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Humor in Medicine: A Literature Review of Humor's Potential Therapeutic Value in Health Care

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Running Head: HUMOR IN MEDICINE: A LITERATURE REVIEW

Humor in Medicine: A Literature Review of Humor's Potential Therapeutic Value in Health Care

An Honors Thesis submitted in partial fulfillment of the requirements of Honors Studies
in Psychology and Biology

By

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Abstract

Using humor and laughter within the health care field has the potential to be relevant to patients during treatment, to the patient-caregiver relationship, to the subjective well-being of health care providers, and to the environments' (e.g., work settings) impact on group relationships (e.g., colleagues). A review of the literature examines how the psychological and physiological effects of laughter and humor within the human body impact health and well-being, how humor and laughter improve the patient-practitioner relationship, and if humor and laughter can potentially impact physician burnout. Several possible implications for these findings are discussed, such as professional medical comedians, improvements to medical education, and a theoretical technological application.

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Wooo Pig!

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Introduction

“Do you know the name of the person who invented hospital gowns? Seymour Heinius!” (Wanzer, Booth-Butterfield, & Booth-Butterfield, 2005, p. 119). A good joke can go a long way in bringing joy to those around. It is commonly understood that laughing feels good, and that it can bring a sense of happiness and enjoyment to an individual or group. Sometimes laughter almost feels therapeutic in certain situations that a person may face. As the adage goes “laughter is the best medicine”, or so it seems. Could laughter actually be medically therapeutic? Could an individual help his or her emotional and physical state just by laughing?

In 1998, a movie was released that brought these questions into the public spot light. *Patch Adams* (Farrell & Shadyac, 1998) was based on a true story that explored the world of medicine through the eyes of a medical student who saw things differently. Patch Adams, (played by Robin Williams), experienced depression and suicidal tendencies early in his life that caused him to learn how to find joy and happiness in life. Patch decided he wanted to become a physician so he could heal others that were suffering just as he had. When Patch got to medical school, he noticed that the medical school professors taught students to keep the patient at a safe social-distance, so that they would not let their emotions cloud their professional judgements. Patch realized that the students were being taught to treat the disease instead of treating the patient. He noticed how scared patients were during visits with the medical team because the physicians did not express interest in the patient, but instead discussed only the disease in academic, and sometimes frightening, terms. Patch decided to change the way he would care for patients, by incorporating humor and laughter into how he practiced medicine. Whether it

was acting silly in the children's oncology ward or helping an elderly woman live out her dream of swimming in a pool of noodles, Patch brought joy and happiness to the hospital, the patients, and the health care professionals through the use of humor and laughter. The medical school directors did not agree with what he was doing, due to the unprofessional nature of acting in such a way inside the hospital. The medical school suspended and attempted to expel Patch so that he would not be able to practice medicine. In order for Patch to practice medicine, legally, he had to get his medical degree and finish medical school. So, in front of the medical board and a court room full of spectators, Patch gave one last emotional plea:

At what point in history did a doctor become more...than a trusted and learned friend who visited and treated the ill...What's wrong with death, sir? What are we so mortally afraid of? Why can't we treat death with a certain amount of humanity and dignity and decency... and, God forbid, *maybe even humor* [emphasis added]? Death is not the enemy, gentlemen. If we're gonna fight a disease, let's fight one of the most terrible diseases of all—*indifference* [emphasis added]. Now, I've sat in your schools and heard people lecture on transference...and professional distance. Transference is inevitable, sir. Every human being has an impact on another. Why don't we want that in a patient/doctor relationship? That's why I've listened to your teachings, and I believe they're wrong. A doctor's mission should be not just to prevent death... but also to improve the quality of life. *That's why you treat a disease, you win, you lose. You treat a person, I guarantee you, you win, no matter what the outcome* [Emphasis added]. (Patch Adams, Farrell & Shadyac, 1998)

Albeit, *Patch Adams* is a Hollywood motion picture and is far from academic, but the movie is still able to introduce interesting ideas that are cause for further examination. The ideas brought about by this movie were the inspiration behind much of the academic research that is focused on discovering if humor and laughter have the potential to be therapeutically relevant in the field of medicine. Humor and laughter had an obvious effect on fictional patients and professionals within the movie, but does this same effect transfer into real life medical situations?

What is Humor?

Humor and laughter tend to go hand-and-hand, but one must separate humor from laughter, and vice-versa, in order to understand what effect, if any, laughter and humor has within the health care field (Mora-Ripoll, 2010). Humor and laughter are two distinct events that occur together or separately, but are often associated as one (Mora-Ripoll, 2010). The Oxford English Dictionary (as cited in Tse et al., 2010) defines humor as, “the quality of action, speech, or writing which excites amusement; oddity, jocularly, facetiousness, comicality, fun” (p. 2). Humor is a multifaceted function that involves cognitive, emotional, behavioral, psychophysiological, and social aspects (Tse et al., 2010). Humor is commonly defined as a stimulus (e.g., comic, comedic movie, stand-up comedy, jokes, pranks, etc.) that can help the individual produce laughter (Mora-Ripoll, 2010; Tse et al., 2010). Humor can also be a mental process based on individual perceptions (Tse et al., 2010). Therefore, a sense of humor is commonly understood as a psychological trait, that varies from person to person, which allows the individual to perceive and respond to different types of humorous stimuli (Mora-Ripoll, 2010).

Further psychophysiological research has partitioned the humor process into three separate components: (1) the stimulus (i.e., humor itself), (2) the emotional response (i.e., mirth), and (3) the physical response or behavior (i.e., laughter) (Berk, 2001). When an individual is exposed to a stimulus that he or she perceives as humorous, the individual's response is two-fold (Berk, 2001). One response is emotionally based which leads to psychological effects, whereas the other is a physical response that induces laughter that produces a series of physiological effects (Berk, 2001).

Francis (1994) offered a different perspective of humor that is based on the sociological aspects rather than the psychological components. This definition describes humor within groups as:

(1) an expert cultural performance, (2) which strengthens or restores the feeling norms of the situation and creates amusement in the self and others, (3) generating positive sentiments among members of an interacting group by bonding them and/or reducing an external threat, and (4) often at the expense of some excluded person(s), event(s), or object(s). (Francis, 1994, p. 148)

Therefore, humor entails the manipulation of symbols or subjects that hold special meaning to a specific in-group (Francis, 1994). Through the use of humor, expected feeling norms are strengthened as well as potentially reducing a perceived threat (Francis, 1994). This helps to strengthen relationships between group members (Francis, 1994). Thus, humor can play an important role in establishing interpersonal relationships within groups of individuals (Francis, 1994).

However, it likely will come as no surprise that not everyone has the same sense of humor. The style in which an individual uses humor can be uniquely divided into four

different categories (i.e., affiliative, self-enhancing, aggressive, and self-defeating) (Martin & Dutzac as cited in Hampes, 2010). According to Martin, Puhlik-Doris, Larsen, Gray, and Weir (2003), the first two styles of humor are considered adaptive (positive) types of humor. The first style of humor is ‘affiliative humor’ which uses humor (i.e., telling jokes, saying funny things, witty banter, etc.) to amuse others, to put others at ease, and to improve interpersonal relationships (Martin et al., 2003). The next type of adaptive humor is considered as ‘self-enhancing’ humor; this style of humor involves a generally humorous outlook on life (Martin et al., 2003). Individuals who use the self-enhancing style of humor tend to be amused by the inconsistencies of life and can maintain a humorous perspective even during times of stress and adversity within their lives (Martin et al., 2003). These two types of humor styles are positively correlated with traits of intimacy, extraversion, and openness to experiences (Hampes, 2010; Martin et al., 2003).

The last two styles of humor are considered to be maladaptive (Hampes, 2010; Martin et al., 2003). The maladaptive style of humor tends to involve ‘aggressive humor’ (Hampes, 2010). Hampes (2010) stated, “Aggressive humor is the tendency to use humor to attack or put down other people” (p. 37). An individual who is associated with this style of humor tends to use sarcasm, teasing, ridicule, derision, hostility, or disparagement humor (Hampes, 2010). These individuals tend to have personality traits that include high hostility and low agreeableness (Hampes, 2010; Martin et al., 2013). The last style of maladaptive humor is ‘self-defeating humor’ (Hampes, 2010; Martin et al., 2013). This style of humor:

Involves excessively self-disparaging humor, attempts to amuse others by doing or saying funny things at one's expense as a means of ingratiating oneself or gaining approval, allowing oneself to be the 'butt' of others' humor, and laughing along with others when being ridiculed or disparaged (Martin et al., 2003, p. 54).

Individuals who are high in self-defeating humor tend also be high in shyness, loneliness, anxious attachment, and anxiety, as well as low in intimacy and experienced reduced satisfaction levels from social support (Hampes, 2010).¹

What is Laughter?

Laughter can be defined as the psychophysiological response to humor or any other specific stimulus (Mora-Ripoll, 2010, p. 57). There are four unique characteristics that can be observed when an individual is laughing:

(1) powerful contractions of the diaphragm together with repetitive vocal sounds produced by the action of resonating chambers of the pharynx, mouth and nasal cavities; (2) typical facial expression (motion of about 50 facial muscles, mainly around the mouth), which may include the release of tears; (3) motion of several groups of muscles of the body (more than 300 may be distinct); (4) a sequence of associated neurophysiological processes. (Mora-Ripoll, 2010, p. 57)

Because laughter can occur with or without the presence of humor, researchers have distinguished between five different groups of laughter that are medically and therapeutically relevant: (1) genuine or spontaneous laughter; (2) simulated laughter; (3) stimulated laughter; (4) induced laughter; and (5) pathological laughter (Mora-Ripoll,

¹ Humor is a multifaceted human function that is relatively hard to define directly. Most studies that will be discussed throughout this paper will use separate definitions for humor and those definitions will be included in the discussion of research.

2010; 2011). Spontaneous laughter is most commonly triggered by an external stimulus or positive emotions and is separate from one's own free will (Mora-Ripoll, 2011).

Duchenne laughter is a common type of spontaneous laughter that can cause contractions of the muscles surrounding the eye (Mora-Ripoll, 2011). On the other hand, simulated laughter differs from spontaneous laughter because simulated laughter is triggered at will with no specific reason (Mora-Ripoll, 2011). Thus, simulated laughter is not elicited by humor, fun, or other positive emotions and stimuli (Mora-Ripoll, 2011). Stimulated laughter can be defined as laughter that occurs from physical contact or action (e.g., to be ticklish, specific facial or bodily motions) (Mora-Ripoll, 2011), whereas induced laughter can be the byproduct of specific drugs or substances (e.g., alcohol, nitrous oxide or 'laughing gas', cannabis, etc.) (Mora-Ripoll, 2011). Finally, the last group of laughter can be classified as pathological laughter (Mora-Ripoll, 2011). Pathological laughter results from injuries that are caused by temporary or permanent neurological diseases within the central nervous system (Mora-Ripoll, 2011). According to Mora-Ripoll (2011), an individual with pathological laughter has no voluntary control over the duration, the laughter is not induced by any specific stimulus, and there is no emotional connection.

There are three components in the neurological control of laughter: cognitive area, motor area, and emotional area (Hasan & Hasan, 2009). According to Hasan and Hasan (2009), the cognitive component is centered in the frontal cortex, which allows the individual to comprehend various stimuli relating to humor. These researchers added that supplemental motor cortex houses the motor component and generates a series of muscle movements that are needed to produce the specific facial expressions that occur during laughter. Lastly, the emotional component of laughter allows the individual to perceive

and rationalize happiness and is situated mostly in the nucleus accumbens, a part of the reward circuitry or “pleasure center” of the brain (Hasan & Hasan, 2009).

The production of laughter is initiated through two distinct neurological pathways because laughter can either be simulated (voluntary) or spontaneous (involuntary) (Mora-Ripoll, 2011; Hasan & Hasan, 2009). The voluntary and involuntary pathways are controlled by a single center in the dorsal upper pons (Hasan & Hasan, 2009). Laughter that follows the involuntary pathway is induced by emotions that are elicited by an external stimulus, and this involuntary pathway through the neurological system includes numerous areas of the brain: amygdala, thalamic, hypothalamic, subthalamamic areas, and the dorsal brain stem (Hasan & Hasan, 2009). Hasan and Hasan (2009) pointed out that if laughter is not emotionally driven, then it is considered to be voluntary and proceeds through a separate path through the neurological system. This voluntary pathway begins in the premotor opercula areas then travels to the ventral brain stem through the motor cortex and pyramidal tract (Hasan & Hasan, 2009). The majority of this thesis will pertain to research that examined spontaneous and simulated laughter’s role in the health care system.

Value of Humor

The value of humor within the health care field is multidimensional and a relatively new area of interest in the scientific community (Beck, 1997; Sumners, 1990). The current approach to treating patients is often directed towards the mechanistic approach, such that health care professionals tend to rely on monitors and machines to assess the patient’s status (Sumners, 1990). The ill patient has the potential to become lost among the seemingly chaotic medical environment when health care professionals

shift their attention away from the patient and on the diagnoses (Sumners, 1990). It is important that the health care team seeks to care for, and about the patient in order to aid in the prevention of depersonalization of the patient (Sumners, 1990).

