

The electronic Humor to Cope and Connect (e-H2C) Workshop:
Feasibility of Internet-Based Humor Skills Training

by

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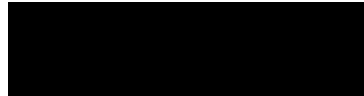
DEDICATION

To the Pettey family who taught me what grace is.

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ABSTRACT

This project developed and assessed the feasibility of the electronic Humor to Cope and Connect (e-H2C) workshop, an Internet-based program designed to train individuals to use humor more adaptively relative to mood, relationships, and health outcomes. The organization of content was based on a model of health behavior change (Information-Motivation- Behavioral Skills Model). In Phase I, The e-H2C workshop was initially constructed based on a thorough review of the available humor literature, and integration of current therapy concepts. In Phase II, the workshop was refined and improved by an iterative process of integrating feedback from interviews of humor research experts (n=4) and a diverse sample of pilot participants (n=7; recruited from the general population) who completed the workshop. Humor experts supported the use of the workshop and endorsed the integration of concepts. Feedback from general participants suggested the workshop was too long (approx. 2.5 hours on average to complete) and intensive. In Phase III, after revisions were made based on Phase II feedback, the workshop was widely disseminated: completion rate was 36%, self-reported satisfaction was greater than neutral, and participants improved on the information subsection, but not the motivation or behavioral skills subsections, of the measure created to assess whether participants improved according to intended workshop goals. Overall, results indicated that the e-H2C workshop is feasible with some improvements.

TABLE OF CONTENTS

LIST OF TABLES	ix
LIST OF FIGURES	x
CHAPTER 1: Introduction	1
Humor, Health, and Technology: Towards an Online Humor Workshop	1
Information-Motivation-Behavioral Skills (IMB) Model.....	3
Overview of Humor	4
Theoretical Foundations of Humor	5
The History of “Humor” and Humor Theories	5
The Benign Violation Theory (BVT)	7
The Relative Interpersonal Distance Theory of Humor (RIDTH).....	9
A Modern Definition of Humor	11
Clinical Foundations of Humor	12
Stress, Emotions, and Health	12
Stress and Emotion Regulation: Cognitive Appraisal and Social Support	13
e-H2C Workshop Model: Regulating Negative and Positive Emotions.....	15
Evidence for Humor as Harmful to Health	22
Humor Styles Research.....	24
Humor styles and psychological well-being	25
Humor styles and relationships	27
Limitations of Humor Styles Research	30
Construct validity	30
Experimental validity	34
Lack of integration with disparagement humor research	35
Addressing Humor Styles Limitations within The e-H2C Workshop	36
Humor in Acceptance and Commitment Therapy (ACT).....	36
Humor as Cognitive Defusion to Cope and Connect.....	38
Existing Humor Interventions.....	40
The 7 Humor Habits Program.....	41
Advances in Telepsychology and Rationale for the e-H2C.....	44
Humor-based online positive psychology interventions.....	46
Individual Differences in the e-Learning Experience	48
The Prospective electronic Humor to Cope and Connect (e-H2C) Workshop	51
<i>A Priori</i> Assumptions of the H2C.....	51
Preliminary Work.....	53
Overview	53
Information	54
Motivation.....	55
Behavioral Skills	56
Implications of Humor Skills Training.....	56

Defining Feasibility	57
Summary	57
CHAPTER 2: Overview and Specific Aims	59
CHAPTER 3: Methods	62
CHAPTER 4: Data-Analysis	73
CHAPTER 5: Results	78
CHAPTER 6: Evaluation of Hypotheses	87
CHAPTER 7: Discussion.....	91
CHAPTER 8: Conclusions	98
REFERENCES	99
APPENDIX A: Background Tables.....	114
APPENDIX B: Background Figures	120
APPENDIX C: Materials from H2C Workshop at The Women’s Center.....	123
APPENDIX D: Online Media Screenshots.....	132
APPENDIX E: Measures	135
APPENDIX F: Ethics Documents	155
APPENDIX E: Results Tables.....	161
APPENDIX F: Results Figures.....	173

LIST OF TABLES

Table 1. Humor Styles Studies Supporting Humor to Cope.....	114
Table 2. Humor Styles Studies Supporting Humor to Connect.....	115
Table 3. Humor styles conceptualized using a mechanistic approach.....	118
Table 4. Targeted aspects of e-H2C feasibility.....	119
Table 5. Results from Phase I internal review of the workshop.	161
Table 6. Participant demographics by Phase.	162
Table 7. Phase IIa (humor experts) interview results and workshop changes.	163
Table 8. Phase IIb (general participants) interview results and workshop changes.	165
Table 9. Pre-post IMB workshop questionnaire and satisfaction outcomes by Phase....	167
Table 10. Dependent samples t-tests for pre-post IMB questionnaire.....	167
Table 11. Humor styles and quality of life scores by Phase.	168
Table 12. Student t-test for Phase III satisfaction score.....	168
Table 13. Phase III non-completers demographics.....	169
Table 14. Logistic regression analysis to identify predictors of completion.	169
Table 15. Independent t-tests of gender differences.	170
Table 16. Correlations among measures for completers and non-completers (N=108).	171
Table 17. Correlations among measures for completers (n=44).....	172

LIST OF FIGURES

Figure 1. Non-Linear Relationships Relevant to Humor and Health.....	120
Figure 2. Conceptual Model of Humor Styles and Health.....	121
Figure 3. Study Design (Phases I-IV)	122
Figure 4. e-H2C Measured Variables and Structure	122
Figures 5. General structure of e-H2C Workshop with identified changes.	173
Figure 6. Modules “chunked” (i.e., broken in sub-modules) for Phase IIb-III.....	174
Figure 7. Attrition patterns during Phase III.	175

CHAPTER 1: Introduction

Humor, Health, and Technology: Towards an Online Humor Workshop

Humor use affects psychological well-being and mental health. Humor has been identified as a tool to enhance positive mood, cope with stress, and enhance relationships [1-3]. However, not all types of humor confer health benefits. Martin *et al.* [2] challenged the perspective that all humor is beneficial and argued that only small correlations between humor and health were found in earlier studies because they failed to distinguish between adaptive versus maladaptive uses of humor. These authors developed a self-report questionnaire based on two theorized health-promoting uses of humor (to enhance self and relationships) and two health-diminishing uses of humor (to degrade self and relationships). Their correlational findings supported the divergent effects of adaptive versus maladaptive forms of humor with regard to mental health.

Six years before the work of Martin *et al.*, McGhee [4], presuming that humor is beneficial to health, developed the “7 Humor Habits Program” (7HHP) to help participants maintain a playful attitude, use humor, and laugh more frequently. Since McGhee developed his program, there has been a large expansion of humor research, including Martin *et al.*’s work, which increased understanding of what makes things humorous and what kinds of humor might be helpful or harmful to individuals [1] and social groups [5]. Despite this expansion, existing interventions to help participants understand and practice using humor therapeutically are sparse. The 7HHP is the only humor intervention that has been empirically investigated multiple times. General humor interventions (e.g., encouraging playfulness, showing comedic videos), such as the 7HHP, retain the one-dimensional “more humor is better” approach, without

considerations of timing, context, audience, and unintended consequences that help distinguish between and adaptive and maladaptive humor use. These interventions also are tailored towards patient populations, rather than made for a general audience.

In parallel to the expansion of humor research, there has been an expansion in telehealth and e-learning technologies. For example, started in 2006, Khan Academy is the largest online school with more than 10 million students [6]. Technological advances have widely supplemented or replaced in-person healthcare and education [7]. The Internet specifically has provided unprecedented access to a diverse range of students and patients, as 90% of Americans use the Internet [8]. Some evidence suggests that web-based teaching might actually be more effective than in-person teaching [9; 10]. Rationale for the current doctoral research project is founded on the popularity and proven utility of online learning.

The current project considered advances in both humor and telehealth/e-learning research to develop an online workshop called “electronic Humor to Cope and Connect (e-H2C).” It is a brief humor education and training program based on the use of humor as a tool for: (a) regulating emotions (i.e., Coping); and (b) improving and maintaining relationships (i.e., Connecting). The workshop integrates many recent findings about humor and is designed for both clinical and non-clinical populations. The current project developed the **content** of the H2C and assessed the feasibility and acceptability of the e-H2C. The **delivery** of the content is based on the Information-Motivation-Behavioral skills (IMB) model for promoting engagement in health behaviors [11]. The following sections describe the IMB model of behavior change, describe the theoretical and clinical foundations of therapeutic humor, and evaluate existing humor interventions. Next, a

summary of the informational, motivational, and behavioral skills components of the e-H2C is provided. Then, anticipated needs and challenges for translating the workshop into an online format are presented, drawing from current research on web-based learning and interventions. After this background information, the methods, results, and discussion of findings of this project are presented.

Information-Motivation-Behavioral Skills (IMB) Model

The general objective of the workshop is to inform participants about how humor affects health and to encourage adaptive uses of humor (i.e., behavior change). In a meta-analysis of 85 internet-based interventions, only approximately 1/5 of the studies reported using theory to create their interventions, and studies that did apply a theory of behavior change tended to yield larger effect sizes [12]. This pattern highlights the importance of grounding programs or interventions in a coherent theory and the utility of using a behavior change strategy. The IMB model of health behavior change [11] was selected as the framework for delivering the e-H2C. While the IMB model was initially developed to prevent HIV infection, since its inception, the model has generalized to a wider range of health-related behaviors [11], including diabetes management [13], and breast self-examination [14]. According to the IMB model, information about the health-related behavior is a prerequisite, but not the only factor, for engaging in that behavior. Motivational factors, such as personal and social incentives, and behavioral skills (i.e., both objective ability and sense of self-efficacy) are considered equally important contributors to behavior change.

Other prominent behavior change approaches include: Social Cognitive Theory (SCT) [15], the Theory of Planned Behavior [16], and the Transtheoretical Model [17].

These approaches share a common assumption that knowledge alone is insufficient to predict behavior. The IMB model was selected as a simple, parsimonious theory to frame a skills training workshop. This model provides guidance on which components are necessary to include for encouraging use of learned information. In contrast to the Theory of Planned Behavior or Transtheoretical Model, application of the IMB model requires less interpersonal interaction and individualization, which are often characteristic of interventions or treatments. The e-H2C is considered a workshop rather than a treatment, so the IMB is a more appropriate model.

The following Introduction sections provide the rationale for the informational component of the workshop, which includes theoretical context and specific content. These sections describe the historical origins of humor, theoretical and conceptual rationale for its therapeutic value, strengths and limitations of previous humor interventions, and finally the general content of the e-H2C workshop.

Overview of Humor

Humor theories attempt to describe the functions and reasons why individuals find things funny — i.e., what creates humor and why. This literature also includes efforts to explain when and how people perceive humor, which varies widely across individuals and groups [18]. The humor and health literature reflects an attempt to understand the possible benefits of using humor — i.e., what kinds of humor, if any, help individuals. Both conversations — i.e., how humor works and when it is helpful — are important for constructing a workshop that aims to coach participants on when and how to use humor to benefit themselves and their relationships. The first humor section describes the theoretical foundations of humor to define and expose a broad

understanding of humor without asserting value judgments regarding whether humor is good or bad for health. The second humor section describes clinical foundations of humor to provide rationale for how and when certain kinds of humor may be beneficial for health.

Theoretical Foundations of Humor

The History of “Humor” and Humor Theories

Evolutionary psychologists Polimeni *et al.* [19] stated, “Because of the multilayered nature of humor, no single humor theory has been completely satisfactory and thus clinched universal acceptance” (p. 349) and “Similar to the familiar story about the blind men, each figuring their own unique representation of an elephant, every humor theory seems to reflect a partial truth.” (p. 349). The purpose of the current project is not to resolve this longstanding debate. Instead, the purpose is to identify and disseminate knowledge of the consequences and health-promoting utility of thoughtful humor use. A summary of the “partial truths” of humor theory helps to frame the complex phenomenon of humor and inform an understanding of how humor works therapeutically.

Wickberg [20] provides an historical account of how humor came to be viewed as a desirable personality trait. The modern understanding of humor, from the Latin *humorem*, or “body fluid,” originates from Ancient Greek medical physiology describing the four humors, or body fluids, that were thought to determine a person’s physical and mental health and personality. By the 16th century, the concept of humor separated from medical physiology and, instead, connoted a person who acted in an unusual or peculiar way. This person often elicited ridicule and laughter. By the 19th century, the person who imitated this type of peculiar person became known as a “man of humor” and represented

the first instance of a person creating humor. However, the term “humor” emerged long after humans were using it. Animal studies and anthropological studies suggest that humans have relied on laughter and humor for a variety of social functions since early in evolutionary history [21].

Humor theories help to explain different aspects of humor, including determinants and function, but there is not unanimous support for any one theory. Martin [18] provides an overview of the major categories of humor theories including psychoanalytic, superiority, incongruity, and reversal. Alternatively, Polimeni *et al.* [19] classify the theories according to: incongruity, repression, superiority, and evolutionary groups. According to Martin [18], Freud (1928) described humor as the healthiest of **defense mechanisms** because it allows people to be in touch with the reality of the situation while also avoiding the unpleasant emotion. Jokes were thought to provide relief from suppression of unconscious sexual and aggressive impulses. **Superiority** theories asserted that all humor was based in malice and downward social comparison. **Arousal** theories indicated that sympathetic nervous system response was necessary for the experience of humor. Arousal theories of humor were generally popular in the 1960s and 1970s, after the increase in research on the role of the sympathetic nervous system accompanying experiences of emotions [18]. **Incongruity** theories were cognitively focused and identified humor as the process of perceiving two incompatible views simultaneously. These theories were popularized in the 1980s and 1990s.

Reversal and evolutionary theories build on supported aspects of other humor theories. Apter [22] developed **reversal** theory, which describes the change from serious (goal-directed, i.e., telic) to playful state (i.e., paratelic) — states that we alternate

between (*i.e.*, *reverse*) throughout the day. According to this theory, humor is regarded as a form of playfulness in which the “serious” and functional aspects of language and communication are diminished. **Evolutionary** theories focus on the functions of humor to improve survival. For example, Ramachandran [23] developed the “false-alarm” theory of humor, which describes humor as indicating that a previously threatening scenario does not need to be addressed. Ramachandran cited medical patients’ laughter in response to pain while numbed as an example of when a situation perceived as threatening (*i.e.*, pain) becomes benign (*i.e.*, numbing) and then elicits laughter. From an evolutionary perspective, humor provides a way to communicate a message to the group about social violations that do not need to be addressed, and appears to encourage in-group cohesion and social bonding, similar to grooming in primates [21]. These theories are important to consider as a context for understanding humor and its different approaches. Aspects of these theories are present in the following sections that describe the foundational concepts of the e-H2C workshop.

The Benign Violation Theory (BVT)

The Benign Violation Theory (BVT) of humor describes how people tend to find humor in examples that are both “wrong and okay” at the same time [24] and was used as a foundational framework for guiding thoughtful humor use in the e-H2C. This theory appears to integrate aspects of previous theories, but is simple and straightforward for making decisions on humor use. Peter McGraw, a professor at the University of Colorado - Boulder, originally studied the psychology of morality before he began to study humor. Understanding of the processes individuals engage in when deciding whether something is right or wrong, and considerations of the concept of emotional disgust provide

important grounding for this theory. According to the BVT, there is a “sweet-spot” of psychological distance from the content of the humor that allows for a humor response [24]. Spilling coffee on your pants before an interview might not be funny in the moment, but could become humorous a week later. Psychological distance can be created by changing: (a) the likelihood of something happening, (b) social distance from the person as the target, or (c) time since the event happened.

McGraw and Warren [24] conducted a series of studies to validate the BVT, which demonstrated that benign or violation conditions alone did not produce amusement. Simultaneous presence of the two elements, the interpretation that the joke is both “wrong and okay,” were necessary for the stimulus to be perceived as humorous. McGraw *et al.* [25] conducted a follow-up investigation of BVT and found that further distance from the threat facilitates humor in tragic situations, but closer proximity facilitates humor in smaller mishaps. It appears there is an interaction between the severity or threat of the target of humor and psychological distance on humor perception. The researchers conducted a longitudinal study of responses to humorous tweets (on Twitter, a social media site) about Hurricane Sandy at ten time-points over the course of 100 days, starting one day before the hurricane made landfall [26]. Results provided evidence for a “comedic sweetspot” whereby temporal proximity to the event reduced perception of the tweet as humorous, but over time was viewed as humorous and less offensive, and eventually, as not humorous or relevant any longer. The BVT resembles previous theories, but differs in its language. The terms “benign,” “violation,” and “psychological distance” are easily linked to intrapersonal (e.g., self-commentary) and interpersonal interactions. Although the BVT does not capture all the nuances and

variations of how humor happens, the theory is simple and accessible and therefore a practical choice to lay the foundation for the e-H2C as a workshop intended for a general audience. The BVT also nicely integrates with basic emotion regulation concepts and other therapeutic techniques (described below in *Humor in Acceptance and Commitment Therapy*).

The Relative Interpersonal Distance Theory of Humor (RIDTH)

The relative interpersonal distance theory (RIDTH) provides a guiding theory for using humor in the context of important relationships [27]. This theory is also simple and parsimonious and provides a guiding framework for considering what types of humor to use around different audiences. This theory extends the Benign Violation Theory (BVT) to interpersonal interactions. It is based on the available research describing in-group versus out-group acceptance of humor. The theory suggests that humor attempts are considered “funny” or acceptable when they are similarly violating to the producer and receiver, which is based on the receiver’s assessment of the perceived relative distance from a topic. Originally, this theory was developed based on patient-provider healthcare relationships. A patient-provider relationship is unique because there exists a significant power differential and providers are also expected to maintain trust and rapport with their patients [28]. According to this theory, effectiveness of healthcare providers’ humor is not assessed by how funny it is, but instead by whether it is therapeutic for the patient. Similar to important social connections, the consequences of the humor may be more important than whether or not the humor is more or less funny.

In 2013, a patient receiving a colonoscopy sued his medical doctors for 1.35 million dollars after he audio-recorded the procedure and listened to the doctors use

humor that offended him [29]. According to this report, these doctors were recorded mocking the patient and making comments such as: “[...] after 5 minutes of talking to you in pre-op I wanted to punch you in the face and man you up a little bit.” This example reflects a breach of trust in what is expected to be an empathic relationship — in other words, the humor is not benign to the patient, though it may have generated laughter and relief for the providers. This example stands in contrast to a quote by comedian Tammy Pescatelli in her recent Stand-up Comedy special: “If I offend any of you here tonight... Good, because you probably needed to hear it” [30]. These two anecdotes highlight the distinct roles of humor as entertainment and humor in the context of intimate relationships.

Humor is a widely used tool for coping with trauma exposure. Salient examples were evident even during the Holocaust by victims in concentration camps [31; 32]. Individuals in professions that involve frequent exposure to death and trauma use humor among each other as an important coping mechanism [33]. A common theme of this research however is the emphasis on containing the humor within the group. This pattern might be related to a process by which others determine whether someone else is “allowed” to joke about a topic. For example, in a study of the effect of source information of the humor user, 167 undergraduates were exposed to cartoons making fun of characters with physical disability and were provided with the information either that the author was disabled or with no information about the author. Participants who reported having relatives with a disability perceived the cartoons as funnier only when provided with the source information that the author had a disability [34]. Alternatively, this same misunderstanding (i.e., that the person is making light of the topic rather than

coping) might result in failure for the other person to identify the humor user's anxiety towards the content. The RIDTH is described in the e-H2C workshop to help participants consider how their perceived identities may influence the success of their humor attempt.

A Modern Definition of Humor

Humor is not consistently defined and there is debate about what humor is [35]. In general, humor is viewed as a cognitive process that often includes affective components (e.g., laughter or mirth) [18; 36]. For the “Humor to Cope and Connect (H2C)” workshop, **humor is defined as the perception of an inconsistency (i.e., a violation) that causes no harm (i.e., benign) to the *perceiver*, frames the message *non-critically*, and elicits an *emotional* response of amusement that can include laughter or smiling.** This definition represents a blend of the BVT [24] and findings related to disparagement humor, which indicates that racist and sexist jokes encourage a non-critical mindset. As Martin [18] indicated, humor is ambiguous, and might involve a “decommitment,” in which a person nullifies his or her message with a qualifying comment such as “I was just joking.” In addition, the “non-critical” aspect of humor is considered a consequence, which captures a non-goal directed (i.e., playfulness) aspect of humor [22] and also the principle of the “false alarm theory” which indicates that humor conveys a message that a once threatening stimulus does not need to be taken seriously [23]. Therefore, an emphasis is also placed on “perceiver” to take into account the variability in what individuals may find humorous (see RIDTH section), e.g., when one person does not find humor in an event that another person does. The definition described above forms the foundation of the e-H2C workshop.

Clinical Foundations of Humor

Stress, Emotions, and Health

Stress is defined as the process by which environmental demands exceed or tax available resources [37; 38]. According to a nationally representative sample (N=3,068), 42% of Americans reported not managing their stress well, and 41% of married or cohabitating individuals indicated that they yelled at or became impatient with their partners because of stress in the previous month [39]. Stress has been classified in a variety of ways. For example, stress can be good versus bad, acute versus chronic, or mild/moderate versus severe [40]. The short and long term effects of stress represent an extremely complex area of research [40; 41]. Stress is generally considered to be adaptive in small and acute “doses,” but harmful in large and chronic “doses” with regard to physical and mental health [41].

DeSteno *et al.* [42] emphasize the ongoing need to integrate associated cognitive and emotional processes to inform research on the links between stress and health. An *emotion* has been defined as the process by which a person responds to cues that are relevant to a person’s goals or values and *affect* describes the valence (i.e., “good or bad”) of an emotion [42]. The experience of stress is closely associated with negative affect, which contributes to the association between stress and poor health [43; 44].

Actually, negative affect may confound the assumed link between stress and health [44; 45] and individuals higher in trait negative affect may be more sensitive to stressors [46]. Dich *et al.* [47] compared cumulative biomarkers of allostatic load (e.g., blood pressure, cholesterol, Body Mass Index) to “negative emotional response” (i.e., asked “How upset were you?” on a 4-point scale) to objective stressful life events (e.g., death of a friend or

loved one, money trouble) across a 15-year period (cohort study of 6,267 British Civil Service workers). The authors found that the relation between negative emotional response to events and allostatic load was non-linear – individuals who expressed minimal distress and who expressed an extreme amount of distress were more likely to have adverse health outcomes. The authors concluded that there is a normative range of negative emotional expression in response to stress that leads to healthier outcomes, whereas suppression or overexpression may lead to adverse health outcomes. With regard to the important role of emotions in the impact of stressors, Desteno and colleagues state: “This perspective, together with the evidence demonstrating that both positive and negative emotions matter for health, supports the view that the ability to regulate emotions or manage emotional complexity may play a critical role not only in mental health but also in physical health” (p. 478).

Stress and Emotion Regulation: Cognitive Appraisal and Social Support

Humor, as a predominantly cognitive and social process, is a potential contributing factor to how individuals experience stress and emotions. If used with intention, then humor may be a tool to regulate stress and negative emotions. This section provides an overview of the empirical support for the roles of cognitive appraisal (i.e., the way individuals perceive stressors) and social support (i.e., the perceived and actual presence of supportive networks) in altering the way stress and emotions may be experienced and regulated.

Recent research has indicated that a “stress-as-enhancing” versus “stress-as-debilitating” mindset predicts more adaptive physiological and behavioral responses [48; 49]. According to the Transactional Model of stress, the responses to and consequences

of stress are determined by the initial appraisal of the stressful stimulus and coping style [37]. This model has proven useful for predicting consequences of stressful experiences, though the specifics of the model are debated [50]. In a nationally representative U.S. sample (N=28,753), self-reported higher levels of stress and perceptions that stress affected health independently predicted premature death [51], which emphasizes that perceptions of stress as unhealthy play a role independent of perceived stressful event itself. Research on post-traumatic growth (PTG) describes the noted meaningful and positive changes in self-perception, interpersonal relationships, and life philosophy after traumatic experiences [52; 53]. This line of research has challenged the previous conceptions of traumatic stress and its negative consequences.

In summary, stress (in its many forms) can lead to negative (e.g., diminished performance, physical and mental illness, decreased function) or positive consequences (e.g., enhanced performance, learning, meaning finding), which are likely determined in part by cognitive perceptions and subsequent emotional responses. For example, Billings *et al.* [54] conducted a 2-year prospective study of the impact of HIV-related stress on patients (n=86) and caregivers (n=167). Results showed that HIV patients and their caregivers who reported higher levels of social coping experienced increases in positive affect and decreases in physical symptoms. Conversely, individuals who reported more cognitive avoidance later experienced higher levels of negative affect and physical symptoms. These findings indicate that the experience of chronic negative affect and mood following stress might exacerbate health problems, though the results cannot support causation. With regard to emotional experiences, cognitive reappraisal rather than

suppression or other strategies can lead to long-term positive consequences [55].

Cognitive reframing and aspects of social support might help to regulate negative affect.

The Stress-Buffering Hypothesis (SBH) proposed that social support bolsters resources so that individuals are better able to adapt to environmental demands [56]. Cohen and Wills initially discriminated between structural support and functional support. Structural support is defined as the breadth and size of one's social network. Functional support describes the resources that the support provides, which could include informational, emotional, instrumental, companionate, or enacted support [57]. Social support in general has been linked to lower incidence of the common cold [58] and decreased likelihood of early all-cause early mortality [59; 60]. Over time, attempts at validating the mechanisms of the SBH revealed that there are many different types of social support that could positively influence health [57].

A tool that enhances emotion regulation in response to stressors and enhances relationships also may lead to positive health outcomes. Adaptive humor use might buffer against the negative consequences of stress through the physical effects of laughter, cognitive reframes of negative events, and/or encouragement of social support [36]. Overall, humor may allow for a more positive initial appraisal of stress or actually increase social support, thereby allowing for a more positive appraisal of one's available resources to cope with stress and reduce negative affect. These potential stress-buffering functions of humor justify the creation of the e-H2C workshop.

e-H2C Workshop Model: Regulating Negative and Positive Emotions

The current workshop is directed towards a general, healthy audience, which may also include participants experiencing distress or mental health problems. Therefore,

humor skills are conceptualized in the context of growth and psychological wellbeing, rather than symptom reduction. Trait positive affect over a life span may confer salient health benefits [61]. In contrast, negative affect that is not expressed in a healthy way may deleteriously impact health and other indices of quality of life [42].

Figure 1 displays the relationships proposed as relevant to how humor may be related to health. As discussed above, Yerkes and Dodson [62] initially conducted studies to support the curvilinear relationship between arousal and performance. Similarly, there appears to be a moderate amount of psychological distance that facilitates humor finding. According to the association among these inverted “U” relationships, identifying the “sweet-spot” or using humor to modulate a person’s state within the top of the curve is an adaptive skill, which the e-H2C workshop focused on cultivating.

Consistent with Figure 1, Figure 2 depicts the conceptual model that provides the rationale for the e-H2C workshop. In this model, humor is proposed as a regulatory tool that can promote health if used to balance the individual within the moderate “sweet spot” of an emotional experience. There is not enough research yet to support that humor can down-regulate a *strong* emotional experience. Rather, humor may be facilitated by a moderate amount of arousal or emotion. Therefore, the lines connecting the humor styles with the emotion/stress regulation components are two-way. For example, according to this model, humor may be more likely to be perceived as affiliative if the humor attempt is made when the person is experiencing a moderate amount of stress. In the aggregate, the predominance of positive affect and/or moderation may saliently impact health by improving relationships and enhancing quality of life according to the Broaden and Build Theory [63]. Humor skills training may increase individuals’ ability to regulate their own

and others' emotions within relationships. Studies that empirically support the personal (humor to cope) and social (humor to connect) uses of humor are discussed in the following sections.

Humor, Emotion Regulation, and Health: Empirical Findings

Based on a review of 88 studies on humor, McCreaddie and Wiggins [3] provided a summary of the possible direct and indirect effects of humor on positive health outcomes. Proposed direct effects include: (a) the physiological effects of laughter and (b) “positive emotional state” resulting from shared humor. Proposed indirect effects include: (a) buffering the impact of stress through cognitive reframing and/or laughter and “enhancing the ability to cope” and (b) enhancing interpersonal skills and increasing social support. These conclusions are consistent with the conceptual model proposed in Figure 2. In this model, humor is framed as a tool to regulate negative and positive intra- and interpersonally. This section describes selected studies that tested the effects of various types of humor in experimental paradigms for coping with stress. It provides an overview of studies investigating general humor and emotion regulation relevant to the conceptual model in Figure 2.

Some studies involved simple paradigms that exposed participants to humor after a stressful stimulus. For example, Abel and Maxwell [64] attempted to distinguish between the effects of trait (i.e., sense of humor) and state humor (i.e., mirth, exposure to humor) in an experiment — a 2 (high or low stress task) x 2 (exposure to a humorous or non-humorous 15-minute video) factorial design. Two hundred and three participants completed a task that was either high stress (i.e., designed to be impossible) or low stress (i.e., relatively easy) and then were exposed to a 15-minute video that either discussed

coping strategies for stress or humorous consequences of substance abuse (rated as significantly more “funny” than the informational video – averaging 3.58 on a 4-point scale, 1= “not funny at all” and 4= “very funny”). Individuals in the high stress condition who watched the humorous video after the task reported a significantly larger decrease in self-reported state anxiety from Time 1 (before the video means [SDs]=44.88 [14.99] for men, 44.15 [12.94] for women) to Time 2 (after the video = 29.96 [8.02] for men, 33.42 [10.22] for women) in comparison to individuals in the non-humorous video condition (45.40 [11.66] to 39.56 [10.09] for men, 45.81 [12.94] to 38.78 [12.94] for women). In addition, this effect was more pronounced for individuals who were low in self-reported trait humor. Findings suggest that encouraging individuals to apply humor during stress when they do not typically use humor may be beneficial.

