive humor, and is completely unrelated to self-defeating humor. Therefore, consistent with the positive humor styles, the VIA-IS Humor scale appears to capture forms of humor that are used to bond with others, reduce interpersonal tension, and cope with stress. However, with respect to the negative styles, the VIA-IS Humor scale does not appear to capture the relative absence of excessively self-disparaging humor (i.e., amusing others at the expense of one's self) or humor used for the purposes of defensive denial (i.e., avoiding constructive ways of problem solving by using humor to mask underlying negative feelings), both of which are assessed by the self-defeating humor scale. In addition, results indicated that the VIA-IS Humor scale, although intended to measure only healthy uses of humor, actually assesses some element of aggressive humor (e.g., sarcasm, teasing, ridicule, mockery and sexist or racist humor to manipulate, hurt, or alienate others).

The VIA-IS Humor scale might still have been a good measure to employ in positive psychology research if the negative forms of humor did not add significantly to the prediction of well-being variables beyond the VIA-IS Humor scale or the positive humor styles. However, consistent with hypotheses and previous research (see Martin, 2007), it was found that the more maladaptive uses of humor increase the variance explained in well-being (particularly with respect to mood, satisfaction with life,

resilience, moral identity, and moral scenarios). Therefore, with reference to the important outcomes in positive psychology, capturing both positive and negative humor appears to be a more fruitful approach to assessing humor as a character strength than capturing positive uses alone (or positive uses diluted with some degree of aggressive humor as does the VIA-IS Humor scale). In summary, the results of correlation and regression analyses support the view that the VIA-IS Humor scale is inconsistent with contemporary humor research. It represents an outdated methodology for studying humor and well-being that has been replaced by the HSQ. Therefore, the HSQ was used as the humor measure in the remaining studies of this dissertation.

Objectives two and three of the present research examined the associations between humor, gratitude, and positive psychology outcomes as well as whether humor predicted more variance in outcomes, over and above gratitude. The findings are discussed together below.

Happiness/Emotional Well-Being

Humor Styles. With respect to happiness variables (i.e., mood, optimism, and satisfaction with life), the results of correlation analyses indicated that both adaptive humor styles are positively correlated with positive mood and optimism. Self-enhancing humor is also positively correlated with satisfaction with life. In contrast, self-defeating humor is unrelated to positive mood, positively correlated with negative mood, and negatively associated with satisfaction with life and optimism. Unlike these three humor styles (affiliative, self-enhancing, and self-defeating), aggressive humor appears, overall, to be unrelated to emotional well-being, with the exception of a positive correlation with negative mood. These findings support the results of previous research (see Martin, 2007 for a review) indicating that affiliative, self-enhancing, and self-defeating humor are the

most consistently linked styles with emotional well-being (although affiliative humor is somewhat more weakly related).

Both self-enhancing and self-defeating humor have a self-referent focus (Martin et al., 2003). People high on self-enhancing humor tend to use this style to protect the self and regulate emotions by maintaining a humorous outlook on life during times of stress. However, those who use humor to ingratiate oneself with others (self-defeating) may be hiding or denying underlying negative emotions. The use of this style may be a way to avoid dealing adaptively with problems. As a result, the use of self-enhancing humor may be at a high personal benefit whereas the use of self-defeating humor may be at a high personal cost, explaining why these styles are consistently associated with psychological functioning (in opposite directions; Martin, 2007).

Relative to the self-referent humor styles, affiliative humor tends to be more weakly correlated with well-being (Martin, 2007). For example, in this study, it was only correlated with two (positive mood and optimism) of the four happiness variables. This finding can be explained by understanding that in the conceptual framework of humor styles, the primary purpose of affiliative humor is to enhance relationships with others (e.g., by increasing cohesiveness, reducing interpersonal tension). Through these functions, the use of this style might help to raise group morale and therefore, enhance the self (although enhancing the self is not a primary function of its use).

Similarly, aggressive humor has an other-referent focus. However, in contrast to affiliative humor, aggressive humor is used at the expense of relationships with others. People who tend to use aggressive humor may lack empathy and social awareness for the potential impact this type of humor has on others (Veselka et al., 2010). As a result, this style may not be particularly detrimental to personal well-being (as the present results

indicate). Instead, its use may be more problematic for outcomes such as relationship satisfaction. Previous research has found support for this assertion (e.g., Cann & Etzel, 2008).

Gratitude. With respect to gratitude, correlations indicated that people who are more grateful also tend to have more positive mood, optimism, and greater satisfaction with life. These findings accord with previous research (McCullough et al., 2004; Watkins et al., 2003). Similar to self-enhancing humor which involves approaching the world with a humorous outlook, grateful individuals may adopt an orientation in which they notice and appreciate the positive in life (Wood et al., 2010). This orientation might increase well-being by "enhancing one's experience of positive events" and "enhancing encoding and retrieval of positive events" (Watkins et al., 2003, p. 449).

Gratitude versus Humor: Negative Mood. In the regression analyses, negative mood was one of the few variables unrelated to gratitude and significantly predicted by humor. A review of the correlation table in Study 1 suggests that it is likely that the negative styles (particularly self-defeating humor) are responsible for the increased variance that humor adds, over gratitude, in the prediction of this outcome. It is possible that gratitude contributes to increasing positive emotions (e.g., optimism) but does not undo the detrimental aftereffects (e.g., increased cardiovascular reactivity) of negative affect (Fredrickson, Mancuso, Branigan, & Tugade, 2000). This hypothesis has been supported in previous research (e.g., Watkins et al., 2003, Study 2) in which no significant correlation was found between gratitude and negative affect (measured using the PANAS).

However, Watkins et al. (2003) found that gratitude was negatively correlated with a measure of depression as did McCullough et al. (2004). Watkins and colleagues

suggest that gratitude may have a unique relationship with depression, in contrast to other forms of negative affect (e.g., anxiety and irritability). Furthermore, McCullough et al., corroborating previous findings (e.g., McCullough et al., 2002), noted that their association between gratitude and depression was rather low in magnitude. Taken together, these studies suggest that gratitude (conceptualized as an affective trait) is more consistently associated with positive affective traits than negative mood. As McCullough et al. (2004) concluded, "gratitude, both as an affective trait and mood, appears to be characteristic of happy, contented, optimistic people" (p. 306).

In contrast to gratitude, the relative absence of self-defeating humor appears to be particularly relevant for reduced negative mood. As noted above, underlying this use of humor may be aspects of emotional neediness, low self-esteem, and negative emotions, offering one possible explanation as to why self-defeating humor is consistently linked with negative mood. Therefore, relative to gratitude, humor may be a unique strength in that certain uses increase the positive emotions in people's lives whereas lower levels of other humor uses decrease the negative emotions. These findings are consistent with the extensive literature on humor and coping as well as humor as a method of affect regulation (for a review see Martin, 2007).

Humor adds to Gratitude in Predicting all Happiness Outcomes. In addition to negative mood, humor added to the prediction in well-being, beyond gratitude, for positive mood, optimism and satisfaction with life. Perhaps one reason for these findings is that while gratitude arguably involves a cognitive component (e.g., adopting a savoring attitude) and an emotional aspect (e.g., feeling grateful or appreciative), humor also involves interpersonal and behavioral features (in addition to cognitive and emotional ones, see Martin, 2007). Research has indicated that humor is fundamentally a social

phenomenon, occurring considerably more often in the presence of other people (Martin & Kuiper, 1999; Provine & Fischer, 1989). Furthermore, humor functions as a social lubricant - for example, increasing social support and providing an avenue to discuss difficult topics or disputes (Martin, 2007). Likewise, when people experience humor, they often produce the behavioral expression of laughter indicative to both the self and others of positive emotional states (Martin, 2007). Based on these additional components of humor (as compared to gratitude), humorous people may be more skilled in their social relationships. Researchers have found that one of the best predictors of happiness is satisfying social relationships (e.g., Diener & Seligman, 2002). Therefore, humor may be adding to the prediction of happiness (and most other outcomes explored in this research), beyond gratitude, because of the important influences of its interpersonal features. This hypothesis could be explored in future studies.

Orientations to Happiness

  Pleasure. Consistent with previous research (e.g., Peterson et al., 2007), humor (particularly the adaptive styles) was positively correlated with the pleasure route to happiness and in regression analyses, accounted for more variance in this orientation over and above the effects of gratitude. Unlike gratitude, as noted above, humor is a social phenomenon which allows individuals to interact in a playful way. As Martin (2007, p. 6) stated, "humans continue to play throughout their lives, most notably through humor." The social and playful nature of humor (in contrast to gratitude) might account for its positive relationship with the pleasure orientation to happiness and its ability to predict this orientation after controlling for gratitude.

  Meaning. In contrast to pleasure, humor did not continue to predict the engagement and meaning routes to happiness over and above the contribution of

gratitude. In order to experience humor, Apter (1991) argued that humans need to be in a present-oriented, high arousal, playful frame of mind he termed the *paratelic* state. Apter differentiated this from the future-oriented *telic* or goal-directed state that is required when completing more serious activities. To experience gratitude, perhaps people need to adopt the *telic* state, specifically focusing on the important and good in life. By doing so, this focus may help an individual understand what has lasting meaning for him or her. In contrast, humor involves a sense of diminishment or devaluation of a situation, event, image or object to make it appear less important (and perhaps less meaningful) than when it initially appeared.

Engagement. With respect to engagement, more grateful people might more readily report experiencing flow, a psychological state highly correlated with engagement (Csikszentmihalyi, 1997). Flow occurs during activities that are voluntary, challenging, and enjoyable, in which an individual can easily lose track of time due to the attention required for the task at hand (Csikszentmihalyi, 1990; Peterson, 2006). Perhaps when people are completely immersed in gratitude-related activities they feel absorbed, less distracted, and less conscious of themselves, all which are feelings/experiences associated with a life of engagement. In contrast to gratitude, humor might be a more fleeting experience. It may be difficult to be in a state of flow when using humor because although we laugh multiple times a day, we do not tend to tell jokes or funny stories consistently for an extended period of time. Furthermore, humor could be used as a form of avoidance or distraction from challenging activities instead of increasing engagement and curiosity with the activities. Finally, anxiety can still be present when using humor (e.g., people who use considerable self-defeating humor) whereas activities that lead to flow and engagement tend to preclude anxiety (Peterson et al., 2007).

Resilience. The results of the regression analyses indicate that humor significantly added to the prediction of all mental toughness subscales, the CD-RISC (resiliency measure), and all stress appraisal dimensions (with the exception of centrality) over and above the effects of gratitude. Furthermore, in some cases, gratitude did not significantly correlate with these variables, particularly with respect to mental toughness: control and stress appraisals: threat, uncontrollable-by-anyone, and overall stressfulness.

Why might humor be more important than gratitude in coping with stress? One possible explanation is the difference in cognitive mechanisms involved in the experience of humor versus the experience of gratitude. As noted, the perception and production of humor is thought to arise from a mental process in which two incompatible interpretations of the same object are activated (i.e., perception of incongruity), allowing an idea, image or situation to be cognitively evaluated as less threatening and playful (Martin, 2007).

Lazarus and Folkman (1984) have argued that the cognitive evaluation of a situation is the most important mediator in determining whether or not a person will perceive a potentially overwhelming situation as stressful. If a situation is appraised as threatening and harmful, exceeding personal resources to cope, then adverse mental health outcomes may result. In contrast when a situation is appraised as challenging, playful, and within a person's ability to handle the event, then the situation poses significant less threat to psychological well-being. The ability to respond to adversity with a playful attitude may help people shift perspective, distance themselves from a perceived threat, and therefore, reduce negative health outcomes (Martin, 2007).

Relative to humor, gratitude does not require a playful frame of mind. An individual can still feel appreciative and thankful in a serious state. Furthermore, as compared to humor, gratitude does not require the sense of diminishment discussed

earlier. It could be argued that in order to be grateful, people actually make a situation appear even more important than it initially appeared because they need to mindfully attend to, be perceptually engrossed in, or cognitively reflect on a positive stimulus and then savor it (e.g., by thinking about thoughts that prolong and amplify the intensity of the positive experience, Bryant, Chadwick, & Kluwe, 2011). This type of approach to a situation may result in a potentially stressful event being appraised as more important than it initially appeared.

In addition to the differences in cognitive mechanisms, the social nature of humor might provide another reason as to why humor is particularly predictive of resilience. As discussed within the happiness section, humor can be used as a way to increase social support, provide intimacy, and reduce interpersonal tension, all which may influence psychological well-being (e.g., Berscheid & Reis, 1998; Martin, 2007).

Morality

The regression analyses indicate that humor continues to add to the variance in moral identity internalization and moral scenarios beyond the effects of gratitude. Based on the correlation results, relative to the other styles, aggressive humor appears to be most consistently negatively related to these variables.

These findings may be understood within the context of the personality traits associated with aggressive humor. For example, Greengross, Martin, and Miller (2012) found that in a sample of 400 university students, aggressive humor was negatively correlated with both agreeableness and conscientiousness. Similarly, Williams and colleagues (2006) found that conscientiousness was associated with higher moral development. These findings suggest that individuals who use aggressive humor are less

careful and more impulsive. Therefore, they may not take the time to consider alternative perspectives, avoid conformity, or think for themselves.

Furthermore, in another study (Veselka et al., 2010), aggressive humor was found to positively correlate with measures of psychopathy (characterized by traits such as lack of empathy and presence of thrill-seeking behaviors) and Machiavellianism (tendency to be manipulative and unemotional). The authors suggest that important elements of aggressive humor overlap with these socially aversive personality traits. Both aggressive humor and Machiavellianism involve manipulative behaviors directed toward others for personal gain. Similarly, both aggressive humor and psychopathy involve the tendency to behave impulsively with disregard for the impact on others. People who score highly on measures of psychopathy and Machiavellianism are thought to exhibit amoral behavior (i.e., indifference toward others) and may experience deficits in central emotions that guide prosocial behavior (e.g., Cleckley, 1976; Hare, 2007; Koenigs, Kruepke, Zeier, & Newman, 2011). It is possible that individuals who use considerable aggressive humor experience deficits in emotional processing, social awareness, and/or inhibitory control, although to a lesser degree than psychopaths. These deficits may explain why this style (in comparison to the others) is particularly associated (negatively) with morality and why humor adds to the prediction of morality variables over and above gratitude.

However, humor does not add to gratitude in the prediction of altruism or moral identity symbolization. A review of the simple correlations indicates that aggressive humor is correlated negatively with symbolization although based on the regression analyses, all four humor styles together do not continue to account for the variance in symbolization beyond gratitude. In contrast, the correlation table in Study 2 indicates that none of the humor styles are significantly associated with altruism. Therefore, unlike

moral identity symbolization (correlated with both humor and gratitude) prosocial behavior may be an important variable distinguishing the effects of gratitude and humor.

The lack of significant correlations between humor (particularly aggressive humor) and prosocial behavior appears to be in contrast to the results discussed above as well as those found in previous research (Algoe & Haidt, 2009; Strohminger et al., 2011). As a result of perceiving humor (which involves diminishing a target object or situation as less important), people may adopt an attitude of disregard toward social norms. Therefore, both conceptually and empirically, one might have expected that humor correlates negatively with prosocial behavior. However, it is important to recognize that morality can be operationalized in many different ways. To my knowledge, no study has attempted to explore the relationships between humor and prosocial behavior. It is possible that humor is particularly pertinent to moral identity and moral decision making but unrelated to altruistic acts. It is also possible that the revised SRA used in Study 2 does not significantly correlate with naturalistic criteria (e.g., how much community volunteering one actually engages in). Future research could explore this area to better understand the relationship (or lack thereof) between humor and moral behavior. In these studies, it would be interesting to examine whether peer ratings of altruism are also unrelated to humor (particularly aggressive humor) as reported by participants.

While the lack of significant relationships between humor and altruism is surprising, the finding that humor does not add to gratitude in the prediction of altruism is not unexpected based on previous research suggesting that gratitude can be conceptualized as a moral affect (similar to other moral emotions such as empathy; McCullough et al., 2001). McCullough and colleagues argue that gratitude motivates the beneficiary of another person's kind actions to behave altruistically. Similarly, they

suggest that gratitude acts as a moral reinforcer for the recipients of prosocial behavior to behave altruistically in the future. These arguments are consistent with the present results.

Summary

In summary, the findings from Study 1 indicate that the HSQ is a better measure of humor as a character strength than the VIA-IS Humor scale and should therefore be used in subsequent positive psychology humor research. The findings from Studies 1 and 2 also indicate that self-enhancing, affiliative, and self-defeating humor appear to be the most consistently linked styles with emotional well-being and coping with stress. The positive humor styles are particularly associated (positively) with a life of pleasure whereas aggressive humor is strongly correlated (negatively) with morality measures. With regard to regression analyses, humor continued to add to their prediction of well-being, beyond gratitude, for all outcomes with the exception of meaning, engagement, symbolization and altruism. Furthermore, in some cases, humor was predictive of outcomes (e.g., negative mood, mental toughness: control, stress appraisal: threat) that show no significant association with gratitude. As suggested, humor may be adding to the prediction because of its important social and behavioral features.

Perhaps an important conclusion with respect to objectives 2 and 3 is that gratitude and humor appear to be more alike than different with regard to their associations with positive psychology outcomes. Both are correlated positively with positive mood, satisfaction with life, optimism, resilience, mental toughness - challenge, commitment, and confidence subscales, moral identity and moral scenarios. Unfortunately, positive psychology researchers have tended to ignore humor despite its relevance to many key constructs within the field (McGhee, 2010).

Practical Implications

A number of studies have already evaluated the effectiveness of gratitude-based exercises for increasing levels of personal well-being (e.g., Emmons & McCullough, 2003; Froh et al., 2008; Lyubomirsky et al., 2011; Seligman et al., 2005) with results indicating that gratitude can serve multiple benefits with respect to well-being. The finding that humor adds to gratitude in predicting most well-being variables suggests that exploring the role of humor-based exercises in positive psychology may be a fruitful area of future investigation. In particular, humor-based interventions might be useful for altering states which showed no relationship with gratitude (e.g., negative mood).

Furthermore, this line of applied research would fit within the recent shift to view mental health as not merely the absence of a diagnosable mental illness but also as a state of well-being in which people can thrive, flourish and overcome adversity (World Health Organization, 2013). Therefore, humor as a happiness exercise may hold some promise in influencing both aspects of mental health (i.e., reducing what goes wrong in life and increasing what goes well in life). However, more research is needed to replicate these findings and examine gratitude in relation to other negative emotions.

Limitations and Future Directions

An important limitation of this study is the use of a correlational methodology and cross-sectional design. Although it is generally assumed that humor has a causal effect on well-being, this approach does not permit researchers to determine the direction of causality between sense of humor and positive psychology outcomes. As a result, it is unknown whether the use of positive types of humor *causes* people to experience greater well-being, or whether these types of humor use emerge as a *consequence* of having greater well-being, or indeed whether some third variable causes both of them.

Furthermore, the cross-sectional correlational methodology only allows researchers to study the relationships between trait variables at one time. It is unknown, for example, how humor, gratitude, and well-being fluctuate on a daily basis.

A process-oriented daily diary approach can be a useful methodology to overcome some of the limitations posed by cross-sectional studies by allowing researchers to explore the daily changes in humor, gratitude and positive psychology variables at the within-person level. Study 3 of this dissertation was designed to explore this topic.

Furthermore, while the diary approach can account for some limitations of cross-sectional correlational research, the best way to determine causality is by using an experimental design. In this type of study, humor and gratitude would be manipulated and their effects on positive psychology outcomes could be observed. Therefore, Study 4 made use of an experimental intervention to examine potential effects of both humor and gratitude exercises on well-being.

Chapter 3: A Daily Diary Study of Humor and Well-Being

Previous research in the field of humor and well-being has relied on cross-sectional correlational designs (e.g., see Martin, 2007 for a review). In these studies measures are completed by multiple individuals at one point in time. The data resulting from these studies provide information only about between-person associations. However, there is growing acknowledgement that in the field of psychology more research is needed evaluating within-person processes (Curran & Bauer, 2011). This type of research must be conducted using longitudinal designs which involve the completion of repeated measures from multiple individuals. Strengths of this approach over previous cross-sectional ones include investigating day-to-day fluctuations in the use of humor, minimizing the biases associated with retrospective reporting, and exploring within-person effects separate from between-person relationships (e.g., Bolger et al., 2003; Curran & Bauer, 2011; Puhlik-Doris, 2004). Due to both conceptual and statistical reasons (see Curran & Bauer, 2011 for more information), the patterns of associations found at these levels may be very different from one another in terms of direction and magnitude. Therefore, to address the limitations of previous research, this study was designed to investigate the relationships between humor and well-being (as well as between gratitude and well-being) over time using longitudinal diary methodology.

Process-Oriented Research: Humor, Gratitude and Well-Being

Only one previous study has used the process-oriented approach to studying humor styles and well-being (Puhlik-Doris, 2004). In order to examine these relationships, Puhlik-Doris created a daily humor styles measure by adapting items from the original HSQ and asking participants to indicate to what extent they have engaged in each type of humor use during the present day. Puhlik-Doris asked participants to

complete this measure in addition to a measure of positive and negative daily mood, twice a week for three weeks. To analyze her results, she used hierarchical linear modeling. Results indicated that participants who used more affiliative humor on a given day also reported lower negative mood on that same day. Greater use of self-defeating humor was associated with higher levels of negative mood on the same day. Negative mood was unrelated to self-enhancing and aggressive humor styles. Regarding positive mood, Puhlik-Doris found that higher levels of both affiliative and self-enhancing humor styles on a given day were associated with increased positive mood on that day. The negative humor styles were unrelated to positive mood.

In addition to exploring Level 1 variables (within-person ratings) across time, Puhlik-Doris (2004) sought to explore whether a stress-moderating effect occurred between humor and stress on negative mood. To investigate this hypothesis, she used both Level 1 (i.e., daily stress) and Level 2 (i.e., scores on the HSQ) predictor variables with daily negative mood as the outcome variable. Therefore, she examined how the relationship between daily fluctuations in stress and mood within people interact with overall humor use. Puhlik-Doris found that, surprisingly, at high levels of stress, individuals using more aggressive and self-defeating humor had lower negative moods relative to their low humor counterparts. At low levels of stress, the inverse association was found. People who use more of these negative styles had worse negative mood.

These findings challenge our current understanding of humor styles. According to the humor styles theory, aggressive and self-defeating humor are hypothesized to be potentially maladaptive styles especially because cross-sectional research has found these uses of humor to positively correlate with maladaptive outcomes including anxiety, depression and hostility (Martin et al., 2003). However, the findings of Puhlik-Doris

(2004) suggest that the effects of humor use can vary as a function of the context in which it is used. Particularly under high levels of stress, self-defeating and aggressive humor can have protective effects on mood, at least on a short term basis. She suggested that perhaps, during these particular times, the benefits (e.g., improved self-esteem) of using these styles outweigh any immediate negative consequences with regard to well-being. During stressful situations, it is possible that any type of humor use allows individuals to gain distance from adversity and to reappraise the situation as less threatening. In this context, self-defeating humor, for example, may be an avoidance coping strategy. Puhlik-Doris concluded her discussion by advocating for further longitudinal research to explore the different functions that humor styles can serve.

As with humor, there has been a significant gap in the research on gratitude and well-being with respect to process-oriented studies exploring within-person relationships over time. Only two studies have examined this area and both studies were conducted by Wood, Maltby, Gillett, Linley, and Joseph (2008). They asked college students to complete measures of gratitude, perceived social support, stress, and depression at the start and end of their first semester of college. Using structural equation modeling, Wood et al. found that both studies supported models in which daily gratitude was associated with increased perceived social support and decreased stress and depression.

