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ROLE OF HUMOR IN EMOTION REGULATION:  
DIFFERENTIAL EFFECTS OF ADAPTIVE AND MALADAPTIVE FORMS OF HUMOR

by

Lindsay M. Mathews

A dissertation submitted to the Graduate Faculty in Psychology in partial fulfillment of the requirements for the degree of Doctor of Philosophy, The City University of New York

2016

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This manuscript has been read and accepted by the Graduate Faculty in Psychology in satisfaction of the dissertation requirement for the degree of Doctor of Philosophy.

Pegilee Wupperman, Ph.D.

\_\_\_\_\_

Date

\_\_\_\_\_

Chair of Examining Committee

Richard Bodnar, Ph.D.

\_\_\_\_\_

Date

\_\_\_\_\_

Executive Officer

William Gottdiener, Ph.D.

Andrew Shiva, Ph.D.

David Klemanski, Psy.D.

Maren Westphal, Ph.D.

Supervisory Committee

THE CITY UNIVERSITY OF NEW YORK

## Abstract

### ROLE OF HUMOR IN EMOTION REGULATION:

#### DIFFERENTIAL EFFECTS OF ADAPTIVE AND MALADAPTIVE FORMS OF HUMOR

by

Lindsay M. Mathews

Advisor: Professor Peggilee Wupperman

Humor is widely believed to be an adaptive method of regulating emotions; however, the empirical literature remains inconclusive. One potential explanation for inconsistent results is that humor may be a multidimensional construct. Correlational research suggests that “adaptive” humor styles (Self-Enhancing and Affiliative) are more beneficial than “maladaptive” humor styles (Self-Defeating and Aggressive). The current study examined the effects of humor styles (i.e., adaptive and maladaptive) on positive and negative emotion in a sample of 146 young adults. In Part I of the study, participants were 1) randomly assigned to three conditions (adaptive humor, maladaptive humor, and distraction), 2) instructed to write about life events that invoked negative emotions, and 3) instructed to generate humorous responses or engage in a distraction task (depending upon condition). Repeated measures ANOVAs showed that the humor tasks resulted in significant changes in positive emotion and negative emotion in the expected directions. Contrary to hypotheses, the humor conditions did not show significantly greater increases in positive emotion or decreases in negative emotion than did the distraction condition. In addition, the adaptive humor condition did not show significantly greater increases in positive emotion or decreases in negative emotion than did the maladaptive humor condition.

Part II of the study addressed the lack of research comparing humor styles with established emotion-regulation measures. As predicted, participants who endorsed more adaptive forms of humor reported significantly less difficulties in emotion regulation (as assessed by the Difficulties in Emotion Regulation Scale; DERS), and participants who endorsed more maladaptive forms of humor reported significantly more difficulties in emotion regulation. Together, these findings provide preliminary contributions to the understanding of humor's role as an emotion regulatory strategy.

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## CHAPTER ONE: INTRODUCTION

Humor is fundamental to our mental and social lives (Martin, 2007); given the prevalence of humor in human interaction, the capacity for humor is arguably an integral part of what it means to be human (Jarrett, 2013). Despite the importance of humor in different areas of human experience and its relevance to multiple branches of psychology, humor has been relatively understudied historically. However, in the past several decades, a steady accumulation of research has focused on various aspects of humor.

The notion that humor is a particularly effective coping strategy in the face of negative emotions has been supported anecdotally and in numerous studies (Abel, 2002; Kuiper, Martin, & Olinger, 1993). While no all-encompassing definition exists, a general definition of *sense of humor* is “habitual individual differences in all sorts of behaviors, experiences, affects, attitudes, and abilities relating to amusement, laughter, jocularity, and so on” (Martin, 1998, p.17).

Research demonstrates that use of humor is related to increased positive mood states, decreased psychological stress, and greater overall psychological health, including self-concept (Kuiper & Martin, 1993; Lefcourt & Martin, 1986; Martin & Lefcourt, 1983; Newman & Stone, 1996; Thorson, Powell, Sarmany-Schuller & Hampes, 1997).

In addition, humor has been shown to reduce depressive symptoms in individuals enrolled in self-help interventions (Morgan & Jorm, 2008); reduce levels of anger, depression, anxiety, and problems with social competence in psychotic patients (Gelkopf, Gonen, & Kurs, 2006); and foster self-esteem and memory improvements in dementia patients (Stevens, 2012). Beyond increasing positive emotions and counteracting negative moods, humor also serves an important social function in the initiation, maintenance, and enhancement of interpersonal relationships (Shiota, Campos, Keltner, & Hertenstein, 2004; Zeigler-Hill, Besser, & Jett, 2013).

Taken together, findings suggest that humor is analogous to definitions of mental health in general (i.e., the ability to manage negative emotions and enjoy positive emotions; ability to cope with stress and adapt to change; and ability to establish relationships with others; Martin, 2007). Thus, humor has significant implications for mental health and general well-being.

Humor has also been shown to exert positive effects on physical health. In recent years, practitioners have advocated the use of “therapeutic humor” in the treatment of illness and maintenance of health (Godfrey, 2004). Potential health benefits of humor include the physiological changes produced by laughter, induction of positive emotional states through humor and laughter, humor as an indirect moderator of adverse stress effects, and humor as an indirect moderator of increased social support (Martin, 2002).

Studies that examined the correlation between humor-induced positive emotional states and beneficial effects on health found effects of increased pain tolerance, enhanced immunity, and reductions in cardiovascular consequences of negative emotions (Martin, 2001). Additionally, controlled laboratory experiments have lent support for positive effects of exposure to comedy on several components of immunity (Dillon, Minchoff, & Baker, 1985; Lefcourt, Davidson-Katz, & Kueneman, 1990), while also demonstrating analgesic effects (Cogan, Cogan, Waltz, & McCue, 1987). In a study examining the impact of emotion regulation behaviors, the use of humor significantly decreased negative affect and neuroendocrine responses among breast cancer survivors (Wong, 2005). However, other studies have failed to find significant expected correlations between trait measures of humor and variables such as immunity, pain tolerance, cardiovascular disease, changes in body mass, and smoking habits (Kerkkänen, Kuiper, & Martin, 2004; Martin, 2001; 2002). Researchers point to a need for more methodological rigor

(e.g., operational definitions that make a distinction between potential components of humor) and examination of potential moderators (Kuiper, Grimshaw, Leite, & Kirsh, 2004).

Thus, although some findings have been inconsistent or equivocal, findings across a number of studies have provided evidence of the potential benefits of humor on physical health in addition to psychological health. The proposed causal mechanism is widely hypothesized to be the stress-moderating effect of humor (Martin & Lefcourt, 1983), whereby health benefits of humor may be due to increased effectiveness in coping with stress through cognitive appraisal or increased tolerance/acceptance of negative emotions (Kuiper et al., 1993). This adaptive appraisal-focused coping strategy is analogous to positive reinterpretation (i.e., reappraisal; Dixon, 1980). From a stress-moderating viewpoint, both reappraisal and tolerability of negative emotion are thought to be associated with a humorous outlook on life.

The conceptualization of humor as a stress moderator has been supported by numerous findings. For example, a seminal early series of studies showed that humor reduces the negative impact of life stressors on mood (Martin & Lefcourt, 1983). Subjects with higher scores on several humor measures (i.e., the Coping Humor Scale [CHS; Martin & Lefcourt, 1983], Situational Humor Response Questionnaire [SHRQ; Martin & Lefcourt, 1981], and Sense of Humor Questionnaire [SHQ; Svebak, 1974]) evidenced a weaker relation between negative life events and depressed moods than did those with lower reported sense-of-humor scores. Several additional studies have replicated and lent support to the stress-buffering role of humor (e.g., Cohen & Wills, 1985; Martin, 2002; Martin, Kuiper, Olinger, & Dance, 1993; Newman & Stone, 1996; Nezu, Nezu, & Blissett, 1988). To further the research on the stress-moderating effects of humor, the specific processes involved in the use of humor as a moderator of stress should be examined (i.e., *how* does humor function as a coping process?). Examination of such processes

may help determine the kinds of stressors with which humor is most effective and the particular aspects of humor that are most effective in moderating stress (e.g., effects of certain styles or types of humor, or making use of humor as a means of coping).

## **CHAPTER TWO: HUMOR & EMOTION REGULATION**

Over the past few decades, research on emotion regulation has increased to the extent that that it is one of the fastest growing areas of research within psychology (Koole, 2009). Although definitions of emotion regulation vary, one central perspective describes emotion regulation as the activation of a goal to modify the magnitude, duration, or tolerability of the emotional response (i.e., how intense the emotion is, how long it lasts, and – if not immediately modified – how tolerable it is; Gross, Sheppes, & Urry, 2011). Attempts to regulate affective responses have the potential to mitigate the direct negative impact of affective states on crucial resources (e.g., cognitive resources) that in turn may play an indirect role in physical and mental health outcomes (DeSteno, Gross, & Kubzansky, 2013). Researchers who have focused on coping processes have defined coping as “efforts to manage demands that tax or exceed our resources” (Lazarus, 1966, p.34). Deficits in emotion regulation skills (including coping deficits) have been shown to lead to difficulties in the monitoring, evaluation, and modification of emotional reactions that may thwart the accomplishment of one’s goals, especially in situations that tax resources (Thompson, 1994).

More than half of the Axis I disorders (i.e., those that are classified as non-substance related) and all of the Axis II personality disorders directly involve some form of emotion dysregulation based on the listed symptom criteria (American Psychiatric Association, 2000), highlighting emotion dysregulation’s prominence in mental health and illness. In addition,

psychopathological theories that highlight the function of problem behaviors rather than symptom picture include emotion regulation as a unifying function (Gratz & Roemer, 2004). Thus, although not listed in the diagnostic criteria, emotion dysregulation may be involved in substance-related disorders and other disorders that involve dysregulated behaviors (e.g., impulse control disorders). As such, deficits in emotion-regulation skills have been shown to play a role in a broad range of psychopathology, including posttraumatic stress disorder (Cloitre, 1988; Ehring & Quack, 2010; Tull, Barrett, McMillan, & Roemer, 2007), attention-deficit hyperactivity disorder (ADHD; Walcott & Landau, 2004), anxiety disorders (Feldner, Zvolensky, & Leen-Feldner, 2004; Mennin, Heimberg, Turk, & Fresco, 2002; Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006), depression (Silk, Steinberg, & Morris, 2003; Williams, Fernandez-Berrocal, Extremera, Ramos-Diaz, & Joiner, 2004), eating disorders (Bydlowski, Jeammet, Paterniti, Berthoz, Laurier, Chambry, Consoli, & Silla, 2005), substance abuse (Fox, Hong, & Sinha, 2008; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996), and borderline personality disorder (Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006).

Utilization of maladaptive emotion regulatory strategies (i.e., rumination, suppression, and avoidance) is also predictive of psychopathological symptoms of depression and anxiety (Aldao & Nolen-Hoeksema, 2012). In addition, aggression and violence toward others may serve an emotion regulatory function, which is consistent with findings in the areas of intimate partner violence and other types of aggressive responding (Bushman, Baumeister, & Phillips, 2001; Jakupcak, Lisak, & Roemer, 2002). Consistently, self-directed aggression, or self-harm, appears to serve a similar affect regulatory function (Briere & Gil, 1998). Both self-report and biological studies on the function of self-harming behaviors (e.g., cutting or non-suicidal self-injury) have found that such behaviors serve to regulate difficult emotions (Briere & Gil, 1998; Haines,

Williams, Brain, & Wilson, 1995; Michel, Valach, & Waeber, 1994; Slee, Arensman, Garnefski, & Spinhoven, 2007).

As a result of its trans-diagnostic status, emotion regulation has become a central focus in this growing area of research (Aldao, & Nolen-Hoeksema, 2010). Research across this range of disorders reflects the efficacy and feasibility of implementing emotion regulation strategies to counteract negative processes that may increase rates of developing psychopathology (Aldao, Nolen-Hoeksema, & Schweizer, 2010). However, the diversity of emotion regulatory processes can result in a lack of conceptual clarity. Additionally, lack of a consistent conceptualization of emotion regulation has contributed to an incomplete picture across research studies. Thus, when studying emotion regulation, it is important to maintain a specific focus (i.e., examining aspects that are amenable to empirical study) without minimizing its inherent complexity.

### **Conceptualization of Emotion Regulation**

The need for more comprehensive and integrative measures of emotion regulation led to the development and validation of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). Since its development, the DERS has been recognized as a popular multidimensional self-report measure (Bardeen, Fergus, & Orcutt, 2012). Although other emotion regulation measures have been created (including the Negative Mood Regulation Scale [NMR; Catanzaro & Mearns, 1990] and the Trait Meta-Mood Scale [TMMS; Salovey, Mayer, Goldman, Turvey, & Palfai, 1995]), the DERS provides the most comprehensive validated measure of emotion regulation skills and has been utilized in numerous studies (e.g., Iverson, Follette, Pistorello, & Fruzzetti, 2012; Perez, Venta, Garnaat, & Sharp, 2012; Schramm, Venta, & Sharp, 2013; Vasilev, Crowell, Beauchaine, Mead, & Gatzke-Kopp, 2009).