Harm *et al.* [65] investigated the experience of self-reported negative emotion when humorous, neutral, or weird cartoons followed exposure to distressing pictures. The study included comparisons of young (mean age= 23 years; n=30) versus older (mean age= 67 years; n=25) adults in their reactions to negative pictures that were followed by a cartoon that was one of three conditions: positive, weird (cognitive distraction control), or humorous. Prior to the experiment, ratings (based on positivity, “funniness,” and “weirdness”) from pilot studies supported that manipulated pictures were valid. Thirty-six pictures (neutral, moderately negative, or strongly negative) were paired with one of the three manipulated cartoons. Participants viewed the 36 pairs in succession. In between pair trials, participants rated their “negative feeling” on a 10-point scale (0 = not at all negative; 9 =completely negative). Results revealed a small interactive effect ($\eta_p^2 = .06$), in which humorous stimuli only significantly reduced negative emotion after

exposure to moderately negative pictures (in contrast to neutral and strongly negative pictures). Notably, positive and “weird” cartoons produced statistically similar effects across trials. Exposure to positive cartoons may not reduce negative feelings. In contrast, humorous cartoons may reflect a balanced engagement with some negative emotion, so that they are “psychologically closer” to the response elicited by the distressing picture [24; 25].

Newman and Stone [66] reported that individuals who developed humorous narratives to a distressing video discussing factory accident experienced less physiological reactivity compared to individuals who narrated the film seriously. Eighty male college students participated (out of a pool of 500) based on their high (one Standard Deviation above the mean) or low (one Standard Deviation below the mean) self-reported humor use (based on the Situational Humor Response Questionnaire and Coping Humor Questionnaire). Individuals were assigned to either the humor condition or serious condition and then asked to watch the 13-minute stressful video. Individuals in the humor condition were asked to “narrate this movie in a way you find amusing to yourself. Try to see this movie in an amusing light” (p. 103). Though the authors concluded that this narration had a significant stress-moderating effect on self-reported negative affect and physiological reactivity (skin conductance, heart rate, and skin temperature), the numbers reported appear to reflect marginal differences between groups. For example, self-reported negative affect was only slightly lower immediately post-stressor ($M=16.73$ for the humor group; $M=18.25$ for the serious group) and slightly reversed 15-minutes post-stressor ($M=14.48$ for the humor group; $M=13.23$ for the serious group). Heart rate was slower during stress ($M=91.29$ for the humor group;

M=99.09 for the serious group) and this between-groups difference was similar over time (M=80.97 for the humor group; M=86.36 for the serious group), but humor did not appear to facilitate a faster recovery time. There were limitations to this study. The content of the humorous narration was unclear and not controlled – though participants in this condition reported feeling more amused than in the serious condition, individual differences among perceptions of the humor were not discussed. Also, the study participants were all male and findings may not generalize to the wider population. Overall, findings suggest that general humorous narration (i.e., without instruction on what type of humor to use) during stress may buffer the experience of stress in the moment, but not necessarily over time.

Similar to Newman and Stone, Samson and Gross [67] asked participants to generate their own humor to regulate negative emotions. The authors found that “positive humor” was better than “negative humor” or no humor use at reducing participants’ negative emotions after viewing distressing pictures. Participants rated their negative and positive emotional reactions on a 6-point, ascending scale (0= “not at all,” 6= “very strong”) on separate scales. Participants in the positive humor condition were instructed to use “sympathetic, tolerant, and benevolent amusement” in creating comments for the pictures. Participants in the negative humor condition were instructed to “laugh at these situations in a hostile, superior way.” Control participants were instructed to simply view the pictures. For example, in a picture displaying handicapped men waiting in line, a participant from the positive humor condition used the caption: “The Jones family didn’t expect such a trick-or-treat rush.” For the same picture, a participant from the negative humor condition used the caption: “The wait feels shorter when you don’t tap your toes,”

which directly highlighted the men's handicap. Study 1 (N=40, M=24.7 years old, German) and Study 2 (N=37, M=19 years old, American) reported similar results, *i.e.*, that positive humor reduced self-reported negative emotion (mean change [SD]=0.66 [0.64] for Study 1, and 0.79 [0.68] for Study 2) and increased self-reported positive emotion (0.32 [0.64] for Study 1, and 0.50 [0.71] for Study 2) more than negative humor or no humor. Of note, negative humor also demonstrated positive results, but with a smaller effect compared to positive humor.

The specific experimental studies described in this section provide some empirical support for the short-term benefits of humorous coping in response to a structured stress paradigm. However, the studies do not include an investigation of the long-term effects of habitual humor use. In a recent review, Kuiper [1] discussed humor styles research in the context of positive psychology and resilience. The author emphasizes and describes the robust literature that supports the use of humor as a resilience behavior. However, he states that existing null findings on humor and health studies emphasize the need to discriminate between adaptive versus maladaptive humor use. He promotes the inclusion of the Humor Styles Questionnaire [2] in more research. Also, Kuiper identifies that cross-sectional studies predominate the existing humor research, which might fail to identify the transient versus sustained effects of humor use. Cann *et al.* [68] purported: "The question that needs to be asked is not whether a good sense of humor is related to greater wellbeing, but rather, does the person's style of using humor facilitate or inhibit the potential to deal effectively with stressors through humor" (p. 227). Taken together, the strengths and limitations of the humor and health literature emphasize the importance of contextual factors, which likely determine whether humor use is helpful and harmful

with regard to health and quality of life. The e-H2C workshop encourages a thoughtful and reflective approach to humor use with considerations of timing and context, and provides specific strategies to use humor flexibly.

Evidence for Humor as Harmful to Health

Greater sense of humor and playfulness may actually be linked to poorer health outcomes. Data from the Terman Life-Cycle study (N=1,178) revealed that parent ratings of cheerfulness and humor of participants at 12 years old predicted earlier mortality [69]. In an analysis of the same cohort, Martin *et al.* [70] found that the children who had higher cheerfulness/humor were more likely to use alcohol and tobacco. Other studies in different samples supported the link between self-reported humor and substance use [71; 72]. Edwards and Martin [73] investigated the association among self-reported substance use, humor styles, and state-trait cheerfulness (i.e., serious versus playful outlook) in a sample of 215 college students. The authors stated they were surprised to find that self-enhancing and self-defeating humor use were unrelated to substance use. Using bootstrapping technique to create a larger, simulated sample and path analysis, the authors found support for seriousness as a partial mediator of the relationship between interpersonal humor use (affiliative and aggressive) and substance use. According to this model, higher affiliative and aggressive humor use were related to lower seriousness and higher substance use. However, aggressive and affiliative humor styles also were directly related to substance use. Post-hoc analyses (i.e., separate regression analyses) revealed that affiliative humor accounts for 4% ($R^2=.04$) and aggressive humor accounts for 5% ($R^2=.05$) of the variance in substance use. When seriousness was added to the regression

models, results revealed that seriousness accounts for approximately half the effect of affiliative and aggressive humor use. The authors conclude:

[...] these results do suggest that advocates of the humor and health movement who wish to promote humor as a means of enhancing physical health should also promote awareness that, when it comes to substance use, a more serious perspective may be more beneficial than a humorous one (p. 532).

The authors highlight an important message of the e-H2C workshop – humor can be detrimental when it interferes with the function of a negative emotion. Fear of the negative consequences of substance use might encourage individuals to moderate their consumption of alcohol or drug use. If humor use helps to remove this fear, then humor use diminishes a person’s ability to respond appropriately to his or her natural emotions.

Humor researcher Arnie Cann speculated that: “Ultimately, a ‘very good’ sense of humor may involve an ability to recognize when and how to use humor across different settings” [74, pp. 18-19]. In this view, the association between humor and wellbeing is not proposed to be linear. Instead, humor is framed as a tool, similar to exercise, that can be used in moderation to promote health, where deficiency or excess may have adverse consequences. It is also a communication tool, similar to a megaphone used to magnify one’s volume of speech — using a megaphone is likely adaptive in certain scenarios (e.g., in an auditorium, to make announcements) and maladaptive in others (e.g., during an intimate conversation). As demonstrated by these examples, prescriptions to use tools more or less are not particularly helpful. Instead, prescriptions and guiding principles on how and when to use tools in ways that are adaptive might confer benefits to individuals and their relationships. The workshop takes a **functional and contextual approach** to

teaching humor skills, which is consistent with the current conceptual understanding of how specific kinds of humor relate to health.

Humor Styles Research

Since its initial validation, the Humor Styles Questionnaire (HSQ) has been used in more than 120 different studies investigating the relation between humor styles and diverse outcomes, such as suicide risk [75; 76], mental toughness [77], and marital divorce [78]. Unfortunately, there has not been a meta-analysis or systematic review of humor styles studies. In addition, many studies are correlational and cannot investigate cause-effect relations with humor styles and outcomes. Existing experimental studies also have salient limitations. Despite the limitations of HSQ research, the measure has generated a large amount of research, which has contributed to an increased understanding of the nuances of how humor use may be relevant to health and quality of life. Humor, when used thoughtfully, might act as a tool to enhance the likelihood of individuals experiencing positive emotional consequences and growth from stress. Below, findings are summarized under domains of coping with stress and social health.

Tables 1 and 2 summarize articles relevant to humor and coping, and humor and social support, respectively. Given the large number of articles, studies using stronger designs were selected to include in the table. Studies were considered strong if they included one or more of the following: multiple time-points; random assignment and manipulation of humor (i.e., an experiment); and peer report or behavioral observation (as supplement or substitute for self-report HSQ). The summary of the literature supports that the Humor Styles conceptualization is a useful foundation for guiding adaptive humor use but, based on limitations, does not fully inform nuanced and practical

considerations of implementing humor in daily life. Considerations for supplemental material to address these limitations are discussed with regard to the development of the e-H2C workshop (see “Limitations of Humor Styles Research”).

Humor styles and psychological well-being

Table 1 presents three selected articles relevant to the humor and well-being link. The majority of studies investigating humor and stress are correlational and, therefore, are not included in Table 1. The three studies used longitudinal data or third party-observations investigating the humor styles and well-being association.

Cann *et al.* [68] found that adaptive and maladaptive humor styles were related to perceived stress in expected directions (i.e., aggressive and self-defeating humor were maladaptive), but relations among interpersonal styles (affiliative and aggressive) and other measures were identified as weak and dropped from follow-up analyses. Time 2 analyses revealed that the effects of self-enhancing and self-defeating humor scores on health were mediated by the relationship between positive personality traits and perceived stress.

Edwards and Martin [73] found that higher scores on all humor styles predicted better scores on humor creation ability. However, self-reported affiliative and self-enhancing humor use more strongly predicted performance. Interestingly, humor creation ability (i.e., how ratings on “funniness” of participants’ humor production) was unrelated to self-reported stress, anxiety, depressive symptoms, and psychological wellbeing. Humor styles were associated with symptoms and wellbeing indices in expected directions according to maladaptive and adaptive patterns. This study provides evidence for the distinction between producing humorous material (i.e., possibly not as relevant)

and using humor in ways that benefit health and wellbeing. In addition, the HSQ might be capturing aspects of humor appreciation, which is consistent with findings from Herzog and Strevey [79] that humor appreciation predicted more of the variance in psychological wellbeing than humor styles.

Guenter *et al.* [80] asked Dutch employees to rate their humor styles, humor acknowledgement (three items determining others' positive responses to humor attempt), emotional exhaustion, and work engagement across 10 days. The authors selected specific items from the HSQ that were considered more adaptable to daily report and added two additional items per style, such as "Today, I made jokes together with other people" and "Today, through the use of humor, I successfully dealt with a problematic situation." The authors found that aggressive and self-defeating humor use were positively related to daily reported emotional exhaustion and affiliative and self-defeating humor use were unrelated. Affiliative and self-enhancing humor use were negatively related to work engagement and aggressive and self-defeating humor use were unrelated.

Correlational studies also support the link between adaptive humor styles and well-being indices [2; 81-87]. Several authors propose that humor styles mediate or moderate the relation between stress and health [81; 82; 87]. For example, applying this model to a sample of 355 Israeli men and women (mean age=25 years), Besser *et al.* [81] found that maladaptive humor use mediated the relation between self-criticism and self-reported neediness and depressive symptoms. Adaptive humor styles were negatively related to self-reported depressive symptoms. There was no evidence for moderation, suggesting that using adaptive humor may not influence depressive symptoms if individuals are already high in self-criticism and neediness. Self-reported humor styles

are consistently relevant to aspects of psychological wellbeing (e.g., coping and life satisfaction) with small to medium effect sizes when controlling for other variables [88; 89]. However, it is not clear if humor styles may be tapping into underlying variables, such as trait optimism or other personality styles [1; 90]. This critique and other limitations are discussed in a later section to consider other material (i.e., beyond the HSQ approach) in the development of the e-H2C workshop.

Humor styles and relationships

Seven articles identified as relatively strong (compared to correlational studies) in design (see Design Strengths column) are included in Table 2. Most of these studies focused on humor styles within romantic relationships, including observed interactions in couples ($n=3$) or self-reported mate desirability based on exposure to manipulated vignettes ($n=3$). Within the couple observation articles, in general, affiliative humor was related to positive responses from the partner and relationship satisfaction and aggressive humor had the opposite effect. Self-directed humor styles (i.e., self-enhancing and self-defeating) were not measured within most of these studies. Of note, observer ratings of affiliative and aggressive humor styles were reliably correlated across studies (Pearson's $r=.68$ to $.98$).

Campbell *et al.* [91] found that when a person used more affiliative humor, the partner reported increased closeness ($b = .24$), higher perceived resolution ($b = .51$), and lower feelings of distress ($b = -.45$). Higher aggressive humor use was associated with partner's lower perceived resolution ($b = -.40$) and higher feelings of distress ($b = .30$). The “ b ” value represents the standardized coefficient in a multilinear regression analysis. The number reflects a proportion of a standard deviation of that measure, indicating that

for every one standard deviation increase in affiliative humor, the identified variable increased by that portion of a standard deviation. However, individuals who frequently used affiliative humor were also more likely to use aggressive humor ($r = .53$ for men; $r = .65$ for women). Campbell *et al.* [91] initially tested the reliability of behavioral rating of humor styles. The authors used a global rating, rather than coding each humor behavior. Howland and Simpson [92] reported adapting Campbell *et al.*'s protocol to rate frequency of individual behaviors instead. Interestingly, when rated globally, aggressive and affiliative humor were highly correlated. When rated according to individual behaviors, aggressive and affiliative humor were significantly *inversely* correlated. These discrepant findings across studies reinforce the need to attend to the contextual and relational nuances of individual humor events that are not captured by global judgments.

Howland and Simpson [92] rated behaviors during a paradigm to discuss future goals of Partner A and found that Partner B's use of affiliative humor was associated with a decrease in negative affect and higher observed support for Partner A. Partner B's use of aggressive humor was associated with an opposite effect and this opposite effect was larger in observed support. Winterheld *et al.* [93] more closely investigated individual behaviors during couple conversations to reveal the interpersonal dynamics that may determine the decision to use and function of a particular type of humor in the moment. The authors found that, during a conflict-resolution paradigm, an individual used more affiliative humor when his or her partner appeared more distressed. Partners who were more avoidant used more aggressive humor and partners who were more anxious used more self-defeating humor. An individual's higher use of affiliative humor was related to more laughter, less anger, and greater satisfaction with conflict-resolution of his/her

partner. Aggressive humor use was not significantly related to anger responses, suggesting that aggressive humor may not always produce negative outcomes.

For studies in which participants rated mate attractiveness [94-96], hypothetical individuals described as using affiliative humor were rated significantly more attractive compared to individuals described as aggressive. In [94], participants rated affiliative, self-enhancing, and self-defeating humor styles as more attractive than aggressive humor style in a potential mate. DiDonato [95] was the only identified study to use pilot information to develop romantic comments (i.e., “pick-up lines”) associated with humor styles. In both kinds of studies — when humor styles were presented as general descriptions (e.g., “This person tends to use humor...”) and as specific humorous comments that may provide a cue to the individual’s humor patterns — results were fairly consistent. Kuiper and Leite [97] also replicated the finding across three studies that participants expressed more interest in continued interaction with a hypothetical person who was described as displaying affiliative or self-enhancing humor rather than aggressive or self-defeating humor. In Zeigler-Hill and colleagues’ peer ratings study [94], participants’ friends ratings of affiliative and self-enhancing humor were associated with other social desirable personality traits.

The relational humor styles studies support the salience of different types in initiating, evaluating, and sustaining relationships. The findings across studies also support a nuanced understanding of humor and should also be interpreted within the context of their limitations. All studies included almost entirely heterosexual individuals, so findings may not generalize to other kinds of couples. In addition, the studies predominately included late adolescent college students, so generational and

developmental differences in humor and relationships may diminish generalization to other age groups. Overall, the studies support the principle that adaptive humor appears more strongly related to desirable outcomes within relationships. However, the affiliative versus self-enhancing constructs may be difficult to distinguish. Aggressive humor may still be adaptive with regard to mate selection and may sometimes be more effective than using no humor at all within couple conversations. Based on these limitations, the e-H2C workshop uses a mechanistic approach for deciding when humor is appropriate according to one's own needs and another person's within the relationship. This approach is reflected in Figures 1 and 2, which indicates that humor can help regulate another person's affect during interpersonal interactions.

Limitations of Humor Styles Research

Construct validity

Heintz and Ruch conducted two separate studies investigating the construct validity of the HSQ [90; 98]. The authors express concerns regarding the widespread use of the measure without critical evaluation. Specifically, the HSQ might not yield incremental validity as a predictor of psychological wellbeing beyond the personality traits [90; 99]. Heintz and Ruch [98] reassessed the construct validity of the HSQ using a multi-trait multi-method analysis (MTMM) and correlated-traits correlated methods minus one (CTC[M-1]) approach. MTMM and CTC[M-1] describe the statistical and theoretical approaches to comparing the initial definitions, constructs, and final HSQ subscales to assess whether final HSQ items measure what they were intended to measure. The HSQ was developed according to a construct-based approach in which a literature review was conducted and theoretical constructs of adaptive versus maladaptive

styles of humor were created. Heintz and Ruch translated the initial definitions and constructs into self-report items. These authors hypothesized that there would be strong correlations among the HSQ items and associated definitions (described below) and constructs (23 items):

Humor Styles Definitions (compared against HSQ items):

Affiliative: “I use humor to enhance my relationships with others in a way that’s relatively benign and self-accepting”

Self-enhancing: “I use humor to enhance myself in a way that is tolerant and non-judgmental to others”

Aggressive: “I use humor to enhance myself at the expense and detriment of my relationships with others”

Self-defeating: “I use humor to enhance my relationships with others at the expense and detriment of myself”

Five hundred and eighty-four participants completed the self-report measure that included definitions and constructs and the full HSQ. The authors found that the convergence among different ways of measuring the HSQ constructs (i.e., definitions and construct descriptions) and HSQ was statistically consistent with the exception of affiliative and self-enhancing subscales, which appeared to have significant overlap conceptually.

Martin (2015) responded to Heintz and Ruch’s conclusions with his own critiques. First, he highlighted that Heintz and Ruch did not apply in the MTMM in the traditional way — i.e., they used all self-report methods rather than integrating peer report and behavioral observations. Second, he stated that the construct items did not

assess frequency as the HSQ items do. For example, a person can strongly endorse a certain use of humor (e.g., “I gently tease or playfully poke fun at others within my own group”), but may admit that she does not engage frequently, so her self-report exaggerates her actual behavior when the item does not account for frequency. Martin also indicated that the constructs and definitions used by Heintz and Ruch resemble some of the original pool of items that were dropped from the final HSQ. He stated that these items were dropped because of the difficulties individuals experienced with identifying the underlying motivations to their humor use. The final items represented more behavioral and observable characteristics of humor use that included a frequency indicator.

In the other critical evaluation of the HSQ, Ruch and Heintz [90] proposed that the HSQ relates to mood and personality indices better than previous measures because of the latent patterns the measure might assess. To test this claim, the authors “re-contextualized” the measure to appear not humor-based. For example, Item 1 (affiliative): “I usually don’t laugh or joke around much [reverse scored]” was changed to “I usually don’t talk or converse much with other people [reverse scored].” Item 11 (aggressive): “When telling jokes or saying funny things, I usually am not concerned with how people are responding” was changed to “When telling experiences or saying enthralling things, I am usually not very concerned with how other people are taking it.” The authors found that the original HSQ subscales predicted small amounts of variance beyond the “re-contextualized” HSQ for six self-report indices of psychological wellbeing (life satisfaction, positive affect, negative affect, self-esteem, optimism, and depression). The authors conducted separate hierarchical linear regressions for each index and each HSQ

subscale (Step 1= Re-contextualized HSQ subscale; Step 2=Original HSQ subscale). The incremental predictive validity (beyond Step 1) of affiliative humor was significant for positive affect [R^2 change=.02] and optimism (R^2 change=.02). However, this effect was in a negative direction, suggesting that affiliative humor predicted lower positive indices. For self-enhancing humor, effects were significant for positive affect and self-esteem. Of note, aggressive humor did not significantly predict variance of any index. Self-defeating humor from the original HSQ negatively predicted optimism [R^2 change=.05]. Across re-contextualized HSQ scales, significant effects were predominantly medium to large for affiliative [R^2 = .06 - .28], self-enhancing [R^2 = .08 -.29], and self-defeating [R^2 = .04 -.20] subscales across wellbeing indices. Overall, the findings suggest that individuals' perspectives on themselves and others, especially in social interactions, might largely contribute to the effects seen in the HSQ, regardless of humor. The limited predictive validity of aggressive humor also is a consistent and important finding.

Overall, the limitations inherent to self-report measures remain constant with regard to the HSQ, which includes retrospective and other forms of biases. As discussed in the previous sections, the literature on humor styles in relation to wellbeing and relationships appears to support the adaptive versus maladaptive humor styles conceptual model. However, some styles (e.g., self-enhancing) may be less relevant to relationships and aggressive humor use may not always be maladaptive. In addition, the overlap and correlation among an individual's humor use (e.g., some studies described above reported correlations between aggressive and affiliative humor use) highlights the challenges of capturing the nuances of everyday use, especially events in which the intention of the humor is not obvious to the producer or receiver. Some individuals may use all types of

humor with higher frequency. The HSQ provides a useful conceptual framework for considering the multidimensionality of humor and its positive and negative effects on personal and interpersonal health. However, measuring humor with a self-report questionnaire has obvious validity issues. In addition, the challenges of creating practical examples of humor styles using vignettes are discussed in the following section.

Experimental validity

As described in the Humor Styles research summary section, many researchers have attempted to experimentally manipulate humor styles; experimental manipulation of humor has many limitations, which are described in this section in addition to a discussion of the validity of experimental findings.. Researchers either stated the intentions of the producer, or assumed particular humor scenarios would be received as one of the four styles. For example, to manipulate self-defeating humor, Kuiper and Leite [97] described a scenario in which a friend made: “several jokes: about their own intellectual faults and academic weaknesses *in order to let others laugh at their expense.*” The authors identified the humor producer’s intention, which may often be unclear (to both the producer and receiver) in real world interactions. Conversely, other researchers created humor events and assumed they would be interpreted according to their intended humor style. For example, Bippus *et al.* [100] investigated how individuals reacted to humorous responses to a complaint of a romantic partner that he/she wanted to spend more time together. The following humorous complaints were presented to the participants:

1. *Affiliative: “The only reason I go out is to tell people how wonderful you are!”*
2. *Aggressive: “Well, no wonder ‘cause your life is so boring compared to mine!”*

3. *Self-enhancing: “If I don’t spend enough time with you, you get jealous. When I don’t spend enough time with myself, I get jealous!”*

4. *Self-defeating: “Well, I don’t have very many friends, so when I find one, I like to spend time with them!”*

The authors created vignettes that did not cite the intention of the producer and assumed the humor attempts would be perceived as affiliative, aggressive, self-enhancing, or self-defeating according to the experimenters’ intentions. The current e-H2C workshop emphasized the distinction between intention and perception. The Relative Interpersonal Distance Theory of humor (RIDTH) is intended to fill the gap on predicting whether the humor attempt will be violating or humorous to another party. Of note, an item on thoughtless humor (i.e., not pausing to consider the impact of humor on other people) is included within the aggressive humor scale within the HSQ.

Lack of integration with disparagement humor research

Disparagement humor describes verbal or nonverbal communication that creates amusement by belittling a specific target [101; 102]. Martineau [103] has been cited as the seminal model of disparagement humor and its functions, including increasing in-group cohesion and controlling in-group behavior. Research has increased over the past decade. Unfortunately, this important area of research emerged after the initial construction of the HSQ and therefore may not have been thoughtfully integrated into the conceptualization of humor styles. In addition, disparagement humor is focused more on group processes, rather than an individual or relationship health. The e-H2C workshop informs participants about the potential consequences of disparagement humor with regard to group environments and power differences in relationships.

Addressing Humor Styles Limitations within The e-H2C Workshop

Because humor styles research primarily relies on self-report or artificially constructed humor scenarios, unintended consequences of humor may not be captured. Individuals may unintentionally convey an aggressive message or two people may have discrepant perceptions of what is funny. Humor theories (e.g., the Benign Violation Theory and the Relative Interpersonal Distance Theory of Humor) help to fill in this missing piece and conceptualize what creates different perceptions of humor. Also, the humor styles literature lacks integration with ongoing disparagement humor research, which focuses on how humor affects social groups, and particularly disenfranchised individuals. In summary, the humor styles conceptualization of adaptive versus maladaptive humor provides a useful starting-point for teaching individuals how to use humor to promote their health and relationships. However, more information is needed to account for its practical application – for teaching individuals who want to use humor adaptively, but do not know how. To inform the practice of adaptive humor, the next section incorporates the clinical and theoretical information already discussed to propose an informed, mechanistic account of what humor is and how it affects the producer, receiver(s), and target of humor.

Humor in Acceptance and Commitment Therapy (ACT)

Current psychotherapeutic interventions help to explain the possible mechanisms of humor in relation to identity and mental health. Acceptance and Commitment Therapy [104] has gained empirical support for treatment of various mental health complaints [105]. Of note, this approach is grounded in functional contextualism, consistent with the proposed frame of the e-H2C workshop. Rather than focus on fighting dissatisfaction and

negative emotions, ACT prescribes growing comfortable with these emotions and greeting them with compassion by using metacognitive strategies. ACT conceptualizes human suffering as a result of cognitive fusion (i.e., our thoughts and beliefs are “fused” with emotion) and experiential avoidance (i.e., we actively avoid things that cause us pain). For example, one may have the thought “I am a loser.” This thought is connected with pain and sadness, whether or not it is based in reality. ACT prescribes “cognitive defusion” strategies to help a person disconnect the thought from the distressing emotion [105].

Often cognitive defusion involves humorously pointing out the inconsistency when a thought is perceived as reality. For example, when participants were asked to choose a negative thought (e.g., “I am stupid”) and to repeat the thought until it had no meaning, they felt less distressed when experiencing the thought in the future [106]. This technique was effective to reduce the believability of the thought. The cognitive defusion technique created psychological (or emotional) distance between the thought and emotion, also called believability. Other cognitive defusion exercises include saying the thought slowly, singing it, saying it an odd voice, or using “bad news radio,” i.e., pretending to report the thought as a catastrophic story on the radio [105]. Hinton and Gaynor [107] reported that the combination of these strategies applied over three one-hour sessions significantly improved self-reported health and self-esteem when compared to a wait-list control group.

Based on the concept of defusion, humor might be an effective tool to create psychological distance. It is unclear whether humor is facilitated by psychological distance or if humor helps create psychological distance [24-26]. Cognitive defusion

strategies can create emotional distance and incidentally, result in humorous distortions of negative thoughts. This connection might provide evidence to the use of humor as causal to creating distance from distress. Therefore, the e-H2C workshop builds on empirically supported theories and strategies that explain how humor is used to cope with stress.

Humor as Cognitive Defusion to Cope and Connect

Based on the proposed definition of humor and the concept of cognitive defusion, creating humor must involve highlighting an inconsistency between two things. For example, cognitive defusion within ACT involves highlighting the inconsistency that we take our thoughts as reality, when they are not reality. Defusion highlights that thoughts are an invention of the mind, rather than an observation of reality. In other words, “I am a loser” does not inherently mean anything. Stereotypes, cultural norms, and social rules are social constructions without a truly objective reality. Using humor allows individuals to highlight the inconsistency that we often take these constructions as reality.