Beck (1997) conducted a phenomenological study about why nurses use humor in a clinical setting. The study included 21 registered nurses who were asked to describe an experience when they had used humor while providing nursing care to patients (Beck, 1997). After collecting the statements and analyzing them, the researcher introduced several themes that could help describe why the nurses used humor while caring for patients. She found that humor could have a significant role in helping nurses provide care effectively during difficult situations and with difficult patients. Beck pointed out that humor could also create a sense of cohesiveness in the nurse-patient relationship, as well as among nurses themselves. Beck added that humor served as a communication technique that helps nurses effectively communicate important information as well as the severity of a situation. Lastly, the researcher found that sharing humor created a lasting effect for both the nurse and patient well after the immediate moment of the initial interaction. Beck stated, "Some humorous interactions were so powerful that nurses recalled these experiences years later with happiness and satisfaction that their nursing strategy had been so effective" (p. 350).

For example, one nurse described an interaction with a patient who was given less than a month to live due to a previously undiagnosed cancer (Beck, 1997). According to Beck, this patient told the nurse one joke a day during his stay in the hospital despite his unfortunate prognosis. Beck added that the nurse was hesitant to tell a joke herself until the day he would be discharged to hospice care. Finally, the nurse told the dying patient a

joke that made him laugh out loud and reported that the encounter was a small moment but an important moment none the less because the patient was happy in that moment (Beck, 1997). The nurse stated that, “He died 2 weeks later...I felt sad. But every time I think of him I think of him laughing at my joke - just happy that I finally told him one” (as cited in Beck, 1997, p. 350).

Beck reported that another nurse discussed a patient who had been hospitalized for a flu-like illness for several weeks, and the patient began to become very discouraged and depressed during her stay at the hospital. Someone from the patient’s life brought the patient’s cat, which she loved dearly, and hid it in her hospital bed (Beck, 1997). The nurse that was on duty discovered the cat under the sheets of the patient’s bed, but “didn’t let the cat out of the bag” (as cited in Beck, 1997, p.351). Beck pointed out that the nursing staff saw the humor within the situation and the joy that was brought to the patient. The researcher added that the comical and fun experience with the cat improved the patient’s mood and created a bond between the patient and nursing staff after collaborating on a shared adventure. Subsequently, the patient recovered from her illness “very quickly thereafter” (Beck, 1997, p. 351).

One shortcoming of the research that examines laughter and humor’s effect on the health of individuals is the lack of universal, cross-culture conclusions based on the data. The study of laughter in medicine is relatively new area of research. In 2009, Hasan and Hasan designed a cross-cultural study that potentially could begin to bridge the gap in the existing research. Their study consisted of 730 adults between the ages of 18 and 39 from two different countries. The first sample came from Mississauga (MISS), Canada and the second sample was taken from Aurangabad (AUR), India (Hasan & Hasan, 2009). The

researchers included these two countries due to their distinct cultural differences; MISS represented an individualistic society, whereas AUR represented a collective society (Hasan & Hasan, 2009). The researchers pointed out that MISS was considered an individualistic society due to the diverse population that lived in the community. In addition, they added that there were two or more different cultures present within Mississauga, which the researchers argued that diversity within the population leads to more individual expression. Hasan and Hasan (2009) defined individualism as, “The crux of individualism is the ethnic diversity...not the particular view of the individual that makes them an individualist, but it is the differing views of a group of individuals that makes an individualist society” (p. 202). On the other hand, AUR had a culturally homogenous population that leads this society to be labeled as collectivist (Hasan & Hasan, 2009).

The objective of this cross-culture examination was to study the potential universal link between laughter and disease prevalence (Hasan & Hasan, 2009). The researchers linked mental well-being and medicine together through humor, which acts as a mediator. The relationship was bidirectional, such that different levels of laughter affected disease while specific diseases affected laughter (Hasan & Hasan, 2009). Hasan and Hasan found that in individualistic cultures, life satisfaction mediates laughter through the intermediated step of emotional well-being, which then leads to the mediation of the disease process. Conversely, they found that life satisfaction was directly linked to laughter mediating the disease process in collectivist societies. The researchers concluded that the difference between the two unique societies is that emotional well-being plays a role in laughter’s ability to mediate the disease process in

individualistic societies, while emotional well-being has no role in a collectivist society.

They added that laughter seems to be the central mediator between mental well-being and the disease process which involves a culturally universal pathway.

Purpose

The purpose of this literature review is to examine the potential therapeutic benefits that humor and laughter have within the health care field. Specifically, how does having a sense of humor and the physical production of laughter influence the psychophysiology of individuals? This review of the literature will also examine if humor and laughter can help health care practitioners build relationships with patients, and how building strong relationships contribute to the overall quality of patient care. Lastly, this paper will examine if humor and laughter can help professional burnout and decreased work satisfaction among health care professionals. The implications of the findings potentially can lead to improvements of medical education, introduction of professional medical comedians to the interdisciplinary health care team. In addition, there will be a discussion of a potential technological solution that could promote the therapeutic value of laughing.

Possible Psychophysiological Benefits

Cardiovascular System

If a person were asked to remember back to the last time that he or she had a good belly laugh, the person might remember the physiological reaction to laughing (e.g., increased heart rate). When individuals start to laugh, they experience an increase in their heart rate and blood pressure (Berk, 2001). Due to the increase in heart rate and blood

pressure, the myocardium is exercised, while also increasing arterial and venous circulation (Berk, 2001).

Based on these premises, Miller and Fry (2009) conducted an experiment to provide more information about the underlying potential for laughter to positively affect the cardiovascular system. In order to research laughter and the cardiovascular system, the researchers conceptualized laughter into its most frequent and most widely recognized form, which is commonly referred to as mirthful laughter (Miller & Fry, 2009). According to Miller and Fry (2009), “Mirthful laughter is composed of active involvements with many different factors of human biological functioning, preeminently the respiratory and muscular systems” (p. 2). The onset of laughter can cause a simultaneous rise in intra-arterial pressure that has a significant impact on the individual’s blood pressure (Miller & Fry, 2009). Arteries are more than a set of passive tubes; arteries actively interact with surrounding tissues and commodities that they are responsible for carrying (Miller & Fry, 2009). Arteries also participate in chemical effusions, cellular transactions, and ad hoc structural modification (Miller & Fry, 2009). Arterial endothelium plays an important role in mediating vascular tone, which is influenced by physical activity and emotional stimuli (Miller & Fry, 2009). This enhances the potential that psychosocial factors directly impair endothelial-dependent vasoreactivity (Miller & Fry, 2009).

If negative stressors can have a negative effect on the biology of endothelial tissues (e.g., arteries) then the researchers suggested that a positive emotion such as mirthful laughter potentially could be beneficial to endothelial function (Miller & Fry, 2009). Based on the results from the study, the researchers suggested that mirthful

laughter provides a physiological benefit on an individual's vasculature (Miller & Fry, 2009). Specifically, Miller and Fry (2009) presented a possible pathway to describe mirthful laughter's effect on vascular endothelium. First, β -endorphins are released by the pituitary gland to activate μ_3 opiate receptors that are expressed in the vascular endothelium (Miller & Fry, 2009). They pointed out that nitric oxide synthase is upregulated due to the increased activation of μ_3 opiate receptors, which enhances the production of nitric oxide. Nitric oxide provides a variety of cardio-protective cellular processes through specific cellular signaling pathways (Miller & Fry, 2009). These cardio-protective functions can include vasodilation, reduced platelet aggregation, inhibition of leukocyte trafficking which leads to a reduction in vascular inflammation (Miller & Fry, 2009). The researchers added that through this pathway, mirthful laughter could serve as an important intervention in promoting better vascular health (Miller & Fry, 2009).

Respiratory and Muscular System

The process of laughing requires the sophisticated coordination of 15 facial muscles as well as spasmodic skeletal muscle contraction (Berk, 2001). Because the process of laughing involves a large mass of muscle tissue, researchers are interested in understanding if laughter could be used as an alternative aerobic exercise (Berk, 2001). In 1932, Paskind (as cited in Berk, 2001) stated that laughing exercises facial, chest, abdominal, and skeletal muscles. If laughter can potentially be an aerobic exercise, then it could play a vital role in helping individuals who are wheelchair-bound or bedridden get more of the aerobic-type of exercise they need (Berk, 2001). Berk (2001) stated that there

is also research that suggests that the muscles in the gastrointestinal system could be positively affected by laughing, thus improving digestion rate.

Laughter has been shown to reduce tension in the muscles of the neck, shoulder area, and abdominals (Berk, 2001). In fact, the post-laughter relaxation could last up to 45 minutes after the initial production of laughing (Bennett & Lengacher, 2008). A study conducted by Overeem, Taal, Öcal Gezici, Lammers, and Van Dijk (2004) sought to better understand the effect that laughter has on muscles. Specifically, their study examined the effects of several respiratory movements on spinal motor excitability. These respiratory movement tasks included: a neutral task, “true laughter” (i.e., laughter stimulated by a joke), “simulated laughter” (i.e., laughter is not elicited by something funny), voluntary coughing, forced expiration, and forced inspiration (Bennett & Lengacher 2008; Overeem et al., 2004).

In order to study these interactions accurately, Overeem et al. (2004) used the Hoffmann reflex (H-reflex) clinical measurement. A stimulus, an electrical shock, is presented to the sensory fibers that extend from muscle spindles (Bennett & Lengacher, 2008). This response is then recorded by an electromyography (EMG) (Bennett & Lengacher, 2008). This method was chosen because the researchers had better control and the responses can be measured more precisely (Bennett & Lengacher, 2008). According to Bennett and Lengacher (2007), if there is an increase in muscle twitching within the H-reflex, then there is an associated increase in spinal cord excitability.

Overeem et al. (2004) found that there was a highly significant difference in H-reflex percentages between the neutral task ($79.4 \pm 16.1\%$), true laughter ($43.7 \pm 17.9\%$), and simulated laughter ($66.6 \pm 24.3\%$). There was also a significant difference in

depression of the H-reflex between true and simulated laughter as well as true laughter and the neutral task, but there was no significant difference in H-reflex depression between simulated laughter and the neutral task (Overeem et al., 2004). The only other respiratory task to have a significant difference in H-reflex depression was coughing, although coughing did not suppress the reflex as deeply as true laughter did (Overeem et al., 2004). The results suggested that both types of laughter, true and simulated, decreased spinal motor excitability, whereas true laughter evoked the deepest depression of the H-reflex (Overeem et al., 2004). The researchers concluded that after a period of laughter, there appears to be a post-laughter muscle relaxation that can be caused by either the physical nature of laughing or by the emotional component alone (Overeem et al., 2004).

As stated above, laughing exercises and conditions the muscles within the lungs and chest, which could lead to improved respiration in an individual (Berk, 2001). The normal cyclic breathing pattern is interrupted when a person starts to laugh (Berk, 2001). This interruption increases ventilation, clears mucous plugs, and accelerates the ability of the lungs to exchange residual air (Berk, 2001). Laughter could lead to the enhancement of blood oxygen levels because of the accelerated exchange of residual air (Berk, 2001). In addition, Berk (2001) stated that laughing can provide more oxygen for red blood cells because of the increase in pulmonary ventilation.

On the other hand, Bennett and Lengacher (2008) presented a contradicting argument that laughter can affect respiratory function. Healthy individuals' oxygen saturation rate is expected to naturally be at 100% (Bennett & Lengacher, 2008). This leads to little, to no possibility of improvement for the healthy population's respiratory function due to laughing (Bennett & Lengacher, 2008). Bennett and Lengacher (2008)

suggested that there could be an effect that laughter could help respiratory function in individuals who have compromised lung function due to different diseases (Bennett & Lengacher, 2008).

More research is needed to better understand the effect of laughter on lung respiration. Recent research does support that laughter indeed improves an individual's respiration (Mora-Ripoll, 2011). In fact, Mora-Ripoll (2011) has suggested that there is not enough research to disconfirm or confirm that laughter can improve respiration, but there does seem to be a potential link that has not been fully vetted.

Stress and the Immune System

One must wonder whether laughing can help improve the body's immunity and subsequently decrease stress hormones. Most researchers will argue that laughter indeed decreases stress hormones and increases the body's immunological defenses (Mora-Ripoll, 2010). Laughter is often associated with a healthy type of stress that is referred to as eustress (Selye as cited in Berk, 2001) that is a result of positive events (e.g., graduation, marriage, birth of a child, etc.) in one's life. Laughter's induction of eustress has been shown to decrease serum levels of cortisol, dopamine, epinephrine, and growth hormones (Berk, 2001). The reduction of these specific hormones can lead to a reduction in stress levels within the human body (Berk, 2001).

Cortisol is an important hormone that is commonly thought of as a stress hormone (Berk, Felten, Tan, Bittman, & Westengard, 2001; Chang, Tsai, & Hsieh, 2013). This hormone is immunoregulated through two distinct pathways of the nervous system: the hypothalamus-pituitary-adrenal (HPA) axis and the sympathetic division of the autonomic nervous system (Berk et al., 2001). These pathways stimulate the release of

cortisol when the body perceives and processes a situation as a stressful event (Berk et al., 2001). An increase in cortisol is considered a “hallmark” response to stress and can be associated with immunosuppression if the elevated levels of cortisol persist (Berk et al., 2001). According to Berk et al. (2001), adequate levels of cortisol are needed to help maintain the immune responses. Therefore, cortisol is not universally immunosuppressive but an excess secretion of the cortisol hormone can lead to negative impacts of the immune system (Berk et al., 2001).