More basic process-oriented studies on gratitude and humor are clearly needed. Studying the way people can vary from themselves is equally as important as studying the way people differ from one another. The former, less frequently examined, provides information about the fluctuating states of daily life. The frequency of variability around a person's usual trend may indicate serious pathology or enhanced resiliency. For example, systematic decreases in an individual's typical level of gratitude or self-enhancing humor

use may indicate that he or she is at risk for depression. Therefore, exploring the within-person relationships between humor, gratitude, and well-being appears to be an area worthy of study and as such, was the focus of this investigation.

The Present Study

The present study was modeled after Puhlik-Doris's (2004) methodology. More specifically, participants were asked to complete online daily diaries twice a week for three weeks and results were analyzed using a hierarchical linear modeling approach. The present research also built on Puhlik-Doris's findings by including gratitude as a predictor variable (in addition to the humor styles) and by including altruism and satisfaction with life as outcome variables (in addition to mood).

Hierarchical linear modeling (HLM) analyses were conducted because this approach examines both within- (Level 1) and between- (Level 2) person effects (independently of one another) in predicting intra-individual variance in an outcome variable. In the present study, within-person effects refer to the way each participant's daily use of humor, gratitude, and well-being fluctuate throughout the study period relative to his or her own mean level on each of these variables. Consistent with the results by Puhlik-Doris (2004), it was expected that greater use of affiliative humor on a given day would be related to lower negative mood on that day whereas greater self-defeating humor on a given day would be associated with higher negative mood on that day. Puhlik-Doris found no within-person relationships for the other two humor styles (self-enhancing and aggressive) with respect to negative mood. Regarding positive mood, I hypothesized, as she found, that self-enhancing and affiliative humor would be positively correlated whereas the two negative styles would remain unrelated. Since no previous studies have explored the longitudinal relationships between humor, altruism,

and life satisfaction or the relationships between gratitude, positive and negative affect, altruism, and life satisfaction, no specific hypotheses are provided.

In general though, I expected that, relative to affiliative and self-enhancing humor, the negative humor styles would be less strongly related to well-being at the within-person level than at the between-person level. Studies 1 and 2 of this dissertation have provided strong support for the relationship between self-defeating humor and decreased mental health at the between-person level. While aggressive humor is generally less important for emotional well-being, using humor to tease or manipulate others was still correlated positively with negative mood in Study 1. However, a review of Puhlik-Doris's findings at the within-person level indicate that the negative humor styles display fewer significant relationships. She found that aggressive humor was unrelated to both positive and negative mood and self-defeating humor was not correlated with positive mood.

In contrast to within-person patterns, between-person effects refer to each person's overall average use of humor, gratitude and well-being over the study period relative to other participants in the study. To examine these relationships, mean daily level predictor variables were created which averaged each person's scores on a given predictor variable across the six diaries. It was hypothesized that people who use more gratitude and adaptive styles of humor would report greater well-being, compared to others. The inverse relationships were expected for the negative humor styles. This pattern of findings would support previous trait research (see Martin, 2007 for a review) and the first two studies of this dissertation.

Additionally, HLM allows for an exploration of cross-level interactions between the two levels (i.e., investigating whether the associations between daily humor or gratitude and well-being [within-person effect] vary as a function of participant's mean

level of humor or gratitude [between-person effect]). While this question was exploratory in nature, it is possible that as Puhlik-Doris (2004) found, use of self-defeating and aggressive humor can be adaptive in certain situations (i.e., under high levels of stress). For example, the results from the present study may indicate that for those people who do not habitually use a considerable amount of these humor styles, day-to-day use may actually be an important way to cope with daily stressors and hence positively correlated with well-being measures. This type of result would suggest that for some people, using more 'maladaptive' humor on a given day (relative to their own mean use) could offer protective effects on mood, prosocial behavior, and life satisfaction. These results would also suggest further questions about the nature of humor styles and emphasize the need to continue exploring the relationships between humor and well-being both at a within- and between-person level.

To investigate these objectives, the present study had two components. The first involved a traditional cross-sectional design in which participants completed a demographics measure and a number of additional questionnaires not of interest in the present study. The second and main component of this research was a daily diary design that used behavioral measures of humor and gratitude and daily assessments of mood, satisfaction with life, and altruism.

Method

Participants

The initial testing session sample was comprised of 211 first-year undergraduate students (70 males, 141 females) enrolled in an Introductory Psychology course at the University of Western Ontario. The mean age of participants was 18.53 years ($SD =$

2.76). The daily diary component of this study was comprised of 208 participants from the original sample who completed the diaries. Participants were recruited through the department research participant pool and were compensated with partial course credit.

Measures

Initial Testing Session

Please see Study 1 for a description of the *Demographics Questionnaire*.

Daily Diary Component

Daily Humor Styles Questionnaire (DHSQ; Puhlik-Doris, 2004). The DHSQ is a revised version of the Humor Styles Questionnaire (Martin et al., 2003) and consists of 12 items (three from each scale). See Appendix F for a copy of this measure. The items were adapted from the HSQ so that they ask participants to indicate the extent to which they used each type of humor during the past twenty four hours. The items selected from the original HSQ to comprise the DHSQ had the highest item-total correlation in previous studies, indicating that these items best capture the style of humor they purportedly measure. Respondents rate each item on a scale from 1 (*not at all*) to 4 (*more than five times*). Example items include "I told someone a joke or said something funny to make someone laugh" (affiliative humor), "I found that my humorous outlook on life kept me from getting overly upset or depressed about things" (self-enhancing humor), "Someone seemed offended or hurt by something I said or did while trying to be funny" (aggressive humor), and "I let someone laugh at me or make fun of me more than I should have" (self-defeating humor).

Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Please see Study 1 for a description of this measure. The present study asked participants to answer questions pertaining to the past 24 hours.

Gratitude Adjective Checklist (GAC; McCullough, Emmons, & Tsang, 2002).

Please see Study 2 for a description of the measure. In the present study, participants were

asked to complete this measure pertaining to their feelings over the past 24 hours.

Furthermore, in the present study, the three gratitude items were averaged and then

multiplied by 10 to create a single gratitude score. Since the GAC items were included

throughout the PANAS questionnaire, the final score was multiplied by 10 to be

consistent with the PANAS scoring. Therefore, the GAC scores could theoretically range

from 10 to 50.

Daily Satisfaction with Life (DSL). DSL was calculated by summing

participants' scores on two questions used in previous longitudinal studies to capture

daily satisfaction with life. The first question, "how happy are you today with your life as

a whole" (Fujita & Diener, 2005, p. 159) was designed to capture current satisfaction with

life. Participants rated this item using a scale ranging from 0 (*totally unhappy*) to 6

(*totally happy*). The second question, "rate your expectations for the next 24 hours using a

scale ranging from 0 (*pessimistic, expect the worst*) to 6 (*optimistic, expect the best*)"

measured future global life appraisals (Emmons & McCullough, 2003).

Daily Altruism. Ten items from the 20 item *Self-Report Altruism Scale* (SRA;

Rushton et al., 1981) were used to create the daily altruism scale (see Appendix G). The

items were chosen on the basis of which were most likely to be everyday prosocial

behaviors (applicable for university students at any time of the year). For example, items

pertaining to "pushing a stranger's car out of the snow" or "buying charity Christmas

cards" were removed from the daily scale. The response scale/instructions were modified

from the original measure. Instead of using a Likert-type scale, in this study participants

were asked to indicate whether they have engaged in any of the listed prosocial activities

during the previous 24 hours using a yes/no response scale. The number of checked items (i.e. "yes" responses) was used to determine a total prosocial behavior score.

Procedure

Initial testing was conducted in groups of up to twenty individuals. After signing the informed consent form, participants completed a demographic questionnaire, followed by a number of additional measures, not included in the present study. Before leaving, participants were asked for their email address, and they were provided with instructions about how to complete the daily diary component of the present study. The initial testing session took approximately fifty minutes, after which participants received a brief debriefing form.

Over the following three weeks, the participants received an email message every 3-4 days, providing them with a link to the website for their next diary. Clicking on this link took them to the website, where they were presented with the diary questions pertaining to their use of the four humor styles, gratitude, altruism, mood and satisfaction with life, over the preceding 24 hours. Participants were encouraged to complete the diary in the evening of the day they received the email. Each diary was estimated to require 10 minutes to complete. In total, the participants were asked to complete six diaries over a three-week period (two per week). If an individual did not complete the diary ratings within three days of receiving the email, up to two reminder emails were sent out at three-day intervals. If the participant still did not respond after two reminder emails, the participant was assumed to have dropped out of the study and no longer contacted. Upon completion of the six diaries, each participant received more extensive feedback via email. To be included in the data analysis, participants had to complete a minimum of four out of the six diary entries. However, 99.5% of participants completed all six logs.

Statistical Analysis

Descriptive statistics for the sample were calculated. Participants were excluded from a specific analysis if they were missing data on the variable being investigated (although this was rare).

Hierarchical linear modeling (HLM) using full maximum likelihood estimation was used to examine associations between daily and mean level humor styles and gratitude scores (the predictor variables) and daily mood, altruism, and satisfaction with life scores (the outcome variables). To conduct these analyses, I used HLM for Windows Version 6.0 Student Edition (Raudenbush, Bryk, Cheong, & Congdon, 2004). (HLM is both a program and a type of analysis.) Level 1 data (i.e., repeated diary measures) were analyzed as nested within persons. Level 2 (between-person) variables were calculated by averaging a participant's score on a given predictor across the six data collection points, to create an overall mean predictor score for that individual. Level 2 variables were centered around the grand mean, Level 1 predictor variables were centered around person-means, and the outcome variables were uncentered.

To examine the questions of interest, I utilized a four step hierarchical model building approach, testing each step to examine whether it represented a significant change from the previous one. These steps were repeated for each of the four daily outcome variables (i.e., positive and negative mood, altruism, and satisfaction with life). In the first step, I ran the unconditional model (i.e., null or baseline model) in which the intercept of the outcome variable of interest was entered as the only predictor. This model provided estimates of the total within- and between-person variance to be used as a comparison for the later steps. I also ran this same step (i.e., the unconditional model) for each predictor in order to confirm that there was sufficient variability across assessments,

within individuals, to use as Level 1 predictors. In the second step, all five of the group-mean centered Level 1 (i.e., diary-level) variables (four humor styles plus gratitude) were added as predictors of the outcome variable. Any non-significant random error components associated with the predictors were removed from the models (e.g., Nezlek, 2007). In the third step, I added person level (i.e., Level 2) measures of the four humor styles and gratitude to the model. Finally, in the fourth step, I added Level 2 humor and gratitude scores as predictors of the slopes for the corresponding Level 1 humor styles and gratitude. The purpose of this step was to determine if there was an interaction between Level 1 and 2 predictors. Any significant cross-level interactions were plotted to examine the pattern of interaction, dividing participants into high (75th percentile) and low (25th percentile) levels of the Level 2 variable of interest.

As an example, the final model for positive mood (PANDPOS) is displayed below.

Level 1 Model:

$$PANDPOS_{ti} = \pi_{0i} + \pi_{1i} (HSQDAF_{ti}) + \pi_{2i} (HSQDSE_{ti}) + \pi_{3i} (HSQDAG_{ti}) + \pi_{4i} (HSQDSD_{ti}) + \pi_{5i} (PANDGRAT_{ti}) + e_{ti}$$

Level 2 Model:

$$\pi_{0i} = \beta_{00} + \beta_{01} * (GRPMAF_i) + \beta_{02} * (GRPMSE_i) + \beta_{03} * (GRPMAG_i) + \beta_{04} * (GRPMSD_i) + \beta_{05} * (GRPMGRAT_i) + r_{0i}$$
$$\pi_1 = \beta_{10} + \beta_{11} * (GRPMAF_i) + r_{1i}$$
$$\pi_2 = \beta_{20} + \beta_{21} * (GRPMSE_i) + r_{2i}$$
$$\pi_3 = \beta_{30} + \beta_{31} * (GRPMAG_i) + r_{3i}$$
$$\pi_4 = \beta_{40} + \beta_{41} * (GRPMSD_i) + r_{4i}$$
$$\pi_5 = \beta_{50} + \beta_{51} * (GRPMGRAT_i) + r_{5i}$$

Results

For descriptive purposes, the means, standard deviations, and reliabilities (Cronbach's alpha) of the daily predictor and outcome variables are presented in Table

3.1. To examine the between-person and within-person variance for each of the five predictor variables in this study (four humor styles and gratitude), a hierarchical linear modeling analysis was conducted on the unconditional model for each of these variables separately (i.e., entering the intercept of the variable as the only predictor). For daily affiliative humor, this analysis revealed a between-person (Level 2) variance of 5.47 and a within-person (Level 1) variance of 4.36, for a total variance of 9.83. Thus, 55.6% of the total variance in daily affiliative humor was between persons and 44.4% was within persons, indicating a sizable proportion of variance at each level. For daily self-enhancing humor, the between-person variance was 5.46 (59.5%) and the within-person variance was 3.71 (40.5%). For daily aggressive humor, the between-person variance was 3.46 (58.7%) and the within-person variance was 2.43 (41.3%). For daily self-defeating humor, the between-person variance was 5.39 (67.6%) and the within-person variance was 2.58 (32.4%). Finally, for daily gratitude, the between-person variance was 78.82 (58.8%) and the within-person variance was 55.14 (41.2%).

Objectives 1-3: Multilevel Analyses[1]

      Daily Positive Mood. In the analyses using daily positive mood as the outcome variable, Step 1 (the unconditional model) revealed that the between-person (Level 2) variance was 38.40 and the within-person (Level 1) variance was 34.05, producing a total variance of 72. 45. Thus, 47% of the overall variability in daily positive mood ratings is a within-person phenomenon and 53% is a between-person phenomenon. The finding of sizable proportions for both types of variance provides support for the use of hierarchical gratitude as predictors, revealed that only the regression coefficients for aggressive humor

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[1] Initially time-lagged analyses were conducted to determine whether well-being ratings (i.e., mood, satisfaction with life, or altruism scores) on a given day predicted humor scores on the following (diary) day and vice versa. None of these analyses were significant and therefore, were not presented here.

Table 3.1

Descriptive Statistics for Day-Level Predictor and Outcome Measures (N = 1241 to 1246)

Measure	Daily Diary Measures		
	M	*SD*	Reliability
HSQAF	10.96	3.14	.83
HSQSE	8.53	3.03	.76
HSQAG	5.42	2.43	.68
HSQSD	5.29	2.82	.80
Gratitude	30.37	11.58	.91
Pos. Mood	27.79	8.52	.90
Neg. Mood	21.28	7.76	.87
Altruism	2.16	1.84	.63
Sat. with Life	10.51	3.31	.73

Note. HSQ = Humor Styles Questionnaire; AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; Pos. Mood = Positive Mood; Neg. Mood = Negative Mood; Sat. with Life = Satisfaction with Life. Reliability was measured using Cronbach's alpha.

and gratitude had significant random components and these were therefore modeled as random in the remaining steps. linear modeling, which allows for separate analyses of the within- and between-person variance components. The second step, entering Level 1 measures of daily humor and This model represented a significant improvement over the previous one, $\chi^2 (10) = 631.84$, $p < .001$. Step 3, entering Level 2 measures of the four humor styles and gratitude, was also significant, $\chi^2 (5) = 176.29$, $p < .001$. Step 4, entering Level 2 humor scores and gratitude as predictors of the slopes for the corresponding Level 1 humor and gratitude predictors, was not significant, $\chi^2 (5) = 3.55$, *ns*.

Table 3.2 presents the results of this final model. As can be seen in this table, at the within-person level (Level 1), affiliative humor, self-enhancing humor, and gratitude were significant predictors, indicating that on a day-to-day basis, on days when people are more grateful and use more of the two positive styles of humor than they usually do, they tend to experience more positive mood than usual. At the between-person level (Level 2), self-enhancing humor, self-defeating humor, and gratitude were significant predictors. These results indicate that when averaging across the six different diary entries for each participant, people who have higher overall levels of gratitude and self-enhancing humor, and lower overall levels of self-defeating humor, tend to have a more positive overall mood. None of the cross-level interactions (between Level 1 and Level 2) were significant, indicating that the magnitude of the day-to-day relationships between positive mood and the character strengths of humor and gratitude did not significantly vary as a function of individuals' mean levels of humor and gratitude across the diary days. The final model explained approximately 51% of the within-person variance and 57% of the between-person variance in positive mood ratings.

Table 3.2

Multilevel Model Predicting Daily Positive Mood

Predictor Variable	Fixed Effects	
	B (Standard Error)	t (degrees of freedom)
Intercept	27.79 (.30)	91.19(202)***
Within-person		
DHSQAF	0.50 (0.09)	5.48 (1229)***
DHSQSE	0.64 (0.09)	7.15 (1229)***
DHSQAG	0.05 (0.14)	0.33 (206)
DHSQSD	-0.19 (0.11)	-1.76 (1229)
DGratitude	0.38 (0.02)	16.72 (206)***
Between-persons		
MHSQAF	-0.02 (0.15)	-0.17 (202)
MHSQSE	0.82 (0.18)	4.58 (202) ***
MHSQ AG	0.28 (0.22)	1.25 (202)
MHSQSD	-0.32(0.16)	-1.95(202)*
MGratitude	0.41(0.04)	10.64(202)***
Cross-level Interactions		
DHSQAG X MHSQAG	-0.01 (0.05)	-0.12 (206)
DGratitude X MGratitude	0.003 (0.003)	1.36 (206)
Covariance parameter estimate	Random Effects	
	Variance (*SD*)	χ^2 (degrees of freedom)
Between (Level 2)	16.50(4.06)	1259.34(186)***
HSQAG slope	0.45(0.67)	258.54(190)***
Gratitude slope	0.02(0.15)	231.02(190)*
Within (Level 1)	16.84(4.10)	

Note. "D" preceding a variable name refers to a daily level variable. "M" preceding a variable name refers to a mean level variable. HSQ = Humor Styles Questionnaire; AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor.

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

Daily Negative Mood. In the analysis of negative mood, Step 1 indicated that the between-person variance was 29.20 (48.5%) and the within-person variance was 31.04 (51.5%). The second step revealed that only self-enhancing humor, self-defeating humor and gratitude had significant random components and these were therefore modeled as random in the remaining steps. This model represented a significant improvement over the previous one, $\chi^2 (14) = 145.19$, $p < .001$, as was Step 3, $\chi^2 (5) = 68.54$, $p < .001$. Step 4 was not significant, $\chi^2 (5) = 8.89$ *ns*.

The results of this analysis are shown in Table 3.3. As can be seen in this table, at the within-person level, affiliative humor, self-defeating humor, and gratitude were significant, indicating that on days when people are more grateful and use more affiliative humor than they usually do, they tend to experience less negative mood than usual. Similarly, on days when people use more self-defeating humor than usual, they tend to experience more negative mood. At the between-person level, affiliative and self-defeating humor styles were significant predictors. These results indicate that when averaging across the six different diary entries for each participant, people who use more self-defeating humor and less affiliative humor, compared to others, tend to experience higher overall levels of negative mood. Again, none of the cross-level interactions were significant. The final model explained approximately 26% of the within-person variance and 28% of the between-person variance in negative mood ratings.

Daily Altruism. In the analysis of altruism, Step 1 indicated that the between-person variance was 1.81 (54% of the total) and a within-person variance of 1.57 (46% of total). In the second step only gratitude had a significant random component and this was therefore modeled as random in the subsequent steps. This model represented a

Table 3.3

Multilevel Model Predicting Daily Negative Mood

Predictor Variable	Fixed Effects	
	B (Standard Error)	t (degrees of freedom)
Intercept	21.29 (.35)	61.56 (202)***
Within-person		
DHSQAF	-0.47(.09)	-5.12(1229)***
DHSQSE	-0.13 (.11)	-1.19(206)
DHSQAG	-0.06(.12)	-0.48(1229)
DHSQSD	0.35(.16)	2.23(206)*
DGratitude	-0.08(.03)	-2.93(206)**
Between-persons		
MHSQAF	-0.60(.17)	-3.42 (202)***
MHSQSE	-0.04(.22)	-0.17(202)
MHSQ AG	0.43(.29)	1.50(202)
MHSQSD	1.01 (.23)	4.34(202)***
MGratitude	0.06(.04)	1.36(202)
Cross-level Interactions		
DHSQSE X MHSQSE	-0.004 (.05)	-0.07 (206)
DHSQSD X MHSQSD	0.04(.07)	0.57 (206)
DGratitude X MGratitude	-0.01(.003)	-1.86 (206)
	Random Effects	
Covariance parameter estimate	Variance (*SD*)	χ^2 (degrees of freedom)
Between (Level 2)	21.05(4.59)	1209.01(170)***
HSQSE slope	0.44(0.66)	211.50(174)*
HSQSD slope	0.73(0.86)	268.93 (174)***
Gratitude slope	0.03(0.18)	214.71(174)*
Within (Level 1)	22.87(4.78)	

Note. "D" preceding a variable name refers to a daily level variable. "M" preceding a variable name refers to a mean level variable. HSQ = Humor Styles Questionnaire; AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor. * $p < .05$, ** $p < .01$, *** $p < .001$

significant improvement over the previous one, $\chi^2(7) = 46.02$, $p < .001$, as was Step 3, $\chi^2(5) = 41.40$, $p < .001$. Step 4 was marginally significant, $\chi^2(7) = 13.44$, $p < .06$.

Table 3.4 presents the results of the final model. As can be seen in this table, at the within-person level, self-enhancing humor and gratitude were significant predictors, indicating that on days when people are more grateful and use more self-enhancing humor than they usually do, they tend to report engaging in more altruistic behaviors than usual. At the between-person level (Level 2), self-enhancing and self-defeating humor styles, as well as gratitude, were significant predictors. These results indicate that when averaging across the six different diary entries for each participant, people who tend to have higher overall levels of self-enhancing and self-defeating humor and were overall more grateful, compared to others, also reported more altruistic actions.

The cross-level interaction between Level 1 daily gratitude and Level 2 mean gratitude scores was significant, indicating that the magnitude of the day-to-day relationship between altruism and gratitude significantly varied as a function of individuals' mean level of gratitude across the diary days. To examine the direction of this interaction, mean gratitude scores at the 25th and 75th percentiles were entered into the equation provided by the analysis. The purpose of doing this was to compute predicted daily altruism scores for individuals with high versus low mean scores on gratitude across the range of daily gratitude scores. These predicted values were then plotted on a graph (see Figure 3.1). As displayed in the figure, there was a stronger positive correlation between daily gratitude and altruism scores for people who had a higher mean level of gratitude across the six diary points, compared to people with a lower mean level of gratitude. Interestingly, for people with a low mean level of gratitude across the six diary points, the relationship between daily gratitude and altruism scores may actually be

Table 3.4

Multilevel Model Predicting Daily Altruism

	Fixed Effects	
Predictor Variable	B (Standard Error)	t (degrees of freedom)
Intercept	2.15 (.09)	24.14 (202)***
Within-person		
DHSQAF	0.03(.03)	1.31(1229)
DHSQSE	0.07(0.02)	3.34(1229)***
DHSQAG	0.01(0.03)	0.40 (1229)
DHSQSD	0.001(.03)	041(1229)
DGratitude	0.01(0.01)	2.29 (206)*
Between-persons		
MHSQAF	0.01(.04)	0.30(202)
MHSQSE	0.09(.04)	2.10(202)*
MHSQ AG	0.01(.08)	0.20(202)
MHSQSD	0.17(.05)	3.13(202)**
MGratitude	0.02(.01)	1.97(202)*
Cross-level Interactions		
DGratitude X MGratitude	0.002(0.001)	2.28(206)*
	Random Effects	
Covariance parameter estimate	Variance (*SD*)	χ^2 (degrees of freedom)
Between (Level 2)	1.41(1.19)	1374.83 (197)***
Gratitude slope	0.001(.02)	231.04 (201)
Within (Level 1)	1.48(1.22)	

Note. "D" preceding a variable name refers to a daily level variable. "M" preceding a variable name refers to a mean level variable. HSQ = Humor Styles Questionnaire; AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor.