Based on the theoretical underpinnings described, humor has effects on the relationships among three primary components: (1) the deliverer; (2) the content; and (3) the receiver. Whether the effects are helpful or harmful depends on what inconsistencies are pointed out. For the deliverer, defusion through humor can lead to positive outcomes if the content is distressing, or negatively viewed (e.g., in an interpersonal context). Humor can enhance social desirability [108] or, in a medical context, can help a person manage impressions and maintain a “good patient persona” [109]. The deliverer may distance herself from content that interferes with engaging with a task or another person. For example, Ford *et al.* [110] found that women who reported frequent use of coping

humor were able to perform better on a math test when primed with the negative stereotype about women in math, compared to women who reported low coping humor. Women who used humor might have been able to cognitively defuse themselves from the stereotype that would have otherwise worsened their performance. Focella [111] found that when people with Arabic-sounding names joked directly about a negatively stereotyped characteristic of their group, they were able to elicit a more positive reaction from others high in reported hostile prejudice. These stigmatized people defused (i.e., distanced) themselves from the negative characteristic that may have interfered with their ability to connect with a hostile person. When there is not another person in the humorous exchange, humor might help a person defuse negative emotions from stressors. For example, humor was used to help people manage fear in response to specific phobias, such as spider phobia [112].

Humor also can produce negative outcomes through defusion. The deliverer can damage his or relationship with the receiver, particularly when the content of the humor is closely tied to the receiver. For example, disparagement humor (i.e., humor that attempts to denigrate another group) has been conceptualized in terms of maintaining one's social identity [102; 113]. Disparagement humor may distinguish or alienate one group from another [5; 114]. When the deliverer makes humor related to something to which the receiver strongly relates, the humor attempt may not be equally violating for the receiver and producer and may therefore injure the relationship [27]. In summary, humor can help a person manage relationships with objects (e.g., a scary monster) or people (e.g., a friend). Through the effect of highlighting an inconsistency, defusing subjective from objective reality, and using the subsequent "non-critical" mindset, a

person can use humor to disconnect from undesirable stimuli that interfere with experiencing positive emotions in individual and social contexts. This principle helps to clarify the shifting strengths and limitations of humor as described in the e-H2C workshop.

This mechanistic approach (i.e., cognitive defusion as the mechanism for the effects of humor) helps to elucidate the reasons that adaptive and maladaptive humor styles are difficult to practically replicate (see Limitations of Humor Styles Questionnaire section). The concept of defusion also can explain the possible characteristics that differentiate among humor styles (*e.g.*, aggressive from affiliative humor). Table 3 presents a breakdown of the humor styles constructs in terms of cognitive defusion. As shown in the preceding sections, humor is a complex behavior. Using cognitive defusion to understand the specific impact of one's humor may increase the odds of being successful with humor use with regard to personal and relational functioning. Within the e-H2C workshop, this approach is explained as a framework for reflecting on and understanding when humor is perceived differently than intended.

Existing Humor Interventions

Although humor techniques in therapy have been identified, there are few standardized humor interventions. This section describes group-based humor interventions. A separate section is dedicated to a discussion of the 7 Humor Habits Program (7HHP) [4; 115] because it has received a relatively large amount of attention and empirical evaluation. A separate section is included to describe a recent, closely related study, which investigated the effectiveness of brief online humor-based interventions [116].

Researchers have investigated effects of passive (e.g., exposures to comedic pictures or films throughout the day) and active (e.g., directives to find humor or to use verbal humor) humor. For example, compared to patients who watched neutral videos, patients with schizophrenia reported reduced anger, anxiety, and depressive symptoms, and improved social competence after watching daily comedy videos [117]. Low *et al.* [118] reported that a humor intervention for nursing home patients decreased participants' agitation, negative affect, and increased happiness, based on observed behavioral data. This intervention included education for staff members about therapeutic humor and visits from an experienced clown over an average of 11 sessions.

Because of limited research, it is unclear if humor skills, i.e., the thoughtful and active production of humor, can be trained. For example, Rudnick *et al.* [119] found no significant effects on self-reported mood when a professional comedian trained participants with “mental illness” (diagnoses were not described) in standup comedy. This standup group was compared to a discussion of comedy videos group or no-intervention group. Overall, although humor training may anecdotally enhance mood, there is limited empirical support for its efficacy. However, the existing humor interventions suggest that intentional exposure to humor can reduce stress. The e-H2C includes considerations of how to intentionally integrate humorous stimuli into daily life, but does not focus on increasing the production of humor.

The 7 Humor Habits Program

McGhee [4] developed The 7 Humor Habits Program (7HHP) and later proposed a revised program, changing the word “habits” to “skills” to reflect the intentional development of humor use in everyday life [115]. The 7HHP encourages general

playfulness and both passive (e.g., daily exposure to humor) and active humor (e.g., strategies to generate humor) uses. The Seven Habits include: [1] Surround yourself with humor (and think about the nature of your sense of humor); [2] Cultivate a playful attitude; [3] Laugh more often and heartily; [4] Create your own verbal humor; [5] Look for humor in your everyday life; [6] Take yourself lightly: Laugh at yourself; [7] Find humor in the midst of stress. These “habits” or “skills” are numbered in ascending order according to their putative progressive increases in difficulty. According to Ruch and McGhee [35], the 7HHP has consistent evidence to support its positive effects on participants’ mood and reported sense of humor use post-training, but their assessment may not be an accurate representation of the available literature. There are eight identified studies found that investigated the efficacy of the 7HHP. Half of these studies are unpublished master’s theses that were not readily accessible.

The 7HHP for chronic pain patients (n=12) reduced self-reported depression compared to a control group [120]. However, this study only included one self-report measure, and though the abstract was in English, details of the methods are only published in Arabic. Konradt *et al.* [121] used a humor intervention “conceptually based on the 7HHP” as supplemental treatment (i.e., in addition to medication and therapy) for geriatric patients diagnosed with depression (n=49) and compared results against a control group (n=50). Both groups (i.e., 7HHP and control) significantly improved in self-report mood measures, but when the less severely depressed patients were analyzed separately, there were no differences. The study suggested that the 7HHP might have some additional utility when added to regular treatment for severely depressed people, but possibly no benefit for moderately or mildly depressed patients. In another setting,

the 7HHP was piloted on a sample of six depressed patients who demonstrated significant improvement in self-report cheerfulness and mood measures, but did not differ on self-reported depressive symptoms over time [122]. This group was not compared to a control group, so symptoms might have decreased over time instead. The intervention consisted of eight sessions using PowerPoint to engage patients in various humor exercises, beginning sessions with an activity to induce a playful mood (e.g., walking in silly way across the room) and ending sessions with a humorous video. Crawford and Caltabiano [123] compared the effects of the 7HHP (n=21) against a social group (n=14), and a control group (n=20). The 7HHP group demonstrated significant increases in self-reported positive affect and optimism compared to the social and control groups. However, it appears the 7HHP participants reported higher depressive symptoms at baseline (38% met criteria for depression) than the other groups (25% in the social group; 1% in the control group). In other words, the 7HHP group had more room to improve mood, and statistical improvement may have resulted from baseline differences between groups (i.e., regression to the mean effect). Overall, the results from the 7HHP studies do not provide convincing evidence for the efficacy of a humor skills framework that does not account for the limitations of humor on indices relevant to physical or emotional health (e.g., mood). The 7HHP intervention did not include general rules and practical skills related to content, timing, and context. It is possible that the 7HHP increased participants' self-reported humor use, but without differentiating between adaptive versus maladaptive approaches. Given the link between adaptive humor and emotional and relationship health (discussed above), a novel humor intervention that distinguishes between helpful and harmful may achieve more robust effects.

Overall, based on study design limitations and the specific samples studied (i.e., primarily depressed individuals), it is not clear whether 7HHP consistently produces positive change, and also whether it might be useful to non-clinical or other clinical populations. Ruch and McGhee [35] identified a gap in their training program and recommended adding a training module that includes considerations of the “virtues (and vices)” of humor, which also encourages individuals to refrain from “earthy and mean-spirited humor” (p. 189). This gap described by Ruch and McGhee highlights the importance of the electronic Humor to Cope and Connect (e-H2C) Workshop, which is foundationally based on training purposeful and thoughtful humor use. The e-H2C workshop shares some common elements with the 7HHP, e.g., encouraging playfulness and strategies for using humor when stress. However, the 7HHP appears to assume that distressed individuals are deficient in humor. The e-H2C workshop is grounded in different assumptions (described below).

Advances in Telepsychology and Rationale for the e-H2C

There are many terms used to describe the delivery of educational or health services over the Internet. For example e-learning is used interchangeably with other terms, such as web-based learning, Internet-based learning, and online learning [124]. E-learning is a term often associated with education or university environments, whereas telehealth is used in the context of medical and mental health care. The term telehealth is derived from the Greek *tele*, meaning “far,” also associated with *telos* meaning “end” [125]. Ritterband *et al.* [126] highlight the need for unifying the language to describe internet-based programs. In this section, findings from across online-mediated services are discussed.

Telepsychology broadly encompasses the range of remote *mental* health interventions and can include media such as cell phone, videoconference, email, and virtual reality [127]. A review of 65 intervention studies suggested that Internet and telephone-based interventions were effective for cigarette smoking prevention, child psychiatry, eating disorders, substance abuse, and anxiety disorders [127]. Of the 65 studies, only 49% were classified as “High” or “Good” quality, based on factors such as randomization, clear description of intervention, follow-up assessment, and sample size. In a meta-analysis of more than 85 internet-based interventions, behavioral techniques that led to the largest effect on subsequent health behaviors were stress management and communication skills [12]. The authors concluded that more research is needed to identify whether telehealth practices should become a fixture of treatments for mental health disorders. However, Webb *et al.* [12] also found that theoretical grounding and behavioral skills training appear to increase the likelihood that intervention will be effective.

The e-H2C workshop is an internet-based tool to train skills that generalize to multiple domains relevant to mental and physical health. This workshop is consistent with the term “web-based intervention” as defined by Barak *et al.* [128]:

[...] a primarily self-guided intervention program that is executed by means of a prescriptive online program operated through a website and used by consumers seeking health- and mental health–related assistance (p. 5).

Though the e-H2C workshop does not include guidance or supportive feedback, which is considered a core component of this definition, the workshop generally fits within this defined framework. The effects of web-based interventions vary greatly based on factors

such as the targeted outcome, technological presentation, and specific content [129].

Luthans *et al.* [130] developed a web-based intervention to increase positive psychological capital among employees. This program resembles the framework for the current e-workshop. This study revealed that a brief intervention aimed at a general population was feasible.

Whereas the literature comparing the effectiveness of telehealth to in-person healthcare does not reveal clear distinctions yet, educational studies have shown starker differences. Two large-scale meta-analyses supported that web-based teaching is *more effective* than in-person teaching [9; 10]. The reason for this difference is debated. One explanation posits that “learning presence” is increased in the online classroom, suggesting that students can pace their own learning and stay engaged for longer periods of time [131]. In addition, another study indicated that interactions between learner and the course content appears more important than learner-instructor or learner-learner interactions [132]. Overall, this literature suggests that the Internet is an effective platform to train behavioral skills and the e-H2C workshop might be a feasible and effective method of training humor skills.

Humor-based online positive psychology interventions

This section summarizes the only known internet-based humor intervention, which supports the feasibility of the e-H2C workshop. The participants were recruited from a general, healthy population, which closely aligns with the current project. Wellenzohn *et al.* [116] adapted five brief (daily, for one week) positive psychology interventions to increase humor production. Approximately 100 participants (N=1,032 in

final analyses) were randomly assigned to each of the five humor-adapted versions below (and placebo-control):

[1] *three funny things* - write down three funniest experiences of the day

[2] *collecting funny things* - describe one funny memory in detail

[3] *counting funny things* - count the funny things that happened during the day and write the frequency down

[4] *applying humor* - note funny things and add new activities, e.g., jokes, funny movies

[5] *solving stressful situations in a humorous way* - think about a stressful experience during the day and how it could be solved in a humorous way).

These five interventions were compared against a placebo control group that required participants to write about their early memories every night. All instructions and measure completion occurred online. Participants were instructed to review 8 -10 slides providing a general overview of humor and then were provided with a pdf copy of instructions according to the intervention to which they were randomly assigned for the next seven days. They then completed post-tests immediately after, 1 month later, and 3 months later.

Outcome measures included two self-report scales: Authentic Happiness Index (AHI) and Center of Epidemiological Studies Depression Scale (CES-D). The authors also measured preference of intervention and perceived personal benefit (assessed using one item for each) as potential moderators. According to individual repeated-measures analyses of variance (covarying for baseline scores) comparing each intervention to the placebo control, all humor interventions were effective immediately after completion

with regard to self-reported depressive symptoms and happiness. With regard to happiness, effects of *three funny things*, *counting funny things*, *applying funny things*, and *solving stressful situations* interventions persisted for 6 months. With regard to depressive symptoms, only *collecting funny things* and *counting funny things* interventions showed significant effects 1 month follow-up and no interventions had a significant effect at 3 and 6 months. Preference for the intervention and perceived benefit accounted for 1% of the variance in both happiness and depressive symptoms. Effects on happiness and depressive symptoms were statistically small and qualitatively uncertain. Despite small effect sizes of the interventions, this study demonstrated that a humor-based online tool is feasible and accepted with minimal incentive (participants were only offered personalized feedback on outcome scores at the end of 6 months). Also, the interventions were brief and self-directed. For some interventions and measures, positive effects still persisted for the entire 6 months studied. Only approximately 12-15% of participants were lost to follow-up at the immediate post-test. Unfortunately, the authors did not use an adherence measure to assess whether participants actually completed the assignments. These interventions notably lack a component that clarifies the potential negative consequences of humor, which is the important feature of the e-H2C workshop. The e-H2C workshop is intended to capitalize on the broadening and enhancing consequences of positive affect, while also attending to the importance and function of negative affect.

Individual Differences in the e-Learning Experience

Since the proliferation of online learning platforms, additional research has identified relevant aspects of the learner, context, and presentation of materials that

enhance or diminish the efficacy of an online educational approach. New approaches to e-learning include artificial intelligence or computer adaptive technologies to provide the traditional benefits of an in-person teacher — e.g., tailoring moment-to-moment materials to individual needs of students [133; 134]. However, in the absence of advanced technologies that personalize the learning experience, some researchers propose that individual learner characteristics (e.g., personality traits) may be the most relevant variables with regard to engagement with material and performance [135; 136].

Gorsky and Caspi [137] theorize that e-learning happens across four types of dialogues: instructor-learner, learner-learner, learner-subject matter, and vicarious interaction. The first two types of dialogue provide the student with feedback, information, motivation, and a social environment. In learner-subject interactions, the student accommodates or integrates the learning content. In vicarious interaction, the student learns from observing other learner interactions. Based on this theory, which captures the variety of ways students can engage in their online learning environments, individual differences in personality may affect how students learn online versus in-person. The Big Five personality traits have been measured in relation to e-learning satisfaction and performance. The Big Five include: Conscientiousness, Openness to Experience, Emotional Stability, Extraversion, and Agreeableness [138]. In a study of 140 students in a Master of Business Administration totally web-based education (TWE) course, leadership orientation appeared strongly related to course performance, but sociability and need for recognition were unrelated to grades [139]. With regard to the Openness construct, creative thinking, not abstract thinking, was related to grade performance. In another study of 214 undergraduate students, comparing participation in

classroom versus web-based instructional activities, individuals who participated in class were more extraverted than individuals who participated in both environments and who participated in only the asynchronous web-based environment [140]. However, in general, most students expressed willingness to participate in the classroom, and much smaller numbers of students reported wanting to participate in the web-based environment or both. Extraversion versus introversion personality patterns may play a minimal role in e-learning outcomes.

Other studies have focused on the association among types of participation and e-learning outcomes. Dennen [141] found that students who engaged in more “pedagogical lurking,” i.e., reading posts and messages without actively writing comments, reported more perceived value in discussion boards than students who may have posted actively without focusing on reading others’ posts. In contrast, Palmer *et al.* [142] found that additional postings to a discussion board beyond course requirements contributed saliently to students’ grades, which suggests that preparing posts may have significant benefits for students. To investigate the relation between “learning style” and performance in a program teaching software skills, Huang *et al.* [135] applied the Felder-Silverman Learning Style Model (FSLSM), which comprehensively describes possible learning characteristics across four dimensions: active/reflective, sensory/intuitive, visual/verbal, and sequential/global. The authors found that individuals higher in sensory learning (i.e., factually and procedurally focused) were more likely to engage in both active (i.e., number of postings and file viewings) and passive (i.e., duration of time spent online and number of page views) participation in the course. Active and passive participation were strong predictors of overall performance. The authors proposed that

individuals who are more intuitive learners may require increased face-to-face instruction to encourage better online engagement. However, of note, the other learner styles were unrelated to participation or performance, which might be related to the topic of the course (i.e., software skills). In addition, internal reliability of the self-report scales representing the dimensional learning styles were low, which calls into question the validity of the primary measure. Large scale reviews on the relation between learning style and general achievement in in-person settings have mostly debunked the proposition that teaching styles must be matched to learning style based on limited and even contradictory empirical evidence [143; 144]. The concept has been labeled as a popular and dangerous myth of psychology that could lead to unfair systematic differences among groups if applied to educational settings [144].

The e-H2C workshop is intended to be asynchronous (i.e., no real-time interaction between instructor and participant) and does not include a discussion group. Therefore, participants learning e-H2C workshop materials engage via learner-subject matter interactions. Gorsky and Caspi [137] proposed that intrapersonal dialogue about the materials mediates learning and social interactions facilitate intrapersonal dialogue. The e-H2C workshop includes components that promote intrapersonal dialogue and interaction with the materials (e.g., “checks on learning” questions, and practical activities) to promote engagement across a variety of learners.

The Prospective electronic Humor to Cope and Connect (e-H2C) Workshop

***A Priori* Assumptions of the H2C**

As discussed above, the theoretical and empirical data on humor and humor interventions are mixed. Therefore, there are certain assumptions that must be made

based on a thoughtful integration of humor findings over time. In addition to the theoretical underpinnings already described, there are three assumptions that guided the rationale and content for the e-H2C:

*Assumption #1. **The cognitive function of humor is an innate evolutionary ability*** in typically functioning adults (i.e., prospective workshop participants), though humor perception and production may vary in frequency. In other words, the assumption is that individuals do not need to learn humor, such as communication training programs that assume that students are able to speak a language. This assumption is supported by vast multidisciplinary literature suggesting the emergence of humor coincided with human's development of language and increased size of social groups [21].

*Assumption #2. With regard to mood and life satisfaction, **the consequences of humor use to individuals and their relationships are more important than the frequency of use or quality with regard to individual and relationship health.*** In contrast to the 7HHP, participants are not encouraged to globally use humor more or less. The content and context of humor are focal points, rather than frequency. This assumption follows from research highlighting the adaptive versus maladaptive uses of humor [2] and negative effects of disparagement humor [5].

*Assumption #3. Following from the former two assumptions, **individuals naturally use and appreciate humor frequently in their daily lives, but may not use humor in a thoughtful way that consistently benefits themselves or their relationships.*** Therefore, lessons about how to produce humor may be less important than helping individuals to understand their own humor styles and to make thoughtful

decisions on when and how humor can be optimized for coping with personal and relationship stress.

Preliminary Work

In June 2015, based on discussions with staff at The Women's Center (a community counseling center in a suburb of Virginia) about the need for new workshops offered to the community, the primary investigator facilitated a 2-hour humor workshop under the supervision of two licensed professional counselors. The workshop included psycho-education about stress, theories of humor, humor styles, and strategies for considering how to use humor in stressful intrapersonal and interpersonal scenarios, based on concepts discussed above (see Appendix C, Handouts #1-5). The second half of the workshop was dedicated to applying knowledge and strategies to a series of hypothetical stressful scenarios (Appendix C, Handouts #6 and 7). The Women's Center workshop coordinators use a standard evaluation form to further develop their programs, which are not intended for formal research purposes. The summary feedback from the workshop participants (N=7) is included in Appendix C. Permission to use the de-identified summary feedback was given by the primary workshop coordinator at The Women's Center (see Appendix C). Overall, participants responded positively to workshop information, materials, and delivery. These preliminary data supported the potential feasibility and acceptability of the e-H2C, which retained the core features of this in-person workshop.

Overview

The e-H2C should consist of common elements of the IMB model. Two major themes are that: (1) humor is a tool to reduce stress through intrapersonal and

interpersonal use, and (2) humor has important limitations and should be used thoughtfully. The e-H2C content and structure were formulated in the development process (see Methods); the following general concepts were included. The workshop was expected to take approximately 1-1.5 hours.

Information

The information provided should include stress and its consequences, a humor definition and theories, and findings on strengths and limitations of humor with regard to coping with stress and connecting socially. The order in which the concepts are presented should encourage participants to reflect on experiences of stress or negative emotions, and then consider how humor can be integrated into those stressful instances.

Maladaptive responses to stress and emotions include suppression and avoidance, which lead to negative mental and physical health problems [145; 146]. A definition of humor should be provided in addition to an introduction of the four Humor Styles. In general, humor for coping and connecting are considered two separate functions. Relevant research associated with each function should be provided separately along with relevant multimedia examples. For each function (i.e., to cope and connect), the strengths, limitations, and other considerations should be described.

For using humor to **cope**, presented information should include a description of the Benign Violation Theory (BVT) [24], which was intended to encourage participants' reflection on their own responses to humor attempts and how those responses might reflect their psychological distance from the topic. Humor should be highlighted as a coping tool to: reframe stress/anxiety, encourage laughter, and increase psychological flexibility (as discussed in the Therapeutic Foundations of Humor section). The

limitations of humor as a coping tool include avoiding emotional experiences or invalidating emotions, which can lead to failure to effectively use a negative emotion and address a problem.

For using humor to **connect**, the Relative Interpersonal Distance Theory of Humor (RIDTH) [27] conceptually builds off the BVT and provides the foundation for considering the content and timing of one's humor. Benefits of using humor interpersonally include: relieving group distress, "lubricating" social scenarios, empowering oneself in a hostile social group [111] or after an embarrassing situation [147; 148], and increasing in-group cohesion. Limitations include: disguising one's emotional or functional needs [149; 150], or perpetuating sexist or racist attitudes [5; 113].

Motivation

Motivational aspects of study recruitment, completion, and prospective use of skills and knowledge learned should be considered. To personalize information and enhance learner presence, a self-assessment portion should be included to provide participants with feedback about their humor patterns (HSQ) and current quality of life.

According to the IMB model, motivation is defined as personal attitudes towards the behaviors and social support for engaging in the behavior [11]. For **personal attitudes**, participants may begin the workshop with certain misconceptions about humor — e.g., humor is "all good" or "all bad." Alternatively, they might believe using humor indicates someone is not taking a topic seriously. These misconceptions are cognitive distortions that gloss over the complexities of humor use and may interfere with thoughtful integration of humor into daily life. Possible misconceptions should be

addressed within the information provided on the determinants of maladaptive versus adaptive humor styles. Other considerations of motivation include perceived social support and perceived norms for how others might use humor. To enhance **social support**, participants should be encouraged to share insights with their family and friends.

Behavioral Skills

Behavioral skills include both perceived and objective abilities [11]. Ideally, after taking the e-H2C workshop, participants will perceive themselves as better able to use humor adaptively and therefore engage in more thoughtful attempts. Humor strategies and specific recommendations for daily use should be provided. These strategies should include considerations for how to respond when humor fails. The e-H2C includes practical components in which participants are presented with hypothetical opportunities to use humor and apply learned knowledge from earlier in the workshop. The current study included development and refinement of these practical scenarios and exercises.

Implications of Humor Skills Training

Developing humor skills fits within broader research on improving professional and personal functioning. There has been an intensified focus on positive psychology and resilience [151]. Humor has been conceptualized as an important aspect of this strengths-based approach to coping with stressors and enhancing personal growth [1]. Of note, the basis of the e-H2C fits nicely within Goleman [152] five-factor model of Emotional Intelligence (EI), which includes personal (self-awareness, self-regulation, and motivation) and social competencies (social skill and empathy). Higher EI has been identified as predictor of effective leadership performance. Humor use also relates to

leading effectively and empowering followers [153] and serves a variety of complex functions related to leadership [154]. However, newer research has reported that specific interactions of leader versus follower humor styles predict the perceived quality of the leader-follower relationship [155]. The impact and complexities of humor use supports the need for a workshop that encourages more thoughtful decisions related to when and how to use humor.

Defining Feasibility

Given the large costs of failed Randomized Controlled Trials, feasibility assessments are vital pre-tests to screen out programs that are likely not going to work [156]. To help clarify the functions of feasibility studies, Bowen *et al.* [156] proposed a framework that describes eight areas that may be included as part of a feasibility. These eight areas were used to identify which aspects of feasibility were assessed for the current study.

Summary

Humor research has advanced in parallel to web-based learning. Humor has long been considered an important tool to reduce stress and foster relationships. However, in the past decade, more research has focused on the strengths and limitations of using humor for these aims. The Benign Violation Theory (BVT) and The Relative Interpersonal Distance Theory of Humor (RIDTH) help to frame the proposed therapeutic mechanisms of humor. The Humor Styles research provides support for the distinctive effects of adaptive (affiliative and self-enhancing) versus maladaptive (aggressive and self-defeating) forms of humor on psychological well-being and relationships. Framed by the BVT, RIDTH, and humor styles research, a mechanistic approach to understanding

how and when humor may be adaptive is proposed and conceptually integrated with Acceptance and Commitment Therapy theory and techniques. According to this mechanistic account, humor “defuses” the producer from the target of the humor. Humor may defuse the producer from an obstacle to the relationship (i.e., affiliative) or from an obstacle to life satisfaction (i.e., self-enhancing). Humor also may defuse the producer from a person if he or she identifies strongly with the target (i.e., aggressive), or from a personal emotion or issue that needs to be addressed (i.e., self-defeating). Of the reviewed humor interventions, the 7 Humor Habits Program (7HHP), a program intended to increase individuals’ humor production in daily life and in response to stress, received the most empirical investigation. Studies on the 7HHP and other humor interventions suggest variable positive results. In addition, a recent study demonstrated the feasibility of using internet-based humor interventions within a general population. The electronic Humor to Cope and Connect (e-H2C) workshop is intended to fill the gap of existing humor interventions by using a multidimensional approach (i.e., that includes limitations).

CHAPTER 2: Overview and Specific Aims

This project created and evaluated the electronic Humor to Cope and Connect (e-H2C) workshop. The following Specific Aims and associated hypotheses provide the framework for the development and feasibility testing of the e-H2C. They are listed in chronological order according to the study procedure (see Methods section).

Specific Aim 1: To construct the **preliminary** e-H2C workshop.

Hypothesis 1a. Principles and activities of the e-H2C workshop will be adaptable to an online format (see **adaptation** focus area, Table 1).

Rationale: Online workshops and interventions have evolved in popularity over the past two decades. Because of the accessibility of video recording and interactive software, the educational and skills-based portions of the e-H2C workshop should be translatable to an online format.

Specific Aim 2: To **refine** the e-H2C workshop with usability pre-testing (i.e., with humor research experts and a diverse sample) using semi-structured interview data.

Hypothesis 2a. Interview data regarding the **content** would lead to improvements on amount and type of information provided.

Hypothesis 2b. Interview data regarding the **delivery** would lead to improvements on usability, presentation of materials, and clarity of language.

Hypothesis 2c. Interview data regarding the knowledge and motivation **questionnaires** would lead to improvements on question wording and clarity.

Rationale: Semi-structured interviewing is a useful method for understanding the user experience within online programs [157]. Usability testing is a method focused on identifying problems with ease of use and satisfaction with technology platforms [158],

and has been used in previous studies to enhance online educational programs [159]. By helping to identify positive and negative aspects of the user experience, the interview data will lead to adjustments to specific parts of the e-H2C workshop and improve future user experience.

Specific Aim 3: To assess the **feasibility** of the e-H2C workshop with regard to **acceptability, demand, practicality, and limited efficacy** (see Table 1).

Hypothesis 3a. The e-H2C workshop would show **practicality** and **acceptability**, as demonstrated by at least N=40 completers, majority (i.e., greater than 50%) retention rate, and greater than neutral satisfaction survey results.

Hypothesis 3b. The e-H2C workshop would be **in demand**, as demonstrated by greater than N=40 participants who initiate the workshop over a 6-month period.

Hypothesis 3c. The e-H2C workshop would show **limited-efficacy** (i.e., partial validity), as demonstrated by improvements in **information** (i.e., knowledge) of humor principles, **motivation** to use skills, and self-reported **behavioral skills** (according to pre-post measures).

Rationale: A sample size of 30-50 is recommended for feasibility studies [160; 161].

Feasibility is a broad term that can include many aspects relevant to pre-testing a novel intervention or program. These focus areas and criteria are based on Bowen's guidelines (see Table 1). The e-H2C workshop is theoretically and empirically grounded in terms of content (i.e., therapeutic humor principles) and delivery (i.e., IMB). Using a rigorous development process, the refined version of the e-H2C workshop was expected to meet feasibility criteria.

Exploratory Aim: To describe **participant characteristics** and identify possible predictors of e-H2C **retention, information-motivation-behavioral skills improvement, and satisfaction.**

Hypothesis a. **Descriptive analyses** would reveal trends in **humor styles** (Humor Styles Questionnaire), self-reported **quality of life** (PROMIS Global Health), and **demographics** (gender, age, race, education) of e-H2C participants.