The items of the DERS reflect four main dimensions of emotion regulation: 1) awareness and understanding of emotions, 2) acceptance of emotions, 3) ability to engage in goal-directed behavior and refrain from impulsive behavior when experiencing negative emotions and, 4) access to adaptive emotion regulation strategies perceived as effective. Confirmatory factor analysis and several subsequent studies have confirmed the factor structure. Factors of the DERS include: 1) Non-acceptance of Emotional Responses (NONACCEPT), reflecting a tendency to have negative secondary responses to negative emotions, or non-accepting reactions to one's distress; 2) Difficulties Engaging in Goal-Directed Behavior (GOALS), reflecting difficulties concentrating and accomplishing tasks when experiencing negative emotions; 3) Impulse Control Difficulties (IMPULSE), reflecting difficulties maintaining control of behavior when experiencing negative emotions; 4) Lack of Emotional Awareness (AWARENESS), reflecting the tendency to have difficulties acknowledging emotions; 5) Limited Access to Emotion Regulation Strategies (STRATEGIES), reflecting the belief that there is little that can be done to modify and regulate emotions effectively once the individual becomes upset by distressing stimuli; and 6) Lack of Emotional Clarity (CLARITY), reflecting the extent to which individuals know the emotions they are experiencing. The measure yields a total score (SUM) as well as the scores on the six subscales.

### **Humor as an Emotion-Regulation Skill**

Research in the field of emotion regulation suggests that the most effective way to understand the functionality is to emphasize the monitoring, evaluation, modification and/or acceptance that occurs in emotion regulation – as well as whether adaptive or maladaptive emotion regulatory strategies are used (Thompson & Calkins, 1996). This focus on monitoring, evaluation, and modification/acceptance often involves the changes in appraisals that give rise to

different emotions (Gross, 2001). In this conceptualization, positive reappraisal can be considered a form of coping, with the goal of reducing emotion dysregulation by modifying emotions and/or modifying the perceived tolerability of the situation. For those emotions and perceptions that cannot be immediately modified, the ability to accept and tolerate the emotions would be another form of emotion regulation.

These conceptualizations of emotion regulation emphasizing the ability to accept and modify affective responses point to the role of humor as a potential emotion regulatory strategy. Thus, humor could be considered a potential skill as conceptualized in the DERS STRATEGIES factor. In individuals with the self-reported ability to engage in adaptive strategies to modify or regulate emotions effectively in the face of distressing stimuli, humor could operate as an effective regulatory strategy. The benefit of humor as an emotion-regulating mechanism may result when humorous reappraisals influence changes in affect. Such cognitive reappraisals produced by humor may function as a means of distancing oneself from the stressful nature of an event and also facilitating attempts to view stressful events or situations from alternative perspectives (Dixon, 1980). In addition, humor may also facilitate the acceptance of negative emotions that cannot be immediately modified (and thus would be expected to be negatively correlated to the NONACCEPT factor on the DERS). The skill of accepting/tolerating negative emotions has been shown to be beneficial to mental health regardless of whether it facilitates modification of emotions (Berking, Poppe, Luhmann, Wupperman, Jaggi, & Seifritz, 2012). Utilization of humor may alleviate the tendency to have negative secondary responses to one's negative emotions or non-accepting reactions to one's distress. Thus, humor may serve both as a means of initially minimizing aversive situations (e.g., through the skill of *acceptance* of the emotion) as well as coping with consequences of the event (e.g., utilizing humor as an emotion-

modification strategy through reappraisal of the distressing situation or reaction). In addition, humor may help with acceptance of emotions that cannot quickly be modified despite attempts at doing so. Therefore, humor may play its role in promoting and maintaining mental health by contributing to the ability to regulate emotions (Gross & Munoz, 1995).

### **Mechanisms of Humor in Emotion-Regulation**

The emotion-regulation strategy of reappraisal operates to change how one interprets events and reactions in order to change the way one responds emotionally (Giuliani, McRae, & Gross, 2008). Reappraisal has been shown to effectively minimize the impact of a negative event or situation. Thus, one way that individuals may utilize reappraisal as an emotion regulation strategy is through engagement in humor during trying times. This is in line with the *Diagnostic and Statistical Manual of the American Psychiatric Association (DSM-IV-TR)* definition of humor as a coping mechanism, whereby “the individual deals with emotional conflict or external stressors by emphasizing the amusing or ironic aspects of the conflict or stressor” (American Psychiatric Association, 2000, p. 812). Therefore, by this definition, humor can be viewed as operating as one form of cognitive reappraisal in the face of stress.

One aim in using emotion regulation strategies in the face of a distressing situation is to make the moment more tolerable, which in turn leads to a reduction in the experience of negative affect (Kuiper, McKenzie, & Belanger, 1995). Sense of humor is a relevant individual difference because of its relationship to appraisals of challenge in lieu of threat or in the face of distress. Restricting a situation so that it is less threatening simultaneously results in a release of emotion associated with the perceived threat (Dixon, 1980) and a reduction in physiological arousal (Shurcliff, 1968). The amount of subjective stress experienced depends upon the individual’s

cognitive appraisal of events and the ability to cope (i.e., the end result of the individual's transaction with the environment; Lazarus, 1966).

Based on research on humor as a coping strategy, some authors have asserted that humorous reappraisals go further than traditional cognitive reappraisal. That is, the humorous reappraisals tend to help individuals to reinterpret situations in more absurd ways, creating an even *greater* change of perspective whereas more simple cognitive reappraisals help individuals to reinterpret situations purely by focusing on positive long-term outcomes (Samson & Gross, 2014). Such lines of research also indicate how stimuli that posed greater cognitive demands (i.e., humor) than less demanding stimuli were shown to be more effective in regulation of negative emotions in particular (Strick et al., 2009).

A number of studies have evidenced support for the role of humor as an adaptive emotion regulation strategy (Abel, 2002; Gross, 2001; Guiliani, McRae, & Gross, 2008; Kuiper, Martin, & Olinger, 1993; Lehman, Burke, Martin, Sultan, & Czech, 2001; Samson & Gross, 2012; Samson & Gross, 2014). For example, even in the absence of conscious regulatory efforts, individuals experienced the same physical and experiential consequences of humor (i.e., autonomic physiology of amusement, facial behavior such as smiles and laughs, and reported experience of positive emotion) when they were able to identify a potentially amusing aspect of a stressful situation and reappraise accordingly (Guiliani et al., 2008). In one study, when individuals rated as more humorous were compared to their less-humorous peers, the more-humorous individuals were more effective at coping with a difficult exam scenario through their ability to make more benign reappraisals of stressors – even though no instructions to use humor were provided (Kuiper et al., 1993). In another study, a significant relationship was found between high sense of humor and likelihood of reappraising stressful situations by positively

reinterpreting the situations for meaning to aid in personal growth (Abel, 2002). Further, individuals who produced a higher quantity of humorous narratives were shown to modulate stress more effectively (Lehman et al., 2001). Thus, the stress-moderating effects of humor may operate, at least in part, through emotion regulation strategies such as reappraisal of environmental information – which may also facilitate greater acceptance of emotions.

The conceptualization of humor as an emotion-regulation skill (with an emphasis on the skills of “strategies” and “acceptance”) share similarities with various theoretical orientations and techniques advocated in treatment approaches. Psychodynamic conceptualizations of humor postulate the defensive function of humor and point to humor as one of the more mature, adaptive defense mechanisms that operate as a positive coping strategy (Vaillant, 2000). Defenses at the mature, adaptive level usually maximize gratification and allow for more conscious awareness of feelings, ideas, and their consequences. Although humor may appear to reflect denial and dissociation, it is thought to help shift the body’s autonomic sympathetic agitation to parasympathetic calm in a manner similar to meditation (Vaillant, 2011). Freud (1928) posited humor as a powerful antidote to negative emotions and regarded humor as the highest of defensive functions (Freud, 1905). Freud pointed to a savings of emotional energy whereby humor spares individuals the emotions that aversive situations can provoke and “overrides with a jest the possibility of such an emotional display” (1959, p. 216). In addition, Gordon Allport asserted that individuals who can laugh at themselves may be on the way to self-management and perhaps to cure (Allport, 1950). Existential psychologist Rollo May has stated that humor functions as a “healthy way of feeling a ‘distance’ between one’s self and the problem, a way of standing off and looking at one’s problem with perspective” (May, 1953, p. 61).

Perspective-taking humor has thus been proffered as a form of emotion-focused coping technique designed to momentarily distance oneself to gain perspective of negative experiences. This is thought to be accomplished by taking either oneself or one's experience (or both) less seriously, leading to a reduction in emotional reactions to threatening situations (May, 1953; Freud 1959). According to a perspective-taking view, the beneficial effects of humors are produced by means of cognitive shifts and corresponding changes in affective quality (Lefcourt, Davidson, Shepherd, Phillips, Prkachin, & Mills, 1995). This shift in perspective is believed to then lead to reductions in more paralyzing negative emotions (Dixon, 1980). Humor should be most effective in the reduction of negative emotions when it matches the stressor, allowing for flexible strategies to regulate the stressor. Thus, perspective-taking may serve to facilitate flexible emotion regulation strategies (such as reappraisal) and acceptance of negative emotions or stressors.

The perspective-taking view of humor is similar to the mindfulness construct of decentering, which mindfulness-based approaches describe as the ability to "step back" mentally from a situation to become more-fully aware of the situation as well as alternate ways of interpreting and responding (Teasdale, Moore, Hayhurst, Pope, Williams, & Segal, 2002; Wupperman, Fickling, Klemanski, Berking, & Whitman, 2013; Wupperman, Neumann, & Axelrod, 2008). Theoretically, this would allow for individuals to view different interpretations and reactions to a situation prior to automatically responding with habitual (potentially maladaptive) reactions. Decentering can be thought of as analogous to the "observing ego" within psychodynamic conceptualizations, whereby the capacity for self-awareness and perception of others and feelings are experienced as separate entities (Kutz, Borysenko, & Benson, 1985). Another related concept, found in Acceptance and Commitment Therapy (ACT),

is referred to as *cognitive defusion* (i.e., learning to perceive thoughts, images, emotions, and memories as what they are, not as what they appear to be; Hayes, Strosahl, & Wilson, 1999). Both decentering and defusion may enable individuals to increase their acceptance of negative emotions or otherwise increase their tolerability, in addition to possibly employing adaptive emotion regulation strategies to eventually modify emotions. Thus, sense of humor may enable individuals to cope more effectively with stress by gaining perspective and distancing themselves from stressful situations (through both active strategies and acceptance), thus allowing for enhancement of feelings of mastery and well-being in the face of adversity (Martin, 2002).

### **Emotionally Dysregulated Individuals and Therapeutic Use of Humor**

The view of humor as an adaptive coping mechanism has encouraged practicing psychologists to incorporate and advocate the use of humor in the therapeutic process (Franzini, 2001; Haig, 1986; Newirth, 2006; Reynes & Allen, 1987; Rutherford, 1994), and humor may be a potentially beneficial therapeutic tool for patients exhibiting problems with emotion regulation (Linehan, 1993; Palmer, 2002). Humor has been specifically cited as an important resource for patients with borderline personality features, whereby the therapeutic efficiency of jokes is thought to aid in the treatment of concretistic thinking, aggression, compulsion, depression, and ambivalence (Fabian, 2011). In a prospective follow-up study that assessed time-varying defenses reported by BPD individuals and an Axis II comparison group, humor was found to predict shorter times to recovery, with an 18% change of recovery for each 1-point increase in scores on humor as measured on the Defense Style Questionnaire (Zanarini, Frankenburg, & Fitzmaurice, 2013). The authors suggest that humor may function to allow more flexible and mature psychosocial adjustment in addition to requiring a well-functioning observing ego.

Irreverent humor is a specific type of humor that originates from a genuine appreciation for the absurdity of human attempts to tolerate and even make meaning of our mortal condition. Rather, irreverence is grounded in truth that individuals dare to acknowledge in themselves and others. It is a type of humor that allows for a safe way to explore verboten topics and for challenging supposedly sacred topics, without tearing them down in reality. In Dialectical Behavior Therapy (DBT) irreverence is one communication strategy that can be employed (Linehan, 1993). Irreverence may serve to gain the clients' attention, shift their emotional response, or present a different perspective (Linehan, 1993).

### **CHAPTER THREE: ADAPTIVE AND MALADAPTIVE USES OF HUMOR**

Certain theoretical orientations and approaches suggest that life difficulties (frustrations, loss, trauma, etc.) have the potential to promote growth, as such experiences may alert individuals to reality and promote development of mental capacity in order to better manage oneself (Calhoun & Tedeschi, 1998; Freud, 1911; Padesky & Mooney, 2012). In the face of adversity, humor may be viewed as a key method in managing negative affect that arises throughout the course of individual lives. However, the successful management of negative affect through the use of humor may be at least somewhat dependent on whether adaptive or maladaptive forms of humor are utilized. In psychodynamic conceptualizations, humor is cited as being used developmentally and/or defensively to manage feelings of inadequacy or lack of worth resulting from humiliation and shame (i.e., narcissistic injury; Britton, 2003).