* $p < .05$, ** $p < .01$, *** $p < .001$
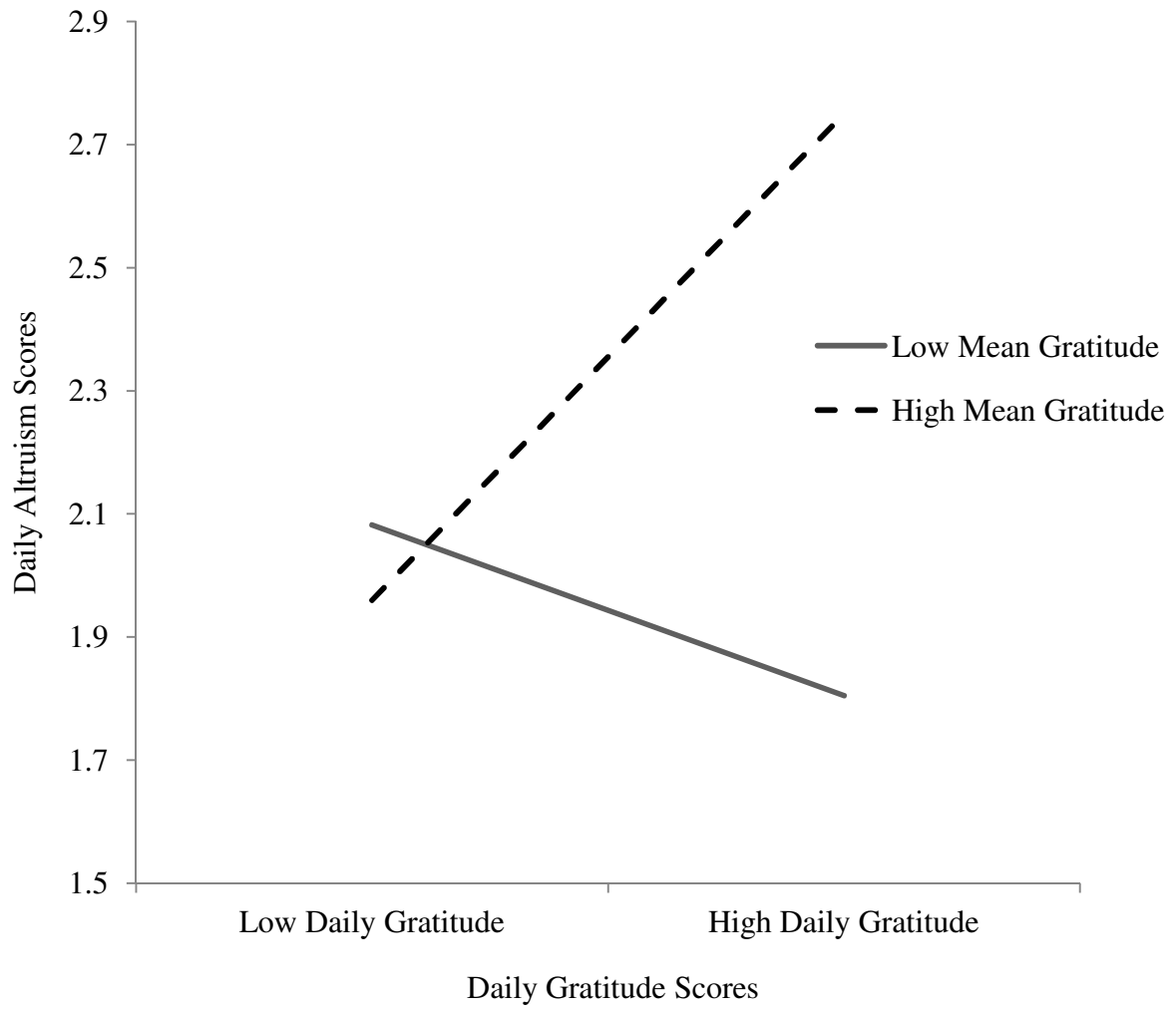
Figure 3.1. Cross-level interaction between Level 1 daily gratitude scores and Level 2 mean gratitude scores on daily altruism.

slightly negative. None of the other cross-level interactions were significant. The final model explained approximately 6% of the within-person variance and 22% of the between-person variance in altruism scores.

Daily Satisfaction with Life. In the analysis of satisfaction with life, Step 1 indicated that the between-person variance was 5.03 (45%) and the within-person variance was 5.87 (54%). The second step revealed that only gratitude and self-defeating humor had significant random components and these were therefore modeled as random in the remaining steps. This model represented a significant improvement over the previous one, $\chi^2 (10) = 342.97$, $p < .001$, as were Steps 3 and 4, $\chi^2 (5) = 118.35$, $p < .001$, and $\chi^2 (5) = 14.04$, $p < .02$, respectively.

Table 3.5 presents the results of the final model. As can be seen in this table, at the within-person level (Level 1), affiliative humor, self-enhancing humor and gratitude were significant, indicating that on days when people are more grateful and use more positive types of humor than they usually do, they tend to experience greater satisfaction with life than usual. At the between-person level (Level 2), affiliative, self-enhancing, and self-defeating humor styles, as well as gratitude were significant predictors. These results indicate that when averaging across the six different diary entries for each participant, people who tend to have higher overall levels of affiliative humor, self-enhancing humor, and gratitude, and lower overall levels of self-defeating humor, compared to others, report having higher satisfaction with life scores.

The cross-level interaction between Level 1 daily self-defeating humor scores and Level 2 mean self-defeating humor scores was significant, indicating that the magnitude of the day-to-day relationship between satisfaction with life and self-defeating humor significantly varied as a function of individuals' mean level of self-defeating humor

Table 3.5

Multilevel Model Predicting Daily Satisfaction with Life

Predictor Variable	Fixed Effects	
	B (Standard Error)	t (degrees of freedom)
Intercept	10.50 (.13)	81.27(202)***
Within-person		
DHSQAF	0.25(.04)	6.87 (1227)***
DHSQSE	0.19(.04)	4.64(1227)***
DHSQAG	-0.11(.05)	-2.20(1227)
DHSQSD	0.01(.06)	0.21(206)
DGratitude	0.10(.01)	10.24(206)***
Between-persons		
Intercept	10.50 (.13)	81.27(202)***
MHSQAF	0.25(.06)	4.37(202)***
MHSQSE	0.15(.08)	2.03(202)*
MHSQ AG	0.01(.11)	0.07(202)
MHSQSD	-0.32(.08)	-4.04(202)***
MGratitude	0.10(.02)	6.72(202)***
Cross-level Interactions		
DHSQSD X MHSQSD	-0.06(.02)	-2.71(206)**
DGratitude X MGratitude	0.001(.001)	0.71(206)
	Random Effects	
Covariance parameter estimate	Variance (*SD*)	χ^2 (degrees of freedom)
Between (Level 2)	2.83(1.68)	1013.85(172)***
HSQSD slope	0.11(.33)	244.33(176)***
Gratitude slope	0.003(.05)	210.51(176)*
Within (Level 1)	3.84(1.96)	

Note. "D" preceding a variable name refers to a daily level variable. "M" preceding a variable name refers to a mean level variable. HSQ = Humor Styles Questionnaire; AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor.

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

across the diary days. To examine the direction of this interaction, mean self-defeating

humor scores at the 25th and 75th percentiles were entered into the equation provided by

the analysis. The purpose of doing this was to compute predicted daily satisfaction scores

for individuals with high versus low mean scores on self-defeating humor across the

range of daily self-defeating humor. These predicted values were then plotted on a graph

(see Figure 3.2). As displayed in the figure, there is a stronger negative correlation

between daily self-defeating humor and satisfaction with life scores for people who had a

higher mean level of self-defeating humor, compared to people who had a lower mean

level of self-defeating humor across the six diary points. None of the other cross-level

interactions were significant. The final model explained approximately 35% of the

within-person variance and 44% of the between-person variance in satisfaction with life

ratings.

Discussion

The main purpose of this study was to investigate the longitudinal within-person

relationships between daily humor use, gratitude, and emotional well-being among

undergraduate university students. Using a process-oriented approach with hierarchical

linear modeling allowed for exploration of possible differences in patterns of correlations

at the within-person and between-person levels, as well as interactions between these two

levels (i.e., cross-level interactions). The results of the present study revealed some

interesting differences in the correlations at different levels of the analysis, which could

have important implications for the way we think about the role of humor styles in

relation to well-being.
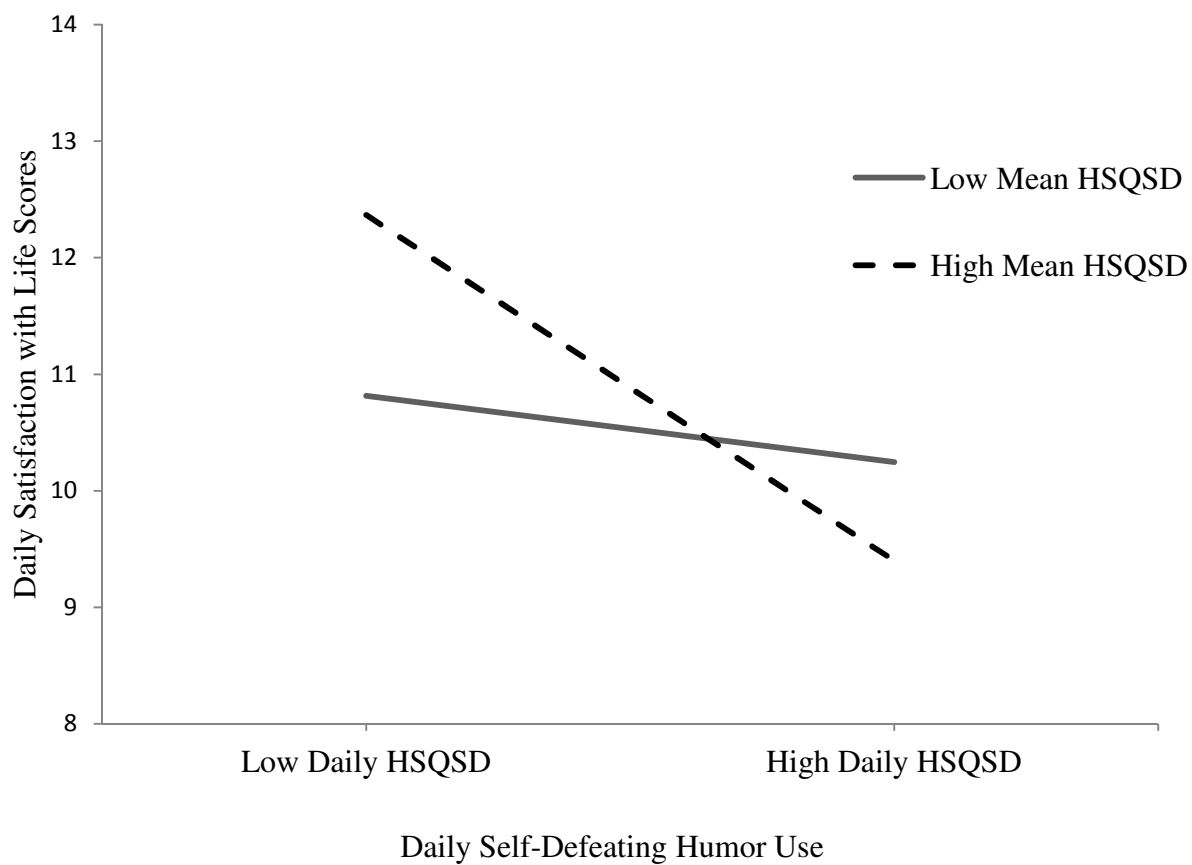
Figure 3.2. Cross-level interaction between Level 1 daily self-defeating humor scores and

Level 2 mean self-defeating humor scores (Mean HSQSD) on daily satisfaction with life.

Between-Person Relationships

At the between-person level, self-enhancing humor and gratitude were significant predictors of positive mood, altruism, and satisfaction with life. Likewise, affiliative humor was a significant predictor of negative mood and satisfaction with life. However, the most consistent predictor was self-defeating humor since this style was the only predictor to display significant relationships with all outcomes. When people used more self-defeating humor over the diary period, compared to their peers, they were also more likely to experience greater negative mood and less positive mood, greater altruism and lower satisfaction with life.

Consistent with my hypotheses, the findings pertaining to mood and satisfaction with life are similar to those from cross-sectional research (e.g., Studies 1 and 2 of this dissertation; Martin et al., 2003) using the trait level HSQ, gratitude and well-being measures to study between-person relationships. For example, a multitude of studies have found support for the robust associations between self-enhancing humor, self-defeating humor and emotional well-being (Martin et al., 2003; see Martin, 2007 for a review). While affiliative humor has been negatively associated with maladaptive indicators of health including anxiety and depression, as well as positively associated with variables such as self-esteem (Martin et al., 2003), its role appears more limited in predicting emotional well-being than those of self-enhancing and self-defeating humor (e.g., Study 1 and 2 of this dissertation; Martin et al., 2003). In contrast to these styles, aggressive humor has usually been found to be the style least associated with measures of emotional well-being. Instead this style appears to be more consistently linked with interpersonal variables such as relationship satisfaction (e.g., Cann, Zapata, & Davis, 2009). Consistent

with these findings, in the present study, aggressive humor was not significantly correlated with any of the emotional well-being variables at the between-person level.

While the aforementioned results were consistent with predictions, unexpectedly self-enhancing humor and self-defeating humor were found to be significant predictors of altruism. These findings are in contrast to the lack of significant correlations between any of the humor styles and altruism in Study 2. Moreover, if any use of humor was associated with altruism, I would have hypothesized that aggressive humor would be most consistently correlated in a negative direction (based on reasons discussed in Study 2 and findings pertaining to the morality measures in Study 1).

One possible reason why different findings emerged in this study (as compared to Study 2) is that, unlike in Study 2 where trait measures were employed, I calculated habitual use by averaging daily humor, gratitude, and well-being across the diary period. It is possible that while trait and state measures are highly correlated, state scores on any given measure (averaged over a three-week period) do not perfectly predict trait scores. As discussed below, different factors may influence trait versus state scores. For example, if people were completing the six diaries during a highly stressful period in their lives then even when averaged together, their humor style scores may still not approximate their general HSQ habitual scores. This possibility highlights the need for more longitudinal research employing a greater number of diaries over a longer period of time. Using this methodology, the cross-sectional and longitudinal between-person relationships between humor and altruism may be more similar.

Finally, the result that gratitude was positively correlated with all outcomes except for negative mood is consistent with the findings from Study 2. As noted in Study 2, it is possible that gratitude contributes to greater positive emotions but does not undo the

detrimental after-effects of negative emotions (Fredrickson et al., 2000). While further experimental research is needed to explore this question, previous studies supports this conclusion (McCullough et al., 2004, Studies 1 & 2; Watkins et al., 2003, Study 2).

In summary, the between-person relationships between humor and emotional well-being are consistent with previous trait humor research. One reason for these findings is because at this level, I was examining enduring patterns that are more trait-like. Further research is needed to explore the relationships between humor and altruism.

Within-Person Relationships

A unique feature of this study was the ability to explore within-person relationships. Interestingly, for some variables, very different patterns emerged within individuals over time as compared to the findings at the between-person level. This was particularly true for self-defeating humor, discussed below.

With respect to mood, the associations I found within individuals over time mirror and replicate the findings of Puhlik-Doris (2004). As she found and I predicted, affiliative and self-enhancing humor were significant predictors of positive mood whereas aggressive and self-defeating humor were unrelated. Similarly, affiliative humor negatively predicted negative mood, self-defeating humor was positively correlated with negative mood, and self-enhancing and aggressive humor were unrelated. Although, Puhlik-Doris did not examine gratitude, in this study it was correlated in the predicted directions with both positive and negative mood (consistent with the results by Wood et al., 2010). These results suggest that, at least with respect to mood, the ability to be grateful and use humor on a daily basis to bond with friends and reduce interpersonal tensions might be especially important. In contrast, overall, the use of daily negative styles appears to be unrelated to fluctuations in day-to-day well-being.

When examining the other two outcome variables, altruism and daily satisfaction with life, gratitude, affiliative and self-enhancing humor displayed similar relationships to the between-person level. Both these humor styles and gratitude were positively correlated with satisfaction with life, and as predicted, self-enhancing humor and gratitude were also positively correlated with altruism. These findings suggest that as with comparisons between people, being more grateful and using humor to bond with others and cope with stress, on a day-to-day basis, is positively associated with increased satisfaction with life and prosocial behavior.

In contrast to gratitude, self-enhancing, and affiliative humor, neither aggressive nor self-defeating humor displayed any significant within-person relationships with altruism and satisfaction with life. While aggressive humor has generally been found to be unrelated to measures of emotional well-being (e.g., Kuiper et al., 2004; Martin et al., 2003), the lack of associations at the within-person level with respect to self-defeating humor appears to be in direct contrast to between-person relationships.

Why does self-defeating humor display differential relationships with well-being depending on the level of analysis? One way to answer this question is to understand the theoretical nature of the outcome variables being predicted by self-defeating humor at each level of analysis. At the between-person level, a number of different chronic factors can influence trait/habitual well-being variables (e.g., positive mood) and result in an individual having more or less positive mood. These chronic factors may include personality variables (e.g., self esteem), differences in lifestyle, etc. However, at the within-person level, I was not measuring traits (or averages) but instead day-to-day state variations. Different, more acute factors, may be responsible for why positive mood is higher on certain days than others. These factors may include changes in normal work,

family, and/or health routines. As Hoffman and Stawski (2009, p. 106) argue, "given that between-person and within-person variation represent two different theoretical constructs, their effects on a given outcome will often be of different magnitudes or even different directions. In our experience, this has been the rule, rather than the exception." Therefore, the results of the present study highlight the importance of examining within-person and between-person associations separately, rather than assuming that the correlations found at the between-person level also apply within persons.

Cross-Level Interactions

The results from the cross-level interactions might help to further explain the differential findings at each level of analysis with respect to self-defeating humor. These interactions suggest that day-to-day changes in the use of a particular humor style or gratitude may play a different role for well-being depending on how much it is used overall. The first (of two) significant interactions indicated that the association between Level 1 self-defeating humor and satisfaction with life scores was moderated by the Level 2 self-defeating humor score. This interaction denotes that the negative association between daily use of self-defeating humor and life satisfaction is stronger among people who tend to use higher levels of self-defeating humor overall. However, individuals who do not generally engage in this type of humor often (i.e., habitually) are less likely to experience significantly lower satisfaction with life on days when they use more self-defeating humor than they typically do. Therefore this interaction supports the explanation that occasional use of self-defeating humor, at least in the short term, is not particularly detrimental. For example, self-defeating humor may help to relieve immediate daily negative emotions and serve as an avoidance coping strategy, outweighing any negative consequences associated with using this style (Puhlik-Doris,

2004). Instead, only when people habitually use this type of humor do they experience less well-being.

One possibility to further explain the differences between levels is that self-esteem might be an important third variable. For people with particularly high trait self-esteem, the use of more self-defeating humor on a particular day relative to their usual amount, may be completely unrelated to fluctuations in well-being. In contrast, for people with lower self-esteem, the use of more daily self-defeating humor than is typically used may be associated with significant declines in daily well-being. It will be important for future research to explore these types of hypotheses.

In addition to the relationship between self-defeating humor and life satisfaction, a second cross-level interaction was found between Level 1 and 2 gratitude in the prediction of daily altruism scores. This interaction indicates that the positive association between daily use of gratitude and altruism is stronger among people who tend to report higher levels of gratitude overall. In contrast, individuals who are not generally grateful are less likely to experience increased altruism on days when they report being more grateful than they typically are. Perhaps for people who are not generally grateful, being more thankful on a particular day is behaving or feeling in a way that is out of character for them. There may be other negative events happening that day which impact people feeling or behaving out of character. These other negative contextual influences (e.g., stressors) may outweigh or counteract any increased benefits from feeling grateful. In contrast, people who are more grateful overall may be behaving in accordance with their character when feeling more grateful on a day-to-day basis. It may be that on these days in which they report more appreciation than is typical, more positive events are happening, influencing daily altruistic behaviors. Future research could explore these

hypotheses by including variables that capture daily events and stressors.

Both cross-level interactions have implications for the design of future exercises aimed to improve well-being. Humor-based interventions should particularly seek to help people who use high levels of habitual self-defeating humor to reduce their use of this humor style. However, people who do not use as much of this style overall (e.g., may use occasional day-to-day uses) do not seem to be as important for targets of interventions. In contrast to self-defeating humor, interventions that aim to increase daily use of self-enhancing and/or affiliative humor could also be important because daily use of these styles (as well as habitual use) was associated with increased well-being.

Gratitude-based interventions might want to focus on increasing habitual levels of gratitude for people who are relatively low on this trait. As a result, when these people use more gratitude on a day-to-day basis, they may also report more altruistic behaviors. However, aiming to target people who do not use a considerable amount of state (i.e., daily) gratitude appears to be a less fruitful endeavor.

In summary, the results of the present study revealed some interesting differences in the correlation patterns at different levels of the analysis. At the between-person level, the results, with respect to mood and satisfaction with life, resemble the findings from Studies 1 and 2 of this dissertation as well as previous correlational research (e.g., see Martin, 2007 for a review). At this level, self-defeating humor, relative to the other styles, was most consistently linked with emotional well-being. However, at the within-person level, self-defeating humor was generally unrelated to well-being indicating that on a day-to-day basis, more use of this style than is typical for oneself does not correlate with fluctuations in well-being. The cross-level interactions provide one way of understanding these findings by suggesting that habitual use of self-defeating humor appears to be

particularly problematic for mental health whereas occasional use may not be detrimental. Under certain circumstances, perhaps daily self-defeating humor may actually be adaptive, such as in periods of high stress (Puhlik-Doris, 2004).

Limitations and Future Directions

While a process-oriented approach can help explain changes within individuals on a day-to-day basis, this approach does not allow researchers to infer causality among variables. For example, it is unclear whether the use of certain humor styles or gratitude on a particular day leads to greater well-being on that day, or whether enhanced well-being affects humor styles or gratitude. Another possibility is that a third variable (e.g., self-esteem, Big Five personality factors; Costa & McCrae, 1980) may correlate with both predictor and outcome variables. While the present study was not concerned with establishing causality, future experimental studies are needed to examine this issue. In this type of study, humor and gratitude could be manipulated and the effects on positive psychology outcomes could be observed.

Another limitation of this study is the use of a university student sample which influences the generalizability of the results. Replication is needed using a sample with more diverse demographics than university students. It is possible that older adults or younger children may show different patterns of daily humor use, gratitude, and well-being than the young adults studied in the present research.

Furthermore, daily humor, gratitude and well-being were measured with only six daily diaries. With fewer data points, the variability of the slope representing each person's individual pattern over time is less reliable. For example, the relationship between humor and well-being may have appeared similar across some individuals when this may not actually be the case. As more diary points are available for each individual,

the variability of the slopes would be more representative of that person's general pattern over time. Therefore, it is worthwhile for future studies to employ more diaries in order to obtain more reliable estimates with respect to the slopes of the regression lines within people.

Future studies many also want to explore the use of data collection applications on handheld computers and mobile telephones which would allow for repeated data collection throughout the day (instead of at one point through the use of an internet daily diary). Daily well-being questions could be broadened to include measures of relationship quality (to investigate whether aggressive humor becomes an important humor style in within-person relationships). Finally, extending the diary period is another important avenue for researchers to examine longer term natural variations between humor, gratitude and well-being.