Berk et al. (2001) conducted a study to examine neuroimmune parameters during mirthful laughter elicited from the intervention condition. Participants preselected a humorous video of their choosing, which lasted for 60 minutes (Berk et al., 2001). The researchers found that mirthful laughter can induce a reduction in cortisol secretion (Berk et al., 2001). The data also suggested that mirthful laughter significantly enhances the activity of natural killer cell (NK cells) (Berk et al., 2001). NK cells are defined as “highly specific and efficient element of immunosurveillance against some tumor cells...and virally infected cells” (Berk et al., 2001, p. 69). The increase in NK cell activity can be associated with a reduction in stress levels and has been closely linked to long-term reduction in recurrence of malignant melanoma (Berk et al., 2001).

Berk et al. (2001) concluded that positive stress (eustress) from laughter could help modulate the human immune system. Immunological changes that laughter induces via a eustress state could be useful in modulating specific immunological parameters (e.g., NK cell activity, cortisol secretion) that are associated with optimizing the specific immunological response (Berk et al., 2001). Berk et al. concluded that these responses

may help to prevent specific diseases as well as enhance the overall immune system's defenses.

Another study examined whether laughter could reduce stress, while simultaneously improving the immunological response of the human body (Chang et al., 2013). This study differed from the Berk et al. (2001) study because the researchers used simulated laughter instead of using mirthful, spontaneous laughter (Chang et al., 2013). Chang et al. (2013) used a Laughing Qigong Program (LQP) to teach the participants how to induce simulated laughter (Chang et al., 2013). The term qigong refers to "various disciplines believed to improve qi ('life force' or field of energy in and around the body) through body movements, calming the mind, and attention to breathing" (Chang et al., 2013, p. 661). The LQP focuses on the mind-body connection through the use of qigong techniques and simulated laughter (Chang et al., 2013). The main purpose of the LQP is to provide individuals with a health coping strategy (Chang et al., 2013). Participants are taught to accept negative emotional states and actively engage in transforming these negative emotions into positive emotions through the use of simulated laughter (Chang et al., 2013).

Chang et al. (2013) conducted their study with 7th graders from Taipei, Taiwan, because adolescence is commonly marked by anxiety and fluctuating mood states. The intervention group went through an eight-week long LQP, while the control group read books during the same time period (Chang et al., 2013). After participants completed the LQP, the experimental group showed a significant improvement in humor scores and the ability to use humor in creative new ways or situations (Chang et al., 2013). According to the researchers, the results indicated that there was a significant difference between the

pre- and post-test levels of cortisol for the experimental group. Conversely, there was no significant difference in pre- and post-test levels of cortisol for the control group (Chang et al., 2013). These results suggest that the LQP increased the individual's ability to find humor in new ways so he or she could use simulated laughter to reduce stress levels (Chang et al., 2013). Therefore, by reducing the stress levels of the adolescents through the use of humor and laughter, there could be a subsequent improvement in immunological response (Berk, 2001; Berk et al., 2001; Chang et al., 2013).

A study conducted by Bennett, Zeller, Rosenberg, and McCann (2003) added more support to the hypothesis that laughter is linked to increased NK cell activity. Bennett et al. (2003) found that there was no significant difference in NK cell activity between participants who viewed a humorous video and those who did not. However, there was a significant improvement in post-test NK cell activity and positive change in NK cell activity for only participants who displayed overt laughter (Bennett et al., 2003). The researchers concluded that the data seem to suggest that the subjects' behavior or physiological response was the key factor that leads to an improvement in NK cell activity. The apparent relationship between mirthful laughter and improved NK cell activity is clinically important because NK cells play a role in viral illnesses and specific types of cancer (Bennett et al., 2003). The use of humor and stimulated laughter could provide cancer patients, and patients who are suffering from a viral illness, an effective complementary therapy that would increase NK cell activity and reduce stress (Bennett et al., 2003; Berk et al., 2001).

Taken together, these studies provide some insight into the possible relationship between humor and laughter and the immune system (Bennett et al., 2003; Berk, 2001;

Berk et al., 2001; Chang et al., 2013). It could be argued that individuals who have a strong sense of humor may experience less impairment to immunological function due to stress, which could decrease an individual's risk for contracting an infectious illness under stressful conditions (Berk, 2001; Chang et al., 2013). Humor and laughter, therefore, could provide a buffer in the immunosuppressive effects of stress (Berk, 2001).

Laughter as Exercise

Some researchers have argued that laughter can stimulate the release of endorphins, which may contribute to a decrease in pain sensation and create a sense of euphoria (Berk, 2001). Unfortunately, it is relatively difficult to collect empirical evidence due to the painful nature of obtaining a sample of cerebrospinal fluid to test for endorphins (Berk, 2001). So, researchers must use anecdotal evidence (e.g., effect on pain threshold) to collect data about laughter's possible link to endorphins (Berk, 2001). According to some studies, the physiological benefits of laughter are similar to the effects of an intense aerobic exercise (Berk, 2001). Individuals may experience a state of euphoria and pain reduction during an aerobic exercise, such as the 'runner's high' that some individuals report experiencing during a long run (Berk, 2001). In addition, several minutes of intense laughter could have the potential to produce results that are similar to those produced by 10-15 minutes of aerobic exercise on a stationary bicycle or rowing machine (Berk, 2001).

The previous argument is difficult to support with empirical evidence and it seems illogical to assume that a belly laugh could replace normal aerobic exercise. But could laughter be integrated into normal aerobic exercise to enhance the effect exercise has on the human body? The human body uses several muscles (facial, respiratory, and

laryngeal muscles) during the production of laughter (Ruch & Ekman as cited in Buchowski et al., 2007). Due to the disturbances of the chest walls and other parts of the body, laughter could lead to physiological changes that require an increase of oxygen consumption that leads to an increased heart rate (HR) (Buchowski et al., 2007). Thus, if the HR and oxygen consumption are increased, then this should lead to an increased energy expenditure (EE) (Buchowski et al., 2007).

Buchowski et al. (2007) conducted the first study that provided evidence of the energy cost that could be associated with the production of laughter. Participants (n= 31 males, 63 females, 18-34 years old) who were interested in the study were instructed to bring a friend because laughter is far more likely to occur in friendly dyads when compared to being alone or with strangers (Buchowski et al., 2007). The study included same-sex male (n=7), same-sex female (n=21), and mix-sex male-female (n=17) dyads (Buchowski et al., 2007). The participants viewed a series of videos, all in the same order, beginning with a 30-minute video about England's landscape (not-humorous), then a series of four segments that consisted of 10-minute film clips that were explicitly intended to evoke laughter (humorous) (Buchowski et al., 2007). Finally, these were followed by a 5-minute documentary clip (not-humorous) to allow the return to baseline HR and EE. Thus, each dyad watched a series of non-humorous and humorous videos for 90 minutes (Buchowski et al., 2007).

The results showed a significant increase in EE and HR when the participants watched the video clips that were selected to induce laughter, compared to resting levels (Buchowski et al., 2007). Participants laughed on average 5.9 ± 5.3 s/min, with a range of 0 to 40 s/min (Buchowski et al., 2007). The researchers concluded that during genuine

laughter energy expenditure and heart rate showed an increase by 10-20% above resting levels (Buchowski et al., 2007). However, this increase was dependent upon laughter duration and rate (Buchowski et al., 2007). To put these findings into context, light clerical work, writing, or playing cards can also increase EE by up to 20% (Buchowski et al., 2007). On the other hand, intense physical activity can increase an individual's EE by up to 100% or more (Buchowski et al., 2007). Depending upon the individual's body weight and laughter intensity, the energy cost for 15 minutes of laughter ranges from 40 to 170 kJ (10-40 kcal) (Buchowski et al., 2007). During a one-year period (assuming there are no other changes for other components of energy balance) the amount of EE for laughter could translate into an annual weight loss of 0.5-2 kg (Buchowski et al., 2007).

Buchowski et al. (2007) suggested that laughter cannot replace exercise or other types of intense physical activity, but the production of laughter should not be discounted completely. Rather it should play an important role alongside exercise in the total balance of energy within the human body (Buchowski et al., 2007). Furthermore, the production of laughter does cost the body energy, which can contribute to the overall cardioprotection when paired with other aerobic exercise and physical activity (Buchowski et al., 2007).

Laughter Yoga is a relatively new alternative therapy that uses laughter, as a physical exercise, to improve the patient's health (Shahidi et al., 2010). Laughter Yoga was developed by M. Kataria (as cited in Shahidi et al., 2010) and it combines laughter that is not stimulated by humor, jokes, or comedy with yogic breathing (Shahidi et al., 2010). Shahidi et al. (2010) carried out a study that sought to examine the effectiveness of Laughter Yoga as a possible treatment for late-life depression compared to a better-

known alternative therapy, which consisted of group aerobic exercise, in which patients jogged and stretched for 30 minutes over a total of ten sessions. The researchers sought volunteers from the older population of women in Iran that were struggling with depression (mean age = 66.56) (Shahidi et al., 2010).

Shahidi et al. (2010) found that individuals in the laughter and exercise therapy groups had significant reduction of geriatric depression scale (GDS; Yesavage et al. as cited in Shahidi et al., 2010) scores (laughter mean scores: 16.0 ± 5.3 reduced to 10.0 ± 6.9 , exercise mean scores: 15.3 ± 5.4 reduced to 11.1 ± 6.2). However, they found no statistical difference between the two experimental groups when it came to improving depression scores (Shahidi et al., 2010). On the other hand, the two therapy programs did differ in improving life satisfaction scores; more specifically, the laughter therapy group showed a significant improvement in life satisfaction scores (19.2 ± 4.1 improved to 25.9 ± 5.6) with higher scores indicating greater satisfaction with life (Shahidi et al., 2010). Overall, laughter therapy did improve the individual's depression while also helping to increase the individual's satisfaction with life (Shahidi et al., 2010). Shahidi et al. (2010) concluded that this study provided scientific evidence that Laughter Yoga could be just as effective as exercise therapy when treating patients with late-life depression.

Humor and Pain

“Laugh it off!” is a common phrase that people tell another person after some type of painful event. Does the act of laughing play a role in increasing the pain threshold of a person? To answer this question, it is important to first define social laughter. Duchenne, or social laughter, can be defined as, “relaxed, unforced laughter that is stimulus-driven and emotionally valent, involving involuntary contraction of the *orbicularis oculi*

muscles” (Dunbar et al., 2011, p. 5). The physiological process of laughter in humans involves a “sustained series of exhalations without drawing breath” (Dunbar et al., 2011, p. 5). The taxing nature of emptying the lungs during physical laughter causes exhaustion, comparable to physical exercise (e.g., running, rowing) (Dunbar et al., 2011). This type of laughter has also been shown to be responsible for humor’s contagious effect among a group of people (Dunbar et al., 2011). Duchenne laughter is an important factor to consider regarding humor’s ability or inability to affect pain thresholds, because Duchenne laughter has the unique ability to relieve stress and negative emotions when compared to non-Duchenne laughter (Dunbar et al., 2011).

Duchenne laughter’s link to stress and negative emotion relief could be due to endorphins released by the physical nature of laughing (Dunbar et al., 2011). This endorphin activation by physically laughing is believed to also be linked to increasing the pain threshold of an individual (Dunbar et al., 2011). Dunbar et al. (2011) suggested that the activation of the endorphin system in the human body is initiated by the change in positive affect brought about by the physical nature of laughing. Endorphins are produced by the central nervous system and are a specific classification of endogenous opioid peptides (Dunbar et al., 2011). These endorphins have analgesic properties that are important in counteracting the effects of physiological and psychological stresses in the human body (Dunbar et al., 2011). Thus, the increase in pain thresholds may be associated with the increase in the central nervous system’s endorphin levels (Dunbar et al., 2011).

Dunbar et al. (2011) conducted a series of studies that examined whether or not laughing would increase endorphin levels, which would subsequently lead to an increase

in pain threshold. The series of five experiments controlled for possible confounds of group effect and the affect of the participant, while they tested for the main effect of humor on pain tolerance (Dunbar et al., 2011). The sixth study was carried out in a naturalistic setting in order for the possible conclusion from experiments one through five to be generalized to terms outside of the laboratory conditions (Dunbar et al., 2011). The results from the series of studies confirmed the overall hypothesis, that the act of laughing significantly increased pain thresholds by the production of endorphins (Dunbar et al., 2011). The series of studies also provided some evidence that it was laughter alone that influenced pain thresholds and not the confounding variables (e.g., positive affect and group effect), but that these confounds may aid in enhancing laughter's effect (Dunbar et al., 2011).

The previous experimental data is an important finding because of the prevalence of chronic pain among patients in the medical field. The prevalence of chronic pain among older individuals in the community is around 25%-50% (Chung & Wong as cited in Tse et al., 2010). The more important and equally concerning number involves older adults who live in a nursing home or some type of elderly care facility. That is, within nursing homes, 45% - 80% of individuals experience substantial pain (Tse et al., 2010). Chronic pain is defined as, "pain that persists past the normal time of healing. Three months is the most convenient point of division between acute and chronic pain" (Tse et al., 2010, p. 1). Chronic pain is a problem among the elderly population because the persistence of pain can cause loneliness, depression, and impaired functional mobility and ambulation (Tse et al., 2010). Thus, it is important to address and find a positive solution that could help decrease the occurrence of chronic pain, especially for those

residing in nursing homes (Tse et al., 2010). According to Won et al. (as cited in Tse et al., 2010) the current treatment is for physicians to prescribe patients with analgesic medications on an “as needed” basis. This effectively shifts the responsibility for taking the correct dosage from the medical practitioner to the patient (Tse et al., 2010).