Hypothesis b. **Humor styles, quality of life, and demographic** variables would predict **retention and satisfaction** with the e-H2C workshop.

Rationale: This aim was called “exploratory” because it depended on the feasibility of the e-H2C workshop (Specific Aim 3) and a sufficient sample size. The Humor Styles Questionnaire (HSQ) provides information about adaptive and maladaptive uses of humor [2]. Participants who already self-report adaptive patterns of humor use may experience different benefits from the e-H2C workshop. There are some indications of cultural and gender differences in humor appreciation and use [2]. Given the different reactions and uses of humor and online learning across backgrounds, there were expected to be patterns in demographics of participants’ preference for this workshop.

CHAPTER 3: Methods

Procedure

The study consisted of four phases (see Figure 3): (I) initial development of the preliminary e-H2C; (II) refinement of the e-H2C; (III) distribution of the e-H2C; (IV) data analysis and interpretation. Participants were recruited during Phase II (Refinement) and Phase III (Distribution) after approval from the Uniformed Services University's Institutional Review Board (IRB; see Appendix F). All participants provided informed consent prior to participating (see Appendix F). The Phases, recruitment processes, and outcome measures are described below.

Phase I: Initial Development

The goal of Phase I was to create the preliminary version of the e-H2C workshop. Phase I involved writing the scripts for instructional videos, creating the videos using the online software (i.e., Moovly © described in Methods), and embedding the questionnaires and videos within Survey Monkey. This Phase also included internally (within the research team) reviewing and refining the workshop.

The PI created five instructional modules using an online video-making software called “Moovly” © in combination with Camtasia Studio, a video-editing software (see Appendix D: Screenshots for pictures of the software editing screens). Pre and post workshop questionnaires, instructional videos, “check on learning” questions, and practical scenarios were integrated into a single Survey Monkey © survey (see Appendix D: Screenshots, for sample pictures of the workshop in Survey Monkey format). The PI, in collaboration with other members of the research team, wrote and edited scripts for seven videos, which included: (1-5) five primary educational modules; (6-7) an introductory and summary video. To create the videos, the PI read aloud and audio-

recorded the scripts with her own voice, and uploaded them onto the Moovly video software site. She then added relevant images and text to display as the audio-recordings played. The PI conducted Google searches and used images and Graphic Interchange Format pictures (i.e., moving pictures) from a variety of sites. The use of these images is allowable under Fair Use legal doctrine, which sanctions the use of copyrighted materials for the purpose of research.

Initial Construction and Review

The PI spent approximately 80 hours constructing, recording, and editing the videos. After the videos were completed, the PI and co-PI met twice to review videos in full and to improve clarity and consistency in organization and delivery. During initial construction, the PI identified that the online platform could not generate personalized feedback to participants in real-time. Therefore, personalized emailed results for Humor Styles and Quality of life were offered as incentives for Phase III participants after workshop completion. Initial videos were uploaded to Vimeo (a video sharing site), password protected, and embedded within Survey Monkey.

Internal Review

Next, six members of the research team, which included other graduate students (n=3), a University faculty member (n=1), and research associates (n=2), reviewed the videos and preliminary version of the workshop and provided feedback. The PI also conducted “mock” interviews with four research associates to refine the interview process prior to Phase II. After the workshop and associated questionnaires were completed, two separate raters (research associates) individually viewed the workshop and completed the “e-H2C Workshop Content Checklist” (see Appendix D). Upon initial

review, both raters indicated that 100% of the proposed items were present), which was a criterion for moving to Phase II.

Phase II: Refinement

The goal of Phase II was to refine the initial workshop through a repeated qualitative feedback and review process. Phase II consisted of sequential review and adjustments based on input from two groups: humor experts (Phase IIa), and general reviewers (Phase IIb). After Phase IIa, adjustments were made based on feedback so that Phase IIb participants took a revised version of the workshop that was different than in Phase IIa. These groups are further defined in the recruitment descriptions.

Results from this iterative refinement process were expected to improve the content and delivery of the e-H2C workshop. To refine the e-H2C workshop, semi-structured interviews of pilot participants (30-60 minutes) were conducted to assess these components. Generally, semi-structured interviews aimed at answering the question: “How can the e-H2C workshop be improved?” Specific to each sub-phase, discussions focused on content accuracy and breadth from humor experts (Phase IIa) or learning experience and usability for general reviewers (Phase IIb). “Seed” and potential follow-up questions were generated for each sub-phase (see Interview See Questions, in Appendix E). There is debate over whether in-person or phone interviews are preferred for collecting data. In-person interviews allow for more casual conversations and allow for more information with the use of nonverbal communication. Some researchers even advocate for that factors such as increased control over the timing and increased anonymity support the superiority of phone over in-person format [162].

Rationale for Phase II

Semi-structured interviews of participants, the number of rounds of review and edits, and target samples are based on considerations of prior research outcomes and the specific demands of this project. Interviews included cognitive interviewing and other components. Cognitive interviewing is closely related to usability testing, with many shared techniques [163]. Each process is intended to elucidate the experience of a person engaged in a measure or interview. Cognitive interviewing is a form of pre-testing a measure, which aims to troubleshoot issues with question wording and misinterpretation. With regard to e-learning, usability has been defined as the “an ability to gain knowledge from teaching and learning technologies with ease and satisfaction” [164]. Nielsen [158] cited four criteria for usability testing: learnability, efficiency, error rates, and user satisfaction, which remain the core components of modern usability testing.

Three rounds of usability testing with iterative adjustments were conducted: internal review by research team (described above); humor research experts (goal was $n=2$); six general reviewers (goal was $n=6$). Nielsen [158] recommended at least three iterations of user feedback and refinement to improve usability of computerized systems. Consistent with this guidance, Bergstrom *et al.* [164] found that usability of a website improved over three iterations of feedback and refinement, but declined after the fourth iteration. Nielsen [158] recommended at least three iterations of user feedback and refinement to improve usability of computerized systems. Consistent with this guidance, Bergstrom *et al.* [165] found that usability of a website improved over three iterations of feedback and refinement, but declined after the fourth iteration.

The number of reviewers was selected based on previous studies. For example, Cristancho-Lacroix *et al.* [159] applied a usability testing approach called “user-centered” design to develop a web-based psycho-educational program for adults with Alzheimer’s. This approach involved three rounds of user assessment and refinement between rounds. Similar improvements were made for online programs using iterative usability testing, e.g., Mazzoleni *et al.* [166] used participants to improve usability of an e-learning occupational medicine program.

Taken together, prior studies to develop internet-based educational tools and the novelty of the current project suggested that both expert and general user feedback would contribute to the development of the e-H2C workshop. Phase IIa (Expert Feedback) was implemented to increase the accuracy and empirical soundness of the summary and synthesis of humor information. Phases IIb (General Feedback) focused on the user experience to increase the likelihood that a general audience would find the workshop engaging and useful without prior understanding of humor research.

Phase IIa Summary: Expert Feedback

After the preliminary e-H2C workshop was completed, the primary investigator recruited four humor research experts to initiate Phase IIa. Humor experts were selected from the list of consulting editors for the *International Journal of Humor Research* and were offered \$30 Visa gift cards for their participation. Experts provided additional feedback on whether there were missing conceptual points or materials.

Phase IIb: General Feedback

Phase IIb was intended to elicit feedback and make improvements based on general user feedback regarding their learning experience with the e-H2C workshop. A

diverse sample was recruited from relatives and friends (i.e., second and third degree relationships) of university faculty and students, or acquaintances of the PI who had minimal knowledge of the workshop goals (n=7). Participants also were offered \$30 Visa gift cards for their participation. Recruitment goals included: at least two non-white participants and three female participants. With regard to age, recruitment goals included two 18-34-year-olds, two 35-50 year-olds, and two 51+ year-olds. These target sample characteristics were intended to reflect the diverse potential audience of the e-H2C workshop, and are described more fully in the Results.

Phase III: Distribution

The goal of this phase was to assess feasibility of the final version of the e-H2C workshop. Phase III began after the e-H2C was refined by program reviewer feedback and ended once the target sample (N=40) was reached. The finalized version of e-H2C was opened to prospective participants. This phase included recruiting participants and managing data.

Recruitment of Phase III Study Participants

Participants were recruited via a blended sampling technique, intended to target users who often use e-learning or web-based interventions and other participants who may not usually engage in these programs. One intent of this study was to identify characteristics of individuals who may be interested in the e-H2C workshop. Therefore, to ensure a broad audience of potential participants, there were minimal inclusion criteria:

Inclusion criteria:

1. Older than 18 years old
2. Fluent in written and spoken English

3. Able to access computer/internet with audiovisual capabilities

Recruitment took place over email, Facebook, and Scistarter (a website for general citizens to participate in research projects). Screenshots of recruitment pages created for Facebook and Scistarter are in Appendix D. According to a 2015 Pew Research report, 71% percent of adult internet users and 58% of the entire adult population use Facebook [167]. Specifically, Facebook marketing pages for e-learning or self-development sites (e.g., Happify, TedTalks, etc) was targeted for recruitment. The PI contacted administrators of these pages to request them to post the recruitment link. The PI also asked acquaintances to further distribute the recruitment link via email and Facebook to their social network (i.e., snowball, or “chain-referral” sampling). Results of specific recruitment methods are described in the Results section.

This link navigated potential participants to the workshop page where they provided electronic consent, complete the demographic screener, and answer the pre-workshop knowledge questionnaire (see Measure 10, Appendix E).

Phase IV: Quantitative Data Analysis

This phase consisted of data collation and analysis for Specific Aims 3 and 4 (see Data Analysis section).

Measures

This section describes the measures that participants completed, i.e., Phases II (Refinement) and III (Distribution). Measures were reviewed by the research team for clarity and utility (i.e., cognitive pre-testing), and some measures were revised throughout Phase II. The measures described in this section are the final versions used for Phase III. The measures developed or adapted for the e-H2C (i.e., Satisfaction

Questionnaire and IMB Questionnaire) were refined according to pilot reviewer feedback during Phases I and II. Subtle word changes and small revisions were made to some measures, and are described within the measure descriptions. Participants' demographic information was collected at the start of the study. Humor styles (HSQ) and quality of life (PROMIS Global Health) measures were included in the workshop, and the HSQ, initially intended for self-assessment, was used as incentive for participation in Phase III instead (due to technological limitations). Specific items were developed to measure: knowledge, motivation, and behavioral skills gained (pre-post information-motivation-behavioral skills questionnaire; i.e., **limited-efficacy**) and satisfaction (i.e., **acceptability**). Participants provided informed consent and then completed; (1) pre-measures (i.e., Demographics, HSQ, PROMIS Quality of Life, IMB as pre-measure); (2) e-H2C Workshop (see Results section for complete description); (3) post-measures (IMB as post-measure, Satisfaction and Effort, Workshop Development Questionnaire for Phase II only). Phase III participants also provided their email addresses at the end of the workshop if they were interested in receiving the Humor Styles profile by email.

1. Demographics Questionnaire. The Demographic Questionnaire was generated based on sample questions from two general survey websites used for marketing and academic research [168; 169] and US Census Bureau race/ethnicity categorization [170]. There are eight items to identify: (1) age, (2) race, (3) ethnicity, (4) gender, (5) education, (6) marital status, (7) employment status, and (8) household income. Three items (1, 2 – if “other” category, and 7b) request write-in answers for additional descriptive information.

2. *Humor Styles Questionnaire (HSQ)*. The HSQ [2] is a 32-item self-report questionnaire that provides information on the participants' patterns across four possible humor styles (eight items each), which describe using humor in the following ways:

- a. Affiliative ($\alpha=.80$) —to reduce social tensions and enrich relationships
- b. Self-enhancing ($\alpha=.81$)—to identify incongruities of life and respond to stress
- c. Aggressive ($\alpha=.71$)— to ridicule or disparage others
- d. Self-defeating ($\alpha=.80$)—to amuse others at one's own expense

Items use a 7-point Likert-type scale (1=totally disagree to 7=totally agree). In the initial validation study, the four humor styles demonstrated unique factor loadings, which confirmed that they are separate constructs. Subscales showed significant convergent validity (e.g., Coping Humor Scale and Self-enhancing humor; $r=.55$; and bad mood and Self-defeating humor; $r=.28$). Additionally, peer ratings of humor styles were significantly correlated with self-ratings. Permission to use the HSQ for the current study was granted on 19Sep2015 (See Item 2. Personal Correspondence with RM, in Appendix E).

3. *PROMIS Global Health*. Patient Reported Outcomes Measurement Information System (PROMIS) measures were systematically developed by the National Institutes of Health (NIH) [171]. The PROMIS Global Health Short Form (GH-SF) is a 10-item self-report measure that produces ratings of physical function, fatigue, pain, emotional distress, and social health. These items can be analyzed individually or added together to produce global Physical Health and Mental Health scores [172]. The PROMIS-GH-SF was initially validated on a representative U.S. sample ($N=21,133$; 52% female; 80% white) composed of clinical (i.e., cancer, rheumatoid arthritis, psychiatric disorders,

osteoporosis, spinal cord injury, and heart disease) and non-clinical participants. The measure showed good internal consistency ($\alpha=.92$) in sum and across Physical Health ($\alpha=.81$) and Mental Health ($\alpha=.86$) subscales. This measure is publically accessible and takes approximately two minutes to administer.

4. e-H2C Workshop Development Questionnaire (for use during Phase II only)

The workshop development questionnaire was created to assess effects of testing and interviewing. The items assess for perspectives on content, delivery, and question wording and clarity. One composite score was calculated for the three sections (i.e., content, delivery, questionnaires) based on the average item score (Completely Disagree=1; Completely Agree=7). For example, the questionnaires section had a composite score based on the average response across the six items assessing question wording and clarity. For content, an item was added for the humor expert review only based on their unique contribution to the development process.

5. Pre and Post-Workshop Information-Motivation-Behavioral Skills

Questionnaire. The IMB questionnaire is a 14-item measure that was developed based on the goals of the e-H2C workshop. The IMB questionnaire used for HIV medication adherence uses a similar structure. The e-H2C IMB questionnaire asks participants to respond on a 5-point agreement scale (1=completely disagree; 5=completely agree) to items assessing their knowledge (n=7 items; i.e., information relevant to using humor in everyday life), motivation (n=3 items; i.e., desire to apply knowledge and skills), and behavioral skills (n=2 items; i.e., self-efficacy). Two items from behavioral skills intended to assess observed ability to respond to humor scenarios were deleted due to variability in responses. Feedback from Phase II indicated that participants did not

understand how to complete those items initially and were fatigued at the end of the workshop when asked to complete them again. Overall, the IMB questionnaire yielded an **average item response score on a five-point scale**.

6. *Satisfaction and Effort Survey*. The three-item e-learning Satisfaction Scale was adapted from Artino [173]. The scale showed high internal consistency ($\alpha=.90$) and some criterion validity as it was positively related to self-reported self-efficacy and inversely related to self-reported boredom [174]. The last three questions (#s 4-6) were added to parallel Wellenzohn *et al.*'s [116] "intervention fit" items to assess effort and preference for intervention in a previous study of humor-based positive psychology interventions [175]. The original single-item indices of preference (#s 4 & 5) and self-reported adherence to instructions (#6) were significantly related to intervention outcomes. For the current project, items #s 4-6 were adapted to be consistent with possible responses to the first three items (i.e., on a 7-point scale of agreement). The satisfaction items was **scored** based on an **average item response** (Completely Disagree=1; Completely Agree=7). The preference and effort items were scored using the same method.

CHAPTER 4: Data-Analysis

This section describes the analyses according to each Specific Aim of the current study. The primary sources of data were from interviews (Phase II) and pre-post workshop measures. The check-on-learning responses and free text (exercises within the workshop) were not specifically analyzed and might be used for future studies.

Specific Aim 1: To construct the **preliminary** e-H2C workshop.

This Aim was accomplished. No formal analyses were conducted.

Specific Aim 2: To **refine** the e-H2C with usability pre-testing (i.e., with humor research experts and a diverse sample) using semi-structured interview data.

To address Specific Aim 2, the semi-structured interview data were thematically analyzed using a adapted method based on guidelines provided by Braun and Clarke [176]. According to these guidelines, a Thematic Analysis (TA) can be conducted a variety of ways depending on the research questions and sample characteristics. In general, the goal of a TA is determine patterns within qualitative data. Patterns are not necessarily based on frequency, but instead determined by a number of factors, including previous research. For the current study, interview feedback was intended for the specific purpose of improving the functionality and utility of the workshop. The analyses were guided by an end goal of making concrete changes to the workshop. A separate thematic analysis (TA) was completed for each of the two iterations of usability testing and results were integrated directly after each TA. The PI transcribed the audio-taped interviews, removed identifying information, and sent them to raters (i.e., two members of the research team who initially helped to review the workshop).

The two raters organized the results according to the rating instructions, which asked the raters to summarize the negative and positive feedback from each interview transcript (see Measure 6, Rating Instructions Part I, in Appendix E). There was an additional item added for Rating Instructions for Phase IIb (global satisfaction perception) as a potential additional measure of inter-rater agreement, and Part II was not used for Phase IIb because it did not provide additional information. Results from this item are not analyzed in this project. In accordance with the identified thematic analysis framework [175], the raters identified individual statements or ideas (codes) during this step. Two scores were calculated as a result of this step — percentage agreement between raters for identification of codes and percentage agreement between raters' categorization of those codes identified by both raters.

Percentage agreement using the completed rating forms: When raters both identified what appeared to be the same code (i.e., using similar language), then that code was considered concordant between raters. For example, if 10 distinct codes were identified altogether across raters, and eight were identified by both raters, then the percentage agreement was 80% for that interview coding. Percentage agreement for categorization was calculated based on whether the codes that were identified by both raters (e.g., 8/10) were placed in the same category (e.g., 6/8, which would be 75% agreement). Kappa values are a more conservative estimate of rater agreement for qualitative analyses; percentage agreement may overestimate the amount of agreement because it does not take into account the probability of chance agreement among coders [177; 178]. Probability of chance agreement for this type of coding process (i.e., one without a consistent denominator) may itself not be a valid statistic, and could lead to

issues with interpretability of the kappa value [179]. Therefore, percentage agreement was used as an estimate of agreement to gauge whether raters identified similar codes.

Next, the PI and co-PI re-organized the raters' results into broad themes and specific suggestions within those themes. Results were placed in the list of specific changes within the themes if they were identified by both raters using similar language and were specific and actionable. The PI sent the list of broad themes to the raters and instructed them to identify whether or not the theme was addressed by each participant, and comments were made regarding the theme (see Measure 7, Rating Instructions Part II, in Appendix E).

Specific Aim 3: To assess the **feasibility** of the e-H2C workshop with regard to **acceptability, demand, practicality, and limited-efficacy** (see Table 1).

To address Specific Aim 3, first, descriptive analyses were conducted for retention rate (i.e., frequencies, percentage), IMB questionnaire change (i.e., means, Standard Deviations), and satisfaction (i.e., means, Standard Deviations). Results from these descriptive analyses were compared against the feasibility criteria for **practicality** and **acceptability** described above (see Specific Aims section). If retention rate is greater than 50% (Yes or No) and mean satisfaction scores (Satisfaction Questionnaire) are greater than neutral, then the e-H2C were considered practical and acceptable with regard to feasibility (see Table 1). A Student t-test was conducted to assess whether participants' Satisfaction scores are significantly different than neutral. According G*Power, using a one-tailed test, alpha level=.05, medium effect size (Cohen's $d=.5$), and sample size of 40, the power was .93 ($\beta=.07$) for this analysis.

To examine, **limited-efficacy** (i.e., partial validity), dependent samples t-test will be conducted using pre and post knowledge questionnaires as the outcome variables. According to a G*Power analysis, using an alpha level of .05, one-tailed test, and estimated medium effect size (Cohen's $d=0.5$), the power for a sample size of 40 ($df=39$) is .92 ($\beta=.08$) for a dependent samples t-test.

Exploratory Aim: To describe **participant characteristics** and identify possible predictors of e-H2C **retention, information-motivation-behavioral skills improvement, and satisfaction.**

The primary aim of this study was to assess the feasibility of the e-H2C workshop and $N=40$ is considered a sufficient sample size for determining feasibility [160; 161]. Because these quantitative analyses are secondary to assessing feasibility, most analyses were underpowered. Therefore, analyses examining participant characteristics in relation to workshop outcomes were limited. Descriptions of planned analyses (below) included *a priori* power analyses assuming data from a sample size of 40.

1. Retention – To examine predictors of Retention (i.e., dichotomous outcome, initiated and completed or did not complete), a multivariate logistic regression was conducted. A multivariate, rather than univariate, logistic regression was conducted because this analysis was exploratory and there were no *a priori* hypothesized predictors. Other correlations were conducted as redundant and more sensitive analyses to identify possible variables for future exploration.

Unfortunately, many studies do not report attrition rates; based on available data, estimated attrition rates of web-based interventions ranged from 43-99% [180].

However, open access sites have higher attrition rates than controlled trials, which

typically have less than 50% dropout [181]. Therefore, the sample size for this particular analysis is expected to be greater than 70. According to a power analysis conducted using G*Power ($\alpha=.05$; $1-\beta=.80$; two-tailed test), $N=809$ was necessary to detect a small effect size (Odds Ratio=1.5) and $N=98$ was necessary to detect a medium effect size (Odds Ratio=3.5). Predictor variables included: Gender (dichotomous; $n=1$ predictor), Humor Styles Questionnaire (HSQ) scores (continuous; $n=4$ predictors) and PROMIS Global Health – SF scores (continuous; $n=2$ predictors).

2. IMB Change Score - The relation between gender and learning, and association among age, quality of life, and learning will be examined separately. To examine the relation between gender and learning, an independent samples t-test was conducted using gender as the grouping variable and IMB change score as the outcome variable. According to a G*Power calculation, using a two-tailed test, alpha value= .05, sample size of 40, and assuming unequal gender representation ($n=25$ and $n=15$), the expected power was .09 for a small effect size (Cohen's $d=.2$), .32 for a medium effect size (Cohen's $d=.5$), and .67 for a large effect size (Cohen's $d=.8$). To examine the associations among age, quality of life, and learning, Pearson bivariate correlations were conducted.
3. Satisfaction – To examine correlates of satisfaction with the e-H2C workshop, analyses were run as described in IMB Change Score analyses listed above, but using the Satisfaction Questionnaire scores as the outcome variable instead. Similar limitations regarding sample size were noted.

CHAPTER 5: Results

This section describes the specific Results according to Phase I (Development), Phase II (Refinement), and Phase III (Distribution). Next, the findings across Phases are summarized and evaluated with regard to the proposed Specific Aims and hypotheses.

Phase I: Development

Phase I involved writing the scripts for instructional videos, creating the videos using the online software (i.e., Moovly © described in Methods), and embedding the questionnaires and videos within Survey Monkey. This Phase also included internally (within the research team) reviewing and refining the workshop.

The PI (MCB) and co-PI (NEG) edited initial scripts for the videos. The PI spent approximately 80 hours constructing, recording, and editing the videos. After the videos were completed, the PI and co-PI met twice to review videos in full and identify small adjustments to improve clarity and consistency in organization and delivery. During initial construction, the PI identified that the online platform could not generate personalized feedback to participants in real-time. Therefore, personalized emailed results for Humor Styles and Quality of life were offered as incentives for Phase III participants after workshop completion.

Next, six members of the research team reviewed the videos and preliminary version of the workshop and provided feedback. The PI also conducted “mock” interviews with four research associates to refine the interview process prior to Phase II. Table 5 displays general feedback and actions taken during this internal review process. As a result of the internal review process, major changes included: re-ordering the

modules to begin with Humor Styles, adding two practice sample videos prior to practice scenarios, and revising practice scenario instructions.

Phase II: Refinement

As discussed in the Methods, Phase II consisted of two sub-phases: humor content-focused review by experts (Phase IIa); general content and usability review by a representative group (Phase IIb). Specific results are divided by sub-phase in the following sections.

Phase IIa:

Sample Description

Five humor research experts agreed to participate. Four experts fully completed the workshop. One did not complete the workshop due to technological difficulties with her computer. All four humor experts who completed had experience in teaching and are currently employed in an educational or research setting. Among the four completers, one was female, three identified as white, and one did not specify an identified race or ethnicity. Ages ranged from 38 to 50 years old. Participants had a diverse background in subspecialties of humor research, which included psychology, social psychology, sociology, and computational linguistics. Three of the humor experts were on the editorial board of the International Journal for Humor Studies.

Workshop Completion and Interview

According to measurements by Survey Monkey, participants accessed the link for an average of 5 hours and 40 minutes (ranging from 2 hours and 46 min. to 13 hours and 25 min.). During the interview, one participant reported completing the workshop across

multiple sittings. Interviews were an average of 41.83 minutes (ranging from 33 minutes to 54.34 minutes) in length.

Feedback Results and Actions Taken

As discussed in the Methods, the PI transcribed all audio-recorded interviews. De-identified transcripts were sent to two separate raters to code the content according to whether participant feedback indicated: Wrong/Not Useful, Needs Improvement, Missing, or Positive (see “Coding Instructions” in Appendix E). Agreement between the two raters was 87.75% (Standard Deviation=10.3%) when the interviews were initially coded. The agreement for categorizing the codes according to the coding instructions (e.g., “Wrong/Not useful,” etc.) was 77.25% (Standard Deviation=6.7%). On rare occasions (n=2), the two raters discrepantly categorized the same codes as positive and negative in their respective coding forms (i.e., wrong or missing categories); this discordance occurred when the participants expressed ambivalence (i.e., both positive and negative impressions about a specific concept or workshop component). For example, humor expert participants expressed mixed views on the use of the Benign Violation Theory, that it was both not sufficient to cover the breadth of humor theories, but also appropriate for a lay audience and for practical application. Other discordant categorizations were discrepant, but still within one of the negative categories (e.g., “Needs Improvement” versus “Missing”), which did not impact the actions taken given that the participant comment was considered a critique regardless of the specific category. The PI and co-PI identified a list of seven general themes among the identified codes. This list was sent back to the two raters to provide feedback on whether the themes appeared to capture the interview information and codes.

Based on ratings, comments were grouped together into seven major themes. As shown in the tables, humor research experts highlighted some general critiques, including that the workshop in general was too lengthy and dense. Raters identified some specific and actionable suggestions that are shown in the table under the themes. These suggestions were characterized by specific and simple explicit changes. Some experts suggested splitting the modules up into “chunks” rather than maintain the 15-20-minute long videos. As a response to this critique, Modules were split into “sub-Modules” (Figure 2 shows sub-module structure). After these changes, the total length of videos increased from 63 minutes and 21 seconds to 71 minutes and 3 seconds; however, the average length per video decreased from 8 minutes and 42 seconds to 2 minutes and 22 seconds, with increased practice exercises between videos. To decrease the density of academic material, specific citations and research references were deleted, and practice exercises were woven into the Modules rather than maintained as a separate component of the workshop. Humor experts provided positive feedback on the use of Graphic Image Format (GIFs) pictures and graphs to illustrate comments. All experts endorsed the accuracy of the information and integration of concepts. In addition, experts on average indicated “mostly agree” (mean=6; responses were: 5, 7, 6, 6) in response to the item: “The video topics were an accurate and balanced representation of available humor literature.” In summary, results of interview analyses indicated that the humor experts expressed satisfaction with the content and general delivery method, but had concerns regarding whether general participants would have difficulty completing the workshop due to the length and the academic nature of the material.

Phase IIb:

Sample Description

For Phase IIb, seven participants were recruited among family members of students (n=3) and acquaintances of the PI (n=4). All seven participants who were initially recruited completed the workshop (i.e., attrition was 0%). Target sample characteristics were met: there were two participants within each age bracket (18-34; 35-50; 51+), three female participants, and three non-white participants (see Demographics in Table 6a).

Workshop Completion and Interview

According to measurements by Survey Monkey, participants accessed the link for periods that ranged between 2 hours and 36 minutes to 28 hours and 57 minutes. During the interviews, the PI asked participants how long the workshop took them to complete and whether they took any breaks. The majority of the sample (n=5) completed the workshop in multiple sittings. Length and density of material also were addressed in follow-up questions and results are described in more detail below. Interviews were an average of 31.82 minutes in length, and ranged from 26.38 to 36.4 minutes.

Feedback Results and Actions Taken

Agreement between the two raters was 70% (Standard Deviation=8.8%) when the interviews were initially coded. The agreement for categorizing the codes according to the coding instructions (e.g., “Not useful,” etc.) was 84.6% (Standard Deviation=13.1%). Discrepancies in categorizations often occurred when placing the codes in the “Missing” versus “Other Notes” categories.

Based on the identified codes, the PI and co-PI identified eight major themes (see Table 8). Major changes included deletion of the practice scenarios section (i.e., written hypothetical scenarios of humor opportunities) and refinement of practice exercises within the Modules. Overall, the feedback led to minor changes to the workshop, including changes in instructions for recruitment to improve consistency between expectations and experience (i.e., with regard to length and density of material) and reducing the length of the password used to access videos. As shown in the table, two of themes were not used to take action or make changes to the workshop, but were taken into account in the Discussion section for considerations of future adaptations of the workshop. For example, some participants mentioned they would prefer more social interaction. For the current workshop, format limitations prevented real-time interaction.