In summary, the present study was one of the few studies to explore day-to-day variations in humor styles, gratitude and well-being using an analysis that allowed examination of intra- and inter-individual variability across the three-week period. In contrast to traditional studies that rely on mean values across the sample (at one time point), the longitudinal process-oriented methodology is considerably more powerful because it allows researchers to compare within- and between-person associations. The findings in the present study revealed something interesting about self-defeating humor in this regard. At the between-person level, it appears to be most consistently linked with well-being (out of all the humor styles) whereas at the within-person level, it appears to be the least consistently linked. These important results help to refine our understanding of humor styles and how the effects of humor (particularly self-defeating humor) may be different depending on whether researchers examine habitual or occasional use.

Chapter 4: Cultivating Humor as a Positive Psychology Intervention (Study 4)

Almost everyone says that what they want most in life is to be happy (Lyubomirsky, 2008). Research supports the notion that the quest to become happier is a worthwhile and fruitful goal. Happier people are more productive (Straw, Sutton & Pelled, 1994), creative (Estrada, Isen & Young, 1994), prosocial (e.g., Isen, 1970; Kasser & Ryan, 1996), liked by others and satisfied with their social relationships (Harker & Keltner, 2001; Marks & Flemming, 1999). They earn higher incomes (Diener, Nickerson, Lucas, & Sandvik, 2002), have stronger immune systems (e.g., Dillon, Minchoff, & Baker, 1985), are less likely to be divorced (e.g., Myers & Diener, 1995; Lyubomirsky, et al., 2005), and even live longer (e.g., Danner, Snowdon, & Friesen, 2001). In summary, happy people appear to lead fulfilling and flourishing lives.

Based on the many benefits of becoming happier (defined as experiencing more positive emotions, fewer negative emotions, and greater satisfaction with life; Diener, 1994), some scholars have begun questioning whether there are real and lasting ways to increase happiness (e.g., Lyubomirsky, 2008). Unfortunately within the history of clinical psychology, researchers have tended to focus more on what goes wrong in life than what goes well. As a result, a number of existing interventions attempt to move people from a negative state to a more neutral normal, or as Seligman (2002) states, from a minus five to a zero. However, with the development of positive psychology as a relatively new field, researchers are also now beginning to explore how to move people from a zero (or neutral point) to a plus five (indicative of enhanced well-being, resilience, life satisfaction, etc.; Peterson, 2006; Seligman & Csikszentmihalyi, 2000).

The main purpose of the present study was to explore whether humor-based interventions could play a role in increasing happiness. It was also of interest to

investigate whether adopting a humorous outlook in daily life confers well-being benefits similar to or greater than those resulting from an already established positive psychology gratitude intervention.

Determinants of Happiness

Before providing a review of positive psychology interventions, it is important to first consider whether lasting happiness is an attainable goal. In 2001, Lyubomirsky, Sheldon, and Schkade began a collaboration to investigate the determinants of happiness (Lyubomirsky, 2008). A few years later in 2005, they published their findings in a seminal article describing the causes of happiness. Lyubomirsky and her colleagues discovered that chronic happiness ("a person's characteristic level of happiness during a particular period in his or her life" p. 115) has three major determinants: a genetically determined and fixed set-point, circumstances, and behavior (i.e., intentional activities).

First, the happiness set point, defined as "the central or expected value within the person's set range," (Lyubomirsky et al., 2005, p. 116) suggests that a portion of well-being is relatively stable over time, immutable, and determined by genetics. Consistent with this theory are a number of studies on twins (e.g., Lykken & Tellegen, 1996; Tellegen et al., 1988), well-being over time (e.g., Eid & Diener, 2001), and personality factors (e.g., Kagan, 2003), which suggest that approximately 50 percent of the variance in happiness is governed by genes.

The second dimension of the model implies that approximately 10 percent of the variance in well-being is determined by circumstances (e.g., nationality, culture, age, gender, job, health, income). This value was calculated based on a review of studies indicating relatively weak associations and small effects between circumstantial factors and well-being (e.g., Brickman, Coates, & Janof-Bulman, 1978; Diener, Horowitz, &

Emmons, 1985; Diener, Sandvik, Seidlitz, & Diener, 1993; Feinman, 1978; Gallup, 1984; Inglehart, 1990; Lucas, Clark, Geogellis, & Diener, 2003; Warr & Payne, 1982). These studies suggest that circumstances only account for a small percentage of the variance in happiness because most people adapt rapidly to any positive or negative life changes, resulting in relatively stable happiness levels over time.

After accounting for genetically determined traits and complicated life circumstances, Lyubomirsky et al. (2005) concluded that approximately 40 percent of the variance in well-being was still unaccounted for. They proposed that this variance could be explained by intentional behavior - a broad category including activities, actions or practices in which people choose to partake. Unlike circumstances which can happen without any effort, behavior (e.g., exercise) requires a certain level of mindfulness to carry out and maintain. Similarly, unlike circumstances to which people can habituate, intentional activity can be varied (e.g., episodic, tried in different ways) to prevent adaptation. An important implication of this component of the model is that approximately 40 percent of happiness is within an individual's own control and can be modified through thoughts, actions, and behavioral changes.

Happiness Interventions

Based on Lyubomirsky et al.'s (2005) model and supporting research, an increasing number of studies have experimentally investigated the effects of relatively simple and independently initiated happiness-boosting activities on well-being (for a review see Sin & Lyubomirsky, 2009). Some of these exercises include encouraging people to set self-concordant goals, increasing activity (fitness), identifying signature strengths, participating in mindfulness meditation, performing random acts of kindness, and cultivating gratitude through counting one's blessings or writing a letter of thanks to

an influential person in one's life (Seligman et al., 2005; Sin & Lyubomirsky, 2009).

In 2009, Sin and Lyubomirsky conducted a meta-analysis in which they compared the effect sizes of a number of different positive psychology exercises aimed at enhancing well-being. They concluded that from the 49 studies reviewed ($N = 4235$), the average effect size (unweighted mean r) was .29. Similarly, they noted that out of 25 studies that attempted to reduce depression ($N = 1812$), the average effect size was .26, indicating that across all positive psychology interventions, the magnitude of effects was medium-sized.

Unfortunately, within this line of research, positive psychologists appear to have overlooked the role of humor as a potential happiness-boosting activity. The lack of humor-related interventions is somewhat surprising considering, as previously mentioned, that positive psychologists have identified humor as one of twenty-four character strengths deemed ubiquitously important in a life of happiness (Peterson & Seligman, 2004). Therefore, the main purpose of this study was to design and test the first positive psychology humor exercises while also exploring some of the conditions under which this type of practice may work best.

Humor as a Happiness Intervention: Previous Research

A limited number of studies have empirically evaluated programs designed to improve one's sense of humor. McGhee (1996) developed a training program to teach individuals basic humor skills to cope with stress. His intervention consists of an eight-week, eight-step curriculum designed to teach individuals to become more playful (e.g., by noting the lighter side of things). More recently, McGhee (2010) described positive results (in his book) from studies evaluating the effectiveness of his program. Unfortunately, this research remains unpublished and McGhee does not report on sample sizes, detailed methodology, data analyses, or effect sizes in his book.

Recently, a pilot study was conducted by Falkenberg, Buchkremer, Bartels, and Wild (2011) to examine the effects of McGhee's (1996) training program for six depressed inpatients. The eight-week course was modified by shortening the sessions, removing the use of any jokes about death, and simplifying the humor production tasks. All six patients completed the training program and demonstrated improvements in trait cheerfulness and humor as a coping strategy (measured by the Coping Humor Scale, Martin & Lefcourt, 1983). Likewise, participants also experienced significant decreases in state and trait seriousness and state bad mood. While Faulkenberg et al.'s (2011) findings are encouraging and participant feedback was positive, the sample was small and no control group or follow-up period was included.

A more sophisticated and rigorous study using McGhee's humor skills program was conducted by Crawford and Caltabiano (2011). They randomly assigned 55 community volunteers to a humor training group, a social group (who met weekly for tea and socializing), or a non-intervention control group. Well-being measures were completed at baseline, post program, and at a three month follow-up. In comparison to the other two groups, participants in the humor group reported significant increases in well-being (i.e., positive affect, optimism, self-efficacy, perceptions of control) following the intervention. Gains were maintained at the three month follow-up. Moreover, immediately post intervention, the humor group exhibited decreases in depression, anxiety, and stress levels. In summary, Crawford and Caltabiano found support for the notion that humor skills training programs could significantly increase well-being.

One limitation of the aforementioned studies is that the time commitment and amount of participation required does not appear consistent with many PPIs that are brief, relatively simple, mainly self-administered, and can easily be incorporated into one's

daily life. Humor exercises that incorporate these features may be more attractive to the general public than the current humor training programs.

The Present Study

The present investigation was designed to develop and experimentally test two positive psychology humor interventions that fit with these criteria. I also addressed limitations of some previous research by including a control group, follow-up period, and larger sample size. However, one difficulty in designing these types of interventions was deciding which aspect of humor to focus on. Within the scientific community, there is no consensual definition of humor (Ruch, 1998). Instead, the term has been used in divergent and even conflicting ways (Beerman & Ruch, 2009; Ruch, 2001).

However, as results from Chapters 2 and 3 indicate, one conceptualization of humor that appears to be directly relevant to mental health and successful adaptation is the notion of humor styles (Martin et al., 2003). When comparing this aspect of humor to the VIA-IS Humor scale (Peterson & Seligman, 2004), results from Study 1 indicated that the humor styles approach was the stronger conceptualization and measure to employ in positive psychology research because the relative absence of the negative humor styles add to the presence of the positive styles in predicting well-being. Therefore, it may be important when designing a humor intervention to encourage people to not only increase their use of positive humor, but also to reduce their negative humor use.

In order to test this assertion, explore whether humor PPI's are better than a control exercise for increasing well-being, as well as address the distinctions between humor and gratitude, an experiment was designed with four intervention conditions. First, a well-studied and established *gratitude* intervention was included in which participants were asked to focus on and note the favorable in their daily lives (e.g., Emmons &

McCullough, 2003). The purpose of incorporating this intervention was to address one of the underlying objectives of this dissertation: the distinction between humor and gratitude. Based on research by Algoe and Haidt (2009) and the findings from previous chapters, it was expected that participants in the gratitude group would report increased prosocial behavior relative to the humor groups (Hypothesis 1A). Likewise, the humor exercises were hypothesized to lead to reduced negative mood relative to the gratitude group (Hypothesis 1B).

Second, in the *humor styles* exercise, participants were taught to distinguish between positive and negative uses of humor, with the expectation that by doing so, participants would aim to increase their use of positive humor and decrease their use of negative humor. It is important to note that participants were not explicitly instructed to reduce their use of negative humor as findings from previous chapters might recommend. The rationale behind this decision was to reduce threats to internal validity by attempting to ensure that the humor styles condition would be as similar as possible to the other conditions all focused on noticing something in daily life. More specifically, none of the other conditions involved a manipulation whereby participants were asked to actively increase or decrease a behavior.

Third, a more *traditional humor* exercise was included consistent with the VIA-IS humor conceptualization. These participants were asked to note humor observed or created in their daily lives (without any instruction about adaptive versus maladaptive uses). The purpose of including this condition was to specifically test the assumption (Hypothesis 2) that the most effective humor exercises (with respect to greater well-being) would be those that not only teach individuals to notice the humor in their daily lives, but also to distinguish between adaptive and maladaptive uses of humor. As with

the humor styles condition, the traditional humor exercise was modeled after the gratitude exercise in which participants are asked to notice something in daily life.

Finally, the fourth condition was a *control* exercise requiring participants to focus on and note everyday events. This exercise has been previously used as an adequate way to control for extraneous factors that could influence well-being instead of the intervention itself (e.g., Emmons & McCullough, 2003). In the present study, extraneous variables may have included knowing one was receiving an intervention, attention from professionals (during the orientation session), the expectation of an intervention's effectiveness, and completion of daily well-being measures. Compared to the control group, it was hypothesized that all three experimental interventions (gratitude, humor styles, and traditional humor) would result in enhanced affect, prosocial behavior, and satisfaction with life (Hypothesis 3).

Accordingly, participants were randomly assigned to one of the four conditions and were asked to complete their exercise on a diary log they received via email twice a week for three weeks. Measures of well-being were administered immediately before the commencement of the intervention (during an introductory session), on each log and one month subsequent to the competition of the intervention period.

In addition to exploring the differences among active interventions (gratitude and humor groups) and between the control group and active interventions, the present study also sought to explore factors influencing the success of these types of interventions.

Factors Influencing the Success of Happiness Interventions

Effort and Expectancy. There is some research suggesting that effort, expectancy, and other individual-related factors may influence the effectiveness of happiness interventions (e.g., Lyubomirsky et al., 2011). First, participants who exert the

greatest effort when completing positive psychology interventions have been found to accrue the most benefits (Lyubomirsky et al., 2011; Seligman et al., 2005). Second, other studies have suggested that differential levels of expectancy can be a plausible explanation for gains actually achieved (e.g., Devilly & Borkovec, 2000). More specifically, as the placebo effect would predict, people who expect, at the outset, a given intervention to be more helpful, often report more gains than people who are less optimistic about an intervention's ability to affect personal change (e.g., Goossens, Vlaeyen, Hidding, Kole-Snijders, & Evers, 2005; Kirsch, 1997). Therefore, by measuring and controlling for effort and expectancy, researchers can rule out these alternative explanations for any differences among conditions, allowing greater confidence that differences in outcomes are due to the actual interventions. In the present study, the degree of effort exerted in pursuit of the daily exercise was measured throughout the intervention, and participants' expectation regarding the efficacy of their assigned intervention was measured prior to the commencement of their specific intervention. Consistent with past findings (e.g., Lyubomirsky et al., 2011) it was expected that more effort when completing the exercises and greater expectancy prior to the intervention would lead to enhanced outcomes across conditions (Hypothesis 4).

Continued Exercise. Previous researchers have also hypothesized that interventions should have the most pronounced effects on participants who continue the effortful performance of a happiness activity on their own initiative (past the required study period and into the follow-up period; Lyubomirsky et al., 2011; Seligman et al., 2005). For example, Seligman and colleagues tested five happiness exercises and a control exercise delivered via the internet over a one-week period. They then followed participants over the course of six months (one week, one month, three month, and six

month follow-ups), asking them to answer questions about happiness and depression as well as whether the participants continued to complete the exercise past the one-week intervention period. Consistent with hypotheses, they found that the interventions were most effective for participants who continued the exercises on their own. Perhaps by continuing the exercise, these individuals experienced enhanced well-being because they were better able to master the skill of mindfully noticing, paying attention to, and focusing on the humor in their life (for example). Based on this research, I examined and expected that participants who continued their exercise past the three-week intervention and into the one-month follow-up period experienced greater mental health gains relative to participants who did not continue the exercises (Hypothesis 5).

Baseline Humor, Gratitude, and Well-Being. Besides effort, expectancy, and continuing an exercise past the study period, there may be other individual difference variables that determine whether some people benefit more from certain types of positive psychology exercise than others. For the purpose of treatment-matching, it is important to determine which factors or individual profiles differentiate these groups of people. Preliminary studies in this area suggest that people who choose a specific activity (i.e., self-selection versus random assignment) may experience greater boosts to well-being (Lyubomrisky et. al., 2011). The present study expanded this area of focus by including individual difference variables in baseline well-being, humor, and gratitude as predictors of well-being outcomes. On one hand, baseline humor scores (for example) may interact with the humor conditions to predict greater well-being such that high humored individuals experience greater gains from assignment to a humor exercise versus a control or gratitude one because the intervention is matched to their strengths and personality characteristics. On the other hand, it is also plausible that that people with a greater sense

of humor achieve limited benefits from a humor exercise given that they may already reap the potential benefits associated with increasing humor use. Instead these individuals may benefit more from a gratitude exercise. This type of information would provide a useful first step in guiding potential treatment matching decisions among clinicians. Therefore, the present study was designed to explore these hypotheses.

In summary, there were four objectives of the present study. Objective one, the main purposes of this research, involved exploring the differences among the active intervention groups (gratitude, humor styles, traditional humor) and between these conditions and the control exercise. Objective two was designed to investigate the role of effort and expectancy. Objective three examined whether continued practice of the interventions during the follow-up period led to greater gains. Finally, objective four addressed the notion that individual differences in baseline humor, gratitude, and well-being may impact and moderate the success of an intervention.

Method

A Priori Statistical Power Analysis

A power analysis for a single factor MANOVA with four dependent variables (satisfaction with life, prosocial behavior, positive mood, and negative mood) was conducted in G*Power 3 (Faul, Erdfelder, Lang, & Buchner, 2007) to determine a sufficient sample size using an alpha of 0.05, a power of 0.80, and a medium effect size selected based on the findings from the meta-analysis by Sin and Lyubomrisky (2009). The results indicated that a total sample of 20 was required for four groups (5 participants per group). While the results of the MANOVA assessing global effects were of predominant interest in this pilot study, it is important to consider the power for interpreting the subsequent univariate analyses (also provided as output when a

MANOVA is conducted). With a total sample size of 120 participants, the power for detecting a difference on any one variable in the univariate analysis is .99 suggesting virtual assurance of finding a medium sized effect if one exists. Based on the aforementioned considerations, the desired sample size in this study was 120 with equal allocation of participants into each of the four groups (i.e., N = 30 per condition).

Participants

Based on the results of the a priori power analysis, the initial testing session sample was comprised of 113 (42 males, 71 females) students and 22 staff (2 male, 20 female) at the University of Western Ontario (UWO) and Fanshawe College. The mean age of participants was 25.76 years (SD = 10.89). At the start of the study, there were 32 participants in the control group, 35 in the gratitude group, 33 in the traditional humor group, and 35 in the humor styles group. Due to attrition, by time 6 (the end of the intervention period), there were 24 participants in the control group, 32 in the gratitude group, 29 in the traditional humor group, and 27 in the humor styles group. Participants were recruited through an email sent out from the university counseling center to all UWO students and staff, posters placed in and around the counseling centre, a brief description of the study/intervention in a university counseling centre groups pamphlet, and emails sent to psychology students at Fanshawe College. Interested participants were provided with an email address (appearing on all advertising materials) where they could ask any questions and sign up for an introductory session. Although there was no monetary or credit compensation as a result of participation, all participants were told that the purpose of the study was to increase their happiness and well-being.

Measures

Demographics Questionnaire - Please see Chapter 2 for a description.

Daily Humor Styles Questionnaire (DHSQ; Puhlik-Doris, 2004), **Positive and Negative Affect Schedule** (PANAS; Watson et al., 1988), **Gratitude Adjective Checklist** (GAC; McCullough et al., 2002), **Daily Satisfaction with Life** (DSL), and **Daily Altruism Scale** (Rushton et al., 1981). For a description of these measures, please see Chapter 3 (Study 3).

Credibility and Expectancy Questionnaire (CEQ; Devilly & Borkovec, 2000). The CEQ consists of six items (three per subscale) designed to assess credibility (i.e., "how believable, convincing, and logical the treatment is") and expectancy (i.e., "improvements that clients believe will be achieved" p. 82, Kazdin, 1979). Items were modified to ask about exercises (instead of therapy) and improvement in well-being (instead of trauma symptoms). A sample item from the modified credibility subscale is: "At this point, how successfully do you think this exercise will be in improving your well-being" rated on a scale from 1 (*not at all useful*) to 9 (*very useful*). A sample item from the modified expectancy subscale is "By the end of the exercise period, how much improvement in your well-being do you think will occur" rated on a scale from 0% to 100% (with 10% increment options available). Research suggests that both subscales and the total scale have adequate internal consistency and test-retest reliability (Devilly & Borkovec, 2000). For the present study, a total scale score was used.

Effort. To assess effort, participants were presented with the following question, created for this study: "How much effort did you put into the exercise today?" using a scale from 1 (*no effort at all*) to 5 (*a lot of effort*).

Continued Exercise. To assess whether participants continued the exercise in the follow-up period, participants were asked, "Within the last month (since the completion of your last diary log), have you continued to _____? (In other words, have you continued

to do your assigned happiness exercise on your own?)" The blank line was completed with instructions specific to each of the four groups. For example, in the control group, the instructions noted, "…Have you continued to notice daily events or circumstances that affected you?" Participants were asked to indicate their response on a 5-point Likert-type scale ranging from 1 (*not at all*) to 5 (*every day*).

Procedure

After signing up to participate in the study (using the study email address appearing on all advertising materials), and prior to attending a one-hour (face-to-face) introductory session, participants were randomly assigned to complete one of four exercises using a computerized random number generator. Once participants arrived at the introductory session, they received an informed consent form as well as the package of baseline questionnaires (demographics, daily mood, altruism, satisfaction with life, humor, and gratitude) in a randomized order. After the completion of these measures (requiring approximately 20 minutes), participants were told the number of the group to which they were randomly assigned (either group 1, 2, 3, or 4) and then were provided with a brief presentation on positive psychology (lasting approximately ten minutes). The purpose of this presentation was to increase motivation to effortfully participate in the study by providing participants with some background on positive psychology. More specifically, the presentation was designed to describe the field of positive psychology, the benefits of being a happier person, and Lyubomirsky et al.'s (2005) suggestion that 40% of the variance in an individual's happiness can be influenced through intentional activity. A secondary purpose of the presentation was to describe the plan for the remainder of the study. For clarity, the table below (Table 4.1) summarizes the data collection time points and measures completed at each time point.

Table 4.1

Data Collection Time Points and Variables Assessed at Each Time Point

Introductory Group Session	Diary Logs 1-6	Follow-Up Log
Demographics Questionnaire		
Daily Humor Styles	Daily Humor Styles	Daily Humor Styles
Daily Gratitude	Daily Gratitude	Daily Gratitude
Daily Satisfaction with life	Daily Satisfaction with life	Daily Satisfaction with life
Daily Altruism	Daily Altruism	Daily Altruism
Daily Mood	Daily Mood	Daily Mood
Credibility and Expectancy		
	Effort Question	
	Completion of Exercise	
		Continued Exercise Question

After the presentation, participants attended one of four break-out sessions (lasting approximately 30 minutes in length) corresponding to each condition. Each break-out session had anywhere from three to eight participants (as a number of different introductory sessions were offered). The facilitators of these sessions were volunteer Masters level and Ph.D. level interns from the UWO counseling centre. (Prior to facilitation, the volunteer facilitators received a one-hour training session about the study and the exercise break-out group they facilitated.) In these smaller groups, participants were introduced to the specific exercise they were being asked to complete. They were then told that most positive psychology exercises are designed to be brief, easy to complete, require limited time, and that research has shown that these exercises can make a significant difference to well-being over time. Participants were asked to brainstorm a few reasons as to why their exercise might impact well-being. Afterwards, they were provided with a copy of the instructions that would appear on their diary logs in order to practice the exercise. In the control condition, they were told the following:

> There are many events or circumstances in our lives, both large and
> small, that can affect us. Think back over the previous day and write
> down on the lines below up to five events or circumstances in your life
> that affected you.

Examples of events or circumstances listed by participants were "had a nap," "worked on an essay," "went grocery shopping," "lost my debit card," and "got into a disagreement with a friend."

In the gratitude condition, participants were instructed:

> There are many things in our lives, both large and small, that we might
> be grateful about. Think back over the past day and write down on the

lines below up to five things in your life that you are grateful

for or thankful for.

Examples of gratitude-inducing things generated by participants were "roommates", "my husband finally cleaning," "having a job," "free online shows…so no need for cable," "acing a midterm," "fun and awesome family," and "pizza for dinner."