Consequently, this allows physicians to protect themselves from the potential of initiating drug abuse (Tse et al., 2010). If the responsibility is shifted to elderly patients, they will request the medications only if the pain reaches the upper threshold of pain tolerance, which in return limits the overall effectiveness of the drug therapy (Tse et al., 2010). As Tse et al. (2010) pointed out, this cycle of treatment does not work efficiently, so one must consider a non-medication therapy that potentially could provide positive care for the patient overall.

Tse et al. (2010) designed a study that examined the effectiveness of a potential humor therapy program’s ability to decrease chronic pain and feelings of loneliness. The program was also aimed at increasing happiness and life satisfaction among the patients (Tse et al., 2010). Two similar nursing homes were randomly selected in Hong Kong, China, and then were randomly assigned to the experimental group or the control group (Tse et al., 2010). The participants had to have been experiencing chronic pain for more than three months to be included into the study. Overall, 34 participants in the control group and 36 participants in the experimental group agreed and fit the criteria to join the study (Tse et al., 2010).

The proposed humor therapy program was carried out over an eight-week period. The participants in the humor condition went to therapy session once a week, and the researchers controlled the atmosphere to be cheerful and uplifting (Tse et al., 2010).

During the first week of the study, participants would work with the research team to create a personal portfolio called, “My Happy Collection” (Tse et al., 2010). Participants were instructed to add anything they found to be funny to their collection: objects could be jokes, movie clips, cartoons, books, picture, or funny stories (Tse et al., 2010). During the rest of the study, each session involved teaching participants the current humor research and described how to make laughter a higher priority in their everyday life (Tse et al., 2010).

Based on the results of the Tse et al. (2010) study, the humor therapy program was found to significantly decrease pain scores as well as improve all psychological parameters, as compared to the baseline for the experimental group. There was a significant difference between the experimental and control groups’ pain, life satisfaction, and happiness scores. Participants’ pain scores were reduced from 5.19 to 3.22, on a scale of 1 to 10 with 10 being unimaginably unspeakable pain (Tse et al., 2010). Happiness experienced an increase in the experimental group from 16.19 to 23.03, with a range of 4 to 28 with higher scores reflecting greater happiness (Tse et al., 2010). Overall, the study provided evidence in the therapeutic value of a humor therapy program and its ability to increase the psychological health and well-being and reduction of physiological chronic pain in elderly patients (Tse et al., 2010). The researchers concluded that non-pharmacological intervention can be very effective in relieving all types of pain and can be concurrently used with pharmacological intervention to better treat pain (Tse et al., 2010).

Short-term Memory

The process of aging in older adults can negatively affect a person's short-term memory (Bains et al., 2014). Short-term memory (STM) involves, "faculties of the human mind that can hold a limited amount of information in a very accessible state temporarily" (Cowan, 2008). According to Miller (1956), the ideal units that can be processed in STM range from 5 to 9 pieces of information (i.e., approximately 7 units in adults; Cowan, 2008; Miller, 1956). Individuals that experience a decline in short-term memory due to the process of aging can be three times more likely to develop dementia (Bains et al., 2014). Given the importance of STM in moving information to long-term memory (Atkinson & Shiffrin, 1968), it seems important for health care professionals to address this possible link and treat aging patients with a wellness program that could enhance short-term memory. In order to increase short-term memory, programs should provide cognitive stimulation that will improve the quality of life, increase daily activities, and provide self-improvement (Bains et al., 2014).

In order to examine a possibility that humor could improve short-term memory, Bains et al. (2014) randomly assigned older adults, with a mean age of 68.7 years and 69.3 years for the control and humor group respectively, to either the humor therapy group or the control group. The participants in the humor condition were able to choose one of two, 20-minute humorous video to watch, either a montage of *America's Funniest Home Videos* or a Red Skelton comedy (Bains et al., 2014). Participants in the control group were instructed to sit quietly for 20-minutes in a room by themselves. The experimenters administered the Rey Auditory Verbal Learning Test (RAVLT; Rey as cited in Bains et al., 2014) to test specifically participants' learning ability, delayed-recall

ability, and visual-recognition ability. Along with the RAVLT, salivary cortisol samples were taken at five predetermined time points during the study to track the participants' stress levels.

The results from the Bains et al. (2014) study provided data that showed a significant difference in delayed recall scores between the control and humor groups. The researchers found that the humor group had a 43.6% increase in delayed recall, whereas the control group had a 20.3% increase. They also found that there was a significant difference in learning ability between the two groups; more specifically, they found that the control group had a 24% increase compared to a 38.5% increase in the humor group. However, they found no significant difference for visual recognition. Along with the results from the memory tasks, the researchers also found a significant difference in salivary cortisol levels. After watching the humorous video of their choosing (i.e., *America's Funniest Home Videos* or a Red Skelton Comedy), the researchers found that participants' cortisol level were significantly lower than baseline levels (Bains et al., 2014). Bains et al. (2014) suggested that the hippocampus seemed to be less suppressed by cortisol after watching a video that caused the participants to experience laughter. This effect is important because according to the researchers, one of the hippocampus' important functions is to consolidate short-term memory (Bains et al., 2014).

Bains et al. (2014) concluded that the exposure to humor could effectively decrease stress levels, which potentially could open the door for more efficient short-term memory production. Thus, these results seem to help provide evidence in support of the possible value and importance of humor therapy's ability to aid in the improvement of the lives of older adults by improving their memory. As Bains et al. (2014) pointed out, this

therapy takes the whole-person approach and seeks to provide lasting treatment for patients experiencing a reduction in decreasing memory function.

Depression

Depressive disorders have a prevalence rate of 4.5% to 37.5% in patients who are 75 years or older; within that population 4.6% to 9.3% are diagnosed with major depression (Luppa et al., 2012). These high prevalence rates among older adults are concerning because the most frequent psychiatric diagnoses in the elderly population involve some type of the depressive disorders (Konradt, Hirsch, Jonitz, & Junglas, 2012). Depressive disorders are defined in the *Diagnostic and Statistical Manual of Mental Disorders* (5th ed.; DSM-5; APA, 2013) as having, “the common feature of all of these disorders is the presence of sad, empty, or irritable mood, accompanied by somatic and cognitive changes that significantly affect the individual’s capacity to function” (p. 155). Luppa et al. (2012) claimed that late-life depression differs from the depressive symptoms that the younger population experiences. They added that the characteristics of late-life depression are, “sleep disturbance, loss of appetite, fatigue as well as hopelessness about the future, subjective memory complaints, and cognitive deficits are more prevalent in late-life depression” (Luppa et al., 2012, p. 2). There is evidence that untreated depression in the elderly can possibly lead to an increase in disease and disability, as well as suicide and mortality (Ko & Youn, 2011).

The current treatment for depressive disorders tends to be centered on pharmacological treatment (Shahidi et al., 2010). Pharmacological treatment does play a vital role in helping patients, but older adults can experience more negative side effects from their pharmacological treatments because of co-morbid medical conditions (Shahidi

et al., 2010). A common idea to help aid in the treatment of depressive disorders, especially in older adults, is therapy that is centered on humor and increasing the production of laughter (Falkenberg, Buchkremer, Bartels, & Wild, 2010; Ko & Youn, 2011; Konradt et al., 2012; Shahidi et al., 2010). Richman (1995) wrote about the role humor played in treating depressed and suicidal elderly patients. He stated, "Humor, in other words, can save a life if the person is suicidal. For those who are not suicidal, humor can make life richer and more meaningful" (p. 271).

Seeing the possible need for treatments using humor, Falkenberg et al. (2011) modified a 1996 manual-based humor program designed by McGhee (as cited in Falkenberg et al., 2011) by basing the therapy on the unique needs of the patient. These modifications included shortening the length of each session, and excluding the use of disaster jokes and jokes about death (Falkenberg et al., 2011). Also, the original humor production tasks were simplified because of the potential cognitive deficits in patients (Falkenberg et al., 2011). Falkenberg et al. (2011) concluded that the humor therapy helped improve patients' depression symptoms and improved their moods on a short-term basis (i.e., 8 weeks). Patients also reported that they were more likely to use humor as a coping strategy for personal problems (Falkenberg et al., 2011).

Konradt et al. (2012) proposed a similar manual-based humor therapy program that sought to improve the treatment of late-life depression in elderly patients (average age for experimental group: 73.7, control: 71.42) (Konradt et al., 2012). The manual-based program was spread out over eight unique sessions that would cover McGhee's (as cited in Konradt et al., 2012) six hierarchical components to having a sense of humor: enjoyment of humor, laughter, verbal humor, finding humor in everyday life, laughing at

one's self, and humor under stress. The results from the study provided evidence that patients in the experimental group (n = 38 patients) and the control group (total = 36 patients) showed improvements from pre- and post-testing in depression, suicidal tendency, state cheerfulness, and state bad mood scores (Konradt et al., 2012). In addition, there was a significant difference in scores between the experimental and control groups relative to state seriousness, satisfaction with life, and physical health (Konradt et al., 2012).

Thus, these results provided insight that not only did the experimental humor intervention improved patients' depression and suicidal tendencies, but also indicated that there were additional benefits of improving the patient's quality of life by effectively changing humor-related factors like physical symptoms and seriousness (Konradt et al., 2012). The researchers concluded that the standardized treatment protocol sufficiently improved specific depressive symptoms, which also provided added benefits in improving overall quality of life through improving specific humor-related factors (Konradt et al., 2012).

It is also important to discuss the contradicting results in the Konradt et al. (2012) study, given that the control group showed a significant decrease in trait bad mood when compared to the experimental group. The researchers introduced the argument that one of the important aspects of the humor therapy program is to be transparent and open with individual's negative feelings (Konradt et al., 2012). According to Konradt et al. (2012), transparency is needed so that individuals with depression can learn how to avoid repressing their negative feelings and work through them using humor. According to positive psychotherapy (Peseschian as cited in Konradt et al., 2012), participants in the

humor group are more conscious about their bad moods and will be more capable of handling conflicts through their deep emotionality (Konradt et al., 2012). Therefore, it may be that the use of humor enables the patients to be more open and transparent in their understanding and coping with conflicts (Konradt et al., 2012).

Another study conducted in Daegu, South Korea explored the potential psychological benefits of laughter therapy on community-dwelling elderly peoples' depression, cognitive function decline, sleep quality and quality of life (Ko & Youn, 2011). The research team conducted their study with community-dwelling individuals who were 65 years or older (mean age in the laughter and experimental groups respectively: 76.33 and 73.92 years) and included only individuals who had no history of admission in the hospital within one month of the study (Ko & Youn, 2011). Participants in the treatment group received laughter therapy, performed by a trained, certified nurse, one hour a week for a total of four weeks (Ko & Youn, 2011). The laughter therapy program differed from both the Konradt et al. (2011) study and the Falkenberg et al. (2011) manual-based humor therapies in the aspect of actual physical production of laughter (Ko & Youn, 2011). The authors differentiated laughter-based therapy and humor-based therapy; they stated that laughter therapy focuses on the physical process of laughing and its effects, whereas humor therapy is centered on the mental process that aims to improve the patient's skills in coping and how to maintain a positive outlook on life.

Results from the Ko and Youn (2011) study showed a significant decrease, 7.89 ± 3.58 to 6.94 ± 3.19 , in mean GDS scores (Geriatric Depression Scale; Yesavage et al. as cited in Ko & Youn, 2011) (i.e., scoring 1-15, such that the higher the score the more

depressive tendencies) in the laughter therapy group after treatment. The control group had no significant difference in mean GDS scores (Ko & Youn, 2011). The researchers concluded that the laughter therapy provided effective and practical intervention for depressed community-dwelling elderly individuals, compared to the control group in which participants got worse or had no significant improvements (Ko & Youn, 2011).

Empathy

Some researchers have suggested that individuals who score high for the use of humor tend to score high on characteristics that are associated with positive and satisfying interpersonal relationships (e.g., social competence, self-monitoring, intimacy, generativity, and trust) (Hampes, 2001). Thus, one might ask: If humor can positively improve these components of interpersonal relationships, will there also be an improvement in an individual's empathic concern? Empathy is defined as, "the ability to understand and experience the thoughts and feelings of another, and essential to intimacy, generativity and trust" (Rogers as cited in Hampes, 2001, p. 241). An individual should have empathy in order for him or her to have the ability to understand the thoughts and feelings of another person, which plays a major role in intimacy (Hampes, 2001). It is hard to provide care or help, that is associated with generativity, toward someone without grasping an understanding and experiencing the feelings of the person-in-need (Hampes, 2001). If the helper can develop and productively empathize with the person-in-need, then he or she is more likely to establish a sense of trust between the two parties (Hampes, 2001).

There are two ways that an individual may respond to a person in distress: self-oriented personal distress response or other-oriented empathic concern (Davis as cited in

Hampes, 2001). If the empathizer is able to infer the distressed person's emotions (e.g., pain, fear, anger, etc.) without those emotions overwhelming the empathizer, then this person is showing other-oriented empathetic concern (Hampes, 2001). On the contrary, if a person responds with a self-oriented distress response, "it appears likely the person is too overwhelmed by the distress of the other person to focus on the other person's feelings rather than on their [sic] own" (Hampes, 2001, p. 242). Thus, Hampes (2001) predicted that if humor can reduce stress within an individual then the individual might be able to shift from a self-oriented distress response to other-oriented empathetic concern.