Phase III: Distribution

Sample Description

Original recruitment results indicated that 122 individuals started the workshop, and 44 completed it. Two individuals attempted to complete the workshop twice; when there were two attempts, the attempt that included more data was retained in the analyses. Figure 3 shows the attrition over the course of the workshop, and how much of the workshop individuals completed. Fourteen participants did not complete any measure, and therefore were not included in any analyses. Therefore, partial scores from 108 individuals and complete scores from 44 individuals were analyzed for Phase III.

Recruitment results

Week One Recruitment: During week one, a Facebook post was created, advertised to a broad audience, and shared on the principle investigator's and 11 others'

(friends/colleagues/family of PI) Facebook pages. Thirteen participants started the workshop and two participants completed. **Week Two Recruitment:** The co-PI sent an email to 15 colleagues requesting that they disseminate the workshop link and advertisement. A personalized humor styles profile was offered to encourage completion of the workshop. Fourteen participants started the workshop and one participant completed. **Week Three Recruitment:** Thirteen participants started the workshop and two participants completed. **Week Four Recruitment:** During this week, a local pastor offered to place the recruitment advertisement in an online weekly church newsletter. Nineteen participants started the workshop and six participants completed. During the middle of Week Four, the PI sent an email to nine colleagues and requested that they send the link to 2-3 of their friends or family. **Week Five Recruitment:** Advertisement was placed in the church newsletter again. Thirty participants started the workshop and nine participants completed. **Week Six Recruitment:** Thirteen participants started the workshop and four participants completed. **Week Seven Recruitment:** Co-PI shared the link and description with two colleagues, and requested that they disseminate the workshop advertisement. **Weeks 8-10 recruitment:** The PI sent the link to nine friends and family members and requested they ask 1-2 people to complete the workshop. After Week 10, 122 individuals had started the workshop, and 44 completed.

Workshop Completion and Other Outcomes

With regard to completion and retention, retention rate was 36% (122 initiated/ 44 completed). Figure 3 shows attrition throughout the workshop. The largest attrition occurred between the pre-workshop IMB questionnaire and the start of Module 1 of the workshop. Table 13 displays demographics of non-completers; demographics were

generally similar to the completion group—i.e., broad age range, primarily white, well-educated. Table 14 displays the results from a logistic regression analysis to explore possible predictors of completers versus non-completers (i.e., outcome= completion, binary variable with completion coded as “1” and non-completion as “0”). A p-value of .01 or less was considered significant, given the large number of variables and exploratory nature of these particular analyses. As shown in Table 14, self-reported physical health (PROMIS quality of life measure) approached significance ($p=.05$) whereby individuals with higher self-reported physical health were more likely to complete the workshop, $\text{Exp}(B)=1.26$ (small effect size per [182]).

Results from other exploratory analyses are displayed in Tables 15-17. Table 15 shows analyses of gender differences, which indicated there were not detectable gender differences in learning or satisfaction/effort. Tables 16-17 show bivariate correlations among selected pre and post workshop variables. Among completers (Table 17), self-reported adaptive humor styles were positively correlated with pre and post motivation and behavioral skills subscales from the IMB questionnaire (e.g., Pearson’s $r=.44$ and $.49$, $p<.01$, respectively for affiliative humor and post IMB subscales), but not information. Self-reported effort and physical health were positively correlated with satisfaction (Pearson’s $r=.50$ and $.42$ respectively, $p<.01$). These correlations are suggestive of interesting trends to be considered for future analyses, which are explored in the Discussion section.

With regard to satisfaction with the workshop experience, a one-sample t-test indicated that the self-reported satisfaction ($M=5.55$; $SD=1.26$) was significantly higher ($t=8.16$, $p<.001$) than neutral (4=neither agree nor disagree on the scale). Satisfaction

scores were on average 1.55 (Confidence Interval: 1.17-1.93) points higher than neutral (4; ascending scale, 1-7). In qualitative terms, this difference distinguishes between “neither agree nor disagree” and “slightly agree” (+1 point) or “mostly agree” (+2 points) as an average response to satisfaction questions.

With regard to assessing the validity of the workshop (whether the workshop taught what it was intended to, as measured by the pre-post IMB questionnaire), outcomes from dependent samples t-tests indicated that participants improved on the Information subscale (mean Δ = .67; SD = .39, t = 11.45, p < .001, one-tailed), but did not significantly differ on self-reported motivation or behavior (i.e., self-efficacy). Given that the IMB questionnaire was created for the purpose of the current study, there were no established psychometrics. Cronbach’s alpha was calculated for the IMB questionnaire based on pre (α = .54) and post (α = .76) responses, suggesting limited internal consistency for pre responses and sufficient consistency for post responses. This limitation is identified in the Discussion section.

CHAPTER 6: Evaluation of Hypotheses

Specific Aim 1: To construct the **preliminary** e-H2C workshop.

Hypothesis 1a. Principles and activities of the e-H2C workshop will be adaptable to an online format (see **adaptation** focus area, Table 1).

Outcome: Hypothesis 1a was **supported** with one qualification. Two reviewers completed the workshop checklist and indicated that 100% of the proposed checklist components were present in the initial version of the workshop (based on the e-H2C Workshop Checklist). Based on the medium (i.e., Survey Monkey) used, the technology did not allow for integration real-time self-assessment (i.e., direct feedback on humor styles), in which the participants' humor styles profile and quality of life score were displayed to them as they completed the measures. Instead, these outcomes were emailed to the participants as incentives to complete the workshop.

Specific Aim 2: To **refine** the e-H2C workshop with usability pre-testing (i.e., with humor research experts and a diverse sample) using semi-structured interview data.

Hypothesis 2a. Interview data regarding the **content** would lead to improvements on amount and type of information provided.

Outcome: Improvements in content were not quantitatively measured. Results from the interview analyses in Phase II led to additional (e.g., videos from comedians, occupational functions of humor) and refinements in (e.g., reduced time of videos, changed instruction wording) content. Therefore, this hypothesis was **supported**.

Hypothesis 2b. Interview data regarding the **delivery** would lead to improvements on usability, presentation of materials, and clarity of language.

Outcome: Improvements in delivery were not quantitatively measured. Results from the interview analyses in Phases I and II led to changes in delivery of content. Examples included “chunking” the modules into “sub-modules” and reducing the number of letters in the password that participants entered to watch the videos. Therefore, this hypothesis was **supported**.

Hypothesis 2c. Interview data regarding the knowledge and motivation **questionnaires** would lead to improvements on question wording and clarity.

Outcome: Improvements in questionnaires were not quantitatively measured. Results from interview analyses from Phase II led to deleting half of the behavioral skills portion of the Information-Motivation-Behavioral Skills pre-post measures. Therefore, this hypothesis was **supported**.

Specific Aim 3: To assess the **feasibility** of the e-H2C workshop with regard to **acceptability, demand, practicality, and limited efficacy** (see Table 1).

Hypothesis 3a. The e-H2C workshop would show **practicality** and **acceptability**, as demonstrated by at least N=40 completers, majority (i.e., greater than 50%) retention rate, and greater than neutral satisfaction survey results.

Outcome: Retention rate was not greater than 50%. Greater than 40 participants completed the workshop and satisfaction scores were significantly greater than neutral. Therefore, this hypothesis was **partially supported (2 out of 3 components)**.

Hypothesis 3b. The e-H2C workshop would be **in demand**, as demonstrated by greater than N=40 participants who initiate the workshop over a 6-month period.

Outcome: Forty-four participants completed the workshop in a 3-month period. This hypothesis was **supported**; however, more intensive efforts were required to recruit participants were used than anticipated.

Hypothesis 3c. The e-H2C workshop would show **limited-efficacy** (i.e., partial validity), as demonstrated by improvements in **information** (i.e., knowledge) of humor principles, **motivation** to use skills, and self-reported **behavioral skills** (according to pre-post measures).

Outcome: Participants demonstrated improvements in information only. There were no significant improvements in motivation or behavioral skills items. Therefore, this hypothesis was **partially supported (1 out of 3 components)**.

Exploratory Aim: To describe **participant characteristics** and identify possible predictors of e-H2C **retention, information-motivation-behavioral skills improvement, and satisfaction**.

Hypothesis a. **Descriptive analyses** would reveal trends in **humor styles** (Humor Styles Questionnaire), self-reported **quality of life** (PROMIS Global Health), and **demographics** (gender, age, race, education) of e-H2C participants.

Outcome: Participants were predominately female, white, and well-educated (majority bachelor's degree or higher), which may reflect the recruitment efforts directed at networks connected to the PI and co-PI. Participants represented a wide age range; however, there were no trends that indicated relationships among age and other variables.

Hypothesis b. **Humor styles, quality of life, and demographic** variables would predict **retention** and **satisfaction** with the e-H2C workshop.

Outcome: There are some correlations among demographic and other pre-workshop variables, including positive relationships among adaptive humor styles and the motivation and behavioral skills subscales of the IMB questionnaire, but not information. Self-reported physical (but not mental) health was related to satisfaction with the workshop.

CHAPTER 7: Discussion

The purpose of this study was to create, refine, and assess the feasibility of the electronic Humor to Cope and Connect (e-H2C) Workshop – an online training on useful and harmful humor use. The e-H2C Workshop was based on an understanding of humor as both helpful and harmful depending on specific variables and context. The goals of the workshop were to increase participants’ awareness of humor concepts and variables to consider (information), interest in applying new humor-related ideas (motivation), and confidence in ability to apply the ideas (behavioral skills as measured by self-efficacy). The initial version was successfully constructed, refined via feedback from humor experts and general pilot participants, and disseminated for assessment of feasibility. The sections below summarize and provide commentary on the results according to phases, Next, study and workshop limitations, strengths, and future directions are discussed.

Development (Phases I and II)

Workshop creation (Phase I)

The e-H2C workshop was successfully created with all planned content — humor definitions, theory, and concepts; emotions and emotion regulation; specific guidance and examples to use humor adaptively based on the humor styles framework. Survey Monkey, along with video creation software (Camtasia Studio and Moovly) allowed for inclusion of multimedia examples. Internal development of the workshop included feedback from the research team (i.e., one University faculty member and three research associates), which led to changes in the order of modules and examples.

Humor experts' feedback (Phase IIa)

Humor experts communicated a limited number of critiques regarding the concepts and information taught within the workshop, and expressed support of the workshop. Experts primarily communicated critical feedback regarding the structure and length of the workshop, anticipating end user reactions. These outcomes suggest that the workshop content is valid and scientifically sound. Therefore, changes were made primarily to the organization and delivery of materials rather than content specifically. All humor experts suggested deleting specific citations and theories to make the content more understandable to a broad audience. Some experts also proposed adding multiple ways of looking at humor concepts – for example, including more definitions for humor. The original intent of Phase IIa was to ensure the information provided to future participants was accurate and reflective of the current humor literature. Humor experts provided feedback that the information provided should be less rigorous and academic, suggesting that the humor content itself was valid and accurate, and that translating the information into more colloquial language would not diminish the validity of the material. Overall, this phase demonstrated that the novel integration of humor styles and Acceptance Commitment Therapy concepts was consistent with humor literature and well received by humor experts.

General participants' feedback (Phase IIb)

Phase IIb general participants gave feedback related to the user experience – in particular, they expressed dissatisfaction with the length and academic nature of the workshop and some practical scenarios. Many participants also stated that they enjoyed the videos and gifs. Percentage agreement between coders decreased from Phase IIa to

Phase IIb, though this decrease was not statistically measured. General participants appeared to express more idiosyncratic preferences and reactions to the workshop than humor experts, which is likely an effect of the heterogeneity of the group. In addition, one rater was different in Phase IIb from raters in Phase IIa, which may have also altered percentage agreement.

Feasibility testing (Phase III)

Overall, Phase III results indicated that the e-H2C workshop was feasible according to identified feasibility criteria [156] pending some improvements and changes. Successful recruitment required more active and intensive efforts than originally planned. General participants provided feedback in anticipation of this issue during Phase IIb, as some participants indicated that they would not have initiated or completed the workshop if they did not personally know or feel committed to the PI. Most participants dropped out prior to starting the workshop (i.e., after or during completion of pre-workshop questionnaires), or shortly into the first module, suggesting that the length of the workshop was not necessarily the primary or only obstacle to completion. There were no significant quantitative differences between workshop completers and non-completers with regard to demographics or initial responses to the information-motivation-behavioral skills (IMB) questionnaire. Self-reported physical health was significantly correlated with satisfaction for Phase III completers; also, physical health approached significance as a predictor of completion versus non-completion. This possible association between self-reported physical health and completion is consistent with qualitative feedback indicating that the workshop was intensive and participants experienced fatigue. Anticipation of physical issues or distraction by somatic concerns may have negatively impacted

participants' perceived or actual ability to complete the workshop, as symptoms such as pain negatively impact attention and reduce available cognitive resources [183; 184]. More complex analyses might elucidate this association. In addition, future versions of the workshop might include strategies to maintain attention and concentration. Based on Phase II feedback regarding the density of the workshop material, and the completion rate that fell below feasibility standards, future versions may integrate more strategies to decrease cognitive load [185], though the current version applied strategies such as segment (i.e., breaking material into “bite-size” elements) and signaling (i.e., highlighting relevant terms).

Regarding “partial-validity,” or whether the workshop enhanced the targeted knowledge and skills, results indicated that participants improved on the information subscale of the IMB questionnaire and not the motivation or behavioral skills items. This finding might suggest that individuals were not motivated or did not feel confident in practicing humor in new ways. However, it is important to note that there was a possible ceiling effect on the motivation and behavioral skills items – participants tended to rate their motivation and self-confidence as high before they started the workshop, which limited the amount that they could improve in those domains.

Limitations

There were several anticipated and unanticipated methodological and technological limitations of the study and development of the workshop. For Phase II, there were limitations associated with the qualitative data collection, interpretation, and application. As a limitation of the interview format, there was no real-time feedback on specific parts of the workshop. Responses were based on retrospective memory of the

workshop experience, sometimes 1-2 days after completion. In assessing the impact of changes made based on interview feedback, there was no quantitative way to measure improvements in delivery and content. As a limitation for interpreting the interview data, raters were switched for Phase IIb, which may have contributed to the lowered percentage agreement. However, there may also be some utility to having disagreement among raters to achieve a more nuanced, deeper understanding of the data.

For Phase III recruitment, there was not an incentive for completing the workshop aside from receiving the humor styles profile. Charging participants for participation or paying them may increase the engagement and willingness to participate. There were no follow-up assessments; it is possible that participants' opinions may have changed over time. Without follow-up assessments, the study was also missing information regarding how applicable the training was in participants' daily lives. In addition, the humor experts or general participants did not evaluate whether the changes were consistent with their suggestions, which was a methodological limitation.

In terms of technological limitations, the selected medium (i.e., Survey Monkey) and limited skillset of the research team created obstacles for more advanced interactivity within the workshop. Social learning has been identified as an important motivator and determinant of online learning [137]; therefore, this technological limitation may have had a significant impact on retention rates and learning as measured by the IMB questionnaire. Most participants provided positive feedback on the audio-visual aids used. Future editions of the workshop may involve closer consultation and assistance from IT experts. In addition, the workshop may be better disseminated through a stand-alone website as some participants indicated that they thought the workshop was survey-

style (possibly due to the title “Survey Monkey”). There also were measurement limitations with the instruments used. All data were self-report. The IMB questionnaire was developed specifically for this workshop and not psychometrically validated beforehand. Of note, the measure did not discriminate between humor experts and general participants in the information domain. Theoretically, humor experts would have higher scores regarding humor related information than general participants. Therefore, the information subscale may not be sensitive enough to accurately measure humor-related knowledge. This measure can be further developed in future studies. Additional items could be added that could better discriminate among humor expert versus general response, such as specific questions regarding humor theory and research.

Strengths

The mixed method design provided additional information regarding the user experience. Interview participants provided additional information to concerns regarding the length, including the sense that the workshop was academic and evaluative, and the need for breaks. The pre-post test evaluated information, motivation, and confidence in behavioral skills, which allowed for an improved assessment of whether the workshop was useful compared to more global assessments.

Future Directions

This study provided information on future changes and adaptations to the workshop. Efforts should be made to reduce volume of information, and identify ways to enhance motivation and confidence of participants, given that participants significantly improved on information and awareness of humor principles, but not motivation or self-efficacy. Future versions of the workshop might include changes to the volume, or

instructions and strategies to help participants manage the current volume of material. This workshop might be reduced and tailored towards specific subgroups. For example, Phase IIb retired participants (n=2) mentioned that the workshop felt less relevant to them, given the frequent references to the work environment. Versions of the workshop could be tailored to personal and relationship demands specific to retired participants. Alternatively, versions can be tailored towards specific occupations, or specific domains of life (e.g., humor use within marital relationships). Shorter forms might focus on specific events (e.g., using humor during job interviews, or using humor at stressful events) or types of relationships (e.g., cross-gender humor use, parent-child humor use). Future versions might also include input from other types of experts, including experts in marketing and education who might improve the delivery of the workshop. In addition, it would be useful to gather information about beliefs that might affect what people find humorous. Future versions might also include a more systematic method to select specific multimedia examples of humor. Strategies to help participants maintain attention and concentration for current version of the workshop might include the use of incentives, improvement of technological delivery (e.g., stand-alone website), or instructional module on study strategies.

CHAPTER 8: Conclusions

The development and feasibility assessment of the e-H2C workshop demonstrated that the novel integration of humor styles research, Acceptance and Commitment Therapy concepts, and healthful humor use was consistent with humor research and understandable to general participants. Results from this study supported that the e-H2C workshop is feasible with some improvements and changes. The workshop demonstrated feasibility with regard to recruitment, satisfaction, and partial validity. Future versions of the workshop might require payment from or to the participants to encourage completion. If delivered for no cost to the user, then future versions might also be tailored and shortened for individual groups of people, occupations, and events. This outcome is a first step towards getting people to take humor seriously, and use humor strategically in their lives.

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APPENDIX A: Background Tables

Table 1. Humor Styles Studies Supporting Humor to Cope

Af=affiliative; Ag=aggressive; Se=Self-enhancing; Sd=Self-defeating

+ = positive effect; - = negative effect; n = null finding; gray fill indicates style was not measured

First Author (Year)	Design Strengths	Sample		Outcomes	Significant Findings			
		Size	Description		Af	Ag	Se	Sd
Cann (2010)	☒ Multiple Time-points (baseline, + 8 weeks) ☐ Manipulation/Random Assignment ☐ Other Report or Observation	Time 1 (n=299)	American, college students, mostly female, mean age=21	-Positive Personality traits (Hope, Optimism) - Perceived stress	+	- /n	+	-
		Time 2 (n=174)	Subgroup from first group	-Positive Personality traits (Hope, Optimism) - Perceived stress - Perceived psychological and physical health			+	-
Edwards (2010)	☐ Multiple Time-points ☐ Manipulation/Random Assignment ☒ Other Report or Observation	N=215	215 college freshman; Canadian; mean age=19; primarily European origins	- Performance on Frustrating Situation Humor Creation Task - Self-reported, stress, depressive and anxiety symptoms - Self-reported well-being indices (i.e., optimism, life satisfaction, self-esteem)	+	+	+/-	+/-
Guenther (2013)	☒ Multiple Time-points (10, daily) ☐ Manipulation/Random Assignment ☐ Other Report or Observation	N=57	Dutch, automotive employees, mean age=37	-Self-reported Emotional Exhaustion - Self-reported Work Engagement	n/+	n/+	n/+	n/+

Table 2. Humor Styles Studies Supporting Humor to Connect (continued through page 116)

Af=affiliative; Ag=aggressive; Se=Self-enhancing; Sd=Self-defeating

+ =positive effect; - =negative effect; n=null finding; gray fill indicates style was not measured

First Author (Year)	Design Strengths	Sample		Outcomes	Significant Findings			
		Size	Description		Af	Ag	Se	Sd
Campbell (2008)	☒ Multiple Time-points (baseline, +14 days following 7-min. conflict discussion) ☐ Manipulation/ Random Assignment ☒ Other Report or Observation	N=98 couples	American, heterosexual, dating for at least three months, mean age=19	- Change in perceived closeness - Perceived resolution of conflict - Reported feelings of distress	+	-		
Cowan (2013)	☐ Multiple Time-points ☒ Manipulation/ Random Assignment ☐ Other Report or Observation	N=68	Heterosexual college students from the UK (n=33 female); mean age=21	- Short-term and long-term mate attractiveness	+	n		
DiDonato (2013)	☐ Multiple Time-points ☒ Manipulation/ Random Assignment ☐ Other Report or Observation	N=251	American, heterosexual, mostly Caucasian (85%), college students	- Short-term and long-term mate attractiveness - Competence and warmth	+	-		

Af=affiliative; Ag=aggressive; Se=Self-enhancing; Sd=Self-defeating

+ = positive effect; - = negative effect; n = null finding; gray fill indicates style was not measured

First Author (Year)	Design Strengths	Sample		Outcomes	Significant Findings			
		Size	Description		Af	Ag	Se	Sd
Howland (2014)	☒ Multiple Time-points (pre-post paradigm – 7 min. discussion) ☐ Manipulation/Random Assignment ☒ Other Report or Observation	N=87 couples	American, hetero couples (one lesbian couple), mostly white, mean age=26	- Positive change in partner mood state - Observed emotional, practical support	+	-		
Kuiper (2010)	☐ Multiple Time-points ☒ Manipulation/Random Assignment ☒ Other Report or Observation	N=132	Canadian college students; mean age=19	- Self-reported desire to continue interacting - Self-reported positive Self-Feeling - Self-reported negative feeling	+	-	+	-
	☐ Multiple Time-points ☐ Manipulation/Random Assignment ☒ Other Report or Observation	N=181	High school students (n=80 male); mean age=17	- Use with close friends - Use with romantic partners	+	-	+	-
	☐ Multiple Time-points ☒ Manipulation/Random Assignment ☒ Other Report or Observation	N=166	Canadian college students (n=64 males); mean age=20	- Perceived association among humor styles in others	+/-	+/-	+	-

Af=affiliative; Ag=aggressive; Se=Self-enhancing; Sd=Self-defeating
 +=positive effect; -=negative effect; n=null finding; gray fill indicates style was not measured

First Author (Year)	Design Strengths	Sample		Outcomes	Significant Findings			
		Size	Description		Af	Ag	Se	Sd
Winterheld (2013)	☒ Multiple Time-points (pre-post paradigm - 7-min. conflict discussion) ☐ Manipulation/Random Assignment ☒ Other Report or Observation	N=96	Heterosexual couples; dating for at least 3 months; mean age=19	- Observed distress - Observed satisfaction with conflict resolution	+	n		-
Zeigler-Hill (2013)	<i>Study 1</i> ☐ Multiple Time-points ☐ Manipulation/Random Assignment ☒ Other Report or Observation	n=257 “targets;” n=1194 “perceivers” (rated targets)	American, college students, mostly female, mean age=21	- Perceived self-esteem and positive personality traits - Perceived aggression, narcissistic entitlement and grandiosity	+	-	+	-
	<i>Study 2</i> ☒ Multiple Time-points (baseline, + 6 days) ☒ Manipulation/Random Assignment ☒ Other Report or Observation	N=1190	Jewish Israeli community members, unmarried, mid-twenties, educated	- Perceived positive impact of humor style on the target - Perceived positive impact of humor style on others - Perceived romantic desirability of target - Perceived overall mate value of target	+	-	+	+

Table 3. Humor styles conceptualized using a mechanistic approach

Humor Style	Targets	Defuses	Effect	Examples
Affiliative	Obstacle to relationship	Self from target	Diminish obstacle and increase closeness in relationship	Joking about power status (e.g., boss speaking with subordinate)
Aggressive	Characteristic or need of another person	Self from person (closely associated with the target)	Diminish other person and disrupt relationship	Making fun of a friend crying over a small issue
Self-Enhancing	Obstacle to positive mood that cannot be addressed	Self from stressor	Diminish stressor (obstacle) and increase life satisfaction	Making fun of spiders when encountering one in the bathroom
Self-Defeating	Obstacle to positive mood that can be addressed	Self from need	Diminish likelihood	Joking about customer service complaint

Table 4. Targeted aspects of e-H2C feasibility
(adapted from table in Bowen et al., 2009)

Focus Areas	Sample outcomes of interest		Measure
Acceptability	Satisfaction	X	Satisfaction survey
	Intent to continue use	X	Self-reported motivation to use learned information/skills
	Perceived appropriateness		
	Perceived positive or negative effects on organization		
Demand	Actual use	X	Number of completing participants
	Expressed interest or intention to use	X	Number of initiating participants
	Perceived demand		
Implementation	Degree of execution		
	Success or failure of execution	X	Effective translation and administration
	Amount, type of resources needed	X	Financial costs and personnel
	Factors affect implementation ease or difficulty		
Practicality	Efficiency, speed, or quality of implementation		
	Positive or negative effects on target population	X	Satisfaction survey
	Ability of participants to carry out intervention activities	X	Completion rate
	Cost analysis		
Adaptation	Degree to which similar outcomes are obtained in a new format	X	Translation into e-H2C
	Process outcomes comparison between intervention use in two populations		
Integration	Perceived fit with infrastructure		
	Perceived sustainability		
	Costs to organization and policy bodies		
Expansion	Fit with organizational goals and culture		
	Positive or negative effects on organization		
	Disruption due to expansion component		
Limited-efficacy	Intended effects of program or process on key intermediate variables	X	Pre-post knowledge measure; intent to use
	Effect-size estimation		
	Maintenance of changes from initial change		

APPENDIX B: Background Figures

Figure 1. Non-Linear Relationships Relevant to Humor and Health

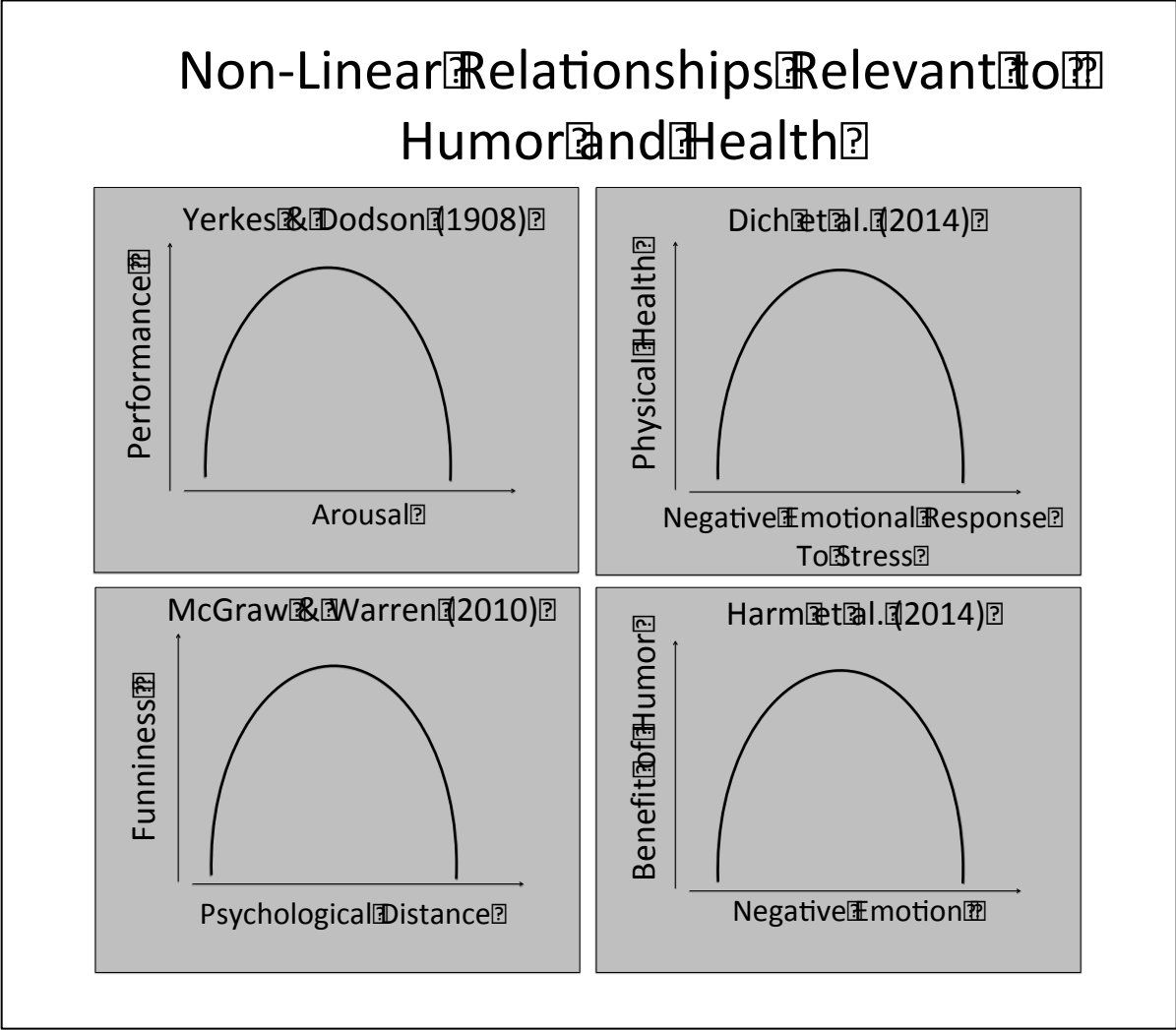


Figure 2. Conceptual Model of Humor Styles and Health

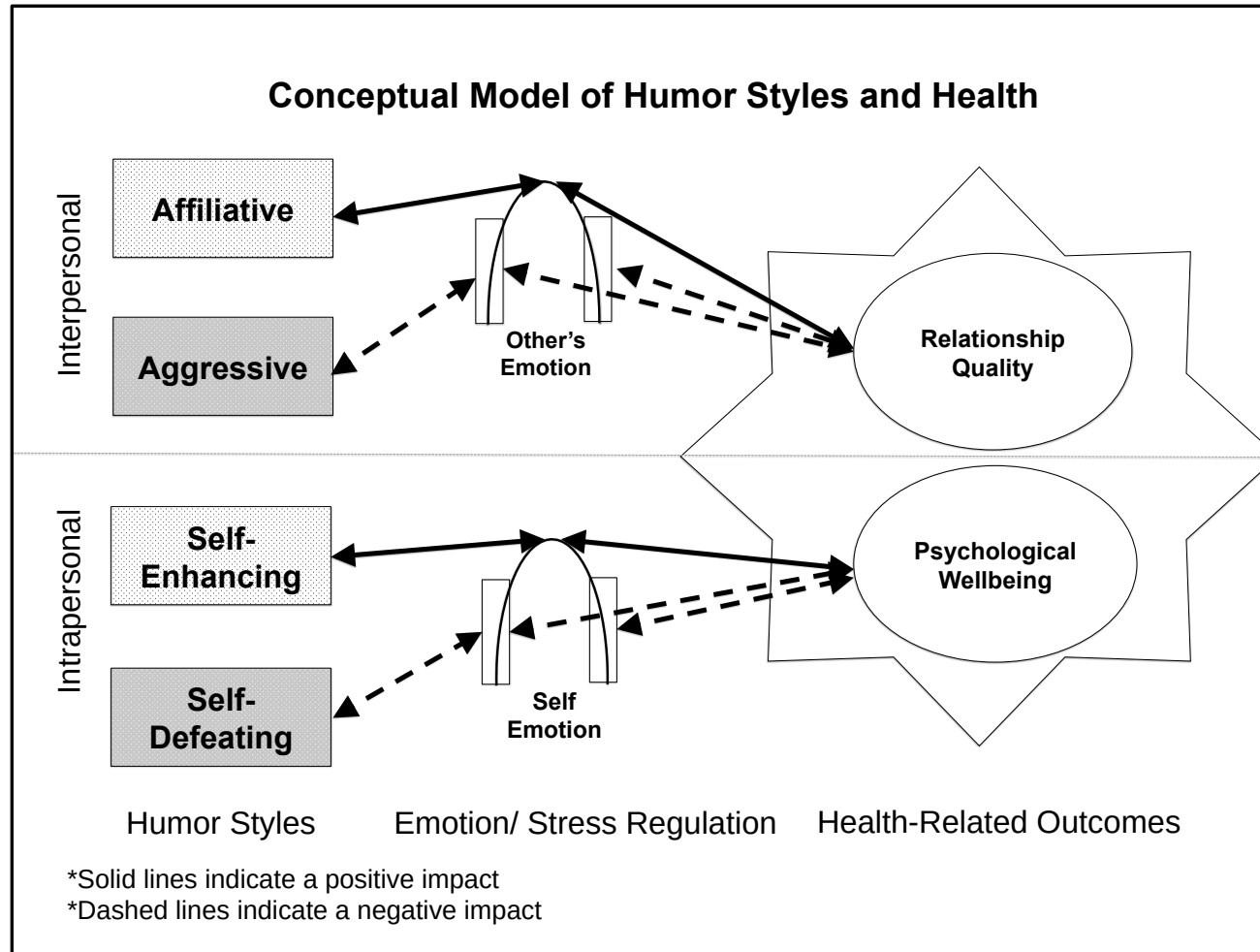


Figure 3. Study Design (Phases I-IV)