In the traditional humor group, they were provided with the following instructions:

There are many things in our lives, both small and large, that might

make us laugh or bring smiles to other people. Think back over the

previous day and write down on the lines below up to five things in

your life that made you laugh, smile, or chuckle. You can also include

examples of situations where you made others smile or where you used

humor to make light of a stressful situation so that it became less

overwhelming.

Examples of humorous situations noted by participants in the traditional humor group were "watching animals do funny things," "making fun of my sister's body," "watching a Russell Peters stand-up comedy show," and "watching my math professor talk about how humans are smarter than cats which made me laugh because it was so out of the blue."

Finally, in the humor styles condition, participants were told:

There are many ways that we use humor in our lives. Some of these

ways are more *positive* and include using humor in a non hostile way to

reduce disagreement among friends or cope with stress by adopting a

humorous outlook. Sometimes people use humor in *negative* ways,

which may take the form of sarcasm, racist jokes, teasing to criticize

others, or trying to amuse others by joking about your own faults. Think

back over the previous day and write down on the lines below up to five

things in your life that made you laugh, smile, or chuckle. You can

include examples of situations where you made others smile or where

you used humor to make light of stressful situations so they became less

overwhelming. Beside each example, record whether you think this was

an example of positive humor **(P)** or negative humor **(N).**

Examples of humorous situations generated by participants in the humor styles condition

were "knocking on my roommate's door to wake him up for school only to have him

inform me that it's Sunday, not Monday (P)," "Making fun of my biology professors'

fashion sense with my friends (P)", "Listening to my sister's jokes about our family

habits (P)," "Retelling a story about getting hit in the face with volleyball (N)", "Joking

about my roommate's girlfriend (N)," and "My boyfriend took me to a local park on his

motorcycle where we accidentally drove through the 'walking area only zone.' Even

though I laughed along with him, I was really embarrassed and everyone was looking at

us (N)."

Encouraging participants to practice the exercise and share responses with their

group (if desired) allowed the facilitator to answer any questions and further clarify the

exercise as necessary. The session concluded with the facilitator reminding participants

about some remaining issues pertaining to the study (e.g., when to expect their first diary

log email, ensuring email inboxes are not full so participants receive the email logs).

Finally, participants completed the credibility and expectancy questionnaire about the

ability of their assigned exercise to increase well-being.

It should be noted that with respect to the humor styles condition, participants

were also presented with a brief model for how to decide whether a humorous instance

can be classified as positive or negative humor use. Then these participants were provided

with a few examples of humorous situations in order to practice using this model when

guiding decisions. For interest, this model is included in Appendix H.

Over the following three weeks after the introductory session, the participants

received an email message every 3-4 days, providing them with a link. Clicking on this

link took them to the website, where they were presented with a diary log. This diary log

included instructions and space to complete their assigned exercise, a question pertaining

to their use of effort in completing the exercise, and other daily questions pertaining to

their use of the four humor styles, gratitude, altruism, mood and satisfaction with life,

over the preceding 24 hours. Participants were encouraged to complete the diary log on

the evening of the day they received the email. Each diary was estimated to require

approximately 10-15 minutes to complete. In total, the participants were asked to

complete six diary logs over a three-week period (two per week). If an individual did not

complete the exercise and diary ratings within three days of receiving the email with the

link to the diary log, up to two reminder emails were sent out. If the participant still did

not respond after two reminder emails, the participant was assumed to have dropped out

of the study and was no longer contacted. Even if participants dropped out, their data

were included in analyses as long as they completed a minimum of four diary logs.

However, the majority of participants (over 95%) completed all diary logs.

One month following the completion of the sixth log, participants were asked

(through email contact) to complete an online follow-up diary log. The follow-up log

contained the same well-being questions as the previous logs (see Table 4.1). However, it

did not ask participants to complete the exercise, and accordingly, it also did not include a

question about effortfully completing the exercise. In addition, the follow-up log included

a question about whether participants had continued to complete the exercise between the end of the three-week intervention period and the one month follow-up. After submitting the follow-up log, the study was complete and participants were emailed a feedback sheet describing the purpose of the study and providing contact information if they had any remaining questions. Participants in the control group were also provided with the opportunity to participate in an intervention group if they desired although no participants chose to do so (perhaps because the intervention was completed around exam time).

Data Analysis Overview

Initially, hierarchical linear modeling (HLM) using full maximum likelihood estimation was used to construct growth curves exploring whether participant scores on the well-being outcome variables increased significantly over the three weeks of diaries (and particularly for those participants in the relevant intervention groups). However, the results indicated that at the within-person level (Level 1), a variable representing the days since the commencement of the study was not predictive of any of the four outcome variables (i.e., positive mood, negative mood, altruism, satisfaction with life). In summary, these results indicated that well-being did not change in a linear manner over the three weeks of diaries and exercises.

Since the usefulness of HLM lies in the ability to explore both within- and between-person relationships, it was initially selected as the most appropriate analysis procedure. However, because the results indicated no significant within-person relationships (i.e., intra-individual change over time), this approach was no longer appropriate. Instead of HLM, I therefore employed multiple regression and analysis of variance (exploring between-person relationships, averaging outcome measures across diary days) using SPSS 18.0. The results of these analyses are presented below.

First, a manipulation check was conducted to determine whether, as expected, the gratitude intervention resulted in more gratitude relative to the other groups and similarly, whether the humor interventions led to higher daily humor styles scores compared to the gratitude and control groups. A one-way between-subjects multivariate analysis of variance (MANOVA) was conducted using condition (4 levels) as the independent variable and the mean across the diary days of each of the four humor styles and gratitude as outcome variables. This approach is consistent with the manipulation check strategy employed by Emmons and McCullough (2003) in their positive psychology experimental investigation.

Following the manipulation check, it was of initial interest to explore whether the three intervention groups (gratitude, humor styles, traditional humor) were significantly different from one another in predicting the outcomes included in the present study. Therefore a MANOVA was conducted using the three experimental conditions as levels of the predictor variable 'condition' and the well-being variables (averaged across the six diaries) as outcomes. Results indicated no significant differences among conditions on any of the outcomes.

Given the lack of significant differences among conditions, the next step in the data analysis strategy was to investigate whether there were significant differences between each experimental intervention and the control group. To do this, three dummy coded variables were created (i.e., gratitude versus control, traditional humor versus control, humor styles versus control) comparing each of the active intervention groups (coded 1) with the control group (coded 0). These variables were then used in regression analyses (in addition to effort and expectancy variables) to predict mean outcome scores on the well-being measures. The use of regression analyses offer advantages over

ANOVA tests because continuous predictors of effort and expectancy can be included in the regression. Furthermore, regression analyses allow for an exploration of the effects of each predictor variable on a given outcome while controlling for the effects of the other predictors. Therefore, if dummy coded condition predictors were significant, it would be possible to conclude that there were differences between experimental and control conditions, controlling for the effects of two variables that may help to explain any changes in outcomes (effort and expectancy). An additional advantage of using the multiple regression approach is that it allows for the examination of interactions between control variables (e.g., expectancy and condition) and the dummy-coded condition variables in predicting outcomes. This was also of exploratory interest in these analyses. For example, interactions between effort and condition as well as between expectancy and condition in predicting well-being were explored.

Although participants were asked to complete the exercises over the course of three weeks, a question was included on the follow-up log about whether they continued the exercise during the intervening period. Higher scores on this variable indicated that the participants were more likely to continue the exercise during the follow-up period. Regression analyses were conducted with the dummy coded conditions and a variable entitled 'continued exercise' as predictors. Well-being scores on the follow-up log were used as the outcome variables. For interest, interactions between condition and continuation of the exercise were also investigated in predicting well-being variables.

A final exploratory question of interest was whether participants who had higher baseline well-being scores, humor scores, or gratitude scores experienced greater well-being during the intervention period. A single well-being score was created by standardizing the scores on satisfaction with life, positive mood, negative mood, and

altruism and then summing the standardized scores for the three positive variables and subtracting the score for negative mood. Likewise, a single humor score was created by summing the standardized scores on the two positive humor styles and then subtracting the standardized scores on the two negative styles. These new well-being and humor scores and the baseline gratitude score were used as predictor variables in regression analyses to predict mean well-being outcomes (averaged over diary days) during the intervention period.

<div align="center">

Results

</div>

Descriptives

For descriptive purposes, the means, standard deviations and reliabilities (Cronbach's alpha) for the outcome measures used in this study are provided in Table 4.2. These data are the means averaged across the six diary days. For interest, Table 4.3 lists the means and standard deviations for these outcomes broken down by condition. As seen in Table 4.3, the patterns of mean gratitude and humor styles scores suggest that the gratitude group reported the highest mean gratitude score (33.88) whereas the humor groups reported the highest mean humor scores (e.g. 4.58 for aggressive humor, 5.02 for self-defeating humor, 8.85 for self-enhancing humor and 10.82 for affiliative humor). Thus, before testing for significance, the means suggest that the intervention manipulation was effective. In addition to humor and gratitude, Table 4.3 suggests that the three intervention groups had higher positive mood, greater altruism and lower negative mood compared to the control group. While the table also indicates that the gratitude and control groups had the same mean satisfaction with life score, the humor groups appear to have experienced more benefits with respect to this outcome variable. However,

Table 4.2

Descriptive Statistics for the Predictor and Outcome Variables for the Total Sample

Measure	*M*	*SD*	Reliability
HSQAF	10.55	2.56	.83
HSQSE	8.26	2.60	.76
HSQAG	4.38	1.47	.58
HSQSD	4.79	2.03	.66
Gratitude	32.94	8.48	.90
Pos. Mood	29.25	6.60	.90
Neg. Mood	18.64	5.21	.88
Altruism	2.45	1.49	.54
Sat. with Life	8.13	1.74	.74
Effort	2.91	0.83	N/A (only 1 item)
Expectancy	6.08	1.43	.85

Note. HSQ = Humor Styles Questionnaire; AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; Pos. Mood = Positive Mood; Neg. Mood = Negative Mood; Sat. with Life = Satisfaction with Life. Reliability was measured using Cronbach's alpha. $N = 128$. For all the variables except expectancy (expectancy scores were only collected at the baseline session), the descriptive statistics reflect the mean scores calculated from the average of the six daily diary scores across participants. The descriptive statistics for expectancy were calculated using the baseline scores on this measure.

Table 4.3

Descriptive Statistics for the Predictor and Outcome Variables Displayed by Condition

Measure	Control (N = 27)		Gratitude (N = 34)		Traditional Humor (N = 33)		Humor Styles (N = 34)	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
HSQAF	10.33	2.84	10.28	2.58	10.82	2.42	10.72	2.51
HSQSE	8.22	2.36	7.99	2.85	7.95	2.43	8.85	2.70
HSQAG	4.65	1.77	4.35	1.24	4.01	1.33	4.58	1.55
HSQSD	4.81	2.26	4.35	1.46	5.00	2.31	5.02	2.12
Gratitude	31.72	6.43	33.88	8.62	32.80	9.24	33.13	9.21
Pos. Mood	26.76	5.16	29.32	6.96	30.10	5.92	30.33	7.57
Neg. Mood	19.83	5.78	18.81	5.75	17.38	4.29	18.74	4.94
Altruism	2.20	1.39	2.75	1.47	2.29	1.46	2.50	1.60
Sat. with Life	7.94	1.74	7.94	1.75	8.20	1.88	8.38	1.60
Effort	3.05	0.80	2.83	0.75	2.80	0.90	2.98	0.86
Expectancy	6.17	1.49	6.33	1.57	5.73	1.34	6.07	1.29

Note. HSQ = Humor Styles Questionnaire; AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; Pos. Mood = Positive Mood; Neg. Mood = Negative Mood; Sat. with Life = Satisfaction with Life.

statistical analyses are of course needed to determine whether these differences were significant.

Manipulation Check

To determine whether participants in the four conditions reported significantly different levels of gratitude and humor across the experimental period, a one-way between-subjects multivariate analysis of variance (MANOVA) was conducted. Mean diary scores on gratitude and the four humor styles (averaged across the six diary days) were entered as the dependent variables and the conditions (control, gratitude, traditional humor, humor styles) were the four levels of the independent variable. If the manipulation was effective, the results of the MANOVA should indicate that the gratitude group reported significantly higher levels of gratitude compared to the humor interventions and control group. Likewise, it would also be expected that the humor groups reported significantly greater scores on humor styles relative to the control group and gratitude intervention. However, the results indicated that the multivariate test for condition was not significant, Wilk's Lambda = .86, F (15, 332) = 1.22, *ns,* indicating that predictions regarding the effectiveness of the manipulation check were not supported. (None of the univariate tests of between-subject effects were significant either.) The non-significant multivariate finding indicates that participants in the four conditions did not report significantly different levels of gratitude and humor across the experimental period. Thus, although, at face value, the mean gratitude and humor styles scores suggest the intervention manipulations were effective (i.e., the gratitude group reported more gratitude whereas the humor groups reported more humor use), statistical analysis indicated that any apparent differences were not significant.

One possible explanation for the non-significant results is that significant differences did not begin to appear until the end of the intervention period, an effect which might be masked by the use of a mean score across the entire diary period. In order to determine whether significantly different effects might have occurred at the end of the intervention period (i.e., last diary log), a similar MANOVA was conducted to the one above. However, instead of using mean well-being scores as dependent variables, only the time 6 scores were used. Results indicated that the multivariate test for condition was not significant, Wilk's Lambda = .83, F (15, 260) = 1.18, ns. Likewise, none of the univariate tests of effects were significant. Taken together, the results of these MANOVAs indicate that the intervention groups did not report differential levels of gratitude or humor styles using both the mean scores on these variables (averaged across diary days) and the time six (last intervention diary) scores.

Differences among Intervention Conditions

A one-way between-subjects MANOVA was conducted to determine whether there were differences between the three experimental conditions (i.e., gratitude, traditional humor, and humor styles) on mean levels of positive mood, negative mood, satisfaction with life, and altruism, averaged across the six diary days. The experimental conditions were the independent variables whereas the mean well-being outcomes were the dependent variables. The results indicated that the multivariate test for condition was not significant, Wilk's Lamda = .95, F (8, 190) = .65, ns, indicating that among the three active conditions, there were no significant differences on well-being. None of the univariate tests of effects were significant. Thus, none of the three active conditions were significantly better than the others in increasing well-being (e.g., in contrast to

hypotheses, the gratitude intervention did not produce more altruistic behavior relative to the humor groups).

Similar to the manipulation check, it is possible that no differences were found between the three experimental conditions when exploring mean well-being variables because the differences may not have emerged until the end of the intervention period. In order to determine whether significantly different effects might have occurred at the end of the intervention period (i.e., last diary log), a similar MANOVA was conducted to the one above. However, instead of using mean well-being scores as dependent variables, only the time 6 scores were used. Results indicated that the multivariate test for condition was not significant, Wilk's Lambda = .98, F (4,83) = 0.42, ns. Likewise, none of the univariate tests of effects were significant. Taken together, the results of these MANOVAs indicate that the intervention groups did not report differential levels of gratitude or humor styles using both the mean scores on these variables (averaged across diary days) and the time six (last diary) scores.

Differences between the Intervention Conditions and Control Group

Based on the lack of any significant differences between intervention conditions on the mean well-being variables, a decision was made to use multiple regression for the remaining analyses examining possible differences between each of the intervention conditions and the control condition. This was done by creating dummy variables (i.e., gratitude versus control, traditional humor versus control, humor styles versus control) which were used to predict the well-being outcomes (averaged across the six diaries).

In the first set of analyses using this approach, each intervention (relative to the control group) was entered as a main effect in order to predict mean well-being across the six diaries, controlling for the effects of two continuous variables: effort and expectancy.

The results of the four regression analyses (predicting each well-being outcome) from condition, effort, and expectancy are displayed in Table 4.4. (For interest, Appendix I presents the results of the same analyses except that effort and expectancy were excluded as predictor variables). As shown in Table 4.4, when controlling for the other predictors, all three intervention groups reported significantly greater positive mood relative to the control group. Effect sizes (Cohen's *d*) were 0.40 for the mean difference between the control and gratitude condition, 0.60 for the mean difference between the control and traditional humor condition, and 0.55 for the mean difference between the control and humor styles condition. These findings indicate that with respect to mean positive mood, each of the interventions, relative to the control group, exhibited small to medium effects. Compared to the control group, the gratitude group also reported significantly greater altruism (effect size: 0.40). Finally, across conditions, participants who reported more effort when completing their exercises and expected their intervention to be more credible and effective had significantly greater positive mood, altruism, and satisfaction with life relative to the other participants.

The regression predicting negative mood from conditions, effort, and expectancy was not significant, indicating that none of the conditions were significantly better than the control group at reducing negative mood. Likewise, exerting more effort on the exercises or viewing the exercises as more credible did not significantly predict a decrease in negative mood.

To determine whether the non-significant results (particularly with respect to the differences between active interventions and control group) were due to a lack of statistical power, post hoc power analyses, available in SPSS for the General Linear Model (comparing each of the four intervention groups), were conducted. Post hoc power

Table 4.4

Multiple Regression Analyses Predicting Well-Being from Conditions, Effort, and Expectancy

Outcome	Predictor	β	T	$p <$
Positive Mood	Gratitude (vs. Control)	.18	1.82	.07
	Tradition Humor (vs. Control)	.30	3.03	.003
$R^2 = .28,\ F(5, 122) = 9.35,$				
	Humor Styles (vs. Control)	.36	2.60	.01
$p < .001$				
	Mean Effort	.31	3.63	.001
	Expectancy	.28	3.33	.001
Negative Mood	Gratitude (vs. Control)	-.10	-0.83	*ns*
	Tradition Humor (vs. Control)	-.22	-1.90	.06
$R^2 = .03,\ F(5, 122) = 0.87,$				
	Humor Styles (vs. Control)	-.10	-0.83	*.ns*
ns				
	Mean Effort	-.01	-0.09	*.ns*
	Expectancy	-.08	-0.87	*ns*
Altruism	Gratitude (vs. Control)	.19	1.87	.06
	Tradition Humor (vs. Control)	.11	1.04	*ns*
$R^2 = .23,\ F(5, 122) = 8.42,$				
	Humor Styles (vs. Control)	.11	1.09	*.ns*
p<. 001				
	Mean Effort	.21	2.44	.02
	Expectancy	.37	4.33	.001

Table 4.4 Continued

Outcome	Predictor	β	T	$p <$
Sat. with Life	Gratitude (vs. Control)	.03	0.29	*ns*
	Tradition Humor (vs. Control)	.15	1.56	*ns*
$R^2 = .27, \ F(5, 122) =$	Humor Styles (vs. Control)	.14	1.38	*ns*
10.31, $p < .001$	Mean Effort	.25	2.99	.003
	Expectancy	.39	4.70	.001

Note. Sat. with Life = Satisfaction with Life

 (or "observed power" as labeled in SPSS output) was determined by using the observed

effect size and total sample size. (For more information on this methodology, see

Onwuegbuzie & Leech, 2004). The results of this analysis indicated that power was less

than .80 for the non-significant results. (For example, for the differences between the

conditions with regard to negative mood, observed power was $< .30$). It is possible that

the observed effect size may be smaller than the value originally proposed in the a priori

power analyses. As a result, the sample size yielded by this initial power analysis might

be too small to detect the observed effects. A post hoc power exploration using G*Power

3 (Faul et al., 2007) revealed that with a small effect size (e.g., 0.025), four groups, and

six different measurements (i.e., diary ratings), a total sample size of 220 (55 per group)

would be required to achieve a power of .83.

Interactions between Effort, Expectancy, and Condition

For interest, hierarchical multiple regressions were conducted to determine if there

were any significant interactions between effort or expectancy and condition in predicting

well-being outcomes. None of these interactions were significant, indicating that the

relationships between effort and outcomes as well as between expectancy and outcomes

did not differ depending on the condition to which a participant was randomly assigned.

Continuing the Exercise (Post Intervention) and Associated Well-Being

Although participants were only required to complete the exercises for three

weeks, the one month follow-up log included a question asking them whether they had

continued the exercise past the intervention period and during the four-week follow-up

period. To test whether participants who continued the exercises experienced enhanced

well-being at the one-month follow-up, four regression analyses were conducted using the

three dummy coded condition variables as predictors in addition to a continuous variable

(ranging from one to five) entitled 'continued exercise.' The outcome variables in each analysis were the four follow-up well-being measure scores. The results (displayed in Table 4.5) indicate that after controlling for the effects of each condition (compared to the control group), participants who continued their exercise during the follow-up period had greater positive mood, altruism, and satisfaction with life scores, across conditions, compared to participants who did not continue the exercises. Furthermore, participants in the gratitude group (relative to the control group) also reported significantly greater satisfaction with life on the follow-up diary log. None of the other main effects were significant, nor was the regression predicting negative mood. For interest, interactions between continued exercise and condition in predicting follow-up outcomes were also explored but none were significant, indicating that the relationships between continued exercise and outcomes did not differ by condition.

Baseline Measures and Associated Well-Being

A final exploratory objective of the present study was to examine whether individual differences on baseline measures moderated the relationships between condition and well-being (averaged across the six diaries). In order to investigate the possible influences of individual differences on baseline measures, hierarchical multiple regression analyses were conducted to predict each of the four mean well-being outcomes from baseline well-being, humor, and gratitude scores. For the purpose of these analyses one baseline well-being variable was created from baseline positive mood, negative mood, altruism, and satisfaction with life. Similarly, one humor variable was also created from the four baseline humor styles scores. In the analyses presented below the interactions between the baseline scores and condition were entered, controlling for the

Table 4.5

Multiple Regression Analyses Predicting Follow-Up Well-Being Scores from Continued

Exercise (Controlling for Dummy Coded Condition Variables)

Outcome	Predictor	β	T	$p <$
Positive Mood	Gratitude (vs. Control)	-.13	-100	ns
$R^2 = .15,\ F(4, 95) = 4.09,\ p$	Traditional Humor (vs. Control)	-.02	-0.15	*ns*
$< .004$				
	Humor Styles (vs. Control)	-.11	-0.88	*ns*
	Continued	.38	3.90	.001
Negative Mood	Gratitude (vs. Control)	.20	1.47	*ns*
$R^2 = .03,\ F(4, 95) = 0.72,$	Traditional Humor (vs. Control)	.05	0.40	*ns*
ns.				
	Humor Styles (vs. Control)	.10	0.80	*ns*
	Continued	-.10	-0.93	*ns*
Altruism	Gratitude (vs. Control)	-.06	-0.44	*ns*
$R^2 = .11,\ F(4, 95) = 2.98,\ p$	Traditional Humor (vs. Control)	-.08	-0.60	*ns*
$< .05$				
	Humor Styles (vs. Control)	.04	0.30	*ns*
	Continued	.34	3.34	.001

Table 4.5 Continued   136

Outcome	Predictor	β	*T*	*P*
Satisfaction with Life	Gratitude (vs. Control)	-.21	-1.63	.11
$R^2 = .12,\ F\,(4, 95) = 3.23,\ p$	Traditional Humor (vs. Control)	-.11	-0.89	*ns*
< .02	Humor Styles (vs. Control)	-.06	-0.52	*ns*
	Continued	.35	3.47	.001

Note. Continued = Continued Exercise

main effects of the three dummy coded conditions and the baseline measure. Since the results pertaining to the three dummy coded conditions have been previously presented, the results of interest below focused on the interactions and baseline well-being variables. In total 12 regression analyses were conducted (the first four using baseline well-being, the second four using humor, and the third four using gratitude).