It has been further suggested that the different types of humor that individuals utilize to manage their affective experience of narcissistic injury produce very different outcomes and effects (Barwick, 2012). Humor's management of affect may result at best in personal and social

development and at worst in oppression and persecution, affecting both intrapsychic and interpersonal relations. Specifically, *reflective*, *deflective*, and *projective* types of humor are cited as differing in their capacity to see oneself through the lens of humor in an attempt to celebrate, tolerate, and transform what one sees when required to do so. In reflective humor, individuals are thought to be able to witness or adopt an attitude that has enough distance to observe but not excessive distance that no longer allows affective participation. Thus, rather than resorting to withdrawal (analogous to cynicism), a positive use of reflective humor may instead give rise to a self-reflective ego. In deflective humor, distressing affect and the content of the idea connected to it are thought to be a conscious focus of attention with the aim of transforming negative affect into neutral affect or pleasure. It is thus seen as the antithesis of repression. As with all comic interventions, however, timing is crucial and determines whether difficult affect is deflected and internalized as a developmental resource (persevering in the face of adversity) or as a defensive recourse (unconscious and involuntary turning away from intolerable affect). Deflective humor is thought to be utilized as a way of managing difficult affect aroused by extreme pain or mortal danger through distraction and self-empowerment (e.g., combatants/POWs, concentration camp detainees) sometimes referred to as ‘gallows humor.’ However, sustained and relentless use of deflective humor may lead, over time, to significant desensitization where tragic perceptions are no longer tempered by humor. In projective humor, similar to deflective humor, there can be temporary relief from disturbing affect through accepting policy and introducing the blatantly absurd to undermine it. However, when unchallenged and unchecked, projective humor is thought to result in others being reduced to caricatures or stereotypes, at the risk of considering others as less than human and treating them as such.

In a recent exploratory descriptive study on humor use among HIV service providers, the forms and functions of adaptive and maladaptive humor were identified (Kosenko & Rintamaki, 2010). This study was aimed at examining coping humor in the face of increased adversity (i.e., work-related stress within the unique environment of HIV care). While multiple participants described humor as an essential component of human service work, they also acknowledged the presence of both adaptive and maladaptive uses of humor citing their observations of differential effects. In particular, adaptive functions of humor identified included *boosting morale* (i.e., maintaining a positive attitude that led to a sense of solidarity and unity) and *reducing tension* (i.e., alleviating stress and managing negative emotions, and defusing anxiety in difficult situations and conversations). In contrast, maladaptive functions of humor identified included *masking pain* (i.e., preempting emotional processing or support), *distracting attention* (i.e., impairing productivity and losing perspective), and *alienating certain groups* (i.e., ostracizing others through use of inappropriate or offensive humor). It thus appears that the adaptive forms of humor operate as a stress-buffer whereas the maladaptive forms of humor may undermine the effectiveness of humorous coping for this population.

#### **CHAPTER FOUR: HUMOR STYLES**

Based on the recognition that humor is a multifaceted construct consisting of both adaptive and maladaptive components (Besser, Luyten, & Mayes, 2012; Kuiper, 2012; Kuiper et al., 2004; Kuiper & Martin, 1998; Zeigler-Hill et al., 2013), there is a need for researchers to identify the specific components of humor that may have either a facilitative or detrimental impact on psychological well-being. The multidimensional construct of humor has been cited in a number of studies (Kuiper et al., 2004; Martin, 2002; Thorson et al, 1997). Sense of humor can

be viewed as a habitual behavior pattern, an attitude, a coping strategy, an aesthetic response, or ability (Edwards & Martin, 2010).

In the past several decades, researchers have utilized a number of self-report measures that focus on aspects of humor considered to be germane to psychological well-being. Studies relying on such measures assess the degree to which individuals notice and enjoy humor (Sense of Humor Questionnaire; Svebak, 1974), the degree to which individuals smile and laugh in a variety of situations (Situational Humor Response Questionnaire; Martin & Lefcourt, 1984), or the use of humor as a means of coping with stressful events (Coping Humor Scale; Martin & Lefcourt, 1983). More recently, however, researchers have questioned the degree to which such measures adequately assess physical- and mental-health relevant dimensions of humor. As mentioned previously, evidence for relationships between self-report humor measures and physical health indicators such as immunity and pain tolerance has not been entirely consistent (Martin, 2001; 2002). Further, although several studies have supported the stress-moderating effects of humor (e.g., Martin & Lefcourt, 1983), they have not always been replicable (e.g., Porterfield, 1987).

Based on the need to more adequately measure the multidimensional construct of humor, the Humor Styles Questionnaire was developed (HSQ; Humor Style Questionnaire (HSQ; Martin, Puhlik-Doris, Larsen, Gray, & Weir, 2003). The HSQ assesses four dimensions related to individual differences in uses of humor in everyday life (i.e., experience and expression of humor). The measure makes a distinction between humor styles that may be more adaptive or more maladaptive. The two dimensions that have been shown to be more conducive to psychosocial well-being are identified as the Self-Enhancing and Affiliative humor styles. Self-Enhancing humor is the style of humor that generally serves as a coping mechanism for stress,

and is related to taking things lightly and having a generally humorous outlook on life (e.g., “If I am depressed I can usually cheer myself up with humor”). Affiliative humor is a positive, non-hostile style of humor used to reduce social tensions and smooth relationships (e.g., “I laugh and joke a lot with my friends”). The two dimensions that may be less benign and potentially deleterious to well-being are identified as the Aggressive and Self-Defeating humor styles. Aggressive humor is a style of humor used to establish dominance or relieve frustration in social situations through expressions typified by sarcasm or ridicule (e.g., “If I don’t like someone, I often use humor or teasing to put them down”). Self-Defeating humor is a style expressed by self-deprecation and encouraging jokes at one’s expense, with underlying emotional neediness, insecurity, and avoidance (e.g., “I let people laugh at me or make fun at my expense more than I should”).

Another distinction in this model has to do with whether humor is used to enhance the self (intrapyschic) or one’s relationships to others (interpersonal). Self-Enhancing humor includes notions of humor as a method of coping with stress or adaptive form of defense in ways that are non-detrimental to the self. In contrast, Self-Defeating humor involves attempts to ingratiate oneself as a form of defensive denial. Affiliative humor serves to increase one’s attractiveness to the other, creating an atmosphere of enjoyment and feelings of attachment. In contrast, Aggressive humor involves intentions of belittling others in a hostile manner, albeit it under the guise of fun. The maladaptive humor styles are thus distinctive due to negative effects both intrapsychically and interpersonally. Used excessively, Self-Defeating humor is seen as potentially detrimental to well-being, since it involves denigration of the self and repression of one’s own emotional needs. Used excessively, the Aggressive style of humor is seen as potentially detrimental to well-being, since it involves use of dominance to avoid and detach

from emotions, while also tending to alienate others. Also of note, in relation to this multidimensional model of humor that includes dimensions formerly not included in humor or defense measures, the adaptive dimensions of humor would be considered mature defenses whereas the maladaptive dimensions of humor would be considered immature defenses.

In the development of the HSQ, a series of validation studies were conducted to examine the relationship between the different styles of humor and psychological well-being. Consistently, data indicate that the four humor styles of the HSQ make independent contributions in the prediction of various aspects of psychological well-being and social relatedness (as assessed on a number of self-report measures). Specifically, the Affiliative humor style was positively correlated with cheerfulness, self-esteem, and social intimacy – and negatively correlated with depression, anxiety, seriousness, and bad mood. The Self-Enhancing humor style was positively correlated with cheerfulness, self-esteem, optimism, satisfaction with social support, and agency – and negatively correlated with depression, anxiety, and bad mood. The Aggressive humor style was positively correlated with measures of hostility and aggression and negatively correlated with seriousness. Finally, the Self-Defeating humor style was positively correlated with depression, anxiety, hostility, aggression, bad mood, and psychiatric symptoms – and negatively related to self-esteem, intimacy, and satisfaction with social supports (Martin et al., 2003; Vaughan, Zeigler-Hill, & Arnau, 2014).

Beyond the validation data, other studies have utilized the HSQ and found support for adaptive and maladaptive humor styles in the predicted directions. Adaptive styles have been shown to correlate positively with various measures of well-being, self-control, emotionality, and sociability, with maladaptive styles correlating negatively (Vernon, Villani, Schermer, Kirilovic, Martin, Petrides, Spector, & Cherkas, 2009). In a study on adult attachment and distress,

attachment anxiety and attachment avoidance were positively related to the use of maladaptive humor styles, and the use of adaptive humor was associated with lower levels of distress (Besser, et al., 2012). Further, adaptive styles have been shown to moderate the relationship of perceived burdensomeness and thwarted belongingness to suicidal ideation (Tucker, Wingate, O'Keefe, Sligh, Judah, & Rhoades-Kerswill, 2013). In addition, the specific use of Self-Enhancing humor style was associated with higher levels of happiness, hope and optimism; whereas greater use of Self-Defeating humor was related to decreased levels of these same qualities (Cann & Etzel, 2008). Finally, an examination of adolescents found that adaptive humor styles were negatively correlated with depressive symptoms and positively correlated with personal adjustment, whereas maladaptive styles evidenced the opposite pattern (Erickson and Feldstein, 2007).

One study specifically examined forms of narcissism (grandiose and vulnerable) and humor styles. Results showed that grandiose narcissism was positively associated with adaptive humor styles, whereas vulnerable narcissism was negatively associated with adaptive humor styles and positively associated with maladaptive humor styles. Thus, individuals with high levels of grandiose narcissism were found to use humor in a benign fashion that allowed them to enhance both themselves and others (Self-Enhancing and Affiliative). In contrast, individuals with high levels of vulnerable narcissism were found to not only refrain from using humor benignly but also to use humor in ways that caused injury to both themselves (Self-Defeating) and others (Aggressive). In a second study, findings indicated that humor styles mediated the association between vulnerable narcissism and perceived stress, with use of maladaptive styles correlating with higher levels of perceived stress (Besser & Zeigler-Hill, 2011).

In a study that examined how humor creation ability (HCA) is related to differences in humor styles and psychological well-being, it was found that humor creation ability [as assessed

by the Frustrating Situation Humor Creation Task (FSHCT) and a Cartoon Caption Task (CCT)] was significantly and positively correlated with all four humor styles (i.e., regardless of whether individuals were found to use humor in beneficial or deleterious ways; Edwards & Martin, 2010). Findings were also consistent with previous HSQ research demonstrating that adaptive humor styles (both Self-Enhancing and Affiliative) negatively correlated with depression, anxiety, and stress; and Self-Enhancing style was significantly positively correlated with self-esteem, optimism, and life satisfaction. Also, the maladaptive humor styles (Aggressive and Self-Defeating) positively correlated with anxiety and depression and negatively correlated with self-esteem and optimism; and Aggressive style also positively correlated with stress. The overall finding suggests that the different ways in which humor creation is used in daily life may be more important for well-being than would simply the ability to create humor. It follows that placing emphasis on how individuals use humor – while specifically increasing their use of beneficial humor styles and potentially decreasing their use of detrimental styles – may maximize mental health gains.

Despite the strength of the HSQ findings, these studies have been correlational and based on various self-report measures. To address this limitation, one study used an experimental manipulation to investigate the effects of positive (i.e., good-natured) humor and negative (i.e., mean-spirited) humor on regulating negative emotion (Samson & Gross, 2012). [It should be noted that the positive and negative humor types in the Samson and Gross study are consistent with the adaptive and maladaptive forms of humor in the HSQ studies. Although the existing research has not unequivocally determined whether adaptive and maladaptive forms of humor are beneficial or harmful, this is the terminology used in the literature to date. Thus, for the purposes of the current study, the terms adaptive and maladaptive will be used so as to be

consistent with existing literature and to avoid confusion by the reader.] In the study, participants were asked to rate their emotional responses to a series of negative stimuli pictures selected from the International Affective Picture System (IAPS; Lang, Bradley, & Cuthbert, 1995). Participants then viewed and rated the pictures a second time after instructions to either use positive humor (i.e., “Use positive, benevolent humor to reappraise the image, avoid hostile humor, and try to see the absurdity of the situation or focus on the imperfections of life”), use negative humor (i.e., “Use negative, hostile, sarcastic, or disparaging humor in order to create an emotional distance”), or simply view the images.

Results revealed a main effect of condition for positive emotion, with both positive and negative humor leading to significantly greater increases in positive emotion than the neutral condition. Further, positive and negative humor differed significantly, with positive humor being more effective at increasing positive emotion than negative humor. In addition, a main effect of condition was also found for negative emotion, with both positive and negative humor leading to significantly greater decreases in negative emotion than the neutral condition. Further, positive and negative humor again differed significantly, with positive humor being more effective at reducing negative emotion. These findings are in line with the idea that humor can be effective in reinterpreting (and perhaps increasing acceptance of) negative stimuli – with particularly strong effects for positive humor. It should be noted, however, that this experimental design utilized distressing visual stimuli only and did not incorporate personally relevant stimuli.

Based on their results, the authors suggest that the mechanisms of positive and negative humor differ, and further suggest that positive humor is more closely related to reappraisal of the situation. In contrast, the use of negative humor may create criticism, emotional detaching, and avoidance, without allowing for individuals to reappraise a negative event and/or accept the

experience of a related negative emotion (Samson & Gross, 2012). This detaching is in contrast to the distancing discussed in the perspective-taking approach, which is the ability to pause before reacting and view the situation from the bigger picture – instead of detaching and avoiding. These explanations are also in line with the previous discussion of psychodynamic conceptualizations of humor forms, suggesting they may exert both adaptive and maladaptive effects.

Of note, even though positive humor showed greater effects than negative humor, negative humor did increase positive emotion and decrease negative emotion greater than did the neutral comparison group. Taken together, results suggest that both positive and negative forms of humor may attenuate negative affect in the short-term when more immediate effects are being measured. However, in the long-term (or when used excessively) the use of negative forms of humor may ultimately be detrimental or result in the higher levels of psychopathology found in the HSQ studies. Consequently, negative humor may serve the function of detachment or avoidance of emotions, which provides short-term relief from distress, but which tends to maintain or even increase distress over time (Barwick, 2012; Martin et al., 2003). Therefore, measurement of in-the-moment changes in positive and negative emotion may represent consequences of a more state-based approach, whereas measurement from a more trait-based approach appears to assess long-term consequences of more-stable humor styles. Further research is needed to gain a greater understanding of the effects of humor styles on regulating emotions in the moment and over time.