Participants from the study consisted of 71 female and 53 male (ages ranged from 17 to 48 years old; $M=20.6$) freshmen and sophomores who were enrolled at a local community college (Hampes, 2001). The students volunteered for the study and completed the test in their class (Hampes, 2001). The students were given the Empathy Questionnaire, specifically the Empathic Concern subscale, which assesses the individual's level of empathy (Davis as cited in Hampes, 2001). Also, each student received several humor scales (e.g., Multidimensional Sense of Humor Scale, Situational Humor Response Questionnaire, and Coping Humor Scale to measure) to measure the individual's "use of humor as a coping mechanism, the generation of humor or creativity, attitudes towards humor and humorous persons, and appreciation of humor" (Thorson & Powell as cited in Hampes, 2001; p. 242).

The results provided evidence that scores on the Empathic Concern subscale were significantly and positively correlated with scores from each of the humor scales (Hampes, 2001). These results supported Hampes's (2001) hypothesis that there would be a positive correlation between empathetic concern and humor. The researcher pointed

out that the positive correlation between the Empathetic Concern subscale and the Coping Humor Scale ($r = .18$) could potentially indicate “the ability to use humor to reduce stress enhances a person’s ability to show empathic concern” (Hampes, 2001, p. 243). Hampes (2001) suggested that emotional intelligence might help explain the potential association between humor and empathic concern. Emotional intelligence is defined as, “the ability to understand and control one’s emotions as well as understanding others’ emotions” (Goleman as cited in Hampes, 2001, p. 243). Thus, individuals with a high emotional intelligence might use humor and empathetic concern as tools to improve personal and professional relationships (Hampes, 2001).

The results from the previous study were limited due to several factors, with the main concern that it did not separate humor into maladaptive and adaptive styles (Hampes, 2010). The relationship between humor styles and empathy could be very different depending on which style of humor an individual uses (Hampes, 2010).

Hampes (2010) conducted another study to further examine the potential relationship between three types of empathy and four different styles of humor. The study included four styles of humor: affiliative (i.e., interpersonal form of humor that involves the use of humor to amuse others); self-enhancing (i.e., involves a humorous outlook on life throughout adversity and stress); aggressive (i.e., humor used to attack or put down others); self-defeating (i.e., excessively self-disparaging use of humor as a means of ingratiating oneself or to gain approval) (Hampes, 2010). The three types of empathy that were examined in this study included empathic concern, perspective-taking empathy, and personal distress (Hampes, 2010). The participants included students from five psychology classes at a community college (28 men and 75 women; ages 18-56 years,

$M=24.1$) who volunteered for this study (Hampes, 2010). Each participant received several questionnaires to examine his or her style of humor style and empathic concern (Hampes, 2010).

The researchers found that affiliative humor and empathic concern ($r=.23$, $p<.05$) and self-enhancing humor and perspective-taking empathy ($r = .28$, $p<.01$) were both significantly and positively correlated (Hampes, 2010). Hampes (2010) suggested that a possible reason that these variables have a positive correlational relationship could be because self-enhancing humor, affiliative humor, empathic concern and perspective-taking empathy are all associated with providing a positive influence on interpersonal relationships. Self-enhancing humor also showed a significant and negative correlation with personal distress ($r = -.34$, $p<.001$) (Hampes, 2010). On the other hand, aggressive humor had a significant negative correlation with perspective-taking empathy ($r = -.40$, $p<.001$), empathic concern ($r = -.29$, $p<.01$), and personal distress ($r = -.20$, $p<.05$) (Hampes, 2010). Self-defeating humor was not significantly correlated with any type of empathy (Hampes, 2010).

Hampes (2010) concluded that the relationship between self-enhancing humor and distress could be explained by its definition, those who score high for this style of humor have the ability to use humor to change their perspective. This means that by using self-enhancing humor the individual has the potential to change his or her perspective to more effectively reduce stress that is associated with threatening events (Hampes, 2010). The difference in correlations between empathic concern in affiliative humor and self-enhancing humor could be because self-enhancing humor is thought to be an adaptive intrapersonal style and affiliative humor is considered to be an interpersonal style

(Hampes, 2010). Hampes (2010) pointed out that when a person is more interpersonally oriented, they are more likely to show concern, warmth, and compassion for others compared to individuals who are more intrapersonally oriented. Therefore, interpersonal affiliative humor could be more strongly related to the “emotional” empathic concern than self-enhancing humor, and self-enhancing humor could potentially be more related to the “cognitive” perspective-taking empathy compared to affiliative humor (Hampes, 2010).

Affiliative humor and self-enhancing humor were both positively correlated with different types of empathy, whereas aggressive humor was negatively correlated with all three types of empathy (Hampes, 2010). Hampes (2010) stated, “Those who use aggressive humor not only don’t want to help someone who’s feeling badly, but have difficulty experiencing both emotionally and cognitively the person’s negative feeling” (p. 41). The relatively strong correlation between aggressive humor and perspective-taking empathy lends some insight into this idea (Hampes, 2010). Therefore, this research suggested that an individual who uses self-enhancing humor, which is used more in social relationships, could be able to change his or her perspective which would lead to greater reduction in stress, thus allowing the individual more ability to empathize with another person (Hampes, 2010).

Anxiety, Children, and Clowns

When people think back to the last time they laughed hard, they may experience a feeling of calm coming. After a long stressful day, there is something unique about how laughing can take the stresses away, even for a moment. In fact, there is evidence that humor potentially could have the ability to relieve stress and anxiety in various ways

(Gaberson, 1995). Preoperative anxiety has been the focus of many recent studies, especially regarding how humor can help reduce anxiety in children before they go into surgery (Golan, Tighe, Dobha, Pere, & Keidan, 2009). Preoperative anxiety can be defined as, “The feelings of apprehension, tension, nervousness, or worry in anticipation of surgery” (Gaberson, 1995, p. 786). A child perceives being hospitalized or having surgery as negative life events, which can cause traumatic distress in the patient (Fernandes & Arriaga, 2010). Preoperative anxiety has been correlated with the increase of possible distress during the post-surgery time period as well (Golan et al., 2009). Preoperative anxiety, especially in children, is an important problem to address because the presence of preoperational psychological stress can lead to negative post-operational outcomes as well as the possibility of creating interference in health care professionals’ ability to care for the patient (Fernandes & Arriaga, 2010). The need for an effective alternative to pharmacologic interventions is vital in ensuring patients receive the best care for their illness (Golan et al., 2009).

One proposed alternative intervention focuses primarily on the induction of laughter through the use of humor by introducing a medical clown into the hospital environment (Fernandes & Arriaga, 2010; Finlay, Baverstock, & Lenton, 2014; Golan et al., 2009). Medical clowns can be traced back to Hunter Doherty ‘Patch’ Adams because of his use of a red nose while practicing medicine (Finlay et al., 2014). According to Finlay et al. (2014), Dr. Adams believed that humor and laughter built trust and love between the medical staff and their patients (Finlay et al., 2014). The first medical clowns were introduced in 1986 in a New York hospital and have now effectively spread throughout the world (Finlay et al., 2014).

Medical clowning (also known as “clown doctors” or “therapeutic clowning”) was developed to provide relief for children who are suffering from anxiety and pain while they are hospitalized (Finlay et al., 2014; Tener, Lang-Franco, Ofir, & Lev-Wiesel, 2012). Medical clowns are trained professionals, as opposed to volunteers, that are an integral part of the pediatric medical team (Tener et al., 2012). Medical clowns have a variety of specific roles, which can be defined as, “(a) to provide children with a sense of control in a helpless situation; (b) to increase communication and alliance between the medical staff, children, and their caregivers; (c) to decrease tension and anxiety often resulting from physically intrusive procedures” (Tener, Lev-Wiesel, Franco, & Ofir 2010, p. 131). Medical clowns receive a great deal of training and experience before entering a pediatric ward of a hospital; in fact, some are required to have a bachelor’s degree in medical clowning (Tener et al., 2010). The clowns are trained to use a variety of props (e.g., toys, dolls, medical instruments, etc.) that are chosen according to the patients’ specific developmental stage (Tener et al., 2010). Studies have shown that the use of medical clowns can facilitate the increase in positive emotions such as laughter, joy and humor (Kingsnorth, Blain, & McKeever 2011).

Finlay et al. (2014) stated that having medical clowns as a key team member among health care professionals may be hard for some to accept because clowns are normally associated with circuses and other performances. On the other hand, the presence of clowns in the hospital gives children a sense of control and power in an environment in which they have very little control over their situation (Finlay et al., 2014). Clowns give the patients and their families permission to “find the silly within the

serious, or the funny inside the frightening, introducing a sense of levity into hospital wards” (Duffin as cited in Finlay et al., 2014, p. 7).

Based upon the potential benefits medical clowns could bring to patients in the hospital, several studies have been conducted in order to provide the first round of empirical evidence concerning the potential benefits of medical clowns. For instance, Bertini, Isola, Paolone, and Curcio (2011) conducted a study that examined the potential benefit of medical clowns inducing humor in children who had been admitted into the hospital for respiratory pathologies. The researchers’ goals were to provide empirical evidence in the clinical progression of patients and assessing direct changes in physiological and pain parameters (Bertini et al., 2011). Patients were randomly assigned to either the experimental group ($M= 7.71$ years old) or the control group ($M= 7.54$ years old) with no exposure to a medical clown (Bertini et al., 2011). Patients in the experimental group were exposed to the medical clown intervention that lasted around 3 hours, and consisted of various methods of entertaining based on the child’s physical and cognitive abilities (Bertini et al., 2011). The researchers noted that the presence of the clowns was limited, but even when the clowns were physically absent there were still traces of their presence throughout the hospital rooms which, according to Bertini et al. (2011), created a unique environment.

Initially, Bertini et al. (2011) conducted clinical assessments (e.g., duration of stay in the hospital, duration of the fever period, time to achieve a clinical recovery) in order to study the patient’s clinical progress during his or her hospital stay. The results provided no significant main effect concerning the days of hospitalization, but the mean duration was shorter for the experimental group compared the control group (Bertini et

al., 2011). The same non-significant trend occurred in the mean duration of the patient's fever (Bertini et al., 2011). In addition, they found a statistically significant decrease in time that the patients in the experimental group needed to achieve a clinical recovery, compared to the control group.

Then, the researchers evaluated the direct impact of the clown intervention on the patient by collecting a series of physiological measurements over a period of three days; the specific parameters included: systolic and diastolic blood pressure (mmHg), heart rate (beats per minute), respiratory frequency (number of breaths per minute), and axillary temperature (°C) (Bertini et al., 2011). Results showed no significant difference for the patients' systolic blood pressure, although there was a sharp decline for the experimental group compared to the control group on the day of clown intervention (Bertini et al., 2011). However, there was a significant increase in diastolic blood pressure for the control group, compared to experimental group that showed a significant decrease in diastolic blood pressure (Bertini et al., 2011). In addition, there was a sharp decrease in patients' heart rates for the experimental group compared to the control group, but the interaction did not reach a level of statistical significance (Bertini et al., 2011). With regards to respiratory frequency, the experimental group showed a significant decreasing trend in breaths per minute when compared to the control group on the day on intervention (Bertini et al., 2011). Finally, the data for the patient's temperature provided "a very interesting" (Bertini et al., 2011, p. 3) result. According to Bertini et al., during the day before intervention, both groups showed an increase in axillary temperature as expected due to the physiological rise during the average day. However, on the day of intervention, specifically during the time of intervention, only patients in the

experimental group showed a significant decrease in temperature, whereas patients in the control group adhered to the normal daily increase in temperature (Bertini et al., 2011).

Lastly, Bertini et al. (2011) assessed pain experienced by the patients through the use of self-surveys and nurses' professional observations. Patients in the experimental group showed a significant decrease in pain sensation from before and after the clown intervention, although the control group showed a non-significant increase in pain sensation (Bertini et al., 2011). The nurses' observations also provided evidence that the clown intervention significantly decreased pain sensation in patients when compared to the control group (Bertini et al., 2011).

Bertini et al. (2011) concluded that their data provide some support that clown intervention has the potential to facilitate the healing process in children who are hospitalized. Bertini et al. stated that the data suggest that the interaction between a medical clown and child who had been suffering from a respiratory illness "led to an earlier disappearance of pathological symptoms" (p. 6) when compared to the control group. The researchers anticipated that children in the experimental group would have a higher level of relaxation, compared to the control group, thus providing a lower level of stress experienced by the patient (Bertini et al., 2011). The data showed a statistically significant decrease in diastolic blood pressure, respiratory frequency, and temperature in the experimental group contrasted to the control group (Bertini et al., 2011). Also, the patients who were exposed to the medical clown intervention reported less somatic pain, which was supported by nurses' observations (Bertini et al., 2011). Taken together, the decrease in physiological factors suggests that medical clown intervention has the potential to decrease general stress levels in young patients (Bertini et al., 2011).