Table 4.6 displays the results of the analyses using baseline well-being scores as predictors whereas Table 4.7 displays the results of the analyses using baseline humor scores as predictors. As seen in Table 4.6, baseline well-being significantly predicted increased positive mood and satisfaction with life as well as decreased negative mood. Similarly, as shown in Table 4.7, baseline humor significantly predicted decreased negative mood. In the analyses presented in both tables, none of the interactions were significant indicating that baseline well-being and baseline humor did not moderate the relationships between condition and mean well-being scores. Thus, the strength of the effect of the experimental interventions did not vary as a function of baseline scores on the outcome measures.

Table 4.8 displays the results of the analyses using baseline gratitude scores as predictors. As displayed in this table, baseline gratitude scores significantly predicted mean positive mood, altruism and satisfaction with life scores. Interestingly, there were also two significant interactions, indicating that baseline gratitude moderated the relationships between the gratitude intervention group and positive mood as well as between the humor styles intervention group and positive mood. To clarify the direction of the effect, three separate regression lines predicting mean positive mood from baseline gratitude were plotted on a graph, one for each of the three conditions (control, gratitude, and humor styles). These lines were computed using the regression weights produced in

Table 4.6

Multiple Regression Analyses Predicting Mean Outcome Scores from Baseline Well-Being Scores

Outcome	Predictor	β	*T*	*p<*
Positive Mood	Well-Being	.37	1.96	.05
	Gratitude (vs. Control)	.17	1.72	.09
$R^2 = .34$, $F(7, 119) =$				
8.71, $p < .001$	Traditional Humor (vs. Control)	.25	2.62	.01
	Humor Styles (vs. Control)	.25	2.53	.01
	Well-Being * Gratitude	.12	0.82	*ns*
	Well-Being * Traditional Humor	-.002	-0.01	*ns*
	Well-Being * Humor Styles	.17	1.52	*ns*
Negative Mood	Well-Being	-.49	-2.32	.02
	Gratitude (vs. Control)	-.05	-0.43	*ns*
$R^2 = .18$, $F(7, 119) =$				
3.62, $p < .001$	Traditional Humor (vs. Control)	-.19	-1.79	.08
	Humor Styles (vs. Control)	-.07	-0.60	*ns*
	Well-Being * Gratitude	.03	0.19	*ns*
	Well-Being * Traditional Humor	.12	0.86	*ns*
	Well-Being * Humor Styles	.08	0.68	*ns*

Table 4.6 Continued

Outcome	Predictor	B	T	p <
Altruism	Well-Being	.13	0.58	*ns*
	Gratitude (vs. Control)	.14	1.21	*ns*
$R^2 = .10$, $F(7, 119) =$	Traditional Humor (vs. Control)	.02	0.19	*ns*
1.87, $p < .08$	Humor Styles (vs. Control)	.07	0.61	*ns*
	Well-Being * Gratitude	.08	0.49	*ns*
	Well-Being * Traditional Humor	.06	0.41	*ns*
	Well-Being * Humor Styles	.14	1.07	*ns*
Satisfaction with Life	Well-Being	.65	3.17	.002
	Gratitude (vs. Control)	-.03	-0.24	*ns*
$R^2 = .24$, $F(7, 119) =$	Traditional Humor (vs. Control)	.08	0.73	*ns*
5.40, $p < .001$	Humor Styles (vs. Control)	.10	0.92	*ns*
	Well-Being * Gratitude	-.17	-1.10	*ns*
	Well-Being * Traditional Humor	-.08	-0.64	*ns*
	Well-Being * Humor Styles	.06	-0.51	*ns*

Note. The predictor term "Well-Being" refers to a composite baseline well-being score. The outcome well-being variables are mean scores from the six intervention diaries.

Table 4.7

Multiple Regression Analyses Predicting Mean Outcome Scores from Baseline Humor Scores

Outcome	Predictor	β	T	p <
Positive Mood	Humor	.18	0.86	ns
	Gratitude (vs. Control)	.17	1.53	ns
$R^2 = .07, F (7, 120) =$				
1.34, ns	Traditional Humor (vs. Control)	.22	1.94	.05
	Humor Styles (vs. Control)	.24	2.01	.04
	Humor * Gratitude	.04	0.33	ns
	Humor * Traditional Humor	-.09	-0.70	ns
	Humor * Humor Styles	-.01	-0.05	ns
Negative Mood	Humor	-.36	-1.78	.08
	Gratitude (vs. Control)	-.09	-0.79	ns
$R^2 = .12, F (7, 120) =$				
2.30, p < .03	Traditional Humor (vs. Control)	-.20	-1.77	.08
	Humor Styles (vs. Control)	-.09	-0.78	ns
	Humor * Gratitude	-.04	-0.31	ns
	Humor * Traditional Humor	.07	0.55	ns
	Humor * Humor Styles	.09	0.63	ns

Table 4.7 Continued

Outcome	Predictor	β	T	p <
Altruism	Humor	.34	1.70	.11
	Gratitude (vs. Control)	.16	1.39	*ns*
$R^2 = .06$, $F(7, 120) =$				
1.05, *ns*	Traditional Humor (vs. Control)	.02	.21	*ns*
	Humor Styles (vs. Control)	.08	0.74	*ns*
	Humor * Gratitude	-.09	-0.69	*ns*
	Humor * Traditional Humor	-.21	-1.53	*ns*
	Humor * Humor Styles	-.09	-0.63	*ns*
Satisfaction with Life	Humor	.29	1.38	*ns*
	Gratitude (vs. Control)	-.002	-0.02	*ns*
$R^2 = .03$, $F(7, 120) =$				
0.57, *ns*	Traditional Humor (vs. Control)	.06	0.53	*ns*
	Humor Styles (vs. Control)	.11	0.95	*ns*
	Humor * Gratitude	-.07	-0.55	*ns*
	Humor * Traditional Humor	-.12	-0.86	*ns*
	Humor * Humor Styles	-.15	-1.02	*ns*

Note. The term "Humor" by itself (i.e., not traditional humor nor humor styles) refers to a composite baseline healthy humor score. Humor Styles and Traditional Humor refer to two of the intervention groups.

Table 4.8

Multiple Regression Analyses Predicting Mean Outcome Scores from Baseline Gratitude Scores

Outcome	Predictor	β	T	$p <$
Positive Mood	T0Gratitude	.10	0.60	*ns*
	Gratitude (vs. Control)	-.75	-1.87	.06
$R^2 = .29$, $F(7, 120) =$				
6.91, $p < .001$	Traditional Humor (vs. Control)	-.21	-0.54	*ns*
	Humor Styles (vs. Control)	-.63	-1.51	*ns*
	T0Gratitude * Gratitude	.97	2.45	.02
	T0Gratitude * Traditional Humor	.46	1.20	*ns*
	T0Gratitude * Humor Styles	.90	2.18	.03
Negative Mood	T0Gratitude	-.18	-0.88	*ns*
	Gratitude (vs. Control)	-.08	-0.18	*ns*
$R^2 = .06$, $F(7, 120) =$				
1.00, *ns*	Traditional Humor (vs. Control)	-.43	-0.97	*ns*
	Humor Styles (vs. Control)	.02	0.03	*ns*
	T0Gratitude * Gratitude	-.02	-0.03	*ns*
	T0Gratitude * Traditional Humor	.22	0.50	*ns*
	T0Gratitude * Humor Styles	-.12	-0.25	*ns*

Table 4.8 Continued

Outcome	Predictor	β	T	p <
Altruism	T0Gratitude	.47	2.44	.02
	Gratitude (vs. Control)	.79	1.78	.08
$R^2 = .13$, $F(7, 120) =$	Traditional Humor (vs. Control)	.57	1.34	*ns*
2.58, $p < .02$	Humor Styles (vs. Control)	.03	0.07	*ns*
	T0Gratitude * Gratitude	-.62	-1.42	*ns*
	T0Gratitude * Traditional Humor	-.55	-1.29	*ns*
	T0Gratitude * Humor Styles	.08	0.17	*ns*
Satisfaction with Life	T0Gratitude	.32	1.81	.07
	Gratitude (vs. Control)	-.42	-1.02	*ns*
$R^2 = .25$, $F(7, 120) =$	Traditional Humor (vs. Control)	-.16	-0.41	*ns*
5.66, $p < .001$	Humor Styles (vs. Control)	-.18	-0.43	*ns*
	T0Gratitude * Gratitude	.46	1.14	*ns*
	T0Gratitude * Traditional Humor	.26	0.65	*ns*
	T0Gratitude * Humor Styles	.32	0.75	*ns*

Note. The term "T0Gratitude" refers to Time Zero (i.e., baseline) gratitude ratings. The term "Gratitude" refers to the gratitude intervention group.

the regression equation and entering scores one standard deviation above and below the mean on baseline gratitude. The results of these analyses are displayed in Figure 4.1. This figure demonstrates that the strength of the correlation between baseline gratitude and mean positive mood differs as a function of the condition to which an individual was randomly assigned. More specifically, individuals with low baseline gratitude had similar scores on mean positive mood regardless of the condition to which they were assigned (control, gratitude, or humor). However, individuals with high baseline gratitude reported significantly greater positive mood if they were assigned to the gratitude or humor styles conditions relative to the control group. Thus, the results support the hypothesis that the gratitude and humor styles interventions are most influential and effective for people who report high baseline gratitude. Finally, the regression predicting mean negative mood was not significant, indicating that baseline gratitude scores did not moderate the relationship between condition and negative mood.

Discussion

This study had four objectives. The first and main purpose was to investigate the differences among the three positive psychology interventions (gratitude, traditional humor, humor styles) and between these interventions and the control exercise in affecting positive mood, negative mood, altruism and life satisfaction. The other objectives included exploring the roles of effort and expectancy (objective two), continuing the exercise during the follow-up period (objective three), and baseline individual difference variables (objective four) in predicting well-being.

Objective 1: Differences Among Positive Psychology Exercises

In contrast to expectations, no significant differences were found in the degree to which the three experimental conditions differed in predicting well-being. More
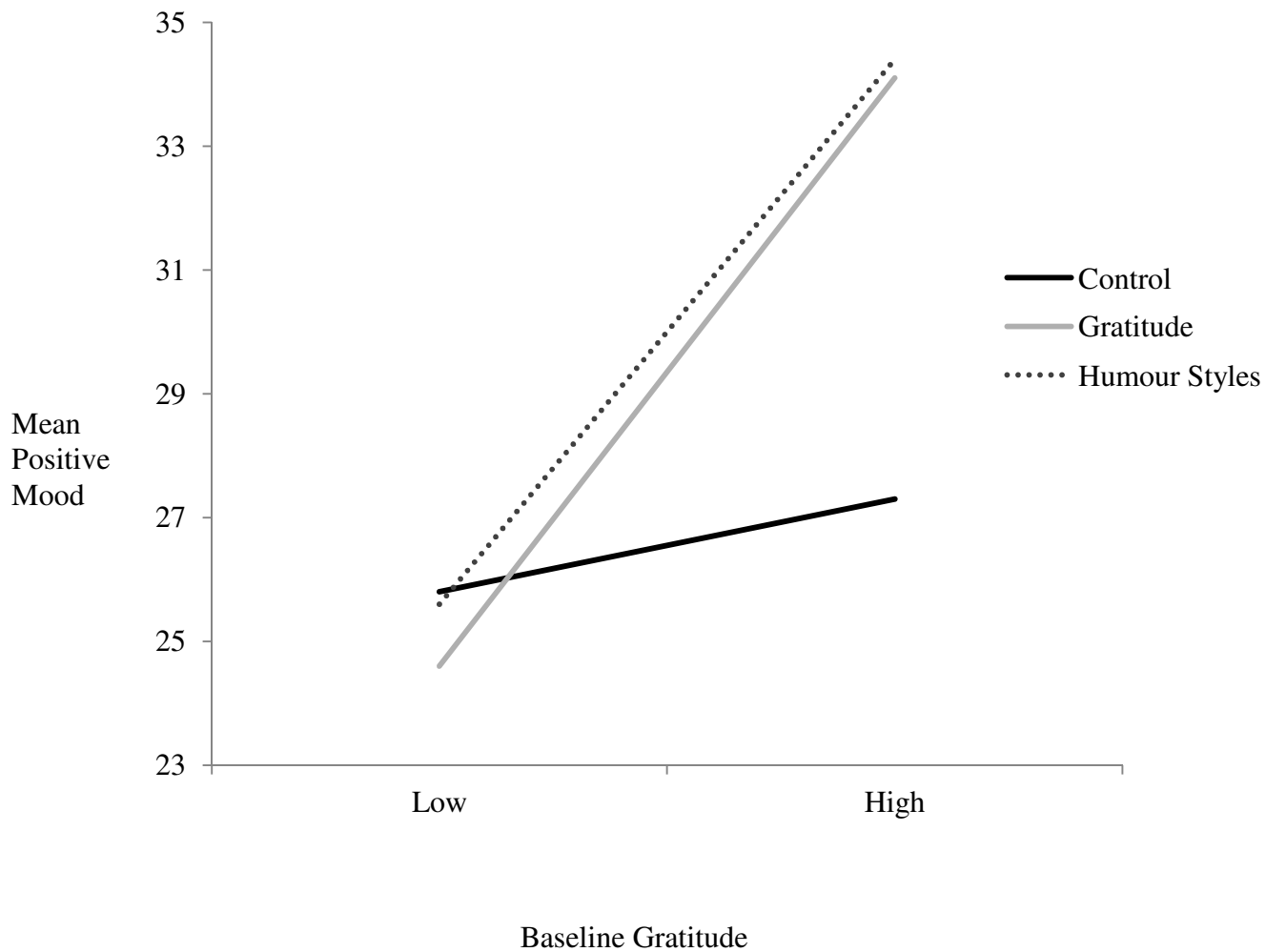
Figure 4.1. Association between Baseline Gratitude and Mean Positive Mood as a

Function of Condition (Control, Gratitude, and Humor Styles).

specifically, with regard to hypothesis two, the results provide no significant support for any differences between a traditional humor intervention and one which involves teaching participants to distinguish between positive versus negative uses of humor. Furthermore, contrary to my expectations in hypothesis one, there were no differences between the humor and gratitude groups. The gratitude group was not more effective at increasing prosocial behavior and the humor groups were not superior at reducing negative mood. One possibility to explain these non-significant findings is that all three interventions are as good as one another but still better than a control exercise.

Differences between Active Interventions versus Control Group. Consistent with this hypothesis, the analyses comparing the intervention groups to the control group indicated some significant differences. In particular, all three intervention groups were significantly more effective than the control group in increasing positive mood. Furthermore, the traditional humor condition was significantly better than the control group at reducing negative mood whereas the gratitude group was significantly better than the control group at increasing prosocial behavior. None of the intervention groups showed any significant benefits with respect to increasing satisfaction with life, relative to the control group.

It is interesting to speculate about why positive mood was the only dependent variable influenced by all three intervention groups. Perhaps it is easier to modify and change this outcome compared to the other positive psychology variables studied. Consistent with this hypothesis, Fredrickson (1998; 2001) has proposed the Broaden-and-Build theory of positive emotions in which she suggests that gratitude, humor, and other character strengths induce positive emotions which then broaden cognitions and build current and future resources. Therefore, immediate consequences to the perception or use

of humor and gratitude might be positive emotions whereas other outcomes (e.g., increased prosocial behavior, satisfaction with life) associated with the broadening and building features might take longer to observe. Future studies could employ a lengthier intervention to explore this proposal.

However, regardless of the specific reasons as to why the active interventions were most effective for positive mood, it should be noted that positive mood is associated with numerous mental health benefits. According to Fredrickson (1998; 2001), positive emotions trigger upward spirals toward enhanced well-being (e.g., improved coping with stress, enhanced interpersonal relationships, broadened scope of attention) in the present and the future (Fredrickson & Joiner, 2002). Therefore, the results of the present study make a valuable contribution by indicating that the two humor exercises were as effective as the gratitude exercise with respect to inducing positive emotion.

Not surprisingly, the results also indicated that the gratitude intervention was significantly better than the control group at increasing altruism scores. This finding is consistent with the results of Study 2 and a previous study indicating that when participants were asked to review a brief video-clip eliciting gratitude (versus joy/amusement), they subsequently reported greater motivation to behave in prosocial ways (Algoe & Haidt, 2009). Perhaps with a longer intervention time period and a stronger humor manipulation, the results would have also indicated that the gratitude group was significantly better than the humor groups at increasing altruism. Similarly, had variables such as playfulness and creativity been included in the present study, it is possible that the humor interventions might have shown elevated scores on these variables relative to a control group and/or gratitude group (e.g., Algoe & Haidt, 2009; Fredrickson, 2001).

Finally, with regard to negative mood, the results indicated that participants in the traditional humor group reported significantly less negative mood as compared to the control group. This result was consistent with those from Studies 1 and 2 indicating that humor was correlated with negative mood whereas gratitude was unrelated. However, it was also hypothesized that the humor styles condition would display the same effect as the traditional humor group or be even better at reducing negative mood. Perhaps by asking participants to differentiate between positive and negative humor in the humor styles group, they were unable to truly focus on the positive experiences gleaned from recalling and recollecting past humorous experiences. Instead, they may have been more cognitively engaged in considering whether their humorous example could be classified as positive or negative humor. In contrast, because participants in the traditional humor group did not have the added cognitive burden of differentiating their humor use, it may have been easier to glean the benefits (e.g., decreased negative mood) associated with recalling experiences of humor.

In summary, the results suggest that the humor exercises tested in this study work as effectively as more established positive psychology interventions (e.g., gratitude) and more effectively than a control exercise with respect to increasing positive mood. Based on these findings, one may conclude that these humor exercises are empirically validated positive psychology interventions for individuals seeking to increase their positive affect.

However, the results do not provide any support for the effectiveness of humor-based positive psychology interventions over already established gratitude ones. There are a number of possible mitigating factors which may account for the lack of significant differences among active conditions and the failure to find significant results with other outcome measures besides positive mood.

Possible Reasons for Limited Significant Results First, although the sample size of each group was consistent with a number of other studies evaluating positive psychology interventions (e.g., see Sin & Lyubomirsky, 2009, for a review), by the end of the intervention (and after accounting for attrition), the sample was too small to provide statistical power for anything other than medium to strong effect sizes. However, in a review of positive psychology interventions, and consistent with the findings of the present study, Sin and Lyubomirsky indicated that most of these interventions have a small to medium effect size. Therefore, one limitation of this study is that statistical power cannot be ruled out as a threat to internal validity.

Second, contrary to hypotheses, the manipulation was not significant, indicating that participants in the four conditions did not differ in the mean levels of gratitude and humor styles reported across the intervention period. One possible reason for why this check was not significant is because participants may have not followed the experimental instructions, as intended. In future studies it would be valuable to also conduct a more proximal manipulation check by coding participants' open-ended diary responses to see if they followed the instructions (unique to each condition) and indeed reported their thoughts in the manner predicted for each condition. This type of check would directly inform whether or not participants actually did what they were supposed to do.

Another reason to explain the non-significant manipulation check is that the instructions to attend to the humor in daily life may not actually have led to any changes in their use. Likewise, noticing humor might not be enough to influence well-being. Perhaps, in order to see significant differences between the humor and gratitude groups (as well as between the two humor groups), participants should actively engage in or seek out more positive humor (and reduce their use of negative humor). This exercise might be

a more effective exercise for increasing happiness. This issue will be discussed further at the end of this chapter.

Third, while a randomized, longitudinal, and experimental study is considered the most powerful research methodology to examine the effects of interventions on particular outcomes, this type of design is not representative of real-world conditions in which students and patients can choose to participate in a particular activity or intervention that is most attractive to them. Along these lines, Lyubomirsky and colleagues (2011) found that when students were allowed to self-select into a positive psychology intervention of their choice (using a quasi-experimental design), gains were considerably greater. Of course in this type of design, researchers cannot rule out initial differences across groups because certain individual traits or profiles might lead people to choose a specific intervention over others. For example people who are more extraverted might self-select into humor exercises over gratitude ones. When random assignment is employed, the intervention groups are considered to be equivalent in all respects initially because individual differences are thought to be distributed evenly across groups.

Fourth, it is possible that the number of times participants were asked to complete the exercises (i.e., twice a week for three weeks) did not result in frequent enough participation or a long enough period to reliably see the gains associated with participating in an active intervention versus control group. Perhaps there was a period of learning during the first week or two in which individuals were training themselves to be more mindful of the humor in their lives. If this were the case, by week three, for example, participants may have only really started noticing and remembering daily humor experiences, suggesting that a longer intervention might be needed to see more positive outcomes.

Finally, some of the measures used, although relevant to mental health, may not be the most suitable to evaluate change in well-being over such a short period of time. For example, satisfaction with life may be unlikely to change considerably over the course of three weeks. Furthermore, while this study predominantly focused on emotional well-being, it is possible that humor interventions may show benefits over gratitude when evaluating more interpersonal measures (such as social support).

Objective 2: Effort and Expectancy

In addition to controlling for the effects of effort and expectancy when comparing the intervention groups to the control condition, it was also of interest to explore the independent roles of effort and expectancy in predicting well-being. Consistent with expectations, more effort and greater expectancy, across conditions, significantly predicted greater positive mood, altruism, and satisfaction with life. These results suggest that sustained effortful practice of positive psychology interventions is important in order to accrue the greatest benefits.

Previous researchers have questioned whether continued effortful performance of a happiness activity should only produce improvements in well-being for active interventions, relative to a control condition (Lyubomirsky et al., 2011). In other words, these researchers suggest that if the activity is neutral (or less meaningful/efficacious), then there should be no greater benefits associated with more (versus less) effortful practice. However, consistent with our findings, in a study by Lyubomrisky and colleagues exploring this very question, they did not find a significant interaction between effort and condition in predicting well-being. These results suggest that, regardless of the activity, participants who are more mindful or effortful, experience enhanced outcomes.

Perhaps the present finding that effort and greater expectancy within the control group predicted enhanced well-being can best be explained by the placebo effect. Participants receiving the control condition (i.e., the inert or neutral treatment, the placebo) were 'falsely' told that their given exercise should result in positive effects (e.g., increased happiness, improved mental health). As a result, these participants may have *believed* that the intervention would change their well-being, thereby resulting in an actual improvement in their condition or a perception of increased well-being. This explanation is consistent with the findings by Seligman et al. (2005) who found that all participants in their happiness exercises, even those in the control group, indicated greater happiness and lower depression scores immediately after the intervention. It is possible that, in the short term, increased effort and greater expectancy when doing a task assigned by a professional is sufficient to boost well-being. It will be important for future studies to include longer follow-up periods to test this hypothesis.

It is also possible that the control condition in the present study was not actually a neutral/inert one and instead contained some efficacious ingredients (such as improving mindfulness skills). For example, by asking participants to record daily activities, they may have experienced the mental health benefits associated with an increased openness to present events and awareness of daily activities (e.g., Hölzel et al., 2011). Future studies could include a control group who receive the same well-being measures but do not complete an exercise. Furthermore, another option is to adopt the approach employed by Froh and colleagues (2008; as well as Emmons & McCullough, 2003) and include a hassles condition (i.e., record things that annoyed you over the past day) designed to explicitly induce negative affect.

One surprising finding was that effort and expectancy were unrelated to negative mood. It is possible that bad mood and other more negative indicators of psychological well-being (e.g., anxiety, depression, stress) are more difficult to impact and change than positive indicators (e.g., positive mood, life satisfaction, altruism). Consistent with this hypothesis, Baumeister, Bratslavsky, Finkenauer, and Vohs (2001) concluded, in a review article, that "bad is stronger than good" (p. 323). In particular, these researchers argued that the mental health effects of negative emotions produce stronger reactions, wear off more slowly, and might require more intensive efforts/interventions to change relative to more positive emotions. Therefore, in the present study, the positive psychology exercises might have been more beneficial at increasing positive emotions than reducing negative ones. This hypothesis could be explored in future research.