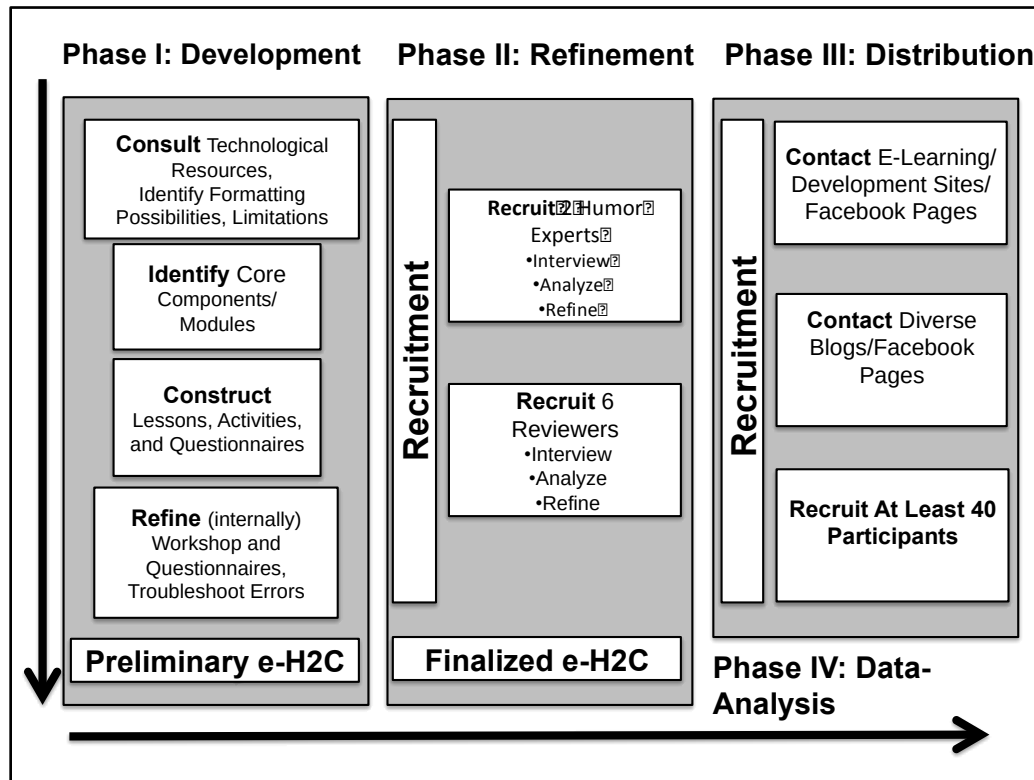
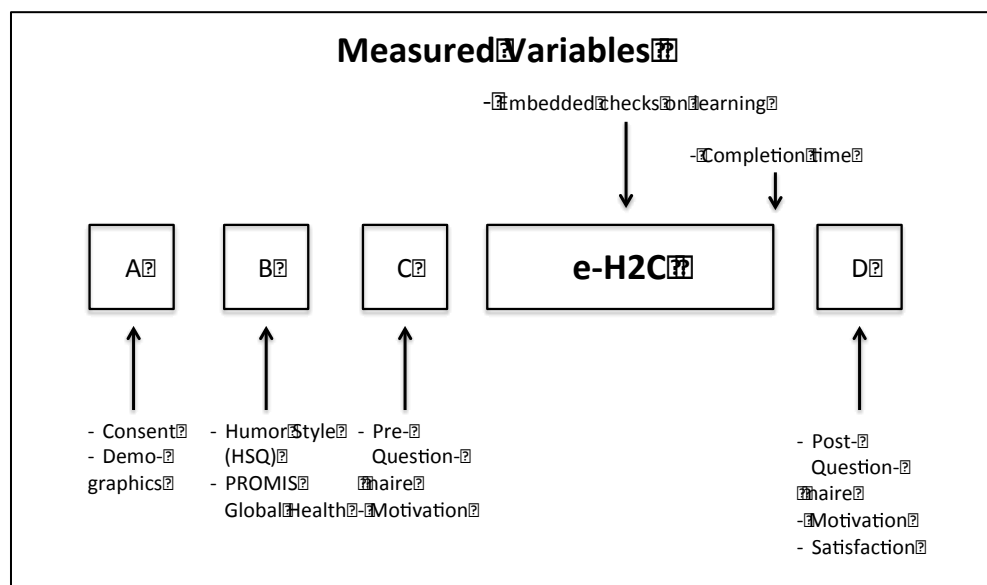


Figure 4. e-H2C Measured Variables and Structure



APPENDIX C: Materials from H2C Workshop at The Women's Center (delivered on 6/16/2015)

Handout #1. Agenda

H2C Workshop
June 16, 2015

Today's Agenda

Humor to Cope and Connect (H2C) Workshop

Primary Goals:

1. Enhance awareness of your own humor use.
2. Understand the benefits and limitations of using humor.
3. Learn strategies for using humor intentionally to cope with stress and relationship dynamics.

Schedule:

I. Background

Introduction

Define Humor

Review Humor Research

Complete Humor Styles Questionnaire

Discuss Stress and Coping

II. Humor to Cope

Review Humor to Cope Strategies

Practice Using Humor to Cope in Hypothetical Scenarios

III. Humor to Connect

Review Humor to Connect Strategies

Practice Using Humor to Connect in Hypothetical Interactions

IV. Summary and Review

Complete Feedback Questionnaires

Question and Answer

Handout #2. Psychoeducation on Stress and Health

H2C Workshop
6/16/2015

How Stress Works

Stress Defined: The psychological and biological process by which the environment challenges or exceeds a person's available resources (adapted from Lazarus & Folkman, 1984; Baum, Gatchel, & Krantz, 1997; McEwen & Gianaros, 2010)

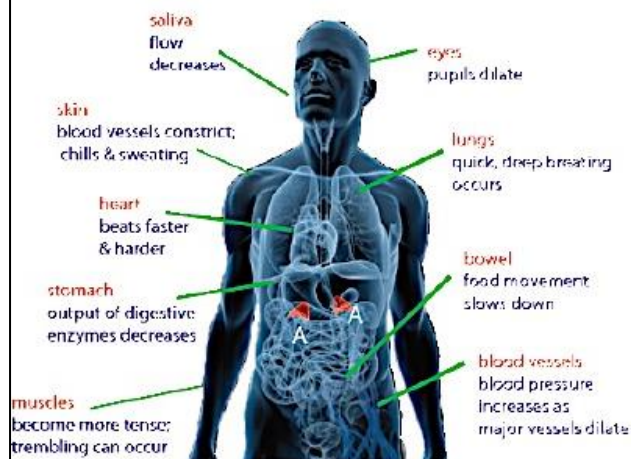
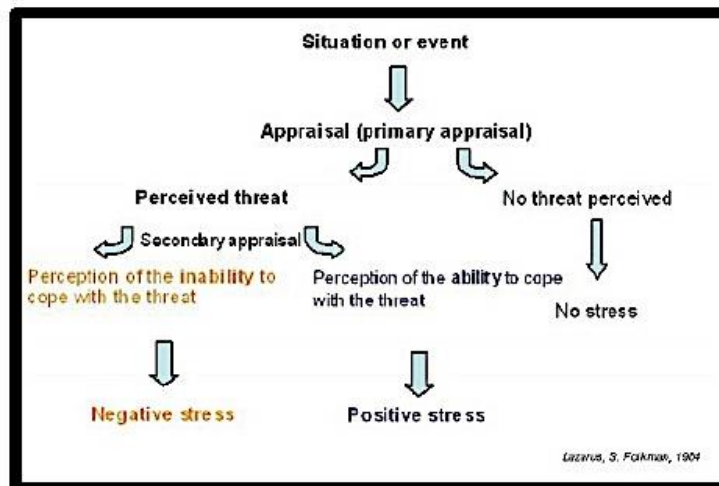
"Short-term adaptation versus long-term damage" (McEwen, 2004)

Acute Stress:

- In small to moderate doses: Decreases reaction time, improves task performance
- In large doses: Produces debilitating anxiety, creates trauma response, shock

Chronic Stress:

- Exacerbates existing mental and physical health problems
 - Increases risk of depression, anxiety, PTSD
 - Increases risk of obesity, high cholesterol and other physical ailments
- Impairs cognitive ability – memory, learning, attention



Taken from,
atomicmeme.com

Handout #3. Description of Humor Styles

H2C Workshop
6/16/2015

Humor Styles (developed by Martin et al., 2003)

Affiliative: amuses others, initiates relationships, and reduces tension between people

Jim and Diane are sitting next to each other on the bus after a long day at work. Jim looks sad. Diane notices Jim's sadness and points to the ground and says, "Hey that spot kind of looks like Bill Murray." She knows that Jim loves Bill Murray. Jim snickers.

Self-Enhancing: finds humor in the inconsistencies of life and maintains a humorous perspective even when under stress

Jim decides to use humor to feel less frustrated. He imagines all the people on the train wearing platinum blonde wigs and he laughs to himself. He feels a small sense of relief.

Aggressive: puts down others with sarcasm, teasing, ridicule; expresses humor without considering how it affects others

Jim's colleague comes to him with a question about how to work the new company software. Jim laughs at his question and says, "You just click this button here! My 3-year-old could figure that out."

Self-Defeating: tries to win others' acceptance or amuse them at the expense of oneself; involves minimizing one's own needs

Jim is about to fail out of his master's program. He's feeling a lot of anxiety and stress, and wonders what he will do if he fails. He wishes he had support. When Diane asks him how he's doing, he jokes, "I need to get hooked on phonics."

Humor to Cope

Reflect on the things you find funny. Why are they funny to you? Would others find humor in similar things? What does your laughter or amusement say about your relationship to the topic?

Plan to expose yourself to humorous materials daily. Be intentional about your humor exposure.

Practice your own humor. Scan the environment or your thoughts for things that might be funny. Attempt to reframe threatening experiences into humorous ones. Use humor strategies:

1. Hyperbole/exaggeration

- Take something that bothers you and imagine a more extreme version

E.g. when you're feeling guilty:

I am the worst person on the planet. Eat your heart out, Stalin.

E.g., when you have a sweating problem:

I am going to sweat buckets today. I'm going to sweat so much that I will make a pool for people to swim in. (technique called "paradoxical Intention" by psychiatrist Viktor Frankl)

2. Odd couples

- Put one thing together with another thing that doesn't match – e.g., Chuck Norris wearing lipstick; small children in suits, having a discussion about the stock market

3. Song (funny voice)

- Sing it; imagine the thought "I'm going to get fired" to a Disney tune

4. Bad news radio

- Narrate an event as if you're reporting the news

This just in... Sally sent an email to her supervisors with a glaring typo in the subject line

5. Literalization

- Take something abstract (e.g., a saying/idiom) and make it literal (see raptor meme)



Humor to Connect

Reflect on how you tend to use humor with others and whether it is more often adaptive or maladaptive. Explore how you tend to use humor across different relationships (e.g., friends, family, professional, acquaintances).

Plan on placing boundaries on your humor use. Consider the following guidelines:

- Humor is useful in communication when:
 - The **topic has similar relevance** to the people involved (i.e., it violates both people to a similar extent)
 - One or both parties is flooded and not able to engage, and a **distraction** might help
- Humor is **NOT** useful when:
 - When **something requires action or resolution** (e.g., joking about symptoms at a medical appointment)
 - It is directed at a **vulnerable party** and there is a significant power differential (e.g., boss making fun of subordinates)

Practice intentionally using humor to identify common interests and enhance another person's mood.



H2C Workshop
6/16/2015

Intrapersonal:
"Opportunities for Humor" Scenarios

A. Sam just lost the keys to her car. She has a meeting in 10 minutes. She's searching around the house frantically and realizes she left them locked inside the car. She decides to take a bus to her meeting and will probably make it just in time. She can't shake her feelings of anxiety on the bus though. She thinks to herself, "I'm so stupid. How do I keep making these mistakes? I am worthless."

B. Karen discovered her boyfriend has been cheating on her. She feels so disappointed and angry. She thought they were going to get married one day. She had been so proud of their relationship. She thinks to herself, "How could he do this to me? I am such a fool for thinking he was a decent guy."

C. Tim has to attend mandatory 3-day training for his work. It's mostly PowerPoint slides about mundane information. He feels extremely bored and agitated and it's only Day One.

D. Rachel starts her first day at her new job. When she gets home, she realizes she had forgotten to put make up on half of her face. She feels horrified and that she must have made a horrible impression on her first day of work. She reaches immediately for the bottle of wine.

E. Frank's doctor tells him he has liver cancer and his odds of survival are not good. Frank feels frozen and numb. He feels like he can't even move. He's only 35 years old. He thought he would have more time to find a girl, get married, and start a family. He thought he had to time to focus on his career first.

H2C Workshop
6/16/2015

Interpersonal:
Opportunities for Humor Scenarios

- A. You arrive to the meeting late and a co-worker says, "Late again. Good work."
- B. You have had a recent outbreak and suspect that you might have a sexually transmitted infection. You feel so embarrassed and incredibly uncomfortable discussing it with your doctor, who reminds you of your father. He asks you why you've come in today.
- C. You're at a mandatory training and it's extremely boring. You look around and see your colleagues are bored too. During break, some of your colleagues are complaining in the hallway.
- D. You are walking around your office cubicles with your fly unzipped. Someone says to you, "Hey, check your zipper." You pause for a couple seconds and feel embarrassed.
- E. You have cancer and have been going through chemotherapy treatment. You've now lost all of your hair. You're meeting up with a friend you haven't seen for a while. When you approach her on the sidewalk, she looks shocked.
- F. You walk into the house and see the dishes aren't done once again. Your roommate said she would clean up after herself and she clearly didn't follow through. It also looks like she stole some of your leftover food that you were going to eat tonight after your long day at work.

Item 1. Summary Feedback from In-Person H2C
(unpublished data, not intended for research; N=7)

<i>Class Evaluation Report(s)</i>			
<i>ClassDate</i>	<i>Instructor & Number of Evaluations</i>		
<i>Humor to Connect and Cope (H2C)</i>			
6/16/2015	Maggie Baisley (7 Evaluations)		
<i>How much do you think this program will help you?</i>	<i>Quality and usefulness of presentation?</i>	<i>Quality and effectiveness of handouts/materials?</i>	<i>Quality and effectiveness of the presenter?</i>
3	Good	Good	Very good
4	Excellent	Excellent	Excellent
5	Excellent	Excellent	Excellent
5	Excellent	Excellent	Excellent
4	Very good	Very good	Excellent
4	Good	Good	Very good
4	Excellent	Excellent	Excellent
<i>Comments:</i>			
I would ask that putting Chuck Norris in lipstick as an odd couple example be re-considered. Any jokes involving gender expression (man in a dress, woman taking testosterone and growing a penis, etc.) can be harmful to people that are transgender or gender variant.			
I like the idea of bringing women together of different ages through common issues/ technology issues.			
Very interesting.			
Thank you!			
I loved this topic. Maggie is wonderful as a presenter, and she clearly prepared well for this. She relates well to the audience & gives clear explanations & examples.			

* “How much you think this program will help you [to make worthwhile changes]?” was answered on a 1-5 Likert-type scale (1= “No Help”; 5= “Great Help”)

** Quality items (i.e., presentation, handouts, presenter) were rated on a 1-5 Likert-type scale (1= “Poor”; 2= “Fair”; 3= “Good”; 4= “Very Good” ; 5= “Excellent”)

Item 2a-b. Permission to Use H2C Workshop Data (Personal Correspondence with KM, workshop coordinator at The Women's Center)

a.

**Baisley, Maggie** <mbaisley@thewomenscenter.org> 10:31 PM (23 hours ago) ☆
to Karen ▾

Hi Karen,

I hope you are doing well. I am working on my dissertation now, which is a feasibility assessment of the humor workshop (that we developed at TWC) administered in an online format. I was wondering if you would give me permission to include this anonymized summary evaluation sheet in my proposal.

Sincerely,
Maggie

...

**Karen O'Meara** <komeara@thewomenscenter.org> 11:04 AM (10 hours ago) ☆
to me ▾

Sure, are we talking about a blank one? As long as there aren't any names on it, it's fine.

Best of luck on the dissertation!!

Karen

From: Baisley, Maggie [mailto:mbaisley@thewomenscenter.org]
Sent: Wednesday, September 30, 2015 10:31 PM
To: Karen O'Meara

b.

**Baisley, Maggie** <mbaisley@thewomenscenter.org> 3:13 PM (6 hours ago) ☆
to Karen ▾

I am referring to the one with ratings and numbers from my workshop (no names, but also not blank)-- is it okay to use that one?

Thank you - I need all the luck I can get!

Sincerely,
Maggie

...

**Karen O'Meara** <komeara@thewomenscenter.org> 3:44 PM (6 hours ago) ☆
to me ▾

Yes, as long as there aren't any names, it's fine.

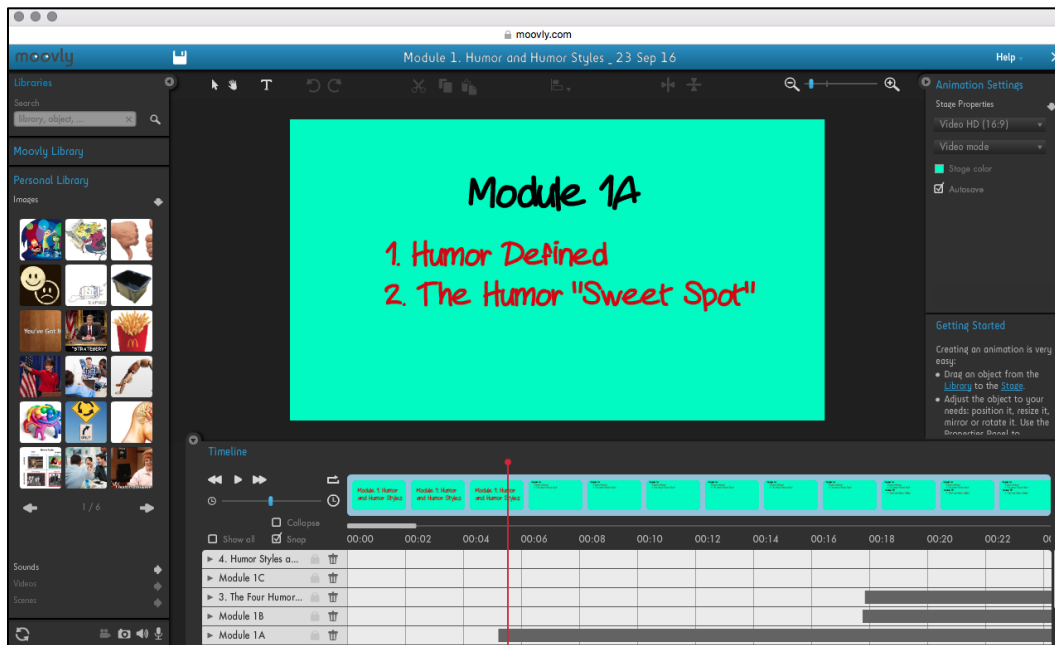
You'll do a great job, I'm sure!

Karen

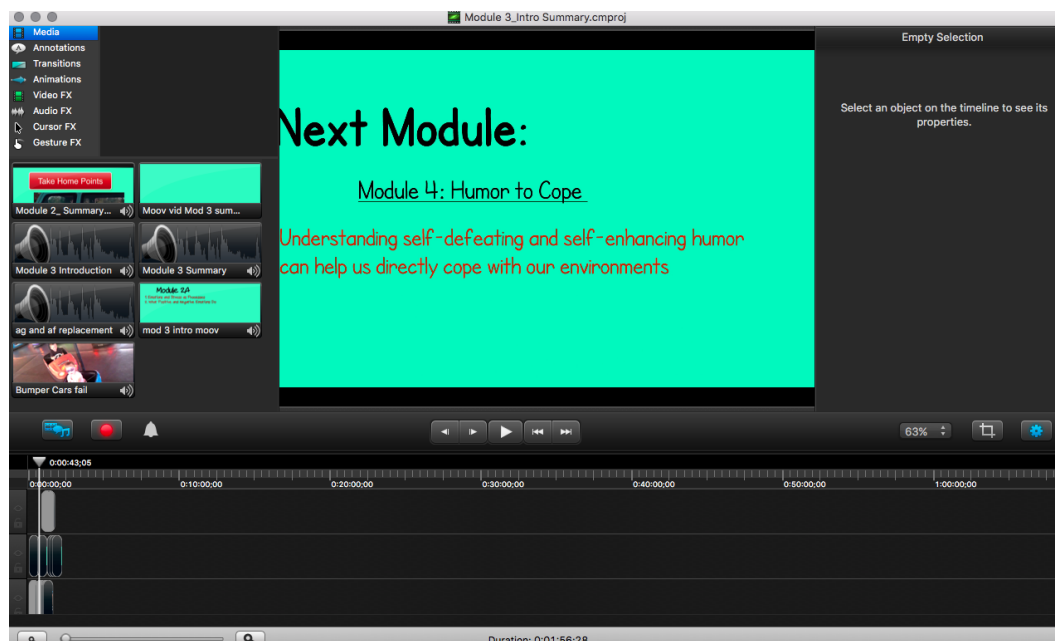
From: Baisley, Maggie [mailto:mbaisley@thewomenscenter.org]
Sent: Thursday, October 01, 2015 3:14 PM

APPENDIX D: Online Media Screenshots

Screenshot 1. Moovly Software window, used to create videos.

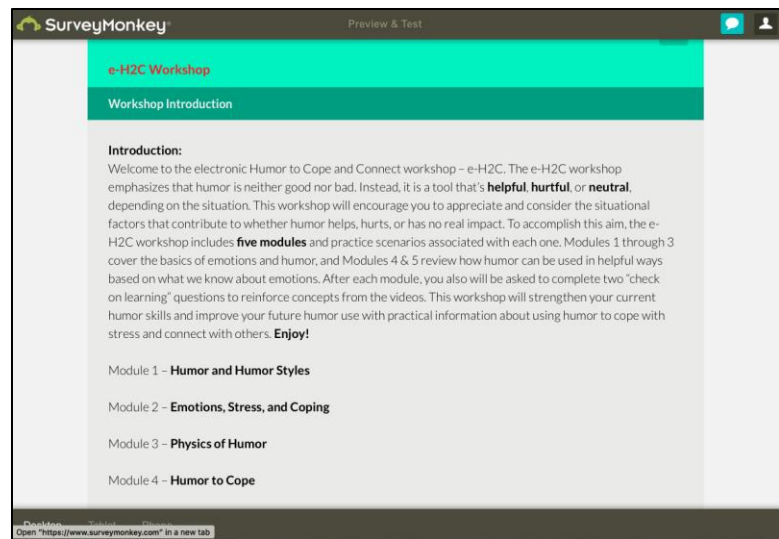


Screenshot 2. Camtasia Software window, used to create videos.

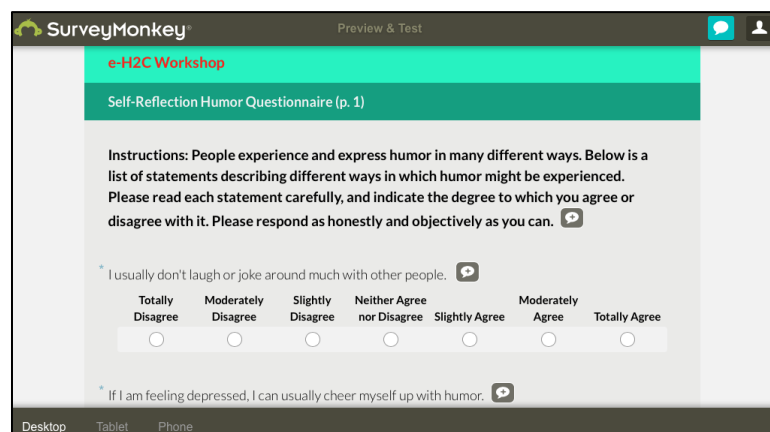


Screenshot 3a-c. Survey Monkey from participants' view.

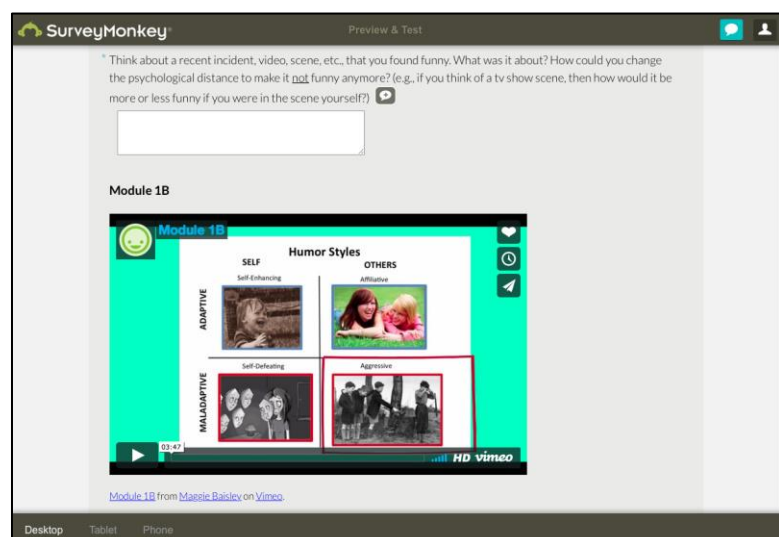
a. Sample page:
Instructions to
participants.



b. Sample page:
Humor Styles
Questionnaire.