## CHAPTER FIVE: SUMMARY

Humor has long been considered to be an effective means of coping with negative or distressing events, situations, and emotions; however, the view of humor as a potentially adaptive mechanism has preceded most formal investigations of the function of humor in individual lives. Due to the prevalence of emotion regulatory difficulties recognized across many forms of psychopathology, research has recently begun to focus on humor as a potential emotion regulation strategy. In particular, research suggests that humor may function as a stress-moderator (Cohen & Wills, 1985; Martin, 2002; Martin et al., 1993; Newman & Stone, 1996; Nezu et al., 1988) and may further allow individuals to briefly distance from conditioned responses to distressing events and instead engage in perspective-taking and/or cognitive reappraisal (Dixon, 1980; Kuiper et al, 1993; Kuiper et al., 1995; Lefcourt et al., 1995; Martin & Lefcourt, 1983). Humor may also function to allow individuals to better tolerate negative emotions through acceptance. Hence, the conceptualization of emotion regulation as the ability to accept and modify affective responses would be in line with humor functioning as an emotion regulatory strategy.

Despite the general consensus that humor is an effective coping strategy, the empirical literature on the mechanism by which it exerts its effects remains inconclusive. In order to increase understanding of the effects of humor, researchers have recently begun examining whether different components of humor are potentially more adaptive or maladaptive (Besser & Zeigler-Hill, 2011; Cann & Etzel, 2008; Edwards & Martin, 2010; Erickson & Feldstein, 2007; Martin et al., 2003; Samson & Gross, 2012; Tucker et al., 2013). Growing research suggests that adaptive or positive forms of humor (i.e., good-natured, benevolent, tolerant) and maladaptive or negative forms of humor (i.e., hostile, sarcastic, disparaging) may operate to either exert

beneficial or adverse effects on psychological health, respectively (Besser et al., 2012; Kuiper et al., 2004; Kuiper, 2012; Martin et al., 2003; Tucker et al., 2013; Vernon et al., 2009; Zeigler-Hill et al., 2013). The underlying mechanisms of forms of humor appear to differ, in that positive/adaptive humor may operate through adaptive emotion regulation strategies of reappraisal and acceptance, whereas negative/maladaptive humor may serve as an attempt to regulate emotions through judgmental emotional detachment and avoidance. Correspondingly, positive/adaptive humor styles have been found to be generally related to psychological well-being and negative/maladaptive humor styles have been found to be generally related to psychopathology. However, considering that research on humor styles has not always shown results in predicted ways (i.e., support shown for one style but not the other in the expected direction), the mechanisms by which humor styles affect psychological well-being may be more nuanced than originally conceived.

In general, the literature seems to point to a positive relationship between adaptive humor and psychological well-being, and a negative relationship between maladaptive humor and psychological well-being. However, in at least one experimental study to date, the use of positive /adaptive and negative /maladaptive humor both led to greater increases in positive and greater decreases in negative emotions than did a neutral condition with no humor (Samson & Gross, 2012). This result may be due to the differential effects of humor in the short-term versus the long-term.

The existing findings that demonstrate how humor can play an emotion-regulatory role in shaping affective responses to negative situations are promising. However, a number of limitations remain. Most previous investigations have been primarily correlational or else have not attempted to make a distinction between differential components of humor. Studies that

incorporate experiential designs to examine in-the-moment changes in affect and also incorporate differential effects of humor styles are very limited. In addition, no studies have incorporated humor styles and an experimental design while also utilizing personally relevant stimuli. Studies that utilize personally relevant stimuli and/or stimuli that incorporate an interpersonal component may represent more adequate examinations of how individuals use humor in their own lives. Finally, there also remains a need to investigate how or whether humor styles correlate in the expected direction with established measures of emotion regulation (i.e., examination of the relationship between more trait-based measures of humor styles and emotion regulation skills). Given the endurance and popularity of the idea that humor is beneficial to mental health and the potential implications of its effects, careful and rigorous investigations are warranted.

## **CHAPTER SIX: STUDY OVERVIEW**

The current study investigated the role of humor as an emotion regulation strategy after experiencing personally relevant distressing stimuli. Specifically, this study aimed to examine the effects of adaptive and maladaptive humor on ratings of positive and negative emotions. This study also explored the relationship of trait-based humor styles to trait-based emotion-regulation skills. Finally, exploratory analyses examined the potential relationship between humor styles and the emotion-regulation sub-scales of strategies and tolerance/acceptance.

The hypotheses and research questions for the current study are as follows:

Hypothesis 1) The humor conditions (i.e., both adaptive and maladaptive humor) will display significantly greater increases in positive emotion than will the distraction condition.

Hypothesis 1a) Individuals in the adaptive humor condition will display significantly greater increases in positive emotion than those in the maladaptive humor condition.

Hypothesis 2) The humor conditions (i.e., both adaptive and maladaptive humor) will display significantly greater reductions in negative emotion compared to the distraction condition.

Hypothesis 2a) Individuals in the adaptive humor condition will display significantly greater reductions in negative emotion than those in the maladaptive humor condition.

Hypothesis 3) The combined adaptive humor styles (Self-Enhancing and Affiliative) will be inversely correlated with difficulties in emotion regulation (DERS total score).

Hypothesis 3a) The combined maladaptive humor styles (Self-Defeating and Aggressive) will be positively correlated with difficulties in emotion regulation (DERS total score).

Research Question 1) What is the relationship between humor styles and adaptive emotion regulation strategies (such as reappraisal; DERS STRATEGY sub-scale)?

Research Question 2) What is the relationship between humor styles and the emotion regulation skill of acceptance (DERS ACCEPT sub-scale)?

Most previous research has utilized correlational methodology to assess the effects of humor styles; and the limited experimental research utilized generic stimuli (IAPS) to evoke negative emotions. In addition, despite the widespread belief that humor may serve as an emotion-regulation strategy, no previous research has investigated the relationship of humor styles to established measures of emotion regulation skills. The current study addressed these limitations in multiple ways. First, the study involved an experimental manipulation of humor

generation (i.e., the emotion regulation tasks) to evaluate the effectiveness of differential types of humor in down-regulating negative emotion and up-regulating positive emotion. Thus, the design allows for measurement of positive and negative emotion experienced at the time of the study rather than retrospectively. Second, this study furthered a previous experimental design of eliciting negative emotions by exposing participants to distressing stimuli that is personally relevant as opposed to generic stimuli. The writing tasks in the current study were designed to elicit personally relevant experiences by instructing participants to remember and write about recent situations in which they felt anger, loneliness, frustration, stress, and hurt/sadness – thus potentially resulting in findings that may be more generalizable to real-world situations. This study furthers the literature by being the first to investigate the effectiveness of humor styles and humor generation in regulating emotional responses to personally relevant situations. Finally, the study examined the association of humor styles with a trait-based emotion-regulation measure, thus providing additional understanding of the role of humor styles in emotion regulation.

## **CHAPTER SEVEN: METHOD**

### **Participants**

The total number of participants recruited for the study was  $N = 186$ . The participants were recruited from an inner-city college in New York City. Participants were required to be at least 18 years old in order to provide informed consent. Additional details about participant demographics is provided in the Results section.

### **Measures**

**Positive and negative emotion rating scales.** Self-report of both positive and negative emotions were assessed separately on a 0 (= *not at all*) to 6 (= *very strongly*) Likert-type rating

scale. Participants were asked the following at baseline and following each task trial: “Please rate your current level of positive emotion on the following scale...” and, “Please rate your current level of negative emotion on the following scale...” with the Likert-type rating scale following each rating instruction. This rating system follows the model utilized by Samson and Gross (2012), in which the authors assessed positive and negative emotion separately to assess whether humor style had differential effects on positive and negative emotions. Support for the use of the 0-6 rating scale of negative and positive emotion was based on previous research that has shown that the two broad factors of positive and negative activation reliably capture emotional expression (Watson, Clark, & Tellegen, 1988). Also, several studies on humor have included a measure of both positive reactions (e.g., amusement) and negative reactions (e.g., aversion) to humorous stimuli (e.g., Ruch, 1992). Similar reasoning was put forth by Samson & Gross (2012) and subsequently supported by their findings.

**The Difficulties in Emotion Regulation Scale (DERS).** The DERS (Gratz & Roemer, 2004) is a 36-item self-report questionnaire that is designed to assess multiple aspects of emotional dysregulation. Responders are asked to indicate how often each item applies to them. Example items include the following: “When I’m upset, I believe there is nothing I can do to make myself feel better,” “When I’m upset, I become irritated with myself for feeling that way.” Responses are rated on a Likert-type scale ranging from 1 (almost never, 0-10%) to 5 (almost always, 91-100%). Higher scores suggest greater problems with emotion regulation. The measure yields a total score (SUM) as well as scores on six sub-scales: 1) NON-ACCEPT (non-acceptance of emotional responses), 2) GOALS (difficulties engaging in goal-directed behavior when experiencing negative emotions), 3) IMPULSE (impulse-control difficulties when experiencing negative emotions), 4) AWARENESS (lack of emotional awareness), 5)

STRATEGIES (limited access to emotion regulation strategies), and 6), CLARITY (lack of emotional clarity). Examination of the DERS' psychometric properties revealed high internal consistency ( $\alpha = .93$  for SUM and  $\alpha > .80$  for each subscale), good test-retest reliability, and adequate construct and predictive validity (Gratz & Roemer, 2004; see Appendix A). In addition, the DERS has shown good psychometric properties across a variety of populations and studies (Harrison, Sullivan, Tchanturia, & Treasure, 2009; Salsman, & Linehan, 2012; Schramm et al., 2013; Vujanovic, Bonn-Miller, Bernstein, McKee, & Zvolensky, 2010).

**The Humor Styles Questionnaire (HSQ).** The HSQ consists of 32 items with eight items for each of the four scales (Self-Enhancing, Affiliative, Self-Defeating, and Aggressive). The HSQ is designed to assess these four dimensions relating to individual differences in uses of humor. Responders rate each item on a Likert-type scale ranging from 1 (totally disagree) to 7 (totally agree), e.g., "If I am feeling depressed I can usually cheer myself up with humor," or "If I don't like someone, I often use humor or teasing to put them down." Research has shown that the HSQ evidences good construct validity (specificity and discriminant), good reliability (internal consistency coefficients ranging from .77-.81 and test-retest correlations of .80-.85) and is an overall reliable and valid measure (see Chen & Martin, 2007; Kuiper et al., 2004; Martin et al., 2003; Martin, 2007; see Appendix B).

**Writing task.** The participants were asked to engage in a spontaneous writing task designed to induce negative emotions. Content of the written instructions for the writing task was the same across all three conditions. Participants were asked to write about times when they experienced the following negative emotions: (a) anger (specified as when they felt betrayed, cheated, disrespected, and/or treated badly); (b) loneliness (specified as when they felt like they did not fit in, felt left out or unwelcome, and/or felt isolated from friends or loved ones); (c)

frustration (specified as when they might have spent effort to obtain or achieve something but not been able to do so; been delayed or blocked from reaching a destination because of transportation issues; experienced a hassle about administrative issues, payments, or other paperwork due to other errors; and/or tried to concentrate or do something but had trouble doing so because of noise or other people); (d) stress (specified as when they may have felt like they were under a lot of pressure to succeed at difficult tasks; felt overwhelmed by all the demands on their time; felt worried and pressured by stressors in the environment and their own standards; and/or experienced a string of demands that left them feeling strained); and, (e) sad or hurt (specified as when a good friend or loved one may have moved away, a pet may have died, or when they may have felt “not good enough” or like their "heart was broken"). Participants were further instructed not to pick situations that were traumatic or caused them severe, long-term distress. It should be noted that the purpose of inducing these particular negative emotions in the participants to have them experience some negative emotion, not to have them experience each discrete emotion. That is, the actual negative emotions induced by the negative emotion prompts may vary across individuals and would not represent a confounding effect.

Participants were encouraged to imagine themselves in each situation they were asked to recall (including remembering how they felt at the time) before beginning each writing task. Participants were allowed to complete each writing task (i.e., each evocation of relevant negative emotion) at their own pace, with the instructions to write one to two paragraphs for each. Participants were allowed to proceed at their own pace on each of the writing tasks; the approximate amount of time required for each of the writing tasks was determined following the pilot study. Based on the pilot study, participants were allotted time slots of an hour-and-a-half to complete the full study (see Appendix C for Writing Task instructions).

**Humor-generation task.** The instructions for the humor-generation tasks differed based on random assignment to the three conditions. Participants were randomly assigned to one of three conditions: adaptive humor, maladaptive humor, and a distraction condition (i.e., instructed to engage in a distraction task copying neutral text). In the adaptive humor condition, participants were instructed to use light-hearted, upbeat, or compassionate humor to allow a change in perspective toward the situation (in the writing task), while avoiding hostile humor and doing their best to see the absurdity and irony of the situation or focus on the imperfections of life. In the maladaptive humor condition, participants were instructed to use sarcastic, critical, or hostile humor to allow a change in perspective toward the situation (in the writing task) in order to create an emotional detachment. Instructions in the humor conditions included a sentence telling participants that their responses do not have to actually be *funny*; they just needed to use the kind of day-to-day humor people use in routine situations. Participants in each condition were provided with examples relevant to condition to clarify what was meant by the instructions. Responses generated were recorded (i.e., written) by each participant. Participants in the distraction condition were instructed to copy text (rather than being instructed to generate humor) that was selected to be neutral in nature and take approximately the same amount of time as the tasks in the humor conditions – as determined by the pilot study (see Appendix C for the instructions for both adaptive and maladaptive humor-generation tasks as well as distraction condition).