Objective 3: Continued Exercise

Consistent with expectations and previous research (e.g., Seligman et al., 2005), participants (across all four conditions) who continued their assigned exercise past the three-week intervention period and during the one-month follow-up reported greater positive mood, altruism, and satisfaction with life scores relative to participants who did not continue the exercise during the follow-up period. As suggested earlier, perhaps by continuing the exercise, these individuals experienced enhanced well-being because they were better able to master the skill of mindfully noticing and focusing on the humor in one's life (for example).

While continuing the exercise led to enhanced outcomes for positive mood, altruism, and satisfaction with life, it was unrelated to reducing negative mood. This finding is consistent with the ones above indicating that (1) increased effort and expectancy did not relate to a reduction in negative mood and (2) relative to the control

group, the intervention groups were no more effective at reducing negative mood at the end of the study period. As previously mentioned, the absence or reduction of the negative (e.g., bad mood) might be harder to obtain than the presence or increase of the positive (e.g., satisfaction with life, Baumeister et al., 2001).

Objective 4: Individual Differences

The final objective of the present study, which was more exploratory in nature than the first three, was to examine whether individual differences on baseline measures (humor, gratitude, and well-being) moderated the relationships between condition and well-being. Interestingly, there were two significant interactions indicating that baseline gratitude moderated the effect of the gratitude intervention group on positive mood as well as the effect of the humor styles intervention group on positive mood. Upon further investigation, the results indicated that the gratitude and humor style interventions were the most influential for people who report high baseline gratitude. In contrast, people with low baseline gratitude scores reported similar changes in their mean positive mood regardless of the condition to which they were assigned. These findings are consistent with the cross-level interaction, pertaining to gratitude, found in Study 3. Both results suggest the importance of considering trait (versus state) gratitude when making decisions about treatment-matching.

It is possible that people with high baseline gratitude are better at savoring daily events and, as a result, were more effective at appreciating and recognizing the positive or the humorous in their day. Furthermore, consistent with the "matching" hypothesis highlighting the importance of person-activity fit (Sheldon & Lyubomirsky, 2004; Snyder & Cantor, 1988), it is possible that people with higher baseline gratitude have strengths, values, interests and other personality factors that predispose them to experience

enhanced outcomes from the humor styles and gratitude interventions as compared to other participants.

When Lyubomrisky et al. (2005) described their model of sustainable happiness, they highlighted the importance of person-activity fit, stating that no one activity will help all people. Previous research has supported this "matching" hypothesis. For example, Fordyce (1977; 1983) found that when participants included 14 different happiness exercises into their daily life, the most effective and beneficial ones significantly varied from one person to another. In summary, the results from the present study add further information to an area that has been understudied within positive psychology intervention research by demonstrating that when individuals are high on baseline gratitude scores, they are more likely to experience enhanced mood if matched to a humor styles or gratitude intervention.

Limitations and Future Directions

Based on the limitations cited as the end of the discussion on objective one (e.g., small sample size, issues with the strength of the humor manipulations, self-selection versus random assignment), future studies should employ larger sample sizes (e.g., 55 per group as indicated in post hoc power analyses) to increase the power. Furthermore, researchers may want to develop positive psychology interventions that specifically require participants to increase their use of adaptive forms of humor (e.g., similar to McGhee, 1996) and/or to increase their humor exposure (e.g., by seeking out additional comedy television programs). By asking participants to notice things in their life for which they are grateful, participants may actually be increasing the amount of gratitude in their daily life. However, the same cannot necessarily be argued for humor exercises. Noticing humor in daily life may not lead to an increase in the amount of daily humor that

participants create or view. Finally, to address the issues pertaining to self-selection, future studies should compare the well-being benefits of individuals who choose to partake in a specific happiness intervention relative to individuals who are randomly assigned to a happiness exercise.

In summary, this study represents the first one, to my knowledge, that attempts to design and test two positive psychology humor interventions (compared to a gratitude exercise) which can be completed relatively independently, over a short period of time, and with minimal training. The findings of the preset study suggest that relative to a control exercise, both humor and gratitude exercises hold promise for increasing positive mood (as both appeared to be equally effective in this regard). More research, addressing the limitations of the present study, is clearly needed to better understand the role that humor can play in positive psychology interventions as well as the potential importance of teaching people to reduce their negative uses of daily humor. Furthermore, it is important to continue to test and refine these types of novel interventions because the profession of psychology is not only about finding ways to reduce the negatives (e.g., depression, anxiety, stress) but also about exploring ways to build the positives (e.g., resilience, happiness, optimism).

Chapter 5: General Discussion

The five primary aims of this dissertation were to: (1) define how humor as a character strength should best be conceptualized and measured in positive psychology, (2) explore which aspects of positive psychology humor is relevant to, (3) compare humor with gratitude in the prediction of positive psychology outcomes, (4) examine within-person associations between humor styles and well-being over time and (5) develop and test a humor-based positive psychology intervention. The results pertaining to each of these objectives are discussed in more detail below.

Objective 1: Defining Humor as a Character Strength

With respect to the first goal, Study 1 investigated the relationships between the VIA-IS Humor scale and the HSQ. In addition, Study 1 compared these measures in their ability to predict well-being. Two important results emerged: (1) the VIA-IS Humor scale, as with more traditional humor measures, captures humor as an overall positive trait but seems to ignore the more negative styles, and (2) the negative humor styles add to the prediction of positive psychology variables, beyond the VIA-IS Humor scale. These findings indicate that important information pertaining to well-being could be lost by failing to measure negative uses of humor in addition to positive uses. Furthermore, these results suggest that future researchers, interested in exploring the role of humor in positive psychology, should employ an approach that captures both positive and negative uses of humor.

While these findings shed light on how to best conceptualize humor within positive psychology, an interesting direction for future research would be to compare the VIA-IS Humor scale with the HSQ in predicting well-being over time. The methodology used in Study 3 (i.e., daily diary process-oriented approach) would be a novel avenue

from which to explore this type of research. Furthermore, investigating whether the HSQ negative styles predict interpersonal variables (e.g., social support, relationship satisfaction) over and above the VIA-IS Humor scale would provide additional support for the benefits of employing the HSQ in future positive psychology humor research.

Objective 2: Relationships between Humor and Positive Psychology Variables

With regard to the second objective, the results from Studies 1 and 2 indicate that on a correlational level, humor is relevant to almost all the outcomes in the present study (e.g., mood, satisfaction with life, resilience, mental toughness, morality, coping with stress). The presence of the positive styles and the relative absence of self-defeating humor were particularly important for emotional well-being. With regard to mental toughness and stress appraisals, self-enhancing humor appeared to be the most relevant style. This finding is not surprising based on the conceptualization of what self-enhancing humor entails (e.g., adopting a humorous outlook in the face of adversity; Martin et al., 2003). The use of affiliative and self-enhancing humor were also positively linked with a life of pleasure. Consistent with previous research (e.g., Peterson et al., 2007), humor (particularly the positive styles) appears most consistently correlated with this orientation as compared to meaning and engagement. The playful and social elements of humor might account for this finding. For example, some researchers suggest that a playful state of mind is a necessary precursor for humor to be perceived (e.g., Apter, 1991).

To my knowledge Study 1 is the first investigation that compared both the VIA-IS Humor conceptualization as well as positive and negative humor styles in the prediction of moral identity and moral decision making. While Peterson and Seligman (2004) argued that all 24 character strengths are morally praiseworthy, the present findings suggest otherwise. In contrast to the VIA-IS Humor scale and positive styles which were

generally unrelated to morality measures, the maladaptive uses of humor, particularly aggressive humor, were correlated negatively with measures of moral identity and moral decision making. As suggested, people who use humor to tease or manipulate others might behave impulsively and with disregard for the impact that their humor use has on others (Veselka et al., 2010). Furthermore, aggressive humor (and to some extent, self-defeating humor) might be positively correlated with deficits in areas important for moral behavior, such as social awareness and emotional processing. Therefore, instead of labeling humor as a "morally praiseworthy trait" it may be more accurate to label the negative styles (particularly aggressive humor) as "morally unpraiseworthy traits."

Future research needs to be conducted to further explore the relationships between humor and eudaimonic indicators of happiness. Researchers could employ a broader array of morality measures (e.g., questionnaires capturing moral emotions and level of moral development; McNamee, 1977; Tangney, Stuewig & Mashek, 2007) as well as measures that capture processes underlying moral behavior (e.g., social awareness). Furthermore, it would be interesting for studies to employ a longitudinal process-oriented approach when studying these associations. For example, this type of methodology would allow questions to be explored such as the following: On days in which a person uses more negative types of humor than usual, does he or she also tend to report engaging in less moral behavior?

Perhaps the most important message with regard to the second objective is how relevant humor is with respect to positive psychology outcomes. While the past decade has witnessed a growth of studies exploring character strengths and well-being, humor appears to be relatively understudied within this literature (McGhee, 2010). In Martin's (2007, p. xv) textbook on humor research, he notes, "Surprisingly…despite obvious

importance in human behavior, humor and related topics like laughter, irony, and mirth are hardly ever mentioned in psychology texts and scholarly books." Based on the findings from this dissertation, continuing to explore the relationships between humor and well-being (perhaps by including more relational scales and employing process-oriented methodology) seems to be a worthwhile pursuit.

Objective 3: Comparing Humor and Gratitude

The third objective of this dissertation involved comparing humor and gratitude in their prediction of positive psychology variables. This purpose grew out of the literature suggesting that gratitude is a well-studied character strength housed within the same positive psychology virtue (transcendence) as humor. Results suggest that, consistent with the classification of strength and virtues (Peterson & Seligman, 2004), humor and gratitude have a number of similarities. For example, both predicted multiple shared outcomes including resilience, morality (particularly the negative versus positive humor styles), optimism, and satisfaction with life. Furthermore, the gratitude measures in Studies 1 and 2 were both positively correlated with self-enhancing humor suggesting that both gratitude and humor might be similar in capturing a good-natured approach toward life.

However, these correlations were not perfect indicating that despite some overlap, humor and gratitude are distinct concepts. Supporting the research by Algoe and Haidt (2009), some important differences between these strengths were found. For example, humor emerged as more important in coping with stress. On a theoretical level, there are a number of elements of humor that might explain why it is more strongly related to coping with stress. In order to experience humor, an individual must engage in a mental process in which two incompatible interpretations of the same stimulus are activated (i.e.,

perception of incongruity), allowing an idea, image or situation to be cognitively evaluated as less threatening and playful (Martin, 2007). By engaging in this type of process, individuals become less serious, shift their perspective, and cope more effectively by making more benign reappraisals of a potential stressor. Numerous studies have empirically investigated the stress-buffering effects of sense of humor (e.g., Martin & Lefcourt, 1983). These studies repeatedly find that humor moderates the impact of stressful events on negative mood and may offer protection against the adverse consequences associated with stressful experiences. Interestingly, some researchers have even argued that humor evolved for the specific purpose of helping individuals cope with cognitive and social stressors (e.g., Dixon, 1980).

In contrast to humor, gratitude does not necessitate the playful attitude, shifts in perspective, and psychological reappraisal that accompany the perception of humor. Relative to humor, to experience gratitude an individual needs to mindfully attend to, perceptually engross in, or cognitively reflect on a positive stimulus and then savor it (e.g., by thinking about thoughts that prolong and amplify the intensity of the positive experience, Bryant et al., 2011). More specifically, to perceive an experience as gratitude-inducing, an individual might require a more serious (rather than playful) frame of mind. Future research should explore this hypothesis in a longitudinal study in which participants are providing daily humor, gratitude, playfulness, and savoring ratings.

In addition to resilience, humor continued to predict more variance over and above the effects of gratitude in every other outcome studied (with the exception of meaning, engagement, symbolization and altruism). As suggested in Chapter 4, the social and behavioral features (see Martin, 2007 for more information) that appear specific to

humor (relative to gratitude) may help to explain why humor adds to the prediction of most outcomes beyond gratitude.

The aforementioned findings place into question whether humor and gratitude should both be conceptualized under the same virtue (transcendence) in the positive psychology classification of strengths and virtues. On one hand, I found similarities between these strengths in predicting well-being. On the other hand, particularly with regard to coping with stress, humor and gratitude appeared to demonstrate distinct functions. Future research is needed to explore the reliability and validity of the six factor structure of the VIA-IS and whether the best placement of humor is alongside gratitude under the virtue of transcendence.

In summary, although gratitude has received considerably more attention than humor in the applied positive psychology literature, these results suggest that humor may be even more important than gratitude in some respects. For example, with regard to strength-based interventions, it may be more beneficial for participants to engage in a humor-based intervention (versus a gratitude-based intervention) to enhance or develop skills to cope with stress. As Quinlan, Swain and Vella-Brodrick note in a review of character strength interventions (2012, p. 1169), findings suggest that "different strategies may be required for different groups and that one size will not fit all." Future studies should explore this hypothesis by conducting experimental interventions that include humor and gratitude conditions with daily stress and coping outcome measures.

Objective 4: Within-Person Relationships Between Humor and Well-Being

The fourth objective of this dissertation was to explore the within-person relationships between humor styles and well-being (and between gratitude and well-being), as compared to between-person associations, using process-oriented longitudinal

methodology. This type of approach is particularly important because humor, gratitude, and well-being may fluctuate within people in a way that might be very different to how people compare to one another on these variables. The results from Study 3 support this assertion. At the between-person level, the most consistent predictor associated (negatively) with well-being was self-defeating humor as this was the only style to significantly correlate with all four outcome measures (positively with negative mood and negatively with positive mood, altruism and life satisfaction). These findings are generally consistent with the results of Study 1 and 2 of this dissertation as well as previous cross-sectional correlational research on humor styles and well-being (e.g., Martin et al., 2003). However, what is most interesting (and perhaps the biggest contribution of this study) is that at the within-person level, self-defeating humor displayed a different pattern. At this level, it was unrelated to all the outcomes with the exception of negative mood indicating that on days in which people use more humor at the expense of themselves, there is no association with fluctuations in positive mood, life satisfaction, and prosocial behavior.

Results also indicated that a significant cross-level interaction occurred between daily self-defeating humor scores and mean self-defeating humor scores in the prediction of satisfaction with life. In particular, for people who are habitual self-defeating humor users, they experience significantly worse satisfaction with life on days in which they use more self-defeating humor than their typical amount. However, for people who do not characteristically use self-defeating humor overall, on days in which more self-defeating humor was used relative to their typical pattern, no associated fluctuations in satisfaction with life occurred. This interaction can provide some further information to help explain why self-defeating humor shows a greater association with well-being at the between-

person level. It may be that occasional use of self-defeating humor is not particularly detrimental. As Puhlik-Doris (2004) demonstrated in her study, use of this style may actually be beneficial for mental health during particularly high levels of stress. However, it is only when people habitually use this type of humor that is becomes associated with poorer well-being.

As mentioned in Chapter 3, another hypothesis for further research to explore is that self-esteem is an important third variable at the within-person level. For example, it may be that for people with high self-esteem, on days in which more self-defeating humor is used, there is no observable decline in well-being. However, for people with low-self esteem, more daily self-defeating humor use (relative to their norm) may be accompanied by poorer daily mood. It will be important for future research to continue exploring the influence of different contextual variables (e.g., stable individual traits, a person's environment, etc.) to determine how these factors impact the relationships between daily humor and well-being. The results from this type of research will continue to refine and shape our understanding of humor styles and how the effects of humor may be different depending on whether researchers examine habitual or occasional use.

Objective 5: Developing and Testing a Humor-Based Intervention

The final objective of this dissertation, covered in Study 4, was to extend the more basic research findings noted in Studies 1 through 3 to a more applied area of positive psychology research: strength-based interventions. In particular, I developed and tested two humor-based positive psychology interventions relative to a gratitude and control exercise. It was hypothesized that participants taught to distinguish between positive and negative uses of humor would report enhanced outcomes relative to a more traditional

exercise in which participants were not taught about maladaptive versus adaptive uses of humor.

Results indicated that all three positive psychology interventions were superior to the control group in increasing positive mood. This finding should not be underestimated because a large amount of empirical evidence details the benefits associated with positive affect (beyond the subjective pleasurable feeling accompanying positive emotions). For example, good feelings broaden the scope of attention (Fredrickson & Branigan, 2005), increase intuition (Bolte, Goschkey, & Kuhl, 2003), enhance creativity (Isen, Daubman, & Nowicki, 1987), predict decreased cortisol levels (Steptoe, Wardle, & Marmot, 2005), and are associated with improved immune system functioning (Davidson et al., 2003), Based on these benefits, it is especially noteworthy that in Study 4 I found that humor interventions (under controlled conditions) are on par with other, more traditional positive psychology interventions. For individuals aiming to enhance their positive mood, humor exercises may be considered a viable positive psychology intervention.

In contrast to positive mood, the humor interventions neither led to significant improvements in life satisfaction and altruism nor declines in negative mood. Perhaps positive mood is the easiest outcome to change (relative to satisfaction with life, prosocial behavior, and negative mood) over the course of a three-week intervention.

With regard to the manipulation check, no significant differences emerged across the four conditions in the levels of gratitude and humor styles reported by participants. Similarly, there were no significant differences between any of the active intervention groups, suggesting that (1) the humor styles group was no more effective than the traditional humor group at increasing well-being, and (2) humor exercises do not confer

any advantages over already well-established gratitude exercises, at least with respect to the outcomes explored in the present study.

As highlighted in the chapter on this study, there are a number of possible reasons for the lack of significant differences among intervention groups. Questions concerning the limited statistical power (due to the modest sample size and small effects), the length/frequency of the intervention, and the outcomes explored/daily diary measures used could all be contributing factors in the lack of significant results. Similarly, while most participants in the humor styles condition tended to cite examples of positive humor, it was never made explicit that one goal of this intervention was to decrease negative humor use. The original rationale for not sharing this information was because I attempted to keep the four intervention groups as similar and equivalent as possible. However, given the non-significant manipulation check, perhaps stronger humor manipulations were necessary.

With gratitude, it may be enough to simply ask participants to think about things for which they are grateful because this activity in itself might lead to increased appreciation. However, with humor, it may not be enough to ask participants to think about funny things that happened in their day. Instead, to influence well-being, interventions might be more effective if they explicitly encourage participants to generate or seek out more humor in their daily life.

Some previous interventions have made use of McGhee's (1996) humor skills training program. As part of his course, McGhee emphasizes the need for participants to laugh more often and to actually learn to create their own humor. In future studies researchers could develop positive psychology humor exercises based on these

components of McGhee's course. For example, to help people laugh more often, participants could be instructed to increase their viewing of comedy television shows.

Another limitation of this study and most positive psychology strength-based interventions is that they are examples of "black box designs" – interventions that are viewed primarily in terms of effects with little regard for the mechanisms explaining how and why a program may work (Grembowski, 2001). Therefore, an extremely important direction for future research is to break down the design of this study by delineating and testing theories of cause and effect (i.e., "underlying logic to explain why a program will cause specific outcomes," Grembowski, 2001, p. 36).

One promising explanation to the question of how humor and gratitude might lead to enhanced well-being is Fredrickson's (1998; 2001) Broaden-and-Build Theory of Positive Emotions. She posits that positive emotions function to *broaden* an individual's mindset in the present (facilitating a wider attention scope, allowing for more creative thoughts and actions to be considered) which then *build* an individual's personal resources that could be drawn upon in future situations, even after the positive emotions have subsided.

Mirth, the positive emotion elicited by humor, is thought to spark the urge to play which in turn creates psychological capital by building cognitive skills (e.g., flexibility and creativity, Sherrod & Singer, 1989), social affective skills (shared amusement, smiles, lasting attachments; Aron, Norman, Aron, McKenna, & Heyman, 2000), theory of mind (Leslie, 1987), and group cohesion. A somewhat different pathway is hypothesized for gratitude. Gratitude creates the urge to savor life events, recent successes, and achievements, which can then be mindfully integrated into a broadened view of oneself and the world. In addition to building cognitive resources, gratitude can foster a sense of

spirituality and the development of social/affective skills (e.g., social reciprocity,

empathy, and altruism; Emmons & McCullough, 2003; Froh, Bono, & Emmons, 2010).

Not only do positive emotions signal well-being in the present and build resources

for the future, they can also repair the effects of negative emotions (such as anxiety or

sadness) restoring more optimal autonomic functioning. This idea is termed the "undoing

hypothesis" and is supported in studies where researchers intentionally induce negative

arousal in participants and then show participants a video clip designed to produce

positive, negative or neutral emotions (Fredrickson & Levenson, 1998). Consistently,

participants in the positive emotion conditions demonstrate faster recoveries from

elevated cardiovascular activation compared to those who saw negative or neutral clips.

Based on Fredrickson's (1998, 2001; 2004) work, Figure 5.1 displays a causal

theory for the humor and gratitude positive psychology exercises that can be used to

guide future research. It is possible that my study only tested the first piece of this model

(i.e., first two boxes) in which I found that gratitude and humor interventions lead to more

positive mood. Perhaps in order to see potential broadening effects and building effects,

researchers should explore longer and more intensive interventions.

Apart from the individual findings of each study, there are some overarching

themes that have emerged. The first is that positive and negative uses of humor capture

more variance in well-being than positive uses alone or measures that combine different

uses of humor together. A second theme is that while humor styles may be broken down

into positive versus negative uses, the adaptability of a style may depend on individual

and environmental factors (e.g., how frequently one uses that humor style, the context in

which it is employed). A third theme is that within-person associations between humor

styles and well-being may be different from between-person associations (particularly for
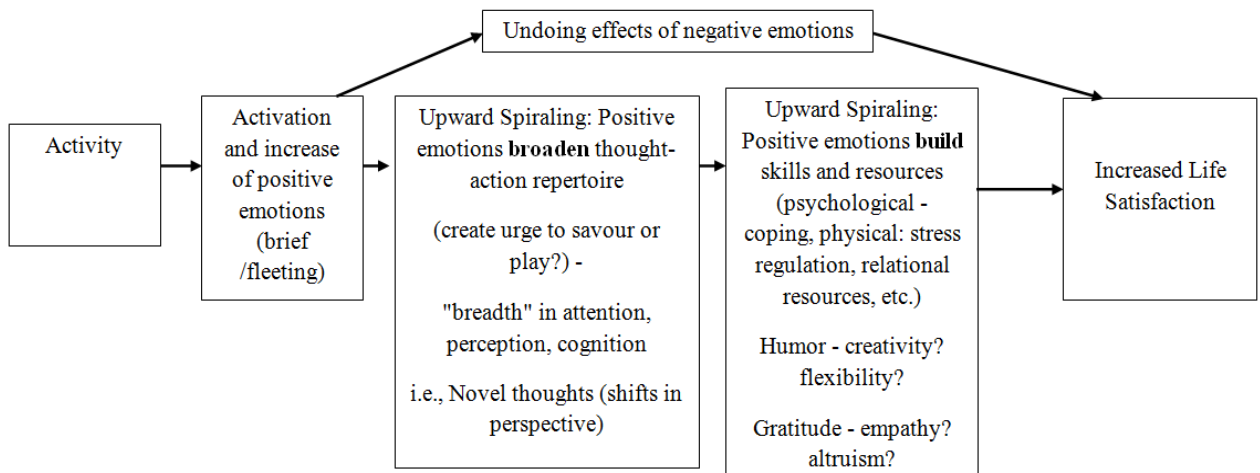
Figure 5.1. Theory of Cause and Effect for the Humor (and Gratitude) Positive

Psychology Exercises.

self-defeating humor). A fourth theme is that with respect to increasing positive mood, humor exercises appear to hold as much promise as gratitude ones. On a related note, humor exercises may hold even more value than gratitude exercises with regard to enhancing skills to cope with stress. The fifth and final overall theme emerging from this research is that despite consistently being overlooked in strength studies, humor has an important role in positive psychology research and is worthy of further investigation.