Bertini et al. (2011) pointed out that one of the most unexpected findings from the previous study was the surprising decrease in axillary temperature for the experimental group when an increase in temperature was expected. This decrease in temperature occurred during the specific time period when the patient was interacting with the medical clown (Bertini et al., 2011). What makes this finding so interesting is that the experimental group showed the same expected increase in temperature that the control group showed on the day before and after intervention (Bertini et al., 2011). Bertini et al. (2011) pointed out that this was “the first time that an association between humor and fever reduction has been reported in the literature” (p. 7) and they also expressed the need for further examination of this phenomenon. Overall, the researchers concluded that, based on the physiological and psychological observations the child’s body potentially benefited from the psychophysiological positive state when interacting with a medical clown (Bertini et al., 2011). Therefore, humor can be a natural and inexpensive therapeutic intervention for children, while also having the potential to provide young patients with a significant enhancement to their health (Bertini et al., 2011).

Another study conducted by Golan et al. (2009) compared the presence of a medical clown to pharmacological intervention in reducing children’s preoperative anxiety that would allow for a smooth induction of anesthesia. The researchers randomly assigned children ($M = 4.5$ years old, with a range of 3-8 years) to one of three groups; the control group in which the patient did not receive any preoperative interventions; group 2 received preoperative pharmacological intervention by taking $0.5 \text{ mg} \cdot \text{kg}^{-1}$ oral midazolam 30 minutes before surgery to aid in relaxing the patient; and group 3 had two professional medical clowns present upon arrival until mask application for anesthesia

induction (Golan et al., 2009). The clowns used a variety of different methods to entertain the children according to their specific age (e.g., magic tricks, gags, music, games, puppets, word games, bubbles) (Golan et al., 2009). It is also important to note that medical clowns do not tend to dress like circus clowns, but instead are costumed with a red nose and other equipment while keeping with the professionalism of a hospital environment (Kingsnorth et al., 2011).

The results of the Golan et al. (2009) study provided evidence that when medical clowns were present during preoperational procedures, patients reported significantly less preoperative anxiety compared to the control group. The reduction of anxiety started in preoperative holding and continued through the time the mask was introduced to the patient, once the mask was placed there was no significant difference in reduction of anxiety compared to the midazolam condition (Golan et al., 2009). The overall results provided evidence that the presence of professional medical clowns outperformed pharmacological intervention in reducing anxiety before an invasive procedure and continued until the anesthesia mask was introduced to the patient (Golan et al., 2009).

A similar study used a medical clown intervention and sought to examine physiological, behavioral, and emotional responses of children who were all patients in a long-term rehabilitation hospital for profoundly disabled children, with a range of physical, cognitive, and/or developmental congenital or acquired disabilities (Kingsnorth et al., 2011). These conditions included, but were not limited to, severe cerebral palsy, traumatic brain injury, or brainstem stroke (Kingsnorth et al., 2011). Kingsnorth et al. (2011) pointed out that it is important to study potential interventions for disabled children in a long-term rehabilitation hospital, because these patients receive more

invasive medical procedures, prolonged restriction to activities, disempowerment, and lengthy separation from families and caretakers compared to non-handicap patients.

The Kingsnorth et al. (2011) study included patients (ages ranged from 4 to 21 years old) who had an average hospital stay of 52 days ($SD = 37$, one patient had been hospitalized for over 5 years) who were exposed to both the intervention and control conditions. The intervention consisted of two professional Therapeutic Clowns who sought to empower the children in short individualized sessions (10-15 minutes on average) (Kingsnorth et al., 2011). The control condition consisted of watching children's television show of their choosing, that provided similar audiovisual stimulation (e.g. loud, colorful, musical, humorous, etc.) (Kingsnorth et al., 2011). The researchers found that all patients who had participated in the study had a significant change in at least one or more physiological responses (e.g. electrodermal activity, skin temperature, respiration, or blood volume pulse) when exposed to the Therapeutic Clowns compared to watching a television show (Kingsnorth et al., 2011). Behavioral responses were also recorded by trained professionals, and provided evidence that the presence of Therapeutic Clowns significantly increased smiling and laughing behavior while decreasing frequency of negative emotions (Kingsnorth et al., 2011). There was also a significant improvement in mood when exposed to the medical clowns compared to when patients watched television (Kingsnorth et al. 2011). The patients, who were able to communicate verbally, reported feeling "happy" and "excited" when the clowns were present (Kingsnorth et al., 2011). These reports provided evidence that the children were enthusiastically engaged when the medical clowns were near (Kingsnorth et al., 2010). The researchers argued that the physiological results may reflect a positive response to

therapeutic clowns based on the positive changes in mood, as well as third-party behavioral observations that laughter and smiling increased in the patients (Kingsnorth et al., 2010). Kingsnorth et al. (2010) concluded that, therapeutic clowns provided an overall positive benefit to patients' mood and well-being, even for patients with a profound disability.

A similar study was conducted in Portugal, but instead of measuring anxiety in patients, Fernandes and Arriaga (2010) designed a study to research the possible relationship between medical clowns and patients' specific worries about surgery. Research has provided data that suggests 'health' concerns are one of the top three areas of worry for children between 7 to 12 years of age (Fernandes & Arriaga, 2010). The researchers defined anxiety as "a multicomplex response system, involving affective, behavioral, physiological, and cognitive components" (Silverman, Greca, & Wasserstein, as cited in Fernandes & Arriaga, 2010 p. 406). According to Fernandes and Arriaga (2010), anxiety differs from worry because worry is considered to be the cognitive component of anxiety that tends to involve intrusive thoughts and images about potential dangers and future adverse events. They added that worry can be an adaptive behavior, but excess worrying can cause dysfunction in the individual. The researchers hypothesized that when children are introduced to medical clowns they will feel less worried about the pending surgery, and will also express a more positive emotional state, which will lead the child to feel calmer before surgery. Fernandes and Arriaga also predicted that parents in the clown intervention group would report less state anxiety when compared to parents in the control group. The secondary hypothesis was especially

important because clown therapy could potentially benefit the caretakers as much as the patient (Finlay et al., 2014).

In the study, patients (average age = 7.93 years old, SD = 2.36) who were admitted for minor ambulatory surgery (e.g. circumcision, herniorrhaphy, excision, and cystoscopy) were assigned to receive either clown intervention (clown group) or no intervention (control group) (Fernandes & Arriaga, 2010). Two professional medical clowns accompanied patients and their parents from the preoperative room to the ambulatory room (Fernandes & Arriaga, 2010). According to Fernandes and Arriaga, as in previously reported studies, the medical clowns in this study used different methods to entertain according to the patient's age in order to attend to each patient's unique type of humor that characterizes them.

The results from the study supported the proposed hypothesis (Fernandes & Arriaga, 2010). Patients in the clown group reported significantly less worry, when compared to the control group, for hospitalization, medical procedures, and for illness and its potential negative outcomes (Fernandes & Arriaga, 2010). The data also suggested that patients had a significant increase in positive affect from pre-operation to post-operation, compared to the control group (Fernandes & Arriaga, 2010). They also found that there was a significant reduction in parents' anxiety for those who were in the clown group.

In addition to the clown intervention's potential effect on patients and families, the researchers also found that the clown intervention significantly impacted the health care professionals assigned to the study (Fernandes & Arriaga, 2010). They also found that 96.43% of the health care professionals considered the presence of medical clowns to

be useful for their patients, that 89.29% considered clowns to help parents, and that 64.29% believed that the clowns were useful for the health care professionals (Fernandes & Arriaga, 2010). The vast majority (89.29%) of health care professionals were in favor of continuing medical clowning as a preoperational intervention (Fernandes & Arriaga, 2010). The results provided evidence that the presence of medical clowns was the only relevant factor that could account for the reduction in preoperational worries about the pending surgery (Fernandes & Arriaga, 2010). Fernandes and Arriaga (2010) also concluded that this study provided important evidence that medical clowns have the potential to reduce a child's worry about surgery and provided a potential additive benefit to the simultaneous reduction in parental anxiety (Fernandes & Arriaga, 2010).

Thus far, the evidence that has been reviewed has provided support that medical clowns have the potential to provide unique therapeutic care, which can be a catalyst for higher quality care for children before and after medical procedures and hospitalizations. However, a group of researchers from Israel took the use of medical clowns beyond surgical procedures and extensive hospitalization, and brought the idea of using medical clowns to elicit humor as a therapeutic intervention that would help children during an extremely sensitive, potentially traumatic procedure (Tener et al., 2010; Tener et al., 2012). Specifically, Tener et al. (2010; 2012) proposed using medical clowns during the medical examination for sexually abused children to help facilitate the important procedure while also protecting the child from potential re-traumatization.

Anogenital examination is a medical procedure that is essential to collect important laboratory and forensic evidence, but also obtains a complete medical history, and provides preventative medical, social and psychological support to protect the

victimized child (Tener et al., 2010). Minors are referred for an anogenital examination, “when the alleged abuse occurred within the last 72 hours, when penetration or attempted penetration is involved, or when there is evidence of bleeding or acute injury” (Christian et al.; Davies & Seymour; as cited in Tener et al., 2012, p. 13). Studies tend to show that children who have been sexually abused will exhibit fear, anger, anxiety, and embarrassment (Tener et al., 2010). Anogenital examination has been shown to have the potential to cause a greater level of distress symptoms when compared to a general physical exam (Tener et al., 2012).

Putting a victimized child through such an invasive medical procedure worries some professionals because of the potential to re-traumatize the child due to stimuli that could potentially be associated with the past traumatic event (Tener et al., 2012). This can cause a child to resist the medical staff during the procedures and treatments, which can lead the physician to use extreme measures (e.g., anesthesia) to calm the patient enough for the medical staff to proceed (Tener et al., 2012). Using anesthesia to force the child to cooperate conveys a high risk of disregarding the welfare of the minor when there is no direct medical benefit for the child (Tener et al., 2010). Tener et al. (2010; 2012) sought to provide a more ethical, beneficial alternative therapy that could help medical professionals collect forensic evidence, while also caring for the abused child’s psychological and physiological needs. The alternative therapeutic modality that the researchers proposed was to introduce medical clowns to the anogenital examination and other medical procedures for sexually abused children (Tener et al., 2010; Tener et al., 2012).

One might wonder why using clowns during a sensitive medical exam would be useful for the child. Tener et al. (2010; 2012) argued that medical clowns are members of the interdisciplinary teams that strive to promote the healing process in hospitalized children. The idea of using medical clowns is based on the foundational assumption that clowns tend to be perceived by children as familiar, happy, funny, and enjoyable characters (Tener et al., 2010). It is important to create an atmosphere in which professionals facilitate humor and laughter, because humor and laughter have been shown to help patients express unpleasant feelings to the medical staff instead of repressing those important feelings (Tener et al., 2010). Humor has the very real potential to lower the anxiety levels in children during medical procedures (Tener et al., 2010).

It is important to reiterate the professionalism involved in the role of the medical clown and who is considered to be a professional medical clown. Tener et al. (2012) stated that medical clowns are tasked with providing children, who are in a state of helplessness, a sense of control over their situation. The medical clown enlists the child as a creative partner during the play experience and provides a pleasurable interaction during (or before and after) medical procedures (Tener et al., 2012). Thus, this interaction can help the child detach from the stressful situation (Tener et al., 2010). It is, therefore essential that the medical clown starts the therapeutic intervention by first developing a rapport with the child prior to the anogenital examination (Tener et al., 2010). Tener et al. (2010; 2012) used Dream Doctors, which is a group of 70 professional medical clowns. Several of the medical clowns in this study had received a bachelor's degree in medical clowning from the drama department at the University of Haifa (Tener et al., 2010). These medical clowns differ from volunteer clowns because medical clowns are

professionally trained in the art of treating patients through the use of humor and play depending on the patient's developmental stage (Tener et al., 2010).

Tener et al. (2010) conducted a case study in which the researchers described a series of sexual abuse cases that came to the hospital for treatment. Case 1 consisted of a 9-year-old girl who was referred to the hospital because of suspected paternal sexual abuse (Tener et al., 2010). She was extremely resistant and refused to be touched by the medical staff (Tener et al., 2010). The patient's resistance to treatment caused the physician to consider the use of general anesthesia so the medical procedure could proceed (Tener et al., 2010). Instead, a female medical clown was brought into the examination room to assist the gynecologist (Tener et al., 2010). The medical clown initiated laughter in the girl by a series of playful events, such as who could jump on the bed first (Tener et al., 2010). By challenging the young girl to jump on the bed, the medical clown transformed the hospital bed into a playground instead of a threat (Tener et al., 2010). Next, the girl refused to allow the male forensic physician to enter the room (Tener et al., 2010). So the medical clown teased and tickled the male physician, and gave him a pair of large empty glasses frames (Tener et al., 2010). The series of play between the physician-clown team and the patient resulted in the girl's unequivocal consent to proceed with the examination (Tener et al., 2010). These actions taken by the medical clown showed the young patient that the clown serves as a friend and protector, thus creating an alliance between the patient and clown (Tener et al., 2010). The physician-clown team continued to work together to complete the entire anogenital examination without the use of general anesthesia (Tener et al., 2010).