**Demographic questionnaire.** The demographic questionnaire contained questions about each participant's gender, age, ethnicity, marital/relationship status, languages spoken and fluency level, and level of education.

## Procedure

The study was conducted in a lab room at John Jay College of Criminal Justice – CUNY. Once the approval of the Institutional Review Board (IRB) was granted, participants were recruited through Sona Systems, an online research management software offered through John Jay College. Prior to submission of the IRB proposal for the full study, a proposal was submitted for a pilot study: an abbreviated study ( $N = 40$ ) utilizing the humor conditions only (i.e., no distraction condition). The purpose of the pilot study was to assess the effectiveness of the writing task manipulation (i.e., whether negative emotions were cued by the writing tasks and whether participants were able to generate humor as instructed in response to each cue). Additionally, the results of the pilot study also determined the approximate length of time participants needed for completion of the experiment (specifically the emotion-generation writing tasks and humor-generation tasks). John Jay undergraduates were given research credit through the Research Experience Program (REP) in exchange for participation in the study. Additional recruitment was done through posted fliers advertising the study.

Block randomization to conditions was utilized, with the first condition chosen at random and first ten participants assigned to that condition (followed by 10 participants in the subsequent randomly chosen condition and then 10 participants in the remaining condition). Each subsequent block (of the three conditions) began with a randomly chosen condition and then followed the above procedures until the desired number of participants completed the experiment. This approach allowed for small-group administration. [Of note, when less than the number of participant sign-ups showed at the allotted time, participants were run until the 10 participants for that condition was met (i.e., 5 participants at one time due to lab space). This

sometimes required scheduling of individual participants or smaller groups in order to obtain data for the first block until assignment to the next randomly chosen condition].

The study packet provided to each participant included the following: informed consent form; written descriptions of the emotion-generation writing tasks and humor-generation tasks for each trial; a rating scale for both positive and negative emotion following each trial; two self-report measures; and a demographic questionnaire. The two measures included are: 1) the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), and 2) the Humor Styles Questionnaire (HSQ; Martin et al., 2003). All measures are described in detail above and are included in Appendix A and B respectively).

Participants began the study by reading and following the written instructions to complete the first emotion-generation writing task. Instructions for the humor-generation or distraction task differed depending on the condition. Participants assigned to the distraction condition were instructed to engage in the distraction task (i.e., copy verbatim the provided text). For both the adaptive and maladaptive humor conditions, prompts were provided to participants as examples of humor-generation for each emotion. Additional prompts were generated in the event that participants required supplementary examples; however, no additional prompts were needed during the study.

Participants engaged in the writing task a total of five times. After each writing task (i.e., following evocation of each negative emotion), participants were asked to rate their level of positive and negative emotion (i.e., how positive and how negative they felt in the moment), followed by a prompt to generate a humorous response (either positive or negative based on condition) to the situation described in the task. Participants were then instructed to provide

another rating of emotions and then proceed to the next writing task. Following all writing tasks, humor-generation tasks (or copying task for the distraction condition), and emotion ratings, participants completed the DERS and the HSQ measure. Finally, the participants completed the demographic questionnaire. The whole procedure took approximately one-and-a-half hours to complete on average. See Appendix C for Task Examples by condition.

Prior to the end of the administration of each condition, participants were asked to respond to a manipulation check to assess awareness of the study's hypotheses (see Appendix D). When signing up for the study, participants were told that they would be required to stay for the full amount of time listed in the announcement and were instructed to bring something to work on (e.g., a book) in the event that they finished ahead of other participants. This ensured that participants did not rush through the tasks in an effort to leave early and that the manipulation check assessing participant's potential awareness of the study's hypotheses was not administered until each participant had completed the study. Participants were also asked how difficult they found the overall humor-generation task (on a scale from 0 [=very easy] to 5 [=very difficult]) to assess for any differences in difficulty generating adaptive versus maladaptive humor (see Appendix E). Of note, previous studies found no significant difference in rated difficulty across humor conditions (Samson & Gross, 2012). Participants were then provided with a debriefing form that explained the purpose of the study. While steps were in place to reduce any psychological distress before participants were dismissed from the experiment/lab space, there were no observed or reported instances of psychological distress as a result of participating in the study. However, all participants were provided with the phone number and location of the John Jay Counseling Center.

## Analysis

Effect sizes based on extant literature support the expectation for relatively modest effects (per guidelines by Cohen, 1988). A power analysis using Gpower (Faul, Erdfelder, Lang, & Buchner, 2007; Faul, Erdfelder, Buchner, & Lang, 2009) indicated a sample of 159 participants would be needed to detect modest effects ( $d = 0.25$ ) with 80% power using an ANOVA test of means with an alpha of 0.05.

Before proceeding with the full data analysis, the variables were examined through SPSS for accuracy of data entry, identification of missing data, presence of outliers, normality, skew, and kurtosis. Repeated measures analyses of variance (i.e., ANOVAs), were computed with the conditions as between-subject variables [(i.e., ANOVAs with time (pre-post) by condition (positive, negative, distraction)]. Post-hoc analyses (using Tukey test) were computed to further determine where any differences occur. Trials were excluded if participants failed to use any form of humor, used an “incorrect” form of humor in their response (e.g., adaptive instead of maladaptive humor), or failed to follow instructions in other ways (e.g., did not rate positive and negative emotions between tasks). Additionally, Pearson correlations were conducted to examine the relationship between the DERS and HSQ scales. To determine any differences in difficulty ratings based on condition (i.e., difficulty on humor-generation task), t-tests were calculated. Participant responses to the question as to what they believed the experiment to be about (inquired about following the experiment) were coded by independent raters and inter-rater reliability was calculated (see Appendix F).

## CHAPTER EIGHT: RESULTS

### Pilot Study

A preliminary pilot study was completed utilizing only the 2 humor conditions (i.e., adaptive and maladaptive) in order to: 1) assess the effectiveness of the writing task to generate negative emotions, 2) assess participants' ability to generate humor in response to prompts, and 3) determine the approximate length of time participants would need for completing the study (specifically the writing tasks and humor-generation tasks). A total of 40 participants completed the pilot study with an even number of participants in each humor condition ( $n = 20$  in the adaptive humor condition and  $n = 20$  in the maladaptive humor condition).

Paired samples t-tests were computed to examine the effectiveness of the manipulations which were found to be successful. Following the vignettes and corresponding writing tasks, there was a significant decrease in average positive emotion reported after the task to induce: anger ( $M = 4.35$ ,  $SD = .949$  to  $M = 3.78$ ,  $SD = 1.165$ , 95% CI [0.260, 0.890],  $t(39) = 3.695$ ,  $p = .001$ ,  $d = 0.58$ ); stress ( $M = 4.28$ ,  $SD = .816$  to  $M = 3.68$ ,  $SD = .971$ , 95% CI [0.331, 0.869],  $t(39) = 4.511$ ,  $p = .000$ ,  $d = 0.71$ ); loneliness ( $M = 4.13$ ,  $SD = 1.223$  to  $M = 3.53$ ,  $SD = 1.012$ , 95% CI [0.270, 0.930]  $t(39) = 3.674$ ,  $p = .001$ ,  $d = 0.58$ ); frustration ( $M = 3.93$ ,  $SD = 1.248$  to  $M = 3.48$ ,  $SD = 1.154$ , 95% CI [0.103, 0.797],  $t(39) = 2.623$ ,  $p = .012$ ,  $d = 0.42$ ); and sadness/hurt ( $M = 3.85$ ,  $SD = 1.159$  to  $M = 3.05$ ,  $SD = 1.297$ , 95% CI [0.453, 1.137],  $t(39) = 4.702$ ,  $p = .000$ ,  $d = 0.75$ ). Following the vignettes and corresponding writing tasks, there was a significant increase in average negative emotion reported after the task to induce: anger ( $M = 1.95$ ,  $SD = .986$  to  $M = 2.65$ ,  $SD = 1.252$ , 95% CI [-1.017, -.383],  $t(39) = -4.462$ ,  $p = .000$ ,  $d = -0.71$ ); stress ( $M = 2.00$ ,  $SD = .987$  to  $M = 2.48$ ,  $SD = 1.320$ , 95% CI [-.791, -.159]  $t(39) = -3.044$ ,  $p = .004$ ,  $d = -0.48$ );

loneliness ( $M = 1.98$ ,  $SD = 1.121$  to  $M = 2.35$ ,  $SD = 1.369$ , 95% CI [-.776, 0.26],  $t(39) = -.1891$ ,  $p = .066$ ,  $d = -0.24$ ); frustration ( $M = 2.10$ ,  $SD = 1.215$  to  $M = 2.48$ ,  $SD = 1.450$ , 95% CI [-.720, -.030],  $t(39) = -2.199$ ,  $p = .034$ ,  $d = -0.35$ ); and sadness/hurt ( $M = 2.21$ ,  $SD = 1.418$  to  $M = 2.92$ ,  $SD = 1.676$ , 95% CI [-1.200, -.236],  $t(39) = -3.017$ ,  $p = .005$ ,  $d = -0.48$ ). Thus, following each vignette-writing task, participants rated their positive emotionality as less positive and their negative emotionality as more negative.

Based on the results of the pilot study, it was found that the time for completion of the writing task and humor-generation task ranged from 45-60 minutes. Therefore, it was estimated that with the addition of the two self-report measures, brief demographic questionnaire, and manipulation check, the approximate length of time for participants to complete the full study would be approximately 1.5-2 hours. Therefore, participants were allowed up to two hours to enable each participant to fully complete the study prior to debriefing.

## **Full Study**

**Sample demographics.** A total of  $N = 146$  participants were included in the study. There were a total of  $n = 50$  participants in the adaptive humor condition, a total of  $n = 49$  participants in the maladaptive humor condition, and a total of  $n = 47$  participants in the distraction condition. A total of two participants were excluded from the study following review of the materials. One participant in the adaptive humor condition was excluded for not following directions (i.e., he/she did not complete the first writing task, and content of writing was irrelevant to both the writing tasks and the humor-generation tasks). One participant in the maladaptive humor condition was excluded for not following directions (i.e., observed to rush through the materials

apparently without reading instructions, completing the study in under 15 minutes, and producing irrelevant content to both the writing tasks and the humor-generation tasks).

The remaining participants included 54 (37%) males and 92 (63%) females. An examination of any differences for condition by gender was not significant,  $F(1, 144) = .366, p = .546$ . At the time of the study, the age of participants ranged from 18 to 48, with a mean age of 20.46 years ( $SD = 3.41$ ). Participants endorsed the following racial/ethnic groups: 13.7% African-American/Black/Afro-Caribbean, 50% Hispanic/Latino/a, 14.4% Asian-American/Pacific-Islander, 11.6% White/Caucasian, 5.5% Bi-racial or Multiracial, 2.1% South Asian, and 2.7% that preferred not to answer. See Table 1 for more demographic details.

To determine whether there were statistically significant differences in emotionality in the expected directions by condition across the five time points, repeated measures ANOVAs (Tabachnick & Fidell, 2007) were conducted with condition as between-subject variables and time points as within-subject variables (with time 1 = mean score of emotion endorsed following the writing tasks eliciting negative emotion; and time 2 = mean score of emotion endorsed following the humor-generation tasks). There were no outliers and the data was normally distributed at each time point, as assessed by boxplot and Shapiro-Wilk test ( $p > .05$ ), respectively. The repeated measures variable only has two levels, therefore sphericity was met.

The emotion regulation tasks (humor/distraction tasks) resulted in significant changes in positive emotion in the expected directions (i.e., upregulation of positive emotion) in all conditions: the adaptive humor condition ( $M = 3.45, SD = 1.01$  to  $M = 3.94, SD = 0.88, p < .005$ ), the maladaptive humor condition ( $M = 3.59, SD = 1.10$  to  $M = 3.90, SD = 1.09, p < .005$ ) and the distraction condition ( $M = 3.41, SD = 1.12$  to  $M = 3.67, SD = 1.01, p < .005$ ).

The emotion regulation tasks (humor/distraction tasks) also resulted in significant changes in negative emotion in the expected direction (i.e., downregulation of negative emotion) in all conditions: the adaptive humor condition ( $M = 3.02$ ,  $SD = 1.10$  to  $M = 2.54$ ,  $SD = 1.09$ ,  $p < .005$ ), the maladaptive humor condition ( $M = 2.97$ ,  $SD = 1.26$  to  $M = 2.60$ ,  $SD = 1.15$ ,  $p < .005$ ), and the distraction condition ( $M = 2.83$ ,  $SD = 1.08$  to  $M = 2.39$ ,  $SD = 1.00$ ,  $p < .005$ ).

Contrary to Hypothesis 1, the humor conditions (i.e., adaptive and maladaptive humor) did not show significantly greater increases in positive emotion than did the distraction condition,  $F(1, 144) = 1.95$ ,  $p = .16$ . The mean numerical changes in the humor conditions (Change Score = 0.40) were numerically greater than in the distraction condition (Change Score = 0.26); however, these differences were not statistically significant (see Table 2).

Contrary to Hypothesis 1a, the adaptive humor condition did not show significantly greater increases in positive emotion,  $F(2, 143) = 2.10$ ,  $p = .13$  than did the maladaptive humor condition. Positive emotion in the adaptive condition increased from  $M = 3.45$  ( $SD = 1.01$ ) to  $M = 3.94$ , ( $SD = 0.88$ ). Positive emotion in the maladaptive humor condition increased from  $M = 3.59$  ( $SD = 1.10$ ) to  $M = 3.90$  ( $SD = 1.09$ ). Thus, although the mean numerical changes in the adaptive humor condition (Change Score = 0.49) were numerically greater than in the maladaptive humor condition (Change Score = 0.31), these differences were not statistically significant (see Table 3).