I hope that this dissertation can help inspire researchers to continue the study of humor and well-being by using innovative methodologies (e.g., daily diary studies with hand-held computers), including diverse populations with a greater range of age, culture, and socioeconomic status, and refining the types of novel interventions explored in this program of research. Psychologists have spent the past fifty years studying what goes wrong with people: building a classification system of mental disorders, developing reliable measures, and testing pharmacological and psychological interventions for mental illness. Given the valued position of the pursuit of happiness in our society, it is finally time for the study of humor as a character strength to be given the scientific inquiry that it deserves.

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Appendix A

Demographics Questionnaire

Please tell us a bit about yourself by completing the following questionnaire:

1. First and last name (please print clearly): _____

2. Date of Birth (Month/Day/Year): _____

3. Current age in years: _____

4. Gender (circle one):   Male   Female

5. Ethnicity (group that you most identify with, please check one):

☐ **European-Canadian** (White)   ☐ **Asian-Canadian** (e.g., Chinese, Vietnamese, Korean)

☐ **Native Canadian** (e.g., Native Indian)   ☐ **Latin American-Canadian** (e.g., Hispanic)

☐ **African/Caribbean-Canadian** (Black)   ☐ **Others** (please specify)

☐ **South Asian-Canadian** (e.g., East Indian, Pakistani)

6. Were you born in Canada? (check one)   no ☐   yes ☐

    If "no"   a) How long have you lived in Canada? _____ (years)

                      b) What country were you born in? _____

7. Is English your first language? (check one)   no ☐   yes ☐

    If "no"   a) How long have you been speaking English? _____ (years)

8. Which of the following most closely describes your program/faculty (check only one)?

    ☐ **Arts and Humanities or Music** (e.g., English, Philosophy, Visual Arts, Women's Studies, Music)
    ☐ **Information and Media Studies** (e.g., Journalism, Media Studies, Library & Information Science)
    ☐ **Social Sciences** (e.g., Psychology, Sociology, History, Economics, Linguistics, Geography, MOS)
    ☐ **Sciences** (e.g., Chemistry, Biology, Physics, Mathematics/Statistics, Computer Science)
    ☐ **Health Sciences** (e.g., Nursing, Kinesiology, Sports & Recreational Services, Health & Rehab)
    ☐ **Engineering** (e.g., Chemical/Bio, Civil/Environmental, Electrical/Computer, Mechanical)
    ☐ **Professional School** (e.g., Ivey Business, Medical/Dental/Law School, Teacher's College)

Appendix B

Moral Scenarios Questionnaire

Below you will find descriptions of 12 scenarios. Please read each scenario carefully and then respond to the question following each one.

Scenario 1
Suppose you own a car and drive it frequently. Imagine that Prime Minister Harper has recently introduced a new bill to reduce increasing pollution levels. This bill requires that ever motor vehicle has a new system installed to filter out combustion gasses. The new device would cost car owners $8000. With the new device, polluting emissions would be cut by 50%. Although the law has been approved, the Government is doing nothing to actually enforce it. Therefore, those car owners who are not installing the device are almost certain they could get away without being caught and without paying any fine.

Would you install the anti pollution device? (check one box)

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 2
Suppose you have a full time job and on evenings and weekends you have a side business in which you work on private contracts that are paid to you in cash. In the past year, you have earned a total of $10, 000 from these private contracts, although there is no official record for these payments. In the coming weeks, you will need to meet with your accountant to review your tax forms for this year. If you declare the income from your private contracts to the appropriate authorities, you would have to pay an additional $1000 in taxes. If you do not report the income from your private contracts, the appropriate authorities will never find out your extra income.

Would you declare the extra income (from your private contracts) to the authorities?
(check one box)

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 3
Suppose that one of the latest controversial blockbuster movies includes several scenes of women being brutally raped. In the movie, the perpetrators of the rape are depicted as heroes. At the end of the movie, the women fall in love with the perpetrators who raped them. Since the opening of the movie, there has been a 10% increase in rape attempts. It seems that such a large increase in a short period of time is due to the influence of the movie.

The company that produced the movie is highly profitable for its shareholders. It appears that its profitability would only increase in the foreseeable future.

Suppose you have some savings to invest in the stock market, and that you have the opportunity to buy some shares of the company producing the movie.

Would you invest in the company producing the movie?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 4

Suppose that you are applying for a college scholarship worth a significant amount of money. In the application, you are required to reveal your income, and your parents' income. Because of your good grades, you would automatically receive a certain amount of money. However, if you declare an income 25% lower than your actual income, you would probably be granted an additional scholarship of about $2000. It is extremely unlikely that you will be caught or sanctioned if you would declare an income lower than your real one.

Would you declare an income lower than your actual income?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 5

Suppose that one of London's most widely read and popular newspapers has experienced a drastic increase in profits since the paper recently started publishing explicit advertisements of paid sexual services. Most of these ads are paid by organizations that control the sex market. These organizations mainly use young immigrant women. Coinciding with the publishing of these ads in this influential London newspaper, it has been estimated that profits of the sex market increased by about 20%.

After the publication of the sex ads, the Company running the newspaper has become very profitable, and is likely to become even more profitable in the future. Suppose you have some money to invest.

Would you invest your money in the company owning the newspaper?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 6

Suppose a new violent sport called Total Fighting has become popular recently. The last Total Fighting Championships has attracted a large TV audience. Recently after the Total Fighting Championships, assaults and attempted homicides have increased by about 10%.

The company that markets Total Fighting events is becoming very profitable, and in the foreseeable future it is expected that their profits would increase even further. You happen to have some savings to invest, and you have the chance to buy some shares of the company marketing Total Fighting.

Would you invest in the company marketing Total Fighting?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 7

Imagine that you are riding a city transit bus in the summer (and that you have no university bus pass during that time). As you board the bus, the bus driver is busy answering another patron's questions. Because the bus driver is not paying attention, he would never notice if you did not pay your bus fare.

Would you pay the $2.75 fare for the bus?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 8
Imagine that you enter a grocery store to purchase your vegetables for the week. After you have paid for your groceries and are pushing your cart past the check-out, you realize that the cashier accidentally gave you an extra $5.00 in change.

Would you go back to the cashier and return the extra $5.00?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 9
Suppose you had a big exam that you did not have much time to study for. During the exam you happen to sit next to one of your classmates who you know is at Western on full scholarship for outstanding academics. You know that she studies a lot and is doing really well in the course. During the exam, the professor steps out of the room and there are no other proctors present. You are struggling with the first five multiple choice questions on the exam and if you glance over, you can see your classmates' scantron sheet.

Would you copy her answers for those questions you are struggling with?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 10
Suppose in a close tennis match, the referee calls a sideline shot you have made "in." You know it was out. Would you tell the referee that the shot was actually "in"?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 11
Suppose to get a needed time out, your soccer coach instructs you to fake an injury. Would you fake an injury?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Scenario 12
Imagine you are driving to work one morning. Along the way you stop, park, and go into Starbucks to buy coffee. After you pay for your coffee, you climb back into your car and as you are reversing out of your spot, you accidentally bump another parked car. You quickly get out of the car and you see a large scratch on the car you hit. It is likely that no one saw what happened and that if you drove off, there may not be any repercussions. Would you leave a note for the owner of the car you hit with your phone number/insurance details?

Certainly not	Likely not	Likely yes	Certainly yes
☐	☐	☐	☐

Appendix C

Standardized Regression Coefficients for VIA-IS Humor Scale and the Subscales of

the HSQ in the Prediction of Positive Psychology Outcomes in Study 1

Category	PP Variables	VIA-IS Humor	HSQ AF	HSQ SE	HSQ AG	HSQ SD
Happiness	Positive Mood	.40***	-.09	.21*	.12	-.19*
	Negative Mood	-.13	-.08	-.01	.19*	.36***
	Sat. with Life	.58***	-.29**	.09	.19*	-.31***
	Optimism	.23*	.00	.23*	.01	-.37***
OtH	Pleasure	.43***	.01	-.05	.09	-.10
	Meaning	.17	-.16	.18	-.24**	-.06
	Engagement	.10	-.15	.16	-.10	-.04
Resilience	MTQ Challenge	.36***	-.02	.15	-.05	-.10
	MTQ Commitment	.17	-.12	.25**	-.11	-.32***
	MTQ Control	.20	.00	.21*	-.04	-.28***
	MTQ Confidence	.35***	-.00	.30***	.02	-.41***
	CD-RISC	.25*	-.01	.41***	-.03	-.21**
Morality	MI Internalization	.39***	-.03	-.05	-.49***	-.08
	MI Symbolization	.37***	-.08	.06	-.22**	-.12
	Moral Scenarios	-.03	-.02	.20*	-.39***	-.14

Note. PP = Positive Psychology; HSQ = Humor Styles Questionnaire, AF = Affiliative Humor, SE = Self-enhancing Humor, AG = Aggressive Humor, SD = Self-defeating Humor; MTQ = Mental Toughness Questionnaire; CD-RISC = Connor-Davidson Resilience Scale; OtH = Orientations to Happiness; MI = Moral Identity.

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

Appendix D

Standardized Regression Coefficients for VIA-IS Gratitude Scale and the Subscales

of the HSQ in the Prediction of Positive Psychology Outcomes in Study 1

Category	PP Variables	VIA-IS Gratitude	HSQ AF	HSQ SE	HSQ AG	HSQ SD
Happiness	Positive Mood	.42***	.07	.21*	.22**	-.17*
	Negative Mood	-.03	-.14	-.04	.19*	.35***
	Sat. with Life	.46***	-.04	.14	.30***	-.29***
	Optimism	.20*	.10	.24**	.06	-.36***
OtH	Pleasure	.17	.21*	.04	.13	-.09
	Meaning	.39***	-.11	.11	-.14	-.04
	Engagement	.39***	-.14	.07	.003	-.03
Resilience	MTQ Challenge	.18*	.15	.21*	-.01	-.09
	MTQ Commitment	.20*	-.05	.24**	-.06	-.31***
	MTQ Control	.01	.10	.27**	-.04	-.28***
	MTQ Confidence	.28***	.15*	.33***	.09	-.40***
	CD-RISC	.33***	.09	.38***	.05	-.20**
Morality	MI Internalization	.34***	.14	-.03	-.41***	-.06
	MI Symbolization	.54***	.05	.01	-.09	-.09
	Moral Scenarios	.26***	-.06	.10	-.32***	-.13

Note. PP = Positive Psychology; MTQ = Mental Toughness Questionnaire; CD-RISC = Connor-Davidson Resilience Scale; OtH = Orientations to Happiness; MI = Moral Identity.

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

Appendix E

Standardized Regression Coefficients for Gratitude Adjective Checklist and the

Subscales of the HSQ in the Prediction of Positive Psychology Outcomes in Study 2

PP Variables	Gratitude	HSQ AF	HSQ SE	HSQ AG	HSQ SD
SAM Threat	-.06	-.04	-.16*	-.03	.15*
SAM Challenge	-.00	.05	.20**	-.25***	-.01
SAM Centrality	.05	.15	.01	.00	-.01
SAM. Cont.-by-self	.18*	.18*	.14*	-.06	-.17*
SAM Cont.-by-others	.18*	.12	.18*	.03	-.06
SAM Uncontroll.	-.15*	-.16*	-.12	-.14*	.17*
SAM Stressfulness	.16*	.03	-.26***	-.07	.21**
Altruism	.07	-.02	.07	-.09	.06

Note. PP = Positive Psychology; HSQ = Humor Styles Questionnaire, SAM = Stress Appraisal Measure.

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

Appendix F

Daily Humor Styles Questionnaire

Below is a list of statements describing ways in which people may express humor. Please read each statement and indicate how often you have engaged in each of these forms of humor expression over the past 24 hours. Answer by clicking one of the option buttons located below each statement.

Not at all
Once
Twice
3-5 times
More than 5 times

1. I told someone a joke or said something funny to make someone laugh.
2. I found that my humorous outlook on life kept me from getting overly upset or depressed about things.
3. I teased someone when they made a mistake.
4. I let someone laugh at me or make fun of me more than I should have.
5. I laughed and joked around with other people.
6. I coped with a problem or difficulty by thinking about some amusing aspect of the situation.
7. Someone seemed offended or hurt by something I said or did while trying to be funny.
8. I said funny things to put myself down.
9. I was able to think of witty things to say to amuse other people.
10. I was amused about something funny when I was all by myself.
11. I used humor to put down or tease someone I don't like.
12. I tried to make someone like or accept me more by saying something funny about my own weaknesses, blunders, or faults.

Appendix G

Daily Altruism Scale

Please rate whether you carried out the following acts over the past 24 hours by checking the "yes" or "no" box next to each act.

		Yes	No
1	I gave directions to a stranger.	☐	☐
2	I gave money to a charity.	☐	☐
3	I gave money to a stranger who needed it (or asked me for it).	☐	☐
4	I did volunteer work for a charity.	☐	☐
5	I delayed an elevator and held the door open for a stranger.	☐	☐
6	I allowed someone to go ahead of me in a line up (e.g., at photocopy machine, in the supermarket).	☐	☐
7	I let a neighbour whom I didn't know too well borrow an item of some value to me (e.g., a dish, textbook tools, etc.)	☐	☐
8	I helped a classmate who I did not know that well with a homework assignment when my knowledge was greater than his or hers.	☐	☐
9	I gave up a seat to a stranger.	☐	☐
10	I carried someone's belongings.	☐	☐

Appendix H

A Brief Guide to Determine Positive versus Negative Humor Use

Q1: **How does the humorous content make you feel?**

Happy, Smiley, Playful, Good Mood, Silly, Joyful

Upset, Sad, annoyed, angered, frustrated, embarrassed

-You don't think the content is funny at all
- You laugh but deep down think the joke was offensive, mean, or hurtful

Negative Humor

Q2: **How does the humorous content make the other person feel?**
- Question applies only if:
  A) You are with or watching/reading humorous content that involves another person – (which is usually the case with humor!)
  B) You consider the other person or your relationship with that individual to be important!!!
- When answering, use your best guess: (Based on the individual's reaction to the humor and your prior experiences with that person/knowledge of that person's likes/dislikes)

If not the case:

Positive Humor

Happy, Smiley, Playful, Good Mood, Silly, Joyful

Upset, Sad, annoyed, angered, frustrated

-They did not think the content is funny at all
- They might laugh but you think that deep down the joke was experienced as offensive or hurtful

Negative Humor

Q3: **How does the humorous episode affect your relationship (over time)?**

Increases bonding, trust, likability, positive feelings, sense of connection

Increases distrust, resentment, hurt feelings, sense of inadequacy

Positive Humor

Negative Humor

Note: Humorous content is an overarching term that is used to refer to funny jokes, situations you see, you tell or hear, actions someone did, the absurdities of life, etc.

Appendix I

Multiple Regression Analyses Predicting Well-Being from Conditions in Study 4

Outcome	Predictor	β	*T*	*p* <
Positive Mood	Gratitude (vs. Control)	.11	1.04	*ns*
$R^2 = .02$, $F(3, 132) = 1.07$, *ns.*	Tradition Humor (vs. Control)	.14	1.32	*ns*
	Humor Styles (vs. Control)	.18	1.71	.10
Negative Mood	Gratitude (vs. Control)	-.05	-0.48	*ns*
$R^2 = .02$, $F(3, 132) = 0.78$, *ns.*	Tradition Humor (vs. Control)	-.16	-1.49	*ns*
	Humor Styles (vs. Control)	-.07	-0.69	*.ns*
Altruism	Gratitude (vs. Control)	.15	1.37	*ns*
$R^2 = .02$, $F(3, 132) = 0.79$, *ns.*	Tradition Humor (vs. Control)	.01	0.10	*ns*
	Humor Styles (vs. Control)	.05	0.45	*.ns*
Sat. with Life	Gratitude (vs. Control)	0.03	0.29	*ns*
$R^2 = .01$, $F(3, 132) = 0.36$, *ns.*	Tradition Humor (vs. Control)	0.02	0.17	*ns*
	Humor Styles (vs. Control)	0.10	0.96	*ns*

Note. Sat. with Life = Satisfaction with Life

Appendix J

Institutional Ethics Review Board Ethics Approval Notice (Study 1)

Department of Psychology The University of Western Ontario
Room 7418 Social Sciences Centre,
London, ON, Canada N6A 5C1
Telephone: (519) 661-2067Fax: (519) 661-3961

Use of Human Subjects - Ethics Approval Notice

Review Number	10 07 06	Approval Date	10 07 30
Principal Investigator	Rod Martin/Kim Edwards	End Date	11 04 30
Protocol Title	Humor, character strengths, 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 end 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 declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clive Seligman Ph.D.

Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2009-2010 PREB are: David Dozois, Bill Fisher, Riley Hinson and Steve Lupker

CC: UWO Office of Research Ethics

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

Appendix K

Institutional Ethics Review Board Ethics Approval Notice (Studies 2 and 3)

Department of Psychology The University of Western Ontario
Room 7418 Social Sciences Centre,
London, ON, Canada N6A 5C1
Telephone: (519) 661-2067 Fax: (519) 661-3961

Western

Use of Human Subjects - Ethics Approval Notice

Review Number	11 08 05	Approval Date	11 08 22
Principal Investigator	Rod Martin/Kim Edwards	End Date	12 04 30
Protocol Title	The pursuit of happiness		
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 end 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 declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clive Seligman Ph.D.

Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2010-2011 PREB are: Mike Atkinson (Introductory Psychology Coordinator), David Dozois, Vicki Esses, Riley Hinson Albert Katz (Department Chair), and Tom O'Neill (Graduate Student Representative)

Appendix L

Institutional Ethics Review Board Ethics Approval Notice (Study 4)

Department of Psychology The University of Western Ontario
Room 7418 Social Sciences Centre,
London, ON, Canada N6A 5C1
Telephone: (519) 661-2067 Fax: (519) 661-3961

Western

Use of Human Subjects - Ethics Approval Notice

Review Number	12 07 15	Approval Date	12 07 31
Principal Investigator	Rod Martin/Kim Edwards	End Date	13 03 31
Protocol Title	Humor and happiness: A follow-up study		
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 end 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 declare a conflict of interest, do not participate in discussion related to, nor vote on, such studies when they are presented to the PREB.

Clive Seligman Ph.D.

Chair, Psychology Expedited Research Ethics Board (PREB)

The other members of the 2012-2013 PREB are: Mike Atkinson (Introductory Psychology Coordinator), Rick Goffin, Riley Hinson Albert Katz (Department Chair), Steve Lupker, and TBA (Graduate Student Representative)

CC: UWO Office of Research Ethics

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

Curriculum Vitae
Kim R. Edwards

Post-secondary Education and Degrees:	Queen's University Kingston, Ontario, Canada 2003-2007 B.A. The University of Western Ontario London, Ontario, Canada 2007-2009 M. Sc. The University of Western Ontario London, Ontario, Canada 2009-Present Ph.D.
Honors and Awards:	Social Science and Humanities Research Council (SSHRC) Doctoral Fellowship 2011-2013 International Society for Humor Studies Graduate Student Award 2012 Canadian Institute of Health Research Professional Student Research Award 2009-2011 Graduate Teaching Assistant Union Scholarship 2012 Ontario Graduate Scholarship 2008-2009 Canada Graduate Scholarship Master's Award 2007-2008
Related Work Experience	Teaching Assistant The University of Western Ontario 2007-2013 Psychometrist Brake Shop, Child Parent Resource Institute 2012-2013

Publications:

Edwards, K. R., & Martin, R. A. (2012). Do humorous people take poorer care of their health? Associations between Humor styles and substance use. *Europe's Journal of Psychology*, *8*(4), 523-534.

Edwards, K. R., & Martin, R. A. (2010). Humor creation ability and mental health: Are funny people more psychologically healthy? *Europe's Journal of Psychology, 3*, 196-212.

Edwards, K. R., Martin, R. A., & Dozois, D. J. A. (2010). The fear of being laughed at, social anxiety, and memories of being teased. *Psychological Test and Assessment Modeling, 52* (1), 94-107.

Rudnick, A., Wedlake, M., Kohn, P., Edwards, K. R., Podnar, D., Caird, S., & Martin, R. (under review). Humor-related interventions for people with mental illness: A randomized controlled pilot study. *Community Mental Health Journal.*

Conference Presentations:

Edwards, K. R., & Martin, R. A. (2012, July). *The Role of Humor in Positive Psychology*. Paper presented at the First Canadian Conference on Positive Psychology, Toronto, ON.

Edwards, K. R., & Martin, R. A. (2012, June). *A Diary-Based Longitudinal Exploration of the Relationships between Daily Humor Styles and Well-Being.* Paper presented at the International Society for Humor Studies (ISHS) Conference, Krakow, Poland.

Martin, R. A., Edwards, K. R., Caird, S., & Podnar, D. (2012, June*). A Randomized Controlled Pilot Study of a Humor-Based Intervention for Individuals with Mental Illness*. Paper presented at the International Society for Humor Studies (ISHS) Conference, Krakow, Poland.

Edwards, K. R., Rudnick, A., & Martin, R. A. (2012, May). *Feasibility and Effects of Humor-related Interventions for People with Mental Illness: A Randomized Controlled Pilot Study*. Paper presented at the 13th annual Regional Mental Health Care Research Half Day, St. Thomas, ON.

Edwards, K. R., & Martin, R. A. (2011, July). *Gelotophobia, Social Anxiety, and Childhood Teasing*. Paper presented at the International Society for Humor Studies (ISHS) Conference, Boston, MA.

Edwards, K. R., & Martin, R. A. (2011, July). *Humor in Positive Psychology: The Importance of Assessing Maladaptive as well as Adaptive Humor*. Paper presented at the International Society for Humor Studies (ISHS) Conference, Boston, MA.

Edwards, K. R., Martin, R. A., Kohn, P. M., Rudnick, A., Podnar, D., Caird, S., et al. (2011, June). *The Role of Humor in an Anti-stigma Initiative: Results from an Efficacy and Feasibility Study Evaluating Stand Up for Mental Health*. Poster presented at the 72nd annual Canadian Psychological Association (CPA) Convention, Toronto, ON.

Edwards, K. R., Martin, R. A., Kohn, P. M., Rudnick, A., Podnar, D., Caird, S.et al. (2010, October). *Stand Up for Mental Health: Results from a Pilot Study in London, Ontario*. Poster presented at the Canadian Mental Health Association Annual Conference: "Thriving in 2010 and Beyond," London, ON.

Conference Presentations Continued:

Edwards, K. R., & Martin, R. A. (2009, April). *Do Humorous People Live a Healthier Life?* Poster presented at the 30th annual Society for Behavioral Medicine Conference, Montreal, QC.

Edwards, K. R., & Martin, R. A. (2009, June) *Humor Creation Ability and Mental Health: Are Funny People More Psychologically Healthy?* Poster presented at the 70th annual Psychological Association Convention, Montreal, QC.

Edwards, K. R., & Martin, R. A. (2009, June). *Are Funny People Healthier? Humor Creation Ability, Humor Styles, and Mental Health*. Paper presented at the International Society for Humor Studies (ISHS) Conference, Long Beach, CA.

Passey, J., Jacobson, J. A., Edwards, K. R., & Hickey, A. J. (2008, February). *The Relationship of Causal Uncertainty to Adult Attachment Qualities and Rejection Sensitivity*. Poster presented at the 9th annual Society for Personality and Social Psychology Conference, Albuquerque, NM.

Edwards, K. R., Craig, W., Pepler, D., & Connolly, J. (2007, June). *Adolescent Trajectories of Eating Behaviors and Associated Individual, Family, and Peer Risk Factors.* Poster presented at the 68th annual CPA Convention, Ottawa, ON.