The researchers then discussed a case about a 17-year-old girl who reported being raped by four men (Tener et al., 2010). A medical clown was assigned to her case, and entered the intake room alongside the medical staff (Tener et al., 2010). The medical clown started the process of building a rapport with the adolescent girl (Tener et al., 2010). The patient trusted the medical clown enough to disclose her embarrassment to undress in front of the male proctologist (Tener et al., 2010). In order to help the patient cope with the embarrassment, the medical clown offered to toss the clothes over the curtain and onto the proctologist's head (Tener et al., 2010). By using this simple action, the medical clown transferred the patient's embarrassment onto the physician while also making the patient laugh (Tener et al., 2010). The importance behind this specific case was to show the potential for medical clowns to assist adolescent patients as well as younger children (Tener et al., 2010). According to Tener et al. (2010), if the patient is an adolescent, the medical clown is trained to respond to the teenager's need for peer group identification and rebellion against authority. The overall interaction between the medical clown and patient allowed the physicians to have full cooperation from the patient during the examinations and created a safe space to express and cope with the patient's anxiety (Tener et al., 2010).

The researchers concluded that medical clowns may be able to reduce anxiety and fear among children and adolescents, while possibly lowering the potential for re-traumatization after the invasive and sensitive procedures (Tener et al., 2010). Tener et al. (2010) argued that the medical clown served as a social resource for the patient. Thus, the medical clown enabled the patient to perceive the situation as a challenge rather than a threat, while also providing the patient with a sense of control by reducing feelings of

shame and embarrassment (Tener et al., 2010). The medical clowns also provided the patient with potentially beneficial dissociative mechanisms allowing the patient to cope with the extreme circumstances (Tener et al., 2010).

One of the major limitations of the previous study, however, was the absence of a comparison group that did not include the use of medical clowns (Tener et al., 2010). Based on the Tener et al (2010) case study, Tener et al. (2012) conducted a quasi-experimental study based on the previous findings. The researchers hypothesized that if clowns were present during the anogenital examination they would help the psychological well-being of the patient more when compared to the control group with no clown present (Tener et al., 2012). Thirty children (ages from 1-17 years, $M = 10.57$ $SD = 4.71$) were assigned to either the clown intervention group or the comparison group (no clowns present) based on the medical clowns' work schedule, to avoid ethical dilemmas (Tener et al., 2012). The children were accompanied by their mothers (65.5%), their fathers (10.3%), or by both parents (24.2%) (Tener et al., 2012). The procedure was similar to Tener et al. (2010) but with the major difference of adding a comparison group (Tener et al., 2012).

After completion of the quasi-experimental study, all the children who participated in the study that were assigned to the intervention group positively viewed the presence of the medical clown during the anogenital examination (Tener et al., 2012). Of the patients in the comparison group, 100% of them reported that the medical examination was the most significant episode (Tener et al., 2012). Compared to 40% of the patients in the intervention group who reported that the medical examination was the most significant episode, the researchers found that 53.3% of the patients in the

intervention group reported that their interaction with the medical clown was the most significant (Tener et al., 2012). The study also found several significant differences in subcategories of the Posttraumatic Stress Disorder Symptoms Scale (PSS-1: Foa, Riggs, Dancu, & Rothbaum as cited in Tener et al., 2012, p. 16) between the intervention and comparison group (Tener et al., 2012). There was a significant difference in the patients' levels of fear, pain, and feelings of invasiveness (Tener et al., 2012).

After examining the data, the researchers concluded that when a medical clown was present during the medical examination of a sexually abused child, the child reported less pain and fear (Tener et al., 2012). These findings may potentially help support previous research that implementing the use of humor techniques could possibly increase the child's pain tolerance (Tener et al., 2012). The researchers presumed that children's fear may increase during the anogenital examination which could lead to an increase in pain sensations, based on the correlation between fear of pain and heightened level of pain experience (Tener et al., 2012). Including medical clowns into the examination procedure allows for humor and laughter to be present, thus this intervention could decrease fear, which potentially could lead to a reduction in body tension and pain (Tener et al., 2012).

Another important finding from the study is that the data suggest that patients are able to distinguish between the medical examination and the sexual assault when a clown is present (Tener et al., 2012). If the patient has the ability to make a distinction between the assault and the examination when a medical clown is included, then the medical clown could act as a psychological buffer that would protect the child from re-traumatization by the intrusive examination (Tener et al., 2010; Tener et al., 2012). This

could help explain why most of the patients in the intervention group did not rate the examination as the most significant episode (Tener et al., 2012).

There were secondary findings presented by these researchers as well. For example, the presence of medical clowns alleviated the emotional state of the parents as well as the children (Tener et al., 2012). Parents provide the most important source of social support to the child during a stressful event such as a sexual assault (Tener et al., 2012). Tener et al. (2012) suggested that watching their child interact in healthy-humorous play with the medical clown, potentially helped to relieve the parents' tension and stress (Tener et al., 2012). This interaction could also help to provide parents with the confidence that their child is able to overcome these events and remain a child (Tener et al., 2012).

The Tener et al. (2012) study also examined what the health care professionals (who were involved in the case) thought about having the medical clown present during the medical procedure. All staff members who were involved with the case reported that the presence of the medical clown was very (a lot or the most) beneficial for the child (100%) (Tener et al., 2012). The health care professionals also reported that having the medical clown present was good for the parents' psychological well (79.3%) and aided the child's cooperativeness during the medical examination (93.3%) (Tener et al., 2012). Lastly, 92.6% of the medical staff members reported that the medical clown contributed to their own wellbeing during the difficult procedures (Tener et al., 2012). Therefore, the inclusion of the medical clowns increased cooperativeness of the patient during the anogenital examination which allowed practitioners to conduct the procedure without the fear of performing the exam on an unwilling patient (Tener et al., 2012). Therefore,

humor and laughter was used by the medical clown in order to increase the possibility of establishing a positive patient-practitioner relationship (Tener et al., 2012).

Humor and Quality of Care

Patient-Practitioner Relationship

The first responsibility of health care practitioners is to prevent and alleviate disease, but they must carry out their responsibility, “mindful of the contributions of the family, our team, our organizations, and our community to what can be accomplished” (Beach, Inui, & the Relationship-Centered Care Research Network, 2006, p. S7). Along with the mindfulness, practitioners must also understand the impact they will have on a patient’s well-being starting from the first interaction and any follow up visits thereafter (Beach et al., 2006). The patient-practitioner relationship is important in assuring that patients receive the highest quality of care (Scholl & Ragan, 2003).

There has been research that may suggest that modern medicine has not been concerned with establishing a stable patient-practitioner relationship, but instead the patient role in Western societies tends to emphasize the lack of control patients have by placing them into a very passive position (Francis, Monahan, & Berger, 1999). If patients desire to get well, then they are expected to follow instructions, answer all questions, submit to any tests, and accept any information without challenging the physician (Francis et al., 1999). Patients generally will hesitate to complain too much to health care professions due to the underlying fear of being labeled as ““bad patients”” (Scholl, 2007, p. 166). Patients’ passivity is further reinforced by medical practitioners through information control, professional distance, and clothing (e.g., lack of clothing for patient, white coat for physicians) (Francis et al., 1999). When physicians encourage the patient

to take an active role in managing his or her own health care, the physician tends to still let their own expertise guide the decision making without regards to patient's wishes (Francis et al., 1999). Traditionally, health care professionals were instructed to not establish therapeutic relationships with their patients, so that these practitioners can distance themselves from potential difficult emotional situations that may arise within the health care setting (McCabe, 2004). Researchers have suggested that, over the past 40 years, this strategy to prevent stress in health care practitioners has resulted in a socialization process that has developed the understanding that therapeutic relationships with patients is strongly discouraged (McCabe, 2004). This model of treating patients is a product of the medical community's emphasis on disease as biological dysfunction (Francis et al., 1999). According to Beach et al. (2006), biomedical science should remain the cornerstone of medical education and scientific research, but understanding patient preferences and satisfaction should be integrated with the biomedical science side of medicine.

Dharamsi, Whiteman, & Woollard (2010) asked this question: "When does emotional distance [between practitioner and patient] become a form of neglect?" (p. 2). Dharamsi et al. (2010) argued that evidence points toward medical education, which can partly be blamed for fostering detachment and cynicism in medical students. Helping a person in need is considered a social and ethical responsibility among health care professionals (Dharamsi et al., 2010). Social distance can negatively influence a victim's likelihood of receiving help and concern from others (Dharamsi et al., 2010). When doctors are concerned more with the immediate demands and stresses that are associated with the profession, they become more susceptible to experience the numbing effect that

social distance can create (Dharamsi et al., 2010). Dharamsi et al. also suggested that health care professionals must accept the reality that faces them, and explore the origins and new ways to provide health care professionals a more functional and empathetic way to cope (Dharamsi et al., 2010). Dharamsi et al. (2010) stated:

There is a growing sense that if we understand how our humanistic, cultural, and professional surroundings influence health, the more likely we are to care about it, the more likely we are to think about the factors that influence it, and the more likely we are to be concerned and try to mitigate the suffering of those affected by it (p. 4).

Does it really matter if the patient receives warm and empathetic care from the health care provider? Does the quality of care given have a relation to the improvement of symptoms and disease? There is some research that suggests that the answer may be “yes”. Kaptchuk et al. (2008) conducted a study that investigated whether the patient-practitioner relationship played a role in improving the patient’s symptoms. In particular, they examined if the medical encounter could elicit non-specific or contextual benefits, also known as the placebo effect (Kaptchuk et al., 2008). This possible effect could be split into three components: the patient’s response to observation and assessment (i.e., Hawthorne effects), patient’s response to the administration of a therapeutic ritual (placebo treatment), and the patient’s response to the patient-practitioner relationship (Kaptchuk et al., 2008). The researchers hypothesized that these three components could be clinically relevant by being combined incrementally to progressively improve the patient’s overall health that could resemble the graded pharmacological dose escalation of component treatments (Kaptchuk et al., 2008). To test this hypothesis, the researchers

recruited patients who had been diagnosed with irritable bowel syndrome (IBS). Irritable bowel syndrome is clinically defined as, “the chronic, functional gastrointestinal disorder characterized by recurrent abdominal pain and disturbed bowel function—that is, diarrhea, constipation, or alternation between the two” (Kaptchuk et al., 2008, p. 1). IBS was chosen as a good candidate to study because it ranks in the top 10 diseases that cause individuals to seek primary care and because of the large positive response relative to IBS and other treatments that are currently under investigation (Kaptchuk et al., 2008).

The study consisted of 262 participants from the Boston area, who were randomly assigned to one of three experimental groups: the waiting list, limited interaction, or augmented interaction (Kaptchuk et al., 2008). Patients in the “waiting list” condition did not receive the placebo treatment nor did they have any interaction with the health care provider; this allowed the researchers to control for any effects due to the assessment and observation conducted by the practitioner, as well as controlling for the natural course of the disease (Kaptchuk et al., 2008).

Patients who were randomly assigned to the “limited interaction” condition received the placebo intervention and a “limited” interaction with the health care provider (Kaptchuk et al., 2008). The researchers used a dummy acupuncture intervention as the placebo treatment because acupuncture has been found to have high placebo effects (Kaptchuk et al., 2008). The sham acupuncture was validated to ensure that it was indistinguishable from actual acupuncture (Kaptchuk et al., 2008). This is because the sham device does not actually pierce the skin, instead a small plastic mount and surgical tape hold the sham needle in place which gives the patient the illusion that acupuncture has been administered (Kaptchuk et al., 2008). Each patient received six to eight placebo

needles in predetermined non-acupuncture points twice a week for three weeks (Kaptchuk et al., 2008). The interaction between patient and provider was established during an initial visit that lasted less than 5 minutes. During this interaction with the patients, the practitioner was instructed to explain that he “knew what to do” (p. 3) and that they had been “instructed not to converse with patients” (Kaptchuk et al., 2008, p. 3). This established the patient-practitioner relationship as cold and undesirable (Kaptchuk et al., 2008).

The last group of patients was assigned to the “augmented interaction” condition. These patients received the same placebo treatment, in the same room as the patients in the limited group (Kaptchuk et al., 2008). Their treatment differed in how the practitioner interacted with the patient (Kaptchuk et al., 2008). The initial visit lasted for 45 minutes and was specifically structured by content and style (Kaptchuk et al., 2008). The content included questions concerning symptoms, how IBS related to relationships, and how the patient understood the cause and meaning of his or her condition (Kaptchuk et al., 2008). To establish a strong rapport with the patient, the practitioner was instructed to incorporate behaviors like a warm, friendly manner; active listening (e.g., repeating patient’s words); empathy (e.g., “I can understand how difficult IBS must be for you”; p. 3); 20 seconds of thoughtful silence while feeling the patient’s pulse; and communication of confidence and positive expectations (Kaptchuk et al., 2008). The practitioners received 20 hours of training to ensure that they could create a strong patient-practitioner relationship (Kaptchuk et al., 2008). According to Kaptchuk et al., this procedure models research concerning how to develop the optimal patient-practitioner relationship.

The researchers measured the patients' IBS global improvement (overall symptom improvement over time), symptom severity, and quality of life (Kaptchuk et al., 2008). The results showed that there was a progressive improvement in symptoms; whereas, the waiting list was less effective than limited, which was also less effective than augmented (Kaptchuk et al., 2008). Patients in the augmented group showed a significant improvement in global symptoms and adequate relief compared to the limited group, who showed a significant improvement compared to the wait list group (Kaptchuk et al., 2008). The results also showed that 3% of the wait list group, 20% of the limited group, and 37% of the augmented reported moderate to substantial improvement on the global improvement scale (Kaptchuk et al., 2008). Patients in the augmented group showed a significant improvement in symptom severity and quality of life when compared to the limited group and waitlist group (Kaptchuk et al., 2008). In addition, over 80% of patients reported no adverse effects of the treatment throughout all conditions (Kaptchuk et al., 2008).