Contrary to Hypothesis 2, the humor conditions did not show significantly greater decreases in negative emotion than did the distraction condition,  $F(1, 144) = 0.02$ ,  $p = .90$ . The mean numerical changes in the distraction condition (Change Score = 0.44) were numerically

greater than in the humor conditions (Change Score = 0.43); however, these differences were not significant (see Table 4).

Contrary to Hypothesis 2a, the adaptive humor condition did not show significantly greater decreases in negative emotion,  $F(2, 143) = .38, p = .68$  than did the maladaptive humor condition. Negative emotion in the positive condition decreased from  $M = 3.02 (SD = 1.10)$  to  $M = 2.54 (SD = 1.09)$ . Negative emotion in the maladaptive condition decreased from  $M = 2.97 (SD = 1.26)$  to  $M = 2.60 (SD = 1.15)$ . Thus, although the mean numerical changes in the adaptive humor condition (Change Score = 0.48) were numerically greater than in the maladaptive humor condition (Change Score = 0.37), these differences were not significant (see Table 5).

Hypothesis 3 and 3a were supported. Pearson correlations were conducted to examine the relationship between DERS and humor styles. The combined positive (adaptive) humor styles (i.e., Self-Enhancing and Affiliative) were found to be moderately negatively correlated with difficulties in emotion regulation (i.e., DERS total score),  $r(144) = -.391, p < .0005$ . The combined negative (maladaptive) humor styles (Self-Defeating and Aggressive) were found to be moderately positively correlated with difficulties in emotion regulation (i.e., DERS total score),  $r(144) = .358, p < .0005$  (see Table 6). Additionally, both research questions were supported. It was found that the STRATEGIES sub-scale on the DERS was moderately negatively correlated with the adaptive humor styles (and moderately positively correlated with maladaptive humor styles),  $r(144) = -.378, p < .0005$ ;  $r(144) = .326, p < .0005$ . Finally, it was found that the NON-ACCEPT sub-scale on the DERS was slightly negatively correlated with the adaptive humor styles (and moderately positively correlated with maladaptive humor styles),  $r(144) = -.211, p < .0005$ ;  $r(144) = .402, p < .0005$ .

An independent-samples t-test was conducted to determine if there were differences in difficulty level endorsed by participants based on the humor conditions (i.e., adaptive and maladaptive). No significant differences for difficulty level by condition were found, with adaptive condition  $M = 2.74$ ,  $SD = 1.29$ , and maladaptive condition  $M = 2.80$ ,  $SD = 1.22$ , 95% CI [-0.56, .446],  $t(97) = -.221$ ,  $p = .825$ . The interrater reliability analysis performed to determine consistency among raters for participants' awareness of the study's hypotheses was found to be Kappa = 0.89 ( $p > 0.001$ , 95% CI (0.802, 0.978)), evidencing very good/almost perfect interrater agreement (Landis & Koch, 1977). Only one participant had the correct idea of what the experiment was about. One participants had only partially correct but close ideas of what the experiment was about, seven participants had only partially correct ideas, and 88 participants had completely incorrect ideas (e.g., that the study was about the effects of negative emotions on handwriting, or humor and gender). Nineteen out of the total number of participants did not provide a response when asked to state their awareness of the study's hypotheses.

## **CHAPTER NINE: DISCUSSION**

The purpose of this study was to further investigate the concept of humor as a potential strategy to regulate emotions. Specifically, the current study investigated the potentially differential effects of adaptive (i.e., good-natured, upbeat, compassionate) and maladaptive (i.e., sarcastic, critical, hostile) forms of humor on positive and negative emotions.

Results showed that the emotion regulation tasks (i.e., humor-generation tasks) resulted in significant changes in positive emotion and negative emotion in the expected directions. In all conditions (including the distraction condition), there was evidence of upregulation of positive emotion and downregulation of negative emotion. However, contrary to prediction, the humor

conditions did not show significantly greater increases in positive emotion than did the distraction condition. Further, the adaptive humor condition did not show significantly greater increases in positive emotion than did the maladaptive humor condition. Also contrary to predictions, the humor conditions did not show significantly greater decreases in negative emotion than did the distraction condition, nor did the adaptive humor condition show significantly greater decreases in negative emotion than did the maladaptive humor condition.

However, other hypotheses were supported. As predicted, the combined adaptive humor styles were found to be moderately negatively correlated with self-reported difficulties in emotion regulation. Also consistent with expectations, the combined maladaptive humor styles were found to be moderately positively correlated with self-reported difficulties in emotion regulation.

The two research questions were also supported. The STRATEGIES sub-scale on the DERS was moderately negatively correlated with the adaptive humor styles, and moderately positively correlated with maladaptive humor styles. Finally, the NON-ACCEPT sub-scale on the DERS was slightly negatively correlated with the adaptive humor styles, and moderately positively correlated with maladaptive humor styles.

### **Forms of Humor versus Distraction**

Previous research has identified a number of emotional and cognitive mechanisms by which humor may serve to regulate emotions (Silvert, Lepsien, Fragopanagos, Goolsby, Kiss, & Taylor, 2007; Van Dillen & Koole, 2007; Strick et al., 2009). Given that at least one prior study showed that both adaptive and maladaptive forms of humor led to significantly greater increases

in positive emotion (and significantly greater decreases in negative emotion), similar results were expected in the current study.

The findings that humor did not perform better than the distraction condition might be interpreted in a number of ways. Previous studies on differential effects of humor types have included a neutral comparison condition, whereas the current study included a distraction condition. This distinction is important in that in previous studies, participants in the humor conditions were instructed to process the distressing images using the specified form of humor, while participants in the neutral condition were not given instructions one way or the other on how to process. A distraction task, such as was used in the current study, is thus qualitatively different and possibly accounts for the different effects.

Additionally, previous studies used pictures (i.e., IAPS) that depicted distressing images meant to elicit negative emotion. These pictures were created to elicit negative emotions in a wide range of individuals and did not necessarily have any personal relevance for the participants. It is possible that humorous regulation of emotions is helpful in the moment after viewing objectively distressing material – but less so when remembering distressing incidents which are personally relevant to the individuals. This is in contrast to the emotion-generation writing tasks in the current study; these tasks focused on personally relevant material in order to invoke negative emotions to which participants were asked to respond using humor.

Although the current study was specifically designed to elicit personally relevant material with the aim of making the findings more generalizable to real-life events, it is possible that the personally relevant material made it more difficult for participants to distance themselves from the material in order to regulate their emotions with humor. While only anecdotal, examination

of writing task content in participant packets revealed that some participants did in fact write about some highly distressing, impactful experiences -- despite having been cautioned against relating situations that were traumatic or that caused severe, long-term distress that impaired functioning (e.g., death of loved ones, physical assaults, etc.). Additionally, it may be that when more-personal impact of events is involved, the quick humorous statements generated across tasks may not be enough to gain sufficient perspective-taking for successful regulation. Further, the effects of humor on emotional reactions to remembered events may not be generalizable to the effects of humor on reactions to actual life events as they occur.

One previous study that examined humor as cognitive distraction provided support for humor being more effective than simple distraction in attenuating negative emotions elicited by distressing images (Strick, Holland, van Baaren, & van Knippenberg, 2009). The authors found that distraction appeared useful when a stressor was imposed on a person for a limited duration. However, as the stressor became more intense and enduring, a perspective-taking strategy (i.e., humor) became more effective. Thus, an alternative explanation to the previous paragraphs may be that humor is more effective (and realistic) than is distraction for stressors that are enduring and invoke strong negative emotions; however, the current study's use of distressing memories may not have evoked the feeling of intense and enduring stress for which humor may be the more-effective response.

Relatedly, in previous studies in which the IAPS was utilized as stimuli, participants were asked to express their humorous responses verbally to the non-personal material. Thus, differences in findings also may be due to the participant's knowledge that highly personally relevant material (as opposed to more objective content) would be reviewed in the current study. That is, participants might have been more hesitant in expressing humorous reactions to personal

information, especially in written form saved as raw data, when they knew such reactions would be reviewed. Further, perhaps using humor as a response in verbal expressions exhibits different effects than when taking time to write down the responses.

Although there were no differences found across conditions in self-reported difficulty in the generation of humor, the possibility remains that participants may have had difficulty spontaneously generating humor (regardless of form) when directly instructed to do so. It may be that being explicitly instructed to generate humor may not exhibit the same effects as self-generated humor. It is thus possible that non-spontaneous humor generation (i.e., being told to use humor in response to emotions) may not be as beneficial as more natural or unconstrained uses of humor.

Of note is that although the humor conditions were not found to perform significantly better than did the distraction condition, the distraction condition was also not found to perform significantly better than did the humor conditions. This finding merits attention in that distraction has been shown to decrease negative emotions such as anxiety, depression, and sadness, at least in the short term (Van Dillen, & Koole, 2007). However, individuals cannot always distract from negative emotions. For example, they may find themselves in real-life situations in which they are forced to focus on the present situation. Thus, the use of humor may offer an alternative strategy that may be as effective as distraction in those circumstances.

Additionally, and perhaps more importantly, it has been shown that a routine use of distraction tends to have a negative effect over time, since emotions are being avoided (Hayes et al., 1996; Hayes et al., 2004; Iverson et al., 2012; Aldao & Nolen-Hoeksema, 2012; Schramm et al., 2013). Although the use of avoidance or other maladaptive coping strategies may provide

short-term relief, conscious unwillingness to experience uncomfortable affect is linked to a range of psychological problems (e.g., Clark, et al., 1991; Wenzlaff & Wegner, 2000; Orsillo, Roemer, & Block-Lerner, 2005; Kalokerinos, Greenaway, & Denson, 2014). Perhaps the use of humor, which may show similar effects of distraction in the short term, and appears to provide a non-avoidant strategy in the face of emotions, could evidence less negative effects in the long term. Therefore, in these instances, humor may be a more adaptive way of coping with negative emotions. However, it is important to note that these findings are preliminary and may be affected by power issues. Additional research is needed to determine whether these findings would be supported.

There are several possible explanations for the lack of significant effects of the adaptive humor condition as compared to the maladaptive humor condition. Although there were no significant differences found for the reported difficulty in generating humor based on condition, and there were no observed problems with participants using the “right” form of humor as instructed, it is possible that there is some overlap in terms of how individuals interpreted the instructions and applied ‘positive’/adaptive and ‘negative’/maladaptive humor. Given the consensus that humor as a construct is complex, there is no consistent or uniform approach in determining the use of the “right” form of humor to any reliable degree. That is, despite receiving the same instructions, there may have been individual differences in how closely and consistently participants conformed to instructions. Future studies could address this issue by providing more standardized instructions as empirical investigations of humor continue.

Further, it is possible that participants were more effective in using the type of humor that matched their humor style (i.e., the style of humor they tend to use in everyday life), and the current study did not control for this. In other words, it may be that participants varied in their

level of “fitness” for type of humor within conditions. For instance, those who have a tendency to use adaptive humor styles may have been more comfortable and effective generating positive/adaptive humor, but may not have been assigned to that condition. Thus, potential individual differences in abilities to generate adaptive versus maladaptive humor needs to be tested in future studies.

### **Humor Styles and Trait-Based Emotion Regulation Skills**

The current study examined the association of humor styles with a trait-based emotion-regulation measure to aid further understanding of the role of adaptive and maladaptive humor styles in emotion regulatory skills. Results confirmed the expectation that participants who were more likely to utilize the more adaptive forms of humor in everyday life (i.e., Self-Enhancing and Affiliative humor styles) reported significantly less problems with difficulties in emotion regulation. Results also confirmed that participants who were more likely to utilize the more maladaptive forms of humor in everyday life (i.e., Self-Defeating and Aggressive humor styles) reported significantly more problems with difficulties in emotion regulation.

This finding is notable given that a large body of research has suggested that humor operates as a form of emotion regulation; however, no previous research has directly examined the relationship of humor to an established emotion regulation measure (i.e., for the DERS in the current study). The results of the current study thus provide more evidence that humor may be a form of emotion regulation, and that different types of humor may be more adaptive or maladaptive in the regulation of negative emotions. Based on previous research showing that difficulties with emotion regulation are related to and predictive of a wide range of psychopathology (e.g., Cloutier, 1988; Hayes, Wilson, Gifford, Follette, & Strosahl, 1996;

Mennin, Heimberg, Turk, & Fresco, 2002; Walcott & Landau, 2004; Gratz, Rosenthal, Tull, Lejuez, & Gunderson, 2006; Salters-Pedneault, Roemer, Tull, Rucker, & Mennin, 2006; Tull, Barrett, McMillan, & Roemer, 2007; Fox, Hong, & Sinha, 2008), the relationship of difficulties in emotion regulation and use of maladaptive humor is particularly noteworthy. Thus, those who have a tendency to utilize maladaptive humor styles may have more problems regulating emotions, and thus may evidence tendencies to maintain or experience increases in distress over time.

Additionally, exploratory analyses revealed that participants who utilized adaptive humor styles were significantly more likely to apply the adaptive emotion regulation skill(s) to modify emotions, as measured by the STRATEGIES subscale on the DERS. Thus, those who reported having more access to adaptive strategies to regulate negative emotions were more likely to report using adaptive humor as a coping mechanism. Accordingly, those individuals possessing such skills may be more flexible in utilizing the skills available to them when doing so would be expected to be beneficial.