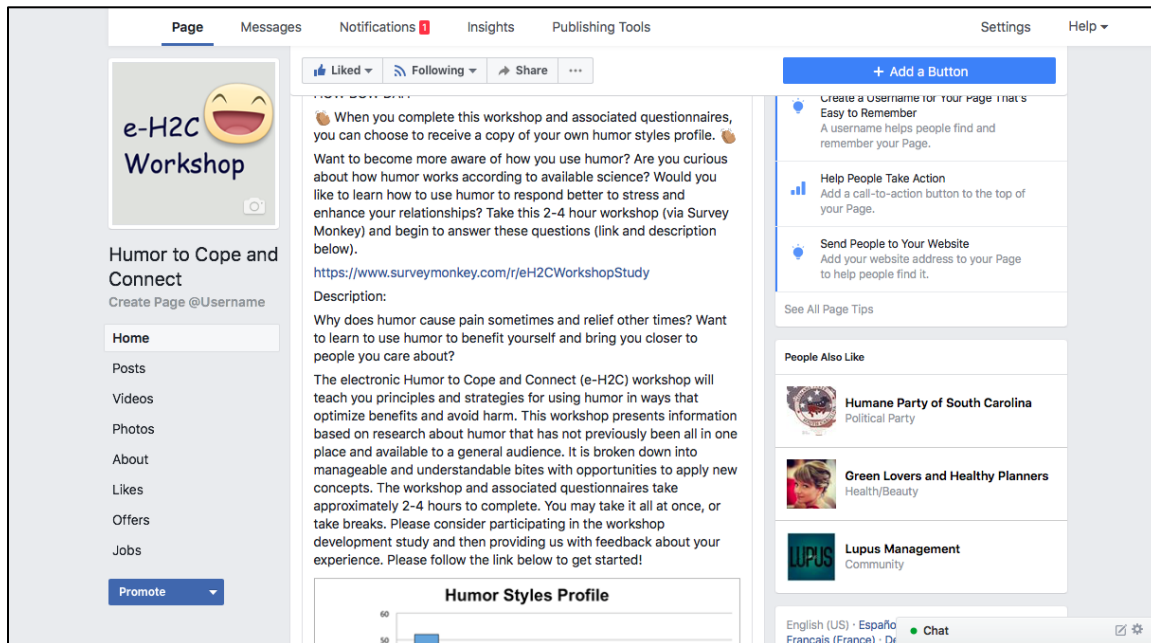


c. Sample page:
Exercises and
videos embedded
within Survey
Monkey page.

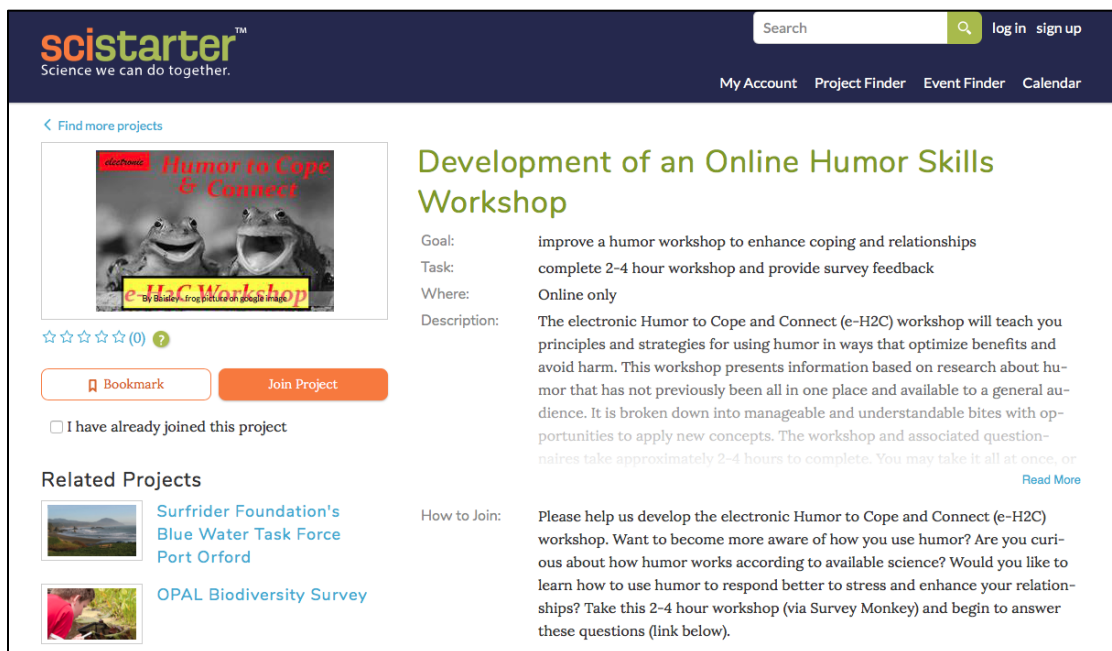


Screenshot 4a-b. Phase III recruitment pages.

a. Facebook recruitment fan page.



b. Scistarter citizen science recruitment page.



APPENDIX E: Measures

Measure 1. e-H2C Workshop Content Checklist (Phase I only)

Instructions: The purpose of this checklist is to assess whether all proposed workshop components are present. Please complete and review the workshop. Mark “X” under “Yes” or “No” to indicate the presence or absence of each workshop component (described in the table).

Psychoeducation	Present?	
	Yes	No
Outline and goals of the workshop - General description of workshop outline and goals.		
Stress, emotions, and health/adaptation - Description of the role of stress in health and adaptation. Description of positive and negative emotions and their benefits/limitations.		
Humor styles and specific examples -Description of the four humor styles and examples of how each humor style is used.		
The Benign Violation Theory - Description of the Benign Violation Theory that explains what makes humor attempts funny.		
Strategies for creating humor - List of strategies and examples for how to create humor.		
Relative Interpersonal Distance Theory of Humor - Description of the Relative Interpersonal Distance Theory of Humor that explains interpersonal factors that contribute to whether humor is perceived as funny.		
Strategies for using humor in different types of relationships - Lists of strategies and examples for how to integrate adaptive humor into interpersonal scenarios.		
Harmful aspects of humor use—individuals and relationships - Description and explanation of disparagement humor, and maladaptive uses of humor (i.e., aggressive and self-defeating) and their negative consequences to self and relationships.		
Practical Exercises		
Three mildly distressing intrapersonal scenarios - Description of three distinct individual scenarios that require participants to decide: (a) whether to use humor, (b) type in a response for what type of humor they use, and (c) specifically what they would say/do in the scenario.		
Three mildly distressing interpersonal scenarios - Description of three distinct social scenarios that require participants to decide: (a) whether to use humor, (b) type in a response for what type of humor they use, and (c) specifically what they would say/do in the scenario.		

Measure 2. e-H2C Workshop Development Questionnaire (Phase II only; continued through page 137)

e-H2C Workshop Development Questionnaire

1. **Content** – the information presented was:

a. Relevant to me.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

b. Consistent with proposed humor topics.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

[added for humor research experts]

c. An accurate and balanced summary of available humor literature with regard to personal and relational health.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

2. **Delivery** – the way the material was presented was clear and accessible with regard to:

a. The order of presented topics.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

b. The narration of the slides.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

c. Pictures and examples.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

3. **Questionnaires:** Please provide responses regarding the wording and clarity of the items you completed.

a. **“Check-on-Learning” Questions** (i.e., the questions embedded within the workshop):

I understood the questions asked.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

I was confident in my ability to honestly answer questions.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

b. **Satisfaction Questionnaire:**

I understood the questions asked.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

I was confident in my ability to honestly answer questions.

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
---------------------	-----------------	-------------------	---------------------------	----------------	--------------	------------------

Measure 3. Demographic Questionnaire

Basic Demographic Questionnaire

Instructions: We are interested in knowing your basic background information to better understand who may be interested in this workshop. Please indicate your answer to the following demographic questions.

1. Age: What is your age?

2. What race/ethnicity do you identify as (check all that apply)?

- White
- Hispanic or Latino
- Black or African American
- Native American or American Indian
- Native Hawaiian/ Other Pacific Islander
- Other _____ (write in)
- Decline to respond
- Hispanic/Latino
- Non-Hispanic/Latino
- Decline to respond

4. Gender: Please specify your gender.

- Female
- Male
- Other

5. Education: What is the highest degree or level of school you have completed? *If currently enrolled, highest degree received.*

- Up to 8th grade
- Some high school, no diploma
- High school graduate, diploma or the equivalent (for example: GED)
- Some college credit, no degree
- Trade/technical/vocational training
- Associate's degree
- Bachelor's degree
- Master's degree
- Doctorate or Professional degree

Measure 3. Demographic Questionnaire Cont'd

6. Marital Status: What is your marital status?

- Married
- Cohabiting (living with partner/significant other, but not married)
- Separated and not living as married
- Divorced and not living as married
- Widowed and not living as married
- Single, never married, and not living as married

7a. Employment Status: Are you currently...?

- Employed, working 40 or more hours per week
- Employed, working less than 40 hours per week
- Not employed
- Retired
- Disabled, not able to work
- Decline to respond

7b. If you are currently employed, then what is your general field of work (e.g., marketing, military)?

8. How much total combined money did all members of your household earn last year? (*amount earned before taxes).

- Less than 40,000
- 40,000 – 100,000
- Greater than 100,000
- Decline to respond

Measure 4. Phase IIa Interview “Seed” Questions

Thank you for participating in the development of this humor workshop and providing valuable feedback. This interview will take approximately 20-30 minutes. Before we get started, I would like to remind you that we welcome frank critiques. All comments, positive and negative, will help us to make the workshop better. Please be as open as possible. Do you have any questions?

1. Overall, what did you think of the e-H2C workshop?
[follow-up, as needed: specific, based on responses; flesh out explanations relevant to answer]
2. With regard to the [positive reactions], what did you like about it?
[follow-up: is there anything you would like to add?]
3. With regard to the [negative reactions], what would you change? Would you omit?
[follow-up: is there anything you would like to add?]

Cognitive Interview Style Questions:

1. What did you think of Module [1-5]? [remind participant of title and general content necessary]
2. What did you think of the practice scenarios?
3. [Follow-up questions based on responses to Development Questionnaires; e.g., “You indicated that (blank) was not useful. Can you tell me a little more about that?”]

Thanks for your participation. As we close up, is there anything else? Any other things that come to mind?

[anything at all?] [anything else?]

Measure 5. Phase IIb Interview “Seed” Questions

Before we get started, I wanted set the frame for our conversation. The interview will take 20-30 minutes. My intent is to understand your genuine experience of the workshop and to pick it apart so that we can make improvements. I would like us to work together to identify what you thought the strengths and weaknesses of the workshop were. Do you have any questions?

What did you expect the workshop would be like?

How did your experience match or not with your expectations?

How long did it take you?

What’d you think about the length?

Which parts did you like?

Which parts did you not like?

What did you learn? In the days [or hours] that followed completion of the workshop, did you think about the workshop material at all? Were there any moments? If yes, what were they?

What did you wish you learned or got out of the workshop?

What was the structure like for you?

How were the practice questions? (within modules) How much did they contribute to your learning?

For these next questions, I identified some areas that you seemed to be less satisfied with based on the feedback. Could you tell me what you didn’t like as much about them, what you would prefer, or if you would remove altogether?

[Review participant feedback on Survey Monkey]

Measure 6. Rating Instructions Part I

Participant ID Color _____

Reviewer:

How long did the person say the workshop took to complete?

Based on the interview transcript, how satisfied would you say this person was with the workshop? _____

**This question added for Phase IIb only.*

0 – Not At All, Dissatisfied

1 – Neutral

2 – Satisfied

3 – Very Satisfied

Review each transcript and identify descriptions that fall into one of the categories below. Also, please write any additional comments, reactions, or ambiguous points under “Other notes”, including critiques that don’t seem to fall into a category as well as your own commentary. You might find it useful to start with the “Other notes” section to orient yourself to the interview transcript.

1. **Not useful** (unsatisfactory, or not helpful), **or needs improvement** (could be refined/improved), with an implication or explicit statement about what should be **removed** or **changed and how**.
2. **Missing** (not there, but should be), with an implication or explicit statement about what the participant hoped for and what should be **added**.
3. **Positive** (good, useful), with an implication or explicit statement about what the participant found helpful, and should be retained and unchanged.

4. **Other notes:**

Some possible questions to consider for this section:

What did the participant seem to focus on? What was the participant’s general impression? Would this participant take the workshop on his/her/their own if not for incentives?

Measure 7. Rating Instructions Part II (Phase IIa only; continued through page 145)

Reviewer:

Date:

Instructions: Please complete the following two tasks using the original transcript material (you also may refer to your coding notes, but please also review the original data).

1. For each of the seven themes below, please indicate whether/which reviewers discussed or mentioned the topic (use “Comments” space for any confusion/questions on word choice).

2. Below each theme, there are specific comments or suggestions relevant to each theme. Underneath each one, please check “R” (Red), “P” (Purple), “Y” (Yellow), and/or “B” (Blue) to indicate which participants endorsed it (use “Other” space for any items not listed that fall under that theme).

1. Workshop Length

☐ Red ☐ Purple ☐ Yellow ☐ Blue

Comments:

- Break into parts

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Reduce amount of information

☐ R ☐ P ☐ Y ☐ B ☐ N/A

Other:

2. Material Density (i.e., Academic/Practical balance)

☐ Red ☐ Purple ☐ Yellow ☐ Blue

Comments:

- Remove references

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Add in more practical aspects

☐ R ☐ P ☐ Y ☐ B ☐ N/A

3. Visuals

☐ Red ☐ Purple ☐ Yellow ☐ Blue

Comments:

- Too animated

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Not animated enough

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Inappropriate animation

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Good animation

☐ R ☐ P ☐ Y ☐ B ☐ N/A

Other:

4. Humor Definition/Theory

☐ Red ☐ Purple ☐ Yellow ☐ Blue

Comments:

- Make more inclusive

☐ R ☐ P ☐ Y ☐ B ☐ N/A

Other:

5. Sample Scenarios (Fresh Prince and Zootopia)

☐ Red ☐ Purple ☐ Yellow ☐ Blue

Comments:

- Make less confusing

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Integrate into modules

☐ R ☐ P ☐ Y ☐ B ☐ N/A

Other:

6. Check on Learning Questions

☐ Red ☐ Purple ☐ Yellow ☐ Blue

Comments:

- Increase difficulty

☐ R ☐ P ☐ Y ☐ B ☐ N/A

Other:

7. Positive Impressions

☐ Red ☐ Purple ☐ Yellow ☐ Blue

Comments:

- Likes structure

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Likes specific concepts

☐ R ☐ P ☐ Y ☐ B ☐ N/A

- Likes visuals

☐ R ☐ P ☐ Y ☐ B ☐ N/A

Other:

Measure 8. Satisfaction Questionnaire

Satisfaction Scale (Adapted from Artino, 2010)

Instructions: Please respond to the following questions with respect to your experience of the e-H2C workshop (Likert-type scale is displayed below).

Completely Disagree	Mostly Disagree	Slightly Disagree	Neither Agree or Disagree	Slightly Agree	Mostly Agree	Completely Agree
------------------------	--------------------	----------------------	---------------------------------	-------------------	-----------------	---------------------

1. Overall, I was satisfied with my online learning experience.
2. This online workshop met my needs as a learner.
3. I would recommend this online workshop to a friend who wanted to learn the material.
4. I liked this online workshop.
5. I think this online workshop personally benefitted me.
6. I put effort into participating in this online workshop.
7. I completed the online workshop according to the instructions.

Measure 9. Humor Styles Questionnaire (continued through page 149)

Humor Styles Questionnaire

People experience and express humor in many different ways. Below is a list of statements describing different ways in which humor might be experienced. Please read each statement carefully, and indicate the degree to which you agree or disagree with it. Please respond as honestly and objectively as you can. Use the following scale:

Totally Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Totally Agree
1	2	3	4	5	6	7
1.	I usually don't laugh or joke around much with other people.					1 2 3 4 5 6 7
2.	If I am feeling depressed, I can usually cheer myself up with humor.					1 2 3 4 5 6 7
3.	If someone makes a mistake, I will often tease them about it.					1 2 3 4 5 6 7
4.	I let people laugh at me or make fun at my expense more than I should.					1 2 3 4 5 6 7
5.	I don't have to work very hard at making other people laugh — I seem to be a naturally humorous person.					1 2 3 4 5 6 7
6.	Even when I'm by myself, I'm often amused by the absurdities of life.					1 2 3 4 5 6 7
7.	People are never offended or hurt by my sense of humor.					1 2 3 4 5 6 7
8.	I will often get carried away in putting myself down if it makes my family or friends laugh.					1 2 3 4 5 6 7
9.	I rarely make other people laugh by telling funny stories about myself.					1 2 3 4 5 6 7
10.	If I am feeling upset or unhappy I usually try to think of something funny about the situation to make myself feel better.					1 2 3 4 5 6 7
11.	When telling jokes or saying funny things, I am usually not very concerned about how other people are taking it.					1 2 3 4 5 6 7
12.	I often try to make people like or accept me more by saying something funny about my own weaknesses, blunders, or faults.					1 2 3 4 5 6 7
13.	I laugh and joke a lot with my friends.					1 2 3 4 5 6 7
14.	My humorous outlook on life keeps me from getting overly upset or depressed about things.					1 2 3 4 5 6 7
15.	I do not like it when people use humor as a way of criticizing or putting someone down.					1 2 3 4 5 6 7
16.	I don't often say funny things to put myself down.					1 2 3 4 5 6 7
17.	I usually don't like to tell jokes or amuse people.					1 2 3 4 5 6 7

Totally Disagree	Moderately Disagree	Slightly Disagree	Neither Agree nor Disagree	Slightly Agree	Moderately Agree	Totally Agree
1	2	3	4	5	6	7
18.	If I'm by myself and I'm feeling unhappy, I make an effort to think of something funny to cheer myself up.					1 2 3 4 5 6 7
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.					1 2 3 4 5 6 7
20.	I often go overboard in putting myself down when I am making jokes or trying to be funny.					1 2 3 4 5 6 7
21.	I enjoy making people laugh.					1 2 3 4 5 6 7
22.	If I am feeling sad or upset, I usually lose my sense of humor.					1 2 3 4 5 6 7
23.	I never participate in laughing at others even if all my friends are doing it.					1 2 3 4 5 6 7
24.	When I am with friends or family, I often seem to be the one that other people make fun of or joke about.					1 2 3 4 5 6 7
25.	I don't often joke around with my friends.					1 2 3 4 5 6 7
26.	It is my experience that thinking about some amusing aspect of a situation is often a very effective way of coping with problems.					1 2 3 4 5
6 7						
27.	If I don't like someone, I often use humor or teasing to put them down.					1 2 3 4 5 6 7
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.					1 2 3 4 5 6 7
29.	I usually can't think of witty things to say when I'm with other people.					1 2 3 4 5 6 7
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.					1 2 3 4 5 6 7
31.	Even if something is really funny to me, I will not laugh or joke about it if someone will be offended.					1 2 3 4 5 6 7
32.	Letting others laugh at me is my way of keeping my friends and family in good spirits.					1 2 3 4 5 6 7

Scoring

Affiliative Humor: 1*, 5, 9*, 13, 17*, 21, 25*, 29*

Self-Enhancing Humor: 2, 6, 10, 14, 18, 22*, 26, 30

Aggressive Humor: 3, 7*, 11, 15*, 19, 23*, 27, 31*

Self-Defeating Humor: 4, 8, 12, 16*, 20, 24, 28, 32

* Note: Items marked with * are reverse keyed; i.e., 1=7, 2=6, 3=5, 4=4, 5=3, 6=2, 7=1
After reversing these items, sum across all 8 items in each scale to obtain scale totals.

Interpretation

Affiliative Humor: tendency to share humor with others, tell jokes and funny stories, amuse others, make others laugh, enjoy laughing along with others

Self-Enhancing Humor: tendency to maintain a humorous outlook on life even when not with others, use humor in coping with stress, cheer oneself up with humor

Aggressive Humor: tendency to use humor to disparage, put down, or manipulate others; use of ridicule, offensive humor; compulsive expression of humor even when inappropriate

Self-Defeating Humor: tendency to amuse others at one's own expense, self-disparaging humor; laughing along with others when being ridiculed or put down; using humor to hide one's true feelings from self and others

Measure 9. Permission to Use HSQ for Current Study (email correspondence with Dr. Rod Martin, Sep. 18-19, 2015)

**Baisley, Maggie** <margaret.baisley@usuhs.edu> Sep 18 (9 days ago) ☆
to ramartin ▾

Professor Martin:

Good evening. I am a clinical psychology Ph.D. student at the Uniformed Services University in Bethesda, MD. As a clinician, I am interested in integrating your humor findings into useful training and intervention programs. I am currently working on my dissertation which involves assessing the feasibility and acceptability of a humor skills workshop delivered in an online format. I am interested in using the Humor Styles Questionnaire as part of the workshop and as a predictor of relevant outcomes. Is it possible to receive permission to use your measure for my dissertation? Please let me know if you require more information.

Sincerely,
Maggie Baisley

...

**Rod Martin** Sep 19 (8 days ago) ☆
to me ▾

Hi Maggie,

I'm glad to hear about your research. It sounds very interesting! I'm attaching a copy of the HSQ, along with scoring instructions. I'll also attach a list of published studies that have used the HSQ. In case you're not aware of it, I've published a book on the psychology of humor, which would likely be useful to you in writing your dissertation. You can order it through Amazon.com.

Good luck with your research!

~ Dr. Rod Martin

Measure 10. Information Motivation Behavioral Skills (IMB) Questionnaire (deleted items are displayed on page 151)

*I= Information; M=Motivation; B=Behavioral Skills

Instructions: Please carefully read and respond to each item according to how much you agree with the statement.

Completely Disagree	Moderately Disagree	Neutral	Moderately Agree	Completely Agree
------------------------	------------------------	---------	---------------------	---------------------

I1. Negative emotions (e.g., anger, sadness) are important to address problems or gain social support.

I2. The way I think about stress influences how I respond to it.

I3. All humor promotes health and well-being. It doesn't matter when or how it's used. (negatively scored).

I4. When I find something funny, my reaction tells me how I relate to the topic or situation.

I5. To use humor that benefits my relationships, I should be aware of how humor may negatively affect the other person.

I6. Making fun of different groups is harmless as long as people understand it's a joke (negatively scored).

I7. Humor may hurt me if it prevents acknowledging or understanding negative emotions.

M1. I prefer to not use humor at all to avoid issues (negatively scored).

M2. I will try to use humor to improve my relationships and ability to cope with stress.

M3. People around me will be supportive if I tried using humor in new ways.

B1. I am confident in my ability to effectively use humor.

B2. I can make others laugh without hurting others or myself.

*The following two items were deleted during Phase II.

~~B3. You sit down at a bar, order a soft drink, and an attractive stranger sits down next to you. You hear him say, "Hey! Want some company?" You turn your head and realize that the stranger is talking to you. "Excuse me?" you ask. "I'll even give you my share of the nuts . . . I know everyone's been eyeing the cashews," he says, smiling, while pointing to the bowl of peanuts.~~

~~In one or two words, how would you describe this type of humor? (answer: affiliative)_____~~

~~How would you alter (or remove) humor to improve the scenario for yourself? Please provide rationale.~~

~~B4. You are about to fail out of his master's program. You're feeling a lot of anxiety and stress, and wonder what you will do if you fail. You wish you had emotional support. When your friend asks you how you're doing, you joke, "I need to get hooked on phonics."~~

~~In one or two words, how would you describe this type of humor? (answer: self-defeating)_____~~

~~How would you alter (or remove) humor to improve the scenario for yourself? Please provide rationale.~~

Rating (points x2):

0 points=lacks acknowledgment of e-H2C humor principles; 1 point=some mention of e-H2C principles; 2 points=thoughtful use of e-H2C principles and/or improvement in humor scenario

Measure 11. PROMIS Global Health (continued through page 154)

PROMIS v.1.1 - Global

Global Health

Please respond to each item by marking one box per row.

		Excellent	Very good	Good	Fair	Poor
Global01	In general, would you say your health is:	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Global02	In general, would you say your quality of life is:	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Global03	In general, how would you rate your physical health?	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Global04	In general, how would you rate your mental health, including your mood and your ability to think?	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Global05	In general, how would you rate your satisfaction with your social activities and relationships?	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Global09	In general, please rate how well you carry out your usual social activities and roles. (This includes activities at home, at work and in your community, and responsibilities as a parent, child, spouse, employee, friend, etc.)	☐ 5	☐ 4	☐ 3	☐ 2	☐ 1
Global06	To what extent are you able to carry out your everyday physical activities such as walking, climbing stairs, carrying groceries, or moving a chair?	Completely ☐ 5	Mostly ☐ 4	Moderately ☐ 3	A little ☐ 2	Not at all ☐ 1

PROMIS v.1.1 - Global

In the past 7 days...

		Never	Rarely	Sometimes	Often	Always						
Global10	How often have you been bothered by emotional problems such as feeling anxious, depressed or irritable?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5						
Global08	How would you rate your fatigue on average?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5						
Global07	How would you rate your pain on average?.....	☐ 0 No pain	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7	☐ 8	☐ 9	☐ 10 Worst imaginable pain

APPENDIX F: Ethics Documents

Document 1. Informed Consent Phase II (continued through page 156)

Consent for Participation in A Research Study

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and/or about the information given below.

It is important that you understand that your participation in this study is totally voluntary. You may refuse to participate or choose to withdraw from this study at any time. If, during the course of the study, you should have any questions about the study or your participation in it, you may contact:

Margaret C. Baisley, M.S.
Department of Medical & Clinical Psychology,
USUHS, Bethesda, MD 20814-4799
margaret.baisley@usuhs.edu

Neil E. Grunberg, Ph.D.
Department of Military and Emergency Medicine,
USUHS, Bethesda, MD 20814-4799
neil.grunberg@usuhs.edu

Institutional Review Board Office at (301) 295-9534 USUHS, Bethesda, Maryland 20814

1. THE PURPOSE OF THE STUDY: The purpose of this study is to develop the preliminary electronic Humor to Cope and Connect (e-H2C) workshop using feedback from participants. The workshop will provide information and strategies for using humor in adaptive ways. Your participation and feedback will help us make changes to the workshop that will lead to improvements in the user experience.

2. THE PROCEDURES TO BE FOLLOWED: If you agree to participate in this study, you will be asked to complete the preliminary version of an online workshop (and associated questionnaires) and a 30-minute interview over the phone within 72 hours of completing the workshop. You also will provide some basic written information about yourself, including demographics and quality of life. In the interview, the researcher will ask you questions about your experience completing the workshop. The phone call will be audio-recorded. Audio-recordings will be deleted after they are transcribed.

3. DURATION OF THE STUDY: Participation in the e-H2C workshop will last approximately 90-120 minutes. Participation in the follow-up phone interview will last approximately 30-60 minutes and will be audio-recorded. The interview must be conducted within 72 hours of completing the workshop.

4. THIS STUDY IS BEING DONE FOR THE PURPOSES OF EDUCATION AND RESEARCH. The goal of this research is to develop an online humor skills workshop, but you may benefit directly from participation in the study by learning information and skills reinforced by the workshop. However, no benefit can be guaranteed.

5. DISCOMFORTS AND/OR RISKS THAT CAN BE REASONABLY EXPECTED ARE: The risks associated with this study are minor. You may find the questions make you uncomfortable. You may skip any questions. Also, you may decline to participate at any time and/or withdraw your participation at any time. If you have any questions or concerns, you can reach the principal investigator, Margaret Baisley, at margaret.baisley@usuhs.edu. A researcher will get back to you within two business days. 

6. **PRIVACY AND CONFIDENTIALITY:** All information you provide as part of this study will be confidential and will be protected to the fullest extent provided by law. Information that you provide and other records related to this study will be accessible to those persons directly involved in conducting this study and members of the Uniformed Services University of the Health Sciences Institutional Review Board (IRB), which provides oversight for protection of human research volunteers.

All interview transcripts and forms will not have identifying information and will be kept in a restricted access, password protected computer, in a locked office. Data from questionnaires will be entered into a database in which individual responses are not identified. Paper copies of the interviews will be destroyed.

Personal information will be collected for payment purposes. This information will be kept separate from the database, in a password-protected computer in a locked office at the Uniformed Services University of the Health Sciences.

If you are a military member, please be advised that under Federal Law, a military member's confidentiality cannot be strictly guaranteed.

NOTE: You are free to withdraw this consent and to stop participating in this study at any time for any reason.

7. **COMPENSATION:** You will be given the option to receive a \$30 Visa gift card in exchange for completing the study, unless you are an employee of the US government. At the end of the study, you will be asked for your preferred email address to use for receiving the electronic gift card. This information will be stored separately from the study data and will be stored in a secure, password protected computer in a locked office with restricted access.

8. **RECOURSE IN THE EVENT OF INJURY:**

This study should not entail any physical or mental risk beyond those described above. It is believed that complications arising from participation should not occur. If, for any reason, you feel that continuing this study would constitute a hardship for you, you may end your participation in the study at any time.