The researchers concluded that an enhanced patient-practitioner relationship, along with a placebo treatment, provided the best effects for patients suffering from IBS (Kaptchuk et al., 2008). Of the three components of non-specific effect studied, the supportive interaction component proved to be the most beneficial for the patient (Kaptchuk et al., 2008). The data also indicate that the magnitude of non-specific effects in the augmented group are not only statistically significant but, more importantly, the effects seen in the study are clinically significant (Kaptchuk et al., 2008). Kaptchuk et al. pointed out that if a patient has a decrease in symptom severity score of 50% then that indicates improvement in overall symptoms. In this study, 61% and 59% of patients in

the augmented group achieved this threshold level of improvement at 3 and 6 weeks, respectively (Kaptchuk et al., 2008). The percentage of patients in the augmented group reported adequate relief that is comparable to patients in clinical trials for pharmaceutical interventions that are currently under examination to treat IBS (Kaptchuk et al., 2008). The researchers suggested that these results support the hypothesis that factors such as warmth, empathy, duration of interaction, and the communication of positive expectation might have a significant role in improving clinical outcomes in patients (Kaptchuk et al., 2008).

Communication and the Patient-Practitioner Relationship

Therefore, communication between the health care provider and patient should be considered as a possible strategy to enhance the quality of care patients receive by establishing the patient-practitioner relationship (McCabe, 2004). Communication is defined as the “reciprocal process of sending and receiving messages using a mixture of verbal and nonverbal communication skills” (McCabe, 2004, p. 41). In addition, communication is an important factor in facilitating social relationships in general, but communication between the health care practitioner and patient is unique in part because this type of communication requires more than the transmission of information (McCabe, 2004). Communication between a patient and his or her health care provider must involve the transmission of feelings, recognition of these feelings, and letting the patient know that his or her feelings are being heard by the health care professional (McCabe, 2004). If communication fails to meet the patient’s needs then there is the potential for significant consequences to the patient’s experience, satisfaction, adherence, resource utilization, and health outcomes (McCarthy et al., 2013).

To further understand the unique type of communication that occurs between patients and their practitioners, McCarthy et al. (2013) conducted a study that focused on effective communication between patient and practitioner in the emergency department. The researchers audio recorded patient's rooms as soon as they were admitted into the emergency department and stopped recording when the patient was discharged (McCarthy et al., 2013). Providers accounted for most of the conversations ($M=239$ utterances) compared to patients ($M=145$ utterances), which provided a talk ratio of 1.67 provider utterances for every one patient utterance (McCarthy et al., 2013). Of the statements made by providers, 33.9% focused on patient education, 29.6% focused on patient facilitation and activation, 14.8% was centered on data gathering (with 86.2% of data gathering involving biomedical topics rather than psychosocial topics-13.8%), whereas 21.6% of conversations focused on building a relationship (McCarthy et al., 2013). Providers sought to build a relationship with their patients by using social talk, jokes and laughter (e.g., humor and laughter), and empathetic statements (McCarthy et al., 2013). On the other hand, patients' conversations primarily focused on information giving (47.4%) and relationship building (45.5%) (McCarthy et al., 2013). However, question asking accounted for only the remaining 5.2% of patients' utterances (McCarthy et al., 2013). The researchers concluded that providers in the emergency department had a verbal dominance during their encounters with patients, and the spoken exchange focused on providers gathering and patients giving biomedical information (McCarthy et al., 2013). Interestingly, this social exchange was found to be multifaceted, not only focusing on medical information but there was also an emphasis on relationship building (McCarthy et al., 2013). The results from the study indicated that emergency department

providers spend nearly a quarter of their time with a patient focused on relationship building despite the unlikelihood for a longitudinal relationship (McCarthy et al., 2013). According to McCarthy et al., these providers were seeking to build their relationship with their patients in order to provide care centered around the patients.

Humor's Role in the Patient-Practitioner Relationship

The patient-practitioner relationship is very delicate and very important in order to assure that patients receive the highest quality of care possible (McCabe, 2004; McCarthy et al., 2013). Many members of the medical community intuitively understand that humor can foster the patient-practitioner relationship and accelerate the healing process (Scholl & Ragan, 2003). Francis et al. (1999) reported that patients use humor with their health care practitioners for two main reasons: “(1) denial or distancing of the threat of diagnosis or impending treatment and (2) expression of anger or frustration with the providers, treatment, or illness” (p. 163). In order to study these potential relationships, several organizations such as, the American Association for Therapeutic Humor and the International Society for Humor Studies (McGuire as cited in Scholl & Ragan, 2003), have been developed to help recognize the importance of humor in the health setting through scientific research (Scholl & Ragan, 2003). Practitioners and patients have some type of understanding that humor has the potential to play an important role in linking the mind and body which could allow positive change in the psychophysiology of the whole person (Scholl & Ragan, 2003).

In order to understand this link further, Beach and Prickett (2016) examined how humor and laughter are used during delicate moments between patients and practitioners in a cancer clinic. Cancer clinic visits are very often stressful for the patients and can

bring difficult emotions that patients must face (e.g., fears, uncertainties, and hopes for sustained cancer remission) (Beach & Prickett, 2016). Delicate and, sometimes, threatening moments are created when a patient is reporting about and coming to grips with his or her diagnosed illness (Beach & Prickett, 2016). During these difficult and delicate moments, patients may, “rely on laughter and humor when attempting to remedy, cope with, and buffer a wide range of awkward, sensitive, embarrassing, fearful, anxious... and abnormal situations” (Beach & Prickett, 2016, p. 1). Beach and Prickett’s (2016) study specifically examined how cancer patients initiate laughter and humor during oncology interviews, as well as how doctors respond to patients’ use of humor and laughter (Beach & Prickett, 2016). Through this study, the researchers provided previously unavailable insights about problems faced by cancer patients, and how patients and doctors work together to manage the patient’s cancer care (Beach & Prickett, 2016).

The researchers pointed out that patients may or may not invite doctors to laugh when patients use humor and laughter as they discuss wellness issues with the doctor (Beach & Prickett, 2016). How the doctor responds to this humor, can potentially create a problem for the doctor as he or she tries to develop the patient-practitioner relationship (Beach & Prickett, 2016). If the doctor refrains from laughing then this could demonstrate “troubles-receptiveness” (p. 3); on the other hand, if the doctor shares a laugh with the patient then this could display insensitivity or disrespectfulness (Beach & Prickett, 2016). Conversely, if the patient does invite the doctor to laugh and the doctor does not laugh, then there is a potential for misalignments to occur that can indicate distance instead of closeness between the patient and the medical professional (Beach &

Prickett, 2016). When a physician denies the patient's laugh, he or she provides minimal acknowledgment about the patient's concerns and shifts to the official agenda and biomedical topics (Beach & Prickett, 2016).

The study included 75 video-recorded interviews between cancer patients and 30 doctors that occurred naturally (Beach & Prickett, 2016). The results from the study suggested that laughter produced by patients and withheld by doctors helps to maintain the balance between contrasting forces: promoting wellness, but delicately drawing attention to cancer threats and challenges; discerning how and if laughter is designed exclusively, "as a patient's resource for invoking, and claiming the relevance of their [sic] life-world experiences" (Beach & Prickett, 2016, p. 6). Beach and Prickett (2016) concluded that, by examining how a lymphoma patient attempts to laugh off her fears of cancer or how a young woman delicately treats her hypothyroid condition as abnormal (to name a few cases), laughter and humor provide deep access to the real-life experiences of cancer patients. Laughter and humor were prominent throughout the interactions between cancer patients and doctors, which gave the patients the opportunity to effectively communicate their delicate and very personal problems to the doctors (Beach & Prickett, 2016). The researchers pointed out that this is contrary to the common misconception that cancer clinics are preoccupied with sickness and death (Beach & Prickett, 2016). The data suggested that instead of the cancer clinic being dark and gloomy, it was considerably life-affirming and hopeful which drew attention to wellness and health throughout the course of diagnosing and treating cancer patients (Beach & Prickett, 2016). Beach and Prickett (2016) stated:

Small and seemingly inconsequential particles of laughter, and subtle nuances of humor, are often recruited by patients across a host of revealing social actions, such as minimizing and distancing cancer threats and fears, managing delicate and troubling topics, claiming normality (p. 10).

The researchers concluded that if doctors can have a basic understanding about how and when laughter and humor occur, then the doctors could increase their awareness of the patient's concerns and wellness priorities (Beach & Prickett, 2016). The doctor can partner with the patient if he or she is able to recognize and acknowledge what the patient treats as delicate (Beach & Prickett, 2016). An increased sensitivity toward a patient's laughter and humor has the potential to help the doctor understand if he or she is invited to laugh or not, and how to respond in an alternative way when patients do not invite their doctor to laugh with them (Beach & Prickett, 2016). When the doctor does not laugh when the patient does not invite the doctor to laugh then the doctor can display recognition to the patient's feelings, as well as demonstrating an enhanced focus on the patient's issues (Beach & Prickett, 2016). Thus, not laughing could be an appropriate response that could act as a key resource that helps the doctor align with and respect the communication from the patient (Beach & Prickett, 2016).

On the contrary, doctors should be concerned with when not laughing gives rise to the advancement of biomedical agendas, which shifts the conversation away from the patient's concerns (Beach & Prickett, 2016). Beach and Prickett suggested that doctors should be taught how not to pursue agendas in untimely or overly serious ways that can push aside the concerns raised by patients throughout all interactions between physicians and patients. The researchers concluded that, "Laughter and/or humor initiated by

patients should not be taken for granted, or discounted, but treated as portals providing further access to patients' personal health circumstances" (Beach & Prickett, 2016, p. 10).

To further understand how humor helps to establish that patient-practitioner relationship, Scholl and Ragan (2003) conducted an ethnographic observational study that explored humor in the health setting, specifically through the interactions between patients and their health care providers. This study was conducted in the Medical Institute for Recovery Through Humor (MIRTH), which was a rehabilitation unit in the Integris Baptist Medical Center in Oklahoma City, Oklahoma (Scholl & Ragan, 2003). MIRTH provided patients who were over the age of 65 with therapeutic and rehabilitative services (e.g., physical therapy, infusion therapy, and oncology services) (Scholl & Ragan, 2003). The health care providers (e.g., nurses, volunteers, physical therapists) who worked in this unit had the basic understanding that telling jokes or putting on gags was not the only way to produce humor within the unit; instead they incorporated humor in helping the patients maintain a healthy psychophysiological balance during their rehabilitation (Scholl & Ragan, 2003). The reasoning behind such a unit was based on the principle from previous research that humor can facilitate a more caring and personal approach to the patient-practitioner relationship (Scholl & Ragan, 2003). Humor within the patient-provider interaction was mostly embedded in the communication between the two parties, instead of imposing a designed message to elicit laughter or amusement (Scholl & Ragan, 2003). The providers used this to their advantage so they could enhance and promote therapy (Scholl & Ragan, 2003). This approach was central to the creation of MIRTH because if patients were happy then their physical healing could also be enhanced (Scholl & Ragan, 2003). Humor allowed the patients to express their feelings and thoughts about

their situations in a non-threatening, productive manner, thus promoting immediacy and closeness between the patient and provider (Scholl & Ragan, 2003).

Although humor appears to have a positive effect on most patients who are involved, the provider must be cognizant of the patient's age and personal interest, whether or not the patient is receptive to humor, while also avoiding sarcastic, aggressive, or abusive types of humor (Scholl & Ragan, 2003). Humor is not suitable for all situations nor for all patients; rather humor can serve as a "double-edge sword" (p. 321) in the health care context (Scholl & Ragan, 2003). Scholl and Ragan discussed the importance of understanding the harmful outcomes that humor can produce. According to Scholl and Ragan, "humor can embarrass, hurt, or mock patients through sarcasm and ethnic or sexist jokes. Humor can also prove harmful if a provider initiates it without regard for its effect on patients' feelings, tastes, or emotional states" (p. 321). Therefore, humor must be used in the clinical context on a case-by-case basis instead of a cure-all basis (Scholl & Ragan, 2003).

In their study, Scholl and Ragan (2003) observed the patient-provider interactions that occurred during daily activity sessions, room visits, and conducted in-depth interviews with patients and providers. The researchers defined humor within MIRTH as, "a form of intellectual play, characterized by spontaneous or sportive behavior that connotes kindness and geniality, and carries a message of affection, caring, and humanness" (Sumners as cited from Scholl & Ragan, 2003, p. 322). MIRTH displayed a clear identity of being humorous through the decorations, wall hangings (e.g., cartoons, pictures of animals, humorous sayings, jokes/puns, posters of popular mid 20th century comedic characters, such as Lucille Ball) and personal attire (Scholl & Ragan, 2003). The

door to each patient's room was uniquely decorated with a picture of a famous cartoon character or block quotations (Scholl & Ragan, 2003). Each wall between the doors within the unit were uniquely decorated (Scholl & Ragan, 2003). The images (e.g., Kermit the Frog) and quotes (e.g., jokes) that were used to help create a humorous environment were culturally common comedic symbols that could be recognized in the United States as funny with the intent to induce laughter in the individual (Scholl & Ragan, 2003). The MIRTH unit's decorations conveyed that, "Humor, laughter, mirth, emotional well