Exploratory analyses also revealed that participants who utilized more maladaptive humor styles were significantly less likely to utilize the specific emotion regulation skill of ACCEPTANCE. Thus, those who demonstrated less ability to accept and/or tolerate negative emotions were more likely to use humor in more ways that were self-deprecating and that ridiculed others. As a result, those individuals may demonstrate difficulties accepting and experiencing aversive situations, but instead feel the need to minimize their reactions with the use of hostile or critical forms of humor.

The humor literature has supported the idea that maladaptive forms of humor may be helpful under certain circumstances (e.g., when dealing with highly stressful and threatening situations). However, other research has evidenced that maladaptive forms of humor may negatively influence overall psychological well-being if used on a regular basis in the long-term or in excess (Martin et al., 2003, Samson & Gross, 2014). The potential negative influence of maladaptive humor was supported with the current findings, which showed that participants who demonstrated more problems with emotion regulation were significantly more likely to utilize maladaptive humor styles in everyday life. These findings suggest that such individuals may evidence poorer mental health outcomes in the long-term, when any beneficial effects of maladaptive humor may attenuate.

### **Limitations**

The study had the following limitations. The study was slightly underpowered based on the aforementioned a priori power analysis; increasing the sample size may have given the study even greater power to detect differences across conditions, while also allowing trait-based humor styles to be examined in the context of the manipulation. The current research was laboratory-based, and the artificial setting may limit conclusions about the generalizability of the effects in real-life settings or situations. Additionally, being in a group setting may have further contributed to the artificiality. Replication of the study with humor measured through more experiential sampling may serve to increase generalizability.

Furthermore, this study utilized a university student sample that, while quite diverse, may influence the generalizability of the results. It is possible that a less homogenous sample (e.g., one that includes adolescents and older adults) may show different patterns of daily humor style

use or emotion regulation abilities than did the participants studied in the present study. Thus, replication using a sample with even more diverse demographics is needed.

Another limitation was the use of self-report questionnaires for the trait-based measures of humor styles and emotion regulation abilities. Although the vast majority of research attempting to measure humor as a construct has involved the use of self-report, there are a number of reasons why the self-report questionnaires may not be entirely valid. Participants may not have been honest in their disclosure on either topic. Also, there is inherent difficulty in measures attempting to capture the complex nature of humor. Additionally, participants may have varied based on their understanding or interpretation of particular questions or item content. Finally, causality for the cross-sectional portion of the study (self-report measures) cannot be determined. Thus, whether variations in emotion regulation leads to use of maladaptive or adaptive humor styles or whether use of maladaptive or adaptive humor styles leads to variations in emotion regulation remains equivocal. Finally, while it was one of the primary aims of the experimental portion of the study to measure moment-to-moment *in vivo* changes in emotionality, this does not allow for examination of more long-term effects.

### **Future Directions and Conclusion**

To increase generalizability, future research could measure humor through experiential sampling. This would allow for the inclusion of the inherent social/interpersonal component of humor. This may provide for a more valid approach, as it would investigate how people use humor in everyday life. Future research could further explore the idea that humor as a response to stressors is a more adaptive approach (and more realistic approach) than simple distraction.

Future research also needs to include the long-term effects of humor generation (i.e., use of longitudinal designs to examine cumulative effects).

Existing studies have not addressed the issue of specificity of humorous reappraisal in contrast to other reappraisal strategies. Therefore, future studies should include a non-humorous condition (e.g., simple or serious reappraisal) to further distinguish humor-specific effects from those related to reappraisal in general. Future studies might also include a humor condition whereby participants are instructed to use humor in a way that is unrelated to the negatively emotion-laden situation or event generated in a personally relevant writing task.

Finally, as the current study did not contain a large enough sample to control for humor styles, future studies could examine whether humor styles operate as a moderator for outcome in the different conditions. In addition to assessing positive and negative affect, future investigations should also include measures of psychopathology, defense styles, social desirability, and overall well-being. Further, greater plurality in theories, constructs, methodologies, etc. could also serve to advance our understanding of how humor may foster interpersonal connections. This less rigid approach would be expected to broaden the variety of humor types to be studied and applied within the emerging branch of positive psychology

In summary, the present study was one of the first studies to examine changes in positive and negative emotion with a humor-generation task (i.e., emotion regulation task) using personally relevant examples. In contrast to existing studies on humor, it allowed both a within- and between-person design. Results of the current study thus help to refine our understanding of the construct of humor and how the effects of humor may be different depending on adaptive or maladaptive uses of humor types.

Researchers continue to struggle in the operationalization of the multidimensional construct of humor. Based on the extant humor research, investigators appear to be in agreement that humor as “always positive” is overly simplified, if not erroneous. Although it may be taken for granted that humor is considered a positive component among human characteristics, it may be important not to view humor from such a “black-and-white” perspective (i.e., “positive and negative”), but rather to consider that humor can be many things simultaneously (e.g., mean-spirited, witty, critical, wise, etc.). When humor is viewed as being on a continuum from benevolent, good-natured, and positive to malevolent, mean-spirited, and negative, it underscores the complexity of the potential effects of humor on mental health. Specifically, the forms of humor referred to as “gallows humor” may represent a “gray area” with much variation, with differing outcomes. That is, such “dark” humor may have detrimental effects when used on an intergroup level or for the long-term. On the other hand, such humor may have certain positive effects at the intragroup level (i.e., when members in environments of shared stressors), with varying outcomes in the short- and the long-term (Craun & Bourke, 2014). The link between the emotional-laden tone of humor and its functionality in individual lives thus remains multifaceted.

The largely accepted view of humor as an adaptive coping strategy has encouraged some practicing psychologists to incorporate and advocate the use of humor in the therapeutic process. However, the place of humor within psychotherapy has long been of questionable and varying status, for reasons that include the aforementioned proscriptions against possible detrimental effects. Thus, ongoing rigorous empirical research has implications for identifying the potentially constructive or potentially less adaptive aspects of humor in psychotherapy. For example, more constructive aspects may include a self-observing capacity achieved through perspective-taking

or acceptance of intense emotions, whereas less adaptive aspects may promote avoidance of negative emotions, self-depreciation, and interpersonal estrangement.

In conclusion, although the experimental portion of the current study did not find differential effects for adaptive and maladaptive forms of humor on positive or negative emotions, there was evidence that the humor conditions resulted in upregulation of positive emotion and downregulation of negative emotion following participants' generation of personally distressing events. Although humor did not perform significantly greater than distraction, it did not perform significantly worse; therefore, future research could examine whether humor might be a long-term adaptive response to negative emotions when compared to distraction. In addition, the current study was the first study to show that adaptive humor styles are related to adaptive emotion regulation strategies – and that maladaptive humor styles are related to difficulties with emotion regulation. Though preliminary, this finding suggests that a focus on humor in individuals could foster the development of adaptive emotion regulation strategies to be utilized intrapersonally and interpersonally, which may aid in improved mental health outcomes.

Table 1  
*Demographic Characteristics (N = 146)*

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Current Age (years) <sup>a</sup>		20.46 ± 3.41
Race		
	Caucasian	5.5%
	Hispanic/Latino/a	50%
	African-American/Afro-Caribbean	13.7%
	Asian-American/Pacific-Islander	11.6%
	South Asian	2.7%
	Bi-racial/Multi-racial	2.1%
	Preferred not to answer	2.7%
Year in College		
	Freshman	35.6%
	Sophomore	26.7%
	Junior	30.1%
	Senior	7.5%
Relationship Status		
	Not in a relationship	80.8%
	Married	2.7%
	Committed relationship	15.1%
	Divorced	0.7%

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Note. <sup>a</sup> Mean ± standard deviation

Table 2

*Repeated Measures Analysis of Variance Results for Humor Conditions<sup>1</sup> and Positive Emotion*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between subjects						
Condition	1	2.06	2.06	1.05	0.307	0.01
Error 1	144	282.19	1.96			
Within subjects						
Time	1	0.36	0.36	1.95	0.16	0.01
Error 2	144	26.65	0.19			

<sup>1</sup> Humor Conditions = Combined Adaptive Humor and Maladaptive Humor versus Distraction

Table 3

*Repeated Measures Analysis of Variance Results for Forms of Humor<sup>2</sup> and Positive Emotion*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between subjects						
Condition	2	2.18	1.09	0.55	0.577	0.01
Error 1	143	282	1.97			
Within subjects						
Time	2	0.77	0.39	2.10	0.13	0.03
Error 2	143	26.24	0.18			

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<sup>2</sup> Forms of Humor = Adaptive Humor and Maladaptive Humor

Table 4

*Repeated Measures Analysis of Variance Results for Humor Conditions and Negative Emotion*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between subjects						
Condition	1	1.96	1.96	863.00	0.355	0.01
Error 1	144	326.69	2.27			
Within subjects						
Time	1	0.00	0.00	0.02	0.90	0.00
Error 2	144	30.04	0.21			

Table 5

*Repeated Measures Analysis of Variance Results for Forms of Humor and Negative Emotion*

Source	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>	$\eta^2$
Between subjects						
Condition	2	1.96	0.98	0.43	0.652	0.01
Error 1	143	327	2.29			
Within subjects						
Time	2	0.16	0.08	0.38	0.68	0.01
Error 2	143	30	0.21			

Table 6

*Correlation between Humor Styles<sup>3</sup> and Total DERS<sup>4</sup>*

	M	SD	2	3
1 Total DERS	90.75	25.40	-0.391**	0.358**
2 HSQ Adaptive HSQ	85.71	12.46		
3 Maladaptive	52.66	14.10		

\*\*p<.01.

<sup>3</sup>Humor Styles as measured by the Humor Styles Questionnaire

<sup>4</sup>DERS = Difficulties in Emotion Regulation Scale

## APPENDIX A: DIFFICULTIES IN EMOTION REGULATION SCALE (DERS)

1=Almost never (0-10%)    2=Sometimes (11-35%)    3>About half the time (36-65%)    4=Most of the time (66-90%)    5=Almost always (91-100%)

Please indicate how often the following 36 statements apply to you by writing the appropriate number from the scale above (1-5) in the box alongside each item.

(R=Reverse Scored)

### 1: Nonacceptance of Emotional Responses (NONACCEPT)

- 25) When I'm upset, I feel guilty for feeling that way
- 21) When I'm upset, I feel ashamed with myself for feeling that way
- 12) When I'm upset, I become embarrassed for feeling that way
- 11) When I'm upset, I become angry with myself for feeling that way
- 29) When I'm upset, I become irritated with myself for feeling that way
- 23) When I'm upset, I feel like I am weak

### 2: Difficulties Engaging in Goal-Directed Behavior (GOALS)

- 26) When I'm upset, I have difficulty concentrating
- 18) When I'm upset, I have difficulty focusing on other things
- 13) When I'm upset, I have difficulty getting work done
- 33) When I'm upset, I have difficulty thinking about anything else
- 20) When I'm upset, I can still get things done (R)

### 3: Impulse Control Difficulties (IMPULSE)

- 32) When I'm upset, I lose control over my behaviors
- 27) When I'm upset, I have difficulty controlling my behaviors
- 14) When I'm upset, I become out of control
- 19) When I'm upset, I feel out of control
- 3) I experience my emotions as overwhelming and out of control
- 24) When I'm upset, I feel like I can remain in control of my behaviors (R)

### 4: Lack of Emotional Awareness (AWARE)

- 6) I am attentive to my feelings (R)
- 2) I pay attention to how I feel (R)
- 10) When I'm upset, I acknowledge my emotions (R)
- 17) When I'm upset, I believe that my feelings are valid and important (R)
- 8) I care about what I am feeling (R)
- 34) When I'm upset, I take time to figure out what I'm really feeling (R)

### 5: Limited Access to Emotion Regulation Strategies (STRATEGIES)

- 16) When I'm upset, I believe that I'll end up feeling very depressed
- 15) When I'm upset, I believe that I will remain that way for a long time
- 31) When I'm upset, I believe that wallowing in it is all I can do
- 35) When I'm upset, it takes me a long time to feel better
- 28) When I'm upset, I believe that there is nothing I can do to make myself feel better
- 22) When I'm upset, I know that I can find a way to eventually feel better (R)
- 36) When I'm upset, my emotions feel overwhelming
- 30) When I'm upset, I start to feel very bad about myself

### 6: Lack of Emotional Clarity (CLARITY)

- 5) I have difficulty making sense of my feelings
- 4) I have no idea how I am feeling
- 9) I am confused about how I feel
- 7) I know exactly how I am feeling (R)
- 1) I am clear about my feelings (R)

## APPENDIX B: HUMOR STYLES QUESTIONNAIRE (HSQ)

Please rate the extent to which you agree or disagree with each item.

Indicated by one of the following:

Never or very rarely true, Rarely true, Sometimes true, Often true, Very often or always true

(R)=Reverse Scored

### **Self-Enhancing (+/intrapersonal):**

2. If I am feeling depressing, I can usually cheer myself up with humor.
6. Even when I'm by myself, I'm often amused by the absurdities of life.
10. If I am feeling upset or unhappy I usually try to think of something funny about the situation to make myself feel better.
14. My humorous outlook on life keeps me from getting overly upset or depressed about things. 18. If I'm by myself and I'm feeling unhappy, I make an effort to think of something funny to cheer myself up.
22. If I am feeling sad or upset, I usually lose my sense of humor. (R)
26. It is my experience that thinking about some amusing aspect of a situation is often a very effective way of coping with problems.
30. I don't need to be with other people to feel amused – I can usually find things to laugh about even when I'm by myself.