If at any time you believe you have suffered an injury or illness as a result of participating in this research project, contact the Director of Human Subjects Protection Program at the Uniformed Services University of the Health Sciences, Bethesda, Maryland 20814-4799 at (301) 295-9534. This office can review the matter with you. They can provide information about your rights as a research volunteer. They may also be able to identify resources available to you. If you believe the government or one of the government's employees (such as a military doctor) has injured you, a claim for damages (money) against the federal government (including the military) may be filed under the Federal Torts Claims Act. Information about judicial avenues of compensation is available from the University's General Counsel at (301) 295-3028.

Should you have any questions at any time about the study you may contact the principal investigator, Margaret C. Baisley, M.S., Department of Medical and Clinical Psychology, USUHS, Bethesda, Maryland, margaret.baisley@usuhs.edu.

STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS RESEARCH PROJECT:

By checking the box "Yes" below, I am agreeing that I have read the consent form and understand the procedures to be used in this study. I also agree that I freely and voluntarily choose to participate and understand that I may withdraw at any time.

I may request a copy of this form for my records. 

* Please select a response from the options below. 

- ☐ Yes, I agree to participate in this study
- ☐ No, I do not agree to participate in this study

* Please write your name to indicate consent. 

Document 2. Informed Consent Phase III (continued through page 158)

Consent for Participation in A Research Study

The following information is provided to inform you about the research project and your participation in it. Please read this form carefully and feel free to ask any questions you may have about this study and/or about the information given below.

It is important that you understand that your participation in this study is totally voluntary. You may refuse to participate or choose to withdraw from this study at any time. If, during the course of the study, you should have any questions about the study or your participation in it, you may contact:

Margaret C. Baisley, M.S.
Department of Medical & Clinical Psychology,
USUHS, Bethesda, MD 20814-4799
margaret.baisley@usuhs.edu

Neil E. Grunberg, Ph.D.
Department of Military and Emergency Medicine,
USUHS, Bethesda, MD 20814-4799
neil.grunberg@usuhs.edu

Institutional Review Board Office at (301) 295-9534
USUHS, Bethesda, Maryland 20814

1. THE PURPOSE OF THE STUDY: The purpose of this study is to assess participants' satisfaction with and responses to the electronic Humor to Cope and Connect (e-H2C) workshop. We are interested in understanding whether an internet-based humor skills workshop is feasible and desirable to a broad audience.

2. THE PROCEDURES TO BE FOLLOWED: If you agree to participate in this study, you will be asked to complete the preliminary version of an online workshop (and associated questionnaires). You also will provide some basic written information about yourself, including demographics and quality of life. In the interview, the researcher will ask you questions about your experience completing the workshop.

3. DURATION OF THE STUDY: Participation in the e-H2C workshop and completion of associated questionnaires will last approximately 90-120 minutes.

4. THIS STUDY IS BEING DONE FOR THE PURPOSES OF EDUCATION AND RESEARCH. The goal of this research is to develop an online humor skills workshop, but you are also expected to benefit directly from participation in the study by learning information and skills reinforced by the workshop. However, no benefit can be guaranteed.

5. DISCOMFORTS AND/OR RISKS THAT CAN BE REASONABLY EXPECTED ARE: The risks associated with this study are minor. You may find the questions make you uncomfortable. You may skip any questions. Also, you may decline to participate at any time and/or withdraw your participation at any time. If you have any questions or concerns, you can reach the principal investigator, Margaret Baisley, at margaret.baisley@usuhs.edu. A researcher will get back to you within two business days.

6. PRIVACY AND CONFIDENTIALITY: All information you provide as part of this study will be confidential and will be protected to the fullest extent provided by law. Information that you provide and other records related to this study will be accessible to those persons directly involved in conducting this study and members of the Uniformed Services University of the Health Sciences Institutional Review Board (IRB), which provides oversight for protection of human research volunteers.

NOTE: You are free to withdraw this consent and to stop participating in this study at any time for any reason.

7. COMPENSATION: There is no direct compensation for participation in this study.

8. RECOURSE IN THE EVENT OF INJURY:

COMPENSATION TO YOU IF YOU ARE INJURED AND LIMITS TO YOUR MEDICAL CARE:

This study should not entail any physical or mental risk beyond those described above. It is believed that complications arising from participation should not occur. If, for any reason, you feel that continuing this study would constitute a hardship for you, you may end your participation in the study at any time.

If at any time you believe you have suffered an injury or illness as a result of participating in this research project, contact the Director of Human Subjects Protection Program at the Uniformed Services University of the Health Sciences, Bethesda, Maryland 20814-4799 at (301) 295-9534. This office can review the matter with you. They can provide information about your rights as a research volunteer. They may also be able to identify resources available to you. If you believe the government or one of the government's employees (such as a military doctor) has injured you, a claim for damages (money) against the federal government (including the military) may be filed under the Federal Torts Claims Act. Information about judicial avenues of compensation is available from the University's General Counsel at (301) 295-3028.

Should you have any questions at any time about the study you may contact the principal investigator, Margaret C. Baisley, M.S., Department of Medical and Clinical Psychology, USUHS, Bethesda, Maryland, margaret.baisley@usuhs.edu.

STATEMENT BY PERSON AGREEING TO PARTICIPATE IN THIS RESEARCH PROJECT:

By checking the box "Yes" below, I am agreeing that I have read the consent form and understand the procedures to be used in this study. I also agree that I freely and voluntarily choose to participate and understand that I may withdraw at any time.

I may request a copy of this form for my records. 

* Please select a response from the options below. 

- ☐ Yes, I agree to participate in this study
- ☐ No, I do not agree to participate in this study

* Please write your name to indicate consent. 

Document 3. IRB approval from 25 May 2016



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4712



May 25, 2016

MEMORANDUM FOR 1LT MARGARET BAISLEY, MSC, USA, DEPARTMENT OF
MEDICAL AND CLINICAL PSYCHOLOGY

SUBJECT: USU IRB #1 (FWA 00001628; DoD Assurance P60001) Approval of Protocol TO-91-3974 for Human Subjects Participation

Congratulations! The Initial Review for your No More Than Minimal Risk human subjects research protocol MEM-91-3974, entitled "The Electronic Humor to Cope and Connect (e-H2C) Workshop: Feasibility of Internet-Based Humor Skills Training," was reviewed and approved for execution on May 25, 2016 by Edmund Howe, M.D., J.D., Chair IRB #1 under the provision of 32 CFR 219.110(b)(1) Suppl. F(7). The requirements for obtaining signed informed consent were waived pursuant to 32 CFR 219.117(c)(2). This approval will be reported to the USU IRB #1 scheduled to meet on June 09, 2016.

Authorization to conduct protocol MEM-91-3974 will automatically terminate on May 24, 2017. If you plan to continue data collection or analysis beyond this date, IRB approval for continuation is required. Please submit an application for continuing approval to the IRB Office 60 days prior to your termination date.

You are required to submit amendments to this protocol, changes to the informed consent document (if applicable), adverse event reports, and other information pertinent to human research for this project. No changes to this protocol may be implemented prior to IRB approval. If you have questions regarding this IRB action or questions of a more general nature concerning human participation in research, please contact Micah Stretch at 301-295-9534 or micah.stretch@usuhs.edu.

Edmund Howe, M.D., J.D.
Chair, IRB #1

Concur / Nonconcur

Arthur L. Kellerman, MD, MPH
Professor and Dean, School of Medicine

MAY 25 2016
Date

Learning to Care for Those in Harm's Way

Document 4. Continuing review IRB approval, 1 June 2017



UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES

4301 JONES BRIDGER ROAD
BETHESDA, MARYLAND 20814-4799
www.usuhs.mil



June 01, 2017

MEMORANDUM FOR JLT MARGARET BAISLEY, MSC, USA, DEPARTMENT OF
MEDICAL AND CLINICAL PSYCHOLOGY

SUBJECT: USU IRB #1 (FWA 00001628; DoD Assurance P60001) Continuing Review of Protocol
TO-91-3974 for Human Subjects Participation

Congratulations! The *Continuing Review* for your No More Than Minimal Risk human subjects research protocol TO-91-3974, entitled "The Electronic Humor to Cope and Connect (e-H2C) Workshop: Feasibility of Internet-Based Humor Skills Training," was reviewed and approved for execution on May 25, 2016 by Edmund Howe, M.D., J.D., Chair IRB #1 under the provision 32 CFR 219.110(b)(1)Suppl.F(7). This approval will be reported to the USUHS IRB #1 scheduled to meet on June 08, 2017

The purpose of this mixed method project is to develop a humor skills training workshop and assess aspects of feasibility, including public interest, satisfaction and validity. This project involves three phases. Phase 1 is the initial development of an online workshop. Phase 2 is effectively a pilot testing/refinement of the workshop for use in Phase 3 (assessment of feasibility and interest).

Authorization to conduct protocol TO-91-3974 will automatically terminate on May 24, 2018. If you plan to continue data collection or analysis beyond this date, IRB approval for continuation is required. Please submit an application for continuing approval to the IRB Office 60 days prior to your termination date.

You are required to submit amendments to this protocol, changes to the informed consent document (if applicable), adverse event reports, and other information pertinent to human research for this project. No changes to this protocol may be implemented prior to IRB approval. If you have questions regarding this IRB action or questions of a more general nature concerning human participation in research, please contact Mr. Micah Stretch at (301) 295-0819 or micah.stretch@usuhs.edu.

STRETCH.MI
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Digitally signed by
STRETCH.MICAH.R.1082910863
DN: c=US, o=U.S. Government, ou=DoD,
ou=PKI, ou=OSD,

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Reason: I am the author of this document
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Micah R. Stretch, M.A., J.D.,
Senior IRB Coordinator
Exemption Determination Official

APPENDIX E: Results Tables

Table 5. Results from Phase I internal review of the workshop

Critique (s)	Response (s)
- instructions for practice scenarios were unclear (n=2)	- revised instruction wording - added brief videos to model humor use in scenarios (i.e., as “bridge” between instructional videos and practice scenarios)
- not enough writing on the visual portions of the videos; pictures were sometimes distracting - suggestion to add “lecture notes” for future use - outlines of videos were excessive	- reduced display time and decreased word count for summary portions of the videos
- unclear how to find the “sweet spot” and what it looks like in practice	- included strategies for self-assessment and identification of the sweet spot in Module 2 (emotions stress and coping)
- timing/spacing issues	- refinement to match audio and visual portions
- check-on-learning questions for Module 1 were not challenging (n=2)	- changed second question to be more specific to video
- request 1-2 open-ended reflection questions after check on learning	- added one reflection dialogue box after each module
- “e-H2C Development Questionnaire” items were redundant; not necessary for each module (n=3)	- used development questions only once at the end of the workshop rather than after each module
- Module 1 is not about humor and was not as exciting as expected (n=1; next interviewee supported this critique)	- switched order of modules so that Module 2 (Humor Styles) would be first and Module 1 (emotions & stress) would be second

Table 6. Participant demographics by Phase

a. Demographics of Phase IIb pilot participants

	Mean (SD)	Range	
Age	41.4 (15.7)	25-67	
	Female	Male	
Gender	3	4	
	White	Asian	Black/AA
Race	4	1	2
	BA/BS	MS/MA or some grad	Doc/professional
Education	3	3	1
	Not employed	> 40 hours per week	Retired
Employment	2	3	2

b. Demographics of Phase III general participants

	Mean (SD)	Range			
Age	40.3 (17.8)	20-75			
	Female	Male			
Gender	30	14			
	White	Asian	Black/AA	*NH/Pac. Islander	Decline to respond
Race	38	3	1	1	1
	HS	AA/some college	BA/BS	MS/MA or some grad	Doc/professional
Education	3	8	12	14	7
	Not employed	< 40 hours per week	> 40 hours per week	Retired	Decline to respond
Employment	7	7	24	5	1

*Native Hawaiian/Pacific Islander

Table 7. Phase IIa (humor experts) interview results and workshop changes

Themes	n	Associated Comments/Rationale	Action (s)
Length and density of material may be overwhelming	3	- People cannot concentrate for >2 hours on one task - Length may be feasible for graduate students, but not for lower educational background - Breaking videos into chunks would enhance digestibility	Broke modules into shorter videos Instruct participants to take breaks if necessary
		Specific suggestions: - Add graphic to show workshop progress (e.g., % complete)	Added progress bar to bottom of each page indicating % completed
Academic material is unnecessary for explanations	4	- Specific citations and theories are unnecessary for practical use of humor; there are enough humor theories that describe similar components - Practical examples and videos would “soften” the power point “aesthetic”	Deleted specific citations Added practice exercises and reflection questions within modules
		Specific suggestions: - Add specific real-world occupational functions of humor to emphasize relevance of humor beyond “water cooler” talk - Make daily humor statistic more general (Module 1) - Add clip from Gene Wilder or other comedian to enhance credibility with “expert” stories - Fix citation error (Gross, 1989)	Added brief narration describing possible occupational functions to Module 5 Deleted specific statistic Integrated Gene Wilder clip into Module 1 Deleted specific term/citation
Humor conceptualization is too narrow for a general humor workshop	4	- Specific theory is not important for application - Inclusion of multiple definitions may resonate with more people	Deleted specific citations Added humor definitions

Table 7 cont'd. Phase IIa (humor experts) interview results and workshop changes

Themes	n	Associated Comments/Rationale	Action (s)
Sample video scenarios are not clear	3	- Selected videos were confusing; application of concepts was unclear - Integration of more sample videos within modules would be helpful to “alternate between practical and theoretical”	Added more videos from different media sources; integrated videos within modules rather than as a separate exercise
Check on learning questions are insufficient	2	- Check on learning questions should be more difficult; required “more nuanced attention” to the module	Added an open-ended check on learning question to each module (rather than all multiple choice)
		Specific Suggestions: - Change color of check on learning answer pages (red font) to distinguish from red as “incorrect”	Changed color to blue for all check on learning questions
Positive Comments			
Maintain visuals	3	- Gifs and other pictures are entertaining - Graphs (e.g., the “sweet spot” diagrams) enhance learning	Retain graphics in next iterations
Other	2	- Humor as helpful and harmful is an important concept - Integration of humor styles with other concepts was effective - The RISE (reflect, integrate, set boundaries, and exercise) is a novel and practical concept	Retain general concepts

Table 8. Phase IIb (general participants) interview results and workshop changes

Themes	n	Associated Comments/Rationale	Action (s)
Hard to do in one sitting (length)	7	- Limited attention span - Longer than anticipated - Wanted time to process in between modules - Concerns about exiting and re-entering the link (i.e., having to start over again) - Decided to complete across multiple sittings anyway	Inserted pages that encourage taking breaks if necessary, and provide instructions on how to re-access the link
		Specific suggestions: - Remove the password required to access the video to reduce clumsiness - Reduce comedy video options in Module 4 (from 3 to 1) - Improve expectation management with instructions	Changed the password to one letter for ease of use Changed instructions for participants to watch only one video Added instructions to Phase III recruitment flyer that specified a broader range completion time and emphasized the academic nature of the workshop
Practice exercises were not helpful or clear (Exercises within Modules 4 and 5; scenarios at the end of the workshop)	4	- Participants were fatigued by the end of the workshop - Modules 4 and 5 practice scenarios did not seem to match with videos on which they were based - Reminded one participants of “algebra;” felt formulaic and not applicable	Deleted practice scenario section Combined Modules 4 and 5 exercises with practice scenarios, simplified scenarios, and reduced number of exercises (from 6 to 2)
		Specific suggestions: - Add open-ended questions for participants to consider personal application of concepts	No specific actions taken due to existing concerns about length and density of materials; will consider this idea for future versions of the workshop
Missing social engagement or some real-time interaction	2	- Learn better when interacting with others and trying to apply techniques	No specific actions taken; noted for future versions of the workshop that may be live or online

Table 8 cont'd. Phase IIb (general participants) interview results and workshop changes

Themes	n	Associated Comments/Rationale	Action (s)
Not motivated to take the workshop on their own	2	- Selected videos were confusing; application of concepts was unclear - Integration of more sample videos within modules would be helpful to “alternate between practical and theoretical”	Added incentive to receive personalized humor styles profile for recruitment flyer
Workshop might not be as applicable for retired people	2	- Examples were often based in occupational settings - Workshop format reminded participant of a work-related training	No specific actions taken; noted for future versions of the workshop
Positive Comments			
Visuals helped with engagement and satisfaction	7	- Gifs, other pictures, and videos are entertaining	Retain graphics in next iterations
Specific concepts resonated with participants	-	- Humor styles (n=2 mentioned) - Sweet spot (n=) - The RISE (reflect, integrate, set boundaries, and exercise) is a novel and practical concept	Retain general concepts
Organization of concepts was useful	7	- Liked the “chunking” of the modules; made the content easier to follow	

Table 9. Pre-post IMB workshop questionnaire and satisfaction outcomes by Phase

Mean (standard deviation) is displayed.

	Information (7 items)		Motivation (3 items)		Behavioral Skills (2 items)		² Satis. (5 items)	Effort (2 items)
	Pre	Post	Pre	Post	Pre	Post		
Phase IIa (n=4 humor experts)	4.25 (.53)	4.57 (.42)	4.42 (.42)	4.50 (.57)	4.25 (.96)	4.13 (1.18)	5.95 (.72)	6.88 (.25)
Phase IIb (n=7)	3.94 (.49)	4.14 (.76)	3.90 (.42)	4.57 (.32)	4.07 (.45)	4.64 (.38)	5.49 (1.23)	6.43 (.73)
Phase III (n=44)	3.76 (.42)	¹ 4.43 (.41)	4.11 (.51)	4.20 (.60)	4.38 (.71)	4.32 (.68)	5.55 (1.27)	6.50 (.56)
Total (N=55)	3.82 (.44)	4.41 (.46)	4.11 (.50)	4.27 (.58)	4.33 (.70)	4.35 (.69)	5.57 (1.2)	6.42 (.57)

¹Significant difference from pre-measure; ²Satisfaction

Table 10. Dependent samples t-tests for pre-post IMB questionnaire

	Mean Δ (SD)	CI	t	df	Sig.	Std. Error Mean
Information	.67 (.39)	.55-.79	11.45	43	.00	.06
Motivation	.08 (.44)	-.05-.22	1.25	43	.22	.07
Behavioral Skills	-.06 (.41)	-.18-.07	-.93	43	.36	.06

Table 11. Humor styles and quality of life scores by Phase

Mean (standard deviation) is displayed.

	<u>Humor Styles Questionnaire</u>				<u>Quality of Life</u>	
	Affiliative	Aggressive	Self-enhancing	Self-defeating	*Phys.	Mental
Phase IIa (n=4 humor experts)	51.25 (6.40)	24.75 (10.59)	38.75 (13.07)	32.25 (8.73)	16.00 (2.58)	15.75 (2.36)
Phase IIb (n=7)	46.14 (7.28)	32.14 (6.62)	43.71 (3.99)	27.00 (9.95)	15.71 (1.38)	16.29 (2.29)
Phase III (n=44)	46.98 (7.28)	23.75 (8.03)	39.16 (10.23)	27.68 (8.27)	16.00 (1.86)	14.82 (3.39)
Total (N=55)	47.18 (7.17)	24.89 (8.39)	39.71 (9.85)	27.93 (8.44)	15.96 (1.83)	15.07 (3.22)

*Physical

Table 12. Student t-test for Phase III satisfaction score

N	Mean	SD	SE	t	df	Sig. (2-tailed)	Mean difference
44	5.55	1.26	0.19	8.16	43	<.001	1.55 (CI: 1.17-1.93)

Table 13. Phase III non-completers demographics

	Mean (SD)	Range			
Age	43.51	24-79			
	Female	Male			
Gender	47	17			
	White	Asian	Black/AA	Native American	Decline to respond/other
Race	57	1	2	2	2
	HS	AA/some college	BA/BS	MS/MA or some grad	Doc/ professional
Education	2	5	12	25	20
	Not employed	< 40 hours per week	> 40 hours per week	Retired	Decline to respond
Employment	4	11	42	7	0

Table 14. Logistic regression analysis to identify predictors of completion

	B	S.E.	Wald	df	Sig.	Exp(B)
Gender (1=male)	-0.25	0.49	0.26	1	0.61	0.78
HSQ: Affiliative	0.05	0.03	3.02	1	0.08	1.06
HSQ: Self-enhancing	-0.05	0.03	3.15	1	0.08	0.95
HSQ: Aggressive	-0.02	0.03	0.47	1	0.50	0.98
HSQ: Self-defeating	0.01	0.03	0.16	1	0.69	1.01
Physical Health	0.23	0.12	3.90	1	0.05	1.26
Mental Health	-0.06	0.09	0.40	1	0.53	0.95
Constant	-3.17	2.13	2.22	1	0.14	0.04

Table 15. Independent t-tests of gender differences

	t	df	Sig. (2-tailed)	Mean Δ	Std. Error Δ
Information Δ	-0.49	42	.63	-0.06	0.13
Motivation Δ	1.01	42	.32	0.11	0.11
Behavioral Skills Δ	-0.57	42	.57	-0.05	0.10
Satisfaction	1.32	42	.19	0.53	0.40
Effort	1.78	42	.08	0.31	0.18
*female is coded as "0;" male as "1"					

Table 16. Correlations among measures for completers and non-completers (N=108)

	Age	HSQ: Affiliative	HSQ: Self-enhancing	HSQ: Aggressive	HSQ: Self-defeating	Physical health	Mental health	Pre Information	Pre Motivation	Pre B. Skills
Age	-									
HSQ: Affiliative	-.252**	-								
HSQ: Self-enhancing	-0.129	.495**	-							
HSQ: Aggressive	-.327**	.221*	.221*	-						
HSQ: Self-defeating	-0.155	.267**	.213*	.310**	-					
Physical health	-0.007	0.09	.189*	-0.079	-0.067	-				
Mental health	0.153	0.17	.367**	-0.146	-.207*	.500**	-			
Pre Information	0.077	0.079	0.014	-.235*	-0.16	0.085	0.148	-		
Pre Motivation	-.218*	.625**	.583**	0.173	0.17	.192*	0.159	0.144	-	
Pre B. Skills	-0.133	.648**	.359**	-0.034	0.009	0.144	.247**	0.106	.493**	-

*p<.05; **p<.01

Table 17. Correlations among measures for completers (n=44)

	Age	HSQ: Affiliative	HSQ: Self-enhancing	HSQ: Aggressive	HSQ: Self-defeating	Satisfaction	Effort	Physical health	Mental health	Pre Information	Pre Motivation	Pre B. Skills	Post Information	Post Motivation	Post B. Skills
Age	-														
HSQ: Affiliative	-0.291	-													
HSQ: Self-enhancing	-0.079	.396**	-												
HSQ: Aggressive	-.343*	-0.074	0.076	-											
HSQ: Self-defeating	0.132	0.029	0.009	.337*	-										
Satisfaction	-0.043	0.003	-0.057	-0.069	0.017	-									
Effort	0.275	-0.011	-0.211	-0.253	0.01	.494**	-								
Physical health	-0.011	-0.256	0.187	-0.217	-0.194	.420**	0.201	-							
Mental health	0.056	0.118	.537**	-0.247	-0.196	0.202	0.079	.531**	-						
Pre Information	-0.128	0.059	-0.065	-0.073	0.005	0.223	0.128	0.168	0.114	-					
Pre Motivation	-0.105	.581**	.505**	-0.023	-0.087	0.031	0.054	-0.132	0.044	0.022	-				
Pre B. Skills	-.321*	.592**	.410**	-0.273	-0.051	0.068	-0.073	-0.142	0.266	0.088	.547**	-			
Post Information	.388**	-0.037	-0.205	-.311*	0.079	0.258	.345*	-0.018	-0.002	.549**	0.144	0.124	-		
Post Motivation	0.007	.439**	.369*	-0.217	-0.141	0.244	0.207	-0.097	0.116	0.039	.693**	.558**	.334*	-	
Post B. Skills	-0.127	.490**	.412**	-.343*	-0.167	0.219	0.061	-0.009	.366*	0.047	.486**	.830**	0.201	.729**	-

*p<.05; **p<.01

APPENDIX F: Results Figures

Figures 5. General structure of e-H2C Workshop with identified changes.

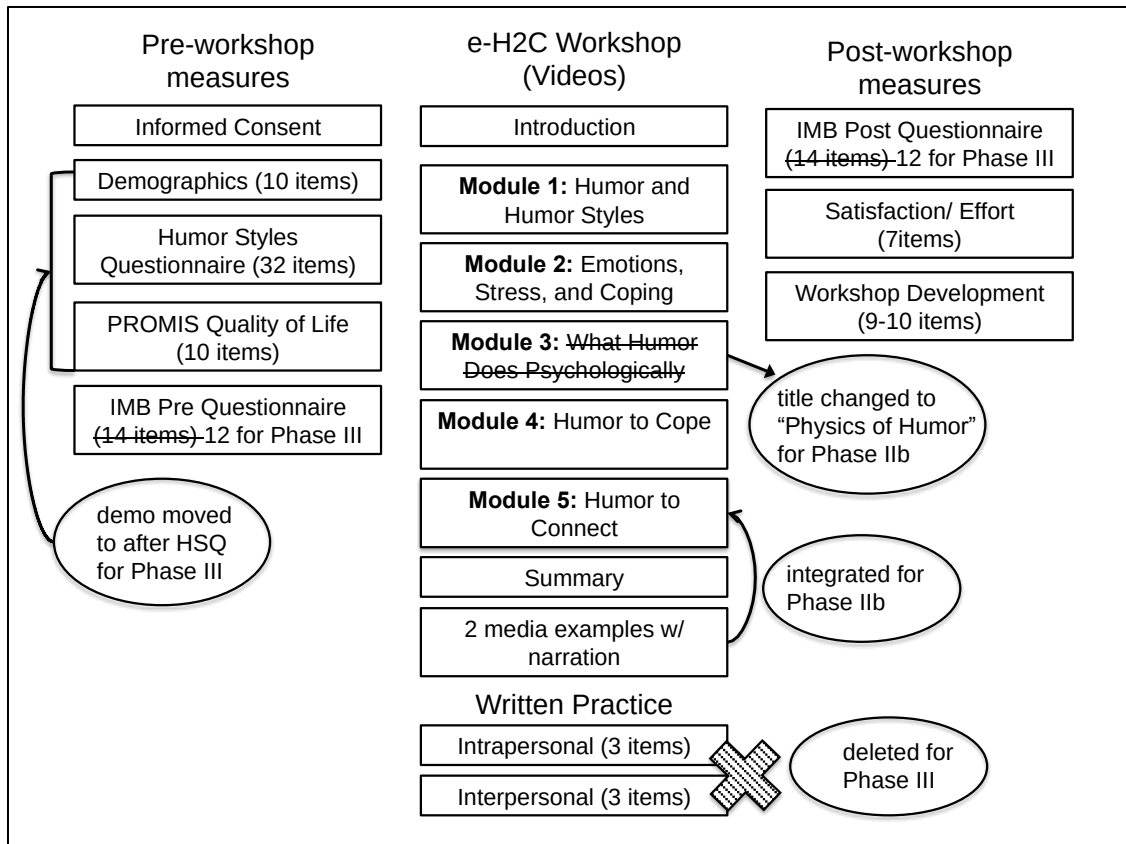


Figure 6. Modules “chunked” (i.e., broken in sub-modules) for Phase IIb-III.

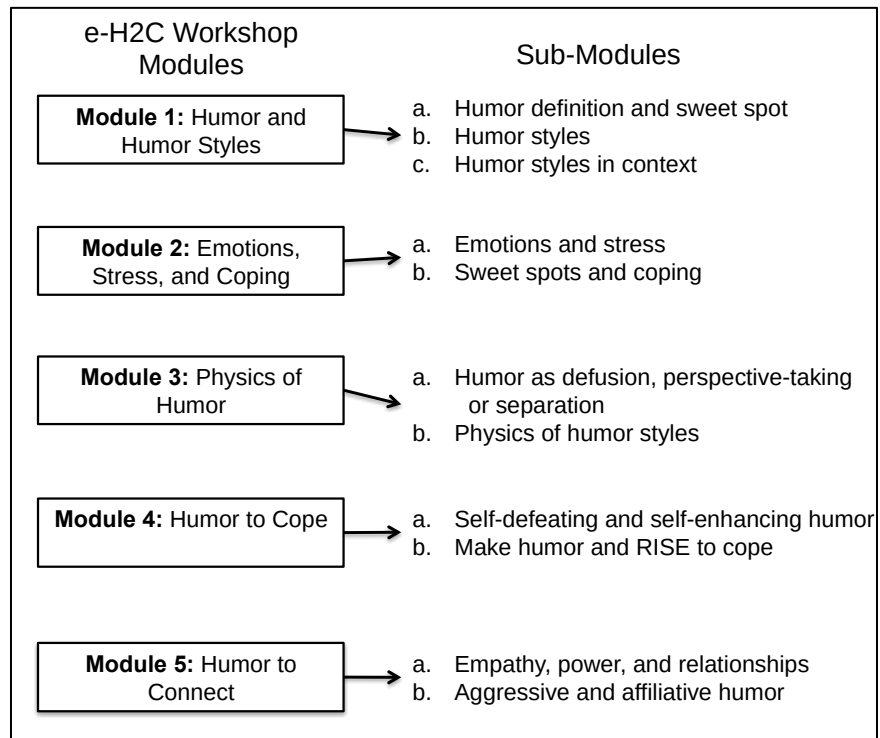


Figure 7. Attrition patterns during Phase III.

Column on the left indicates the percentage retained from the total number who completed informed consent (i.e., initiated the workshop)