### **Self-Defeating (-/intrapersonal):**

4. I let people laugh at me or make fun at my expense more than I should.
8. I will often get carried away in putting myself down if it makes my family or friends laugh.
12. I often try to make people like or accept me more by saying something funny about my own weaknesses, blunders, or faults.
16. I don't often say funny things to put myself down. (R)
20. I often go overboard in putting myself down when I am making jokes or trying to be funny.
24. When I am with friends or family, I often seem to be the one that other people make fun of or joke about.
28. If I am having problems or feeling unhappy, I often cover it up by joking around, so that even my closest friends don't know how I really feel.
32. Letting others laugh at me is my way of keeping my friends and family in good spirits.

### **Affiliative (+/interpersonal):**

1. I usually don't laugh or joke around much with other people. (R)
5. I don't have to work very hard at making other people laugh—I seem to be a naturally humorous person.
9. I rarely make other people laugh by telling funny stories about myself. (R)
13. I laugh and joke a lot with my closest friends.
17. I usually don't like to tell jokes or amuse people. (R)
21. I enjoy making people laugh.
25. I don't often joke around with my friends. (R)
29. I usually can't think of witty things to say when I'm with other people. (R)

### **Aggressive (-/interpersonal):**

3. If someone makes a mistake, I will often tease them about it. 7. People are never offended or hurt by my sense of humor. (R)
11. When telling jokes or saying funny things, I am usually not very concerned about how other people are taking it.
15. I do not like it when people use humor as a way of criticizing or putting someone down. (R)
19. Sometimes I think of something that is so funny that I can't stop myself from saying it, even if it is not appropriate for the situation.
23. I never participate in laughing at others even if all my friends are doing it. (R)
27. If I don't like someone, I often use humor or teasing to put them down. (R)
31. Even if something's really funny to me, I won't laugh or joke if someone will be offended. (R)

## APPENDIX C: WRITING TASKS & HUMOR-GENERATION TASKS

### Writing Tasks:

Please rate your current level of positive emotion (how positive you feel right at this moment) on the following scale:

1.....2.....3.....4.....5.....6  
Not at Slightly Somewhat Moderately Strongly Very  
All Strongly

Please rate your current level of negative emotion (how negative you feel right at this moment) on the following scale:

1.....2.....3.....4.....5.....6  
Not at Slightly Somewhat Moderately Strongly Very  
All Strongly

Some of the following items will ask you to think about times in your life when you experienced various emotions. Please do your best to pick situations that led to experiencing the emotions, but do not pick situations that were traumatic or caused you severe, long-term distress that impaired your functioning.

1. Please think about a time when you felt angry. (For example, you may have felt betrayed, cheated, disrespected, and/or treated badly). Take a moment to remember the experience and how you felt at the time. Then write at least 1-2 paragraphs describing the experience and how you felt. Go at your own pace.
2. Please think about a time when you felt stressed. (For example, you may have felt like you were under a lot of pressure to succeed at difficult tasks; felt overwhelmed by all the demands on your time; felt worried and pressured by stressors in the environment and your own standards; and/or experienced a string of demands that left you feeling strained). Take a moment to remember the experience and how you felt at the time. Then write at least 1-2 paragraphs describing the experience and how you felt. Go at your own pace.
3. Please think about a time when you felt lonely. (For example, you may have felt like you didn't fit in, felt left-out or unwelcome, and/or felt isolated from friends or loved ones.) Take a moment to remember the experience and how you felt at the time. Then write at least 1-2 paragraphs describing the experience and how you felt. Go at your own pace.
4. Please think about a time when you felt frustrated. (For example, you might have spent effort to obtain or achieve something but not been able to do so; been delayed or blocked from reaching a destination because of transportation issues; experienced a hassle about administrative issues, payments, or other paperwork due to other errors; and/or tried to concentrate or do something but had trouble doing so because of noise or other people.) Take a moment to remember the experience and how you felt at the time. Then write at least 1-2 paragraphs describing the experience and how you felt. Go at your own pace.
5. Please think about a time when you felt sad or hurt. (For example, a good friend or loved one may have moved away; a pet may have died; you may have felt "not good enough" or like your "heart was broken.") Take a moment to remember the experience and how you felt at the time. Then write at least 1-2 paragraphs describing the experience and how you felt. Go at your own pace.

Please rate your current level of positive emotion (how positive you feel right now) on the following scale:

1.....2.....3.....4.....5.....6  
Not at Slightly Somewhat Moderately Strongly Very  
All Strongly

Please rate your current level of negative emotion (how negative you feel right now) on the following scale:

1.....2.....3.....4.....5.....6  
Not at Slightly Somewhat Moderately Strongly Very  
All Strongly

Humor-generation tasks: Now that you have completed the writing task, please reflect on what you have written and then do the following:

*Adaptive humor condition:* Do your best to use light-hearted, upbeat, or compassionate humor to help you get a little different perspective of the situation and focus on the absurdity or irony. Avoid using critical or hostile humor; instead, just focus on the imperfections of life. Please note that your responses don't have to actually be *funny*; they just need to use the kind of day-to-day humor people use in routine situations. Go at your own pace in producing your response.

*Maladaptive humor condition:* Do your best to use sarcastic, critical, or hostile humor to help you get a little different perspective of the situation and create an emotional detachment. Please note that your responses don't have to actually be *funny*; they just need to use the kind of day-to-day humor people use in routine situations. Go at your own pace in producing your response.

*Distraction condition:* Now that you have completed the writing task, please copy the following text: The amount of water on Earth always stays about the same. How, then, did the glaciers of the Ice Age form? They formed from water in oceans and lakes. This caused ocean levels to fall. One place where this happened is the Bering Strait. When the water levels dropped, a strip of land 1,000 miles long slowly emerged from beneath the shallow water. That strip of land connected the continents of Asia and North America.

## APPENDIX D: TASK EXAMPLES

**Writing task (emotion cue = anger):** *Last semester I was enrolled in a Social Psychology course with several of my new friends from school. On the first day of class, the professor went over an assignment, and it sounded like she was going to be really strict with the grading. But she also said we could get bonus points if we turned it in early. My friends and I decided we would work together on the assignment so we could give each other feedback. We all got together a few times and it was working out well. Then I started hanging out more with one of the guys in the group because it seemed like we were becoming close friends. It felt nice to have such a close friend at my new school. Then one week he didn't show up to our study group. The next day in class I saw him sitting in the front and noticed that the professor handed him back the assignment we had been working on. I had just turned mine in that day. That evening the professor emailed me accusing me of plagiarism! It didn't take long for me to put it together that my "friend" had stolen my work and turned it in ahead of me. When I met with the professor she said it was his word against mine. I confronted him and he denied everything, but I knew he was lying to my face! So he got the bonus points and I got a zero. I couldn't believe how disrespectful my so-called friend had been or how unsympathetic the professor had been. It felt like a complete betrayal.*

**Adaptive humor example:** *I felt like I must have been on some kind of prank show or something. If that's the case, that episode will get the highest rating all season. There's just no way my "friend" AND my professor could turn on me that way. They really got me good. Now it's just a matter of waiting for the phone call about my new TV deal to come in.*

**Maladaptive humor example:** *The only lesson I learned from that Social Psychology course was NOT to be social. Maybe my "friend" and that mean professor thought you only get bonus points for being cheaters and liars. Let's see how they like their bonus points once Karma kicks in.*

**Writing task (emotion cue = loneliness):** *I had just moved to the city to be closer to school and it was a far enough move to mean that it made it really difficult to see my closest friends anymore. So not only was I feeling alone in the city, I was about to start classes in the fall with zero friends going to the same school. That's why when I saw a flier posted for a mixer/meet-up for new students I immediately decided I would go. I showed up in a good mood, optimistic about meeting new people. But when I looked around, I saw that everyone was already chatting each other up and having a good time like they already knew each other. I didn't want to be rude and break into a circle of them, so I just got a drink and sat by myself in the corner. Beyond the fact that I was all by myself, I had never felt so lonely while being surrounded by so many people before. After only maybe 10 minutes, I felt so left out that I just went home. Making new friends seemed harder than I thought, and I really missed my old friends back home. I spent the entire weekend before school just feeling homesick and alone. No matter how I looked at it, I already felt isolated in the city and my school, and school hadn't even really started yet.*

**Adaptive humor example:** *Maybe I left the mixer too early. People might have been thinking "who is that mysterious stranger???" Maybe I should come up with a cool back story about being a spy for a rival school organization or purposely just observing to get ideas for my next novel. That way I'll have a way to explain in case I ever see any of those people again.*

**Maladaptive humor example:** *Yeah, what a great start...my school came up with such a good idea to make people feel welcome...ugh. I must have missed the part on the flier that said "jerks only." Someday they'll regret it when I'm actually doing something with my life and they're still hanging out trying to act popular at stupid school mixers.*

**Writing task (emotion cue = stressed):** *I had finally gotten to a point where I felt like a “real” grown-up. I was close to being done with school and had gotten the job that I had interviewed for. I was eager to please my new boss, and she gave me an assignment that she said was really important and that had to be completed as soon as possible. But once I looked at the details of the assignment, I knew right away I wasn’t qualified for everything it required. I remember sitting at my new desk just staring at the assignment until my eyes went blurry and my head started pounding. I felt frozen. I was already disappointing myself and was about to disappoint my new boss just after starting the job. On top of that, there I was still in school AND starting a new job. The week before it had all seemed so promising, but at that moment I couldn’t see how I was going to accomplish any of it. I felt like pulling my hair out. I didn’t know what would be worse – telling my family I expected to get fired right after being hired or facing my boss and admitting I was in over my head. It didn’t feel like I had any options...it was all so overwhelming*

**Adaptive humor example:** *Maybe my boss was at least impressed that I could multi-task so well: I was very good at hyperventilating and trying not to freak out at the same time. But the good news is that I got through the whole thing without my head exploding (although I think it might have come very close).*

**Maladaptive humor example:** *It’s too bad part of the assignment wasn’t giving up, because then I would have actually accomplished something at that job. If you’re going to do something, you should do it well. Well, I gave up very well, gave up very quickly, and gave up very completely.*

**Writing task (emotion cue = frustrated):** *I was barely keeping my head above water trying to balance all the work in my classes. I had needed to work on my history paper, and just could not get myself to work on in advance. The day before my paper was due, I was worked two hours in the library trying to finish. At about 11pm, I was so tired I had to stop and saved what work I had to my flash drive. On my way home on the subway, my backpack got caught between the doors as I was trying to make the train. When I got home and got my flash drive out of my backpack, my stomach dropped as I realized my flash drive was ruined, along with everything on it. I could not imagine starting that paper over again and there was just no time. I remember just putting my head down on my arms while sitting at my desk late at night and having a million worries run through my head. I was worried about time, worried about my grade, worried about failing. There MUST have been a way to prevent this. I was so frustrated with myself, frustrated at the subway, frustrated at everything! I knew I would have to skip my other classes the next day so I was worried about my grades in those classes as well. I didn't even know what to feel anymore, I was just frustrated and exhausted.*

**Adaptive humor example:** *Maybe I was psychic when I procrastinated. This was WAY less work to lose then if I had finished at the library!*

**Maladaptive humor example:** *If only there was a class in being an idiot, I'd get an A+. I'm top of the class in screwing everything up.*

**Writing task example (emotion cue = sad/hurt):** *The neighborhood I live in is mostly older people, and I never made many friends who lived nearby that I could hang out with. So that made it extra disappointing when I found out that a girl my age that lived just around the corner was moving away already after I'd only known her for a few months! It didn't make me feel any better that we were both disappointed. I hid how sad I was in front of her, her family, and my family because I didn't want anyone to see how upset I was. I mean I had only hung out with her for a couple of months, and I just felt like it meant more to me than to her. So after we had said our goodbyes and she and her family were gone, I went to my room and cried for a long time. Losing a potentially really close friend hurt, and it hurt even more than I felt bad for being so sad. I hate feeling bad for myself, or having a "pity party" like my mom would call it, but I couldn't help it. I always thought it was easier for everyone else to make friends and even though I had a few close friends, I never seemed to be able to make more. On top of everything else, even though I felt really sad I also felt I had to hide my sadness from my family, which only made it hurt more.*

**Adaptive humor example:** *I must have looked like a star in a soap opera to everyone that day. Maybe I've found my calling. I can write for soap operas and get paid for writing about my emotional life.*

**Maladaptive humor example:** *Eh whatever, who needs friends when you have a pet goldfish. People always leave you, but your goldfish can't. Plus my goldfish doesn't have that whiny voice that my friend had.*

APPENDIX E: STUDY AWARENESS CHECK & DIFFICULTY RATING FORM

Thank you for your participation in the study. Please take a moment to provide some feedback regarding what you think the study was about:

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Finally, please rate below the overall difficulty you had with the humor-generation task on the following scale:

0 = not at all difficult, 1 = somewhat difficult, 3 = moderately difficult, 4 = difficult, 5 = very difficult

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## APPENDIX F: STUDY AWARENESS CODING

- 1) **Correct:** “We want to measure the effect of using adaptive or maladaptive humor to change positive and negative emotions; adaptive humor or maladaptive humor as emotion regulation strategy.”
- 2) **Only partially correct/close:** (e.g., mentioning adaptive or maladaptive humor, but neither whether they have specific consequences on positive and negative emotions, nor emotion regulation)
- 3) **Only partially correct:** (e.g., mentioning emotion regulation, humor as coping mechanism, but without specifically mentioning adaptive or maladaptive humor)
- 4) **Incorrect:** (e.g., that the study was about distraction, about ethnicity, or measured the effect of mood on perception)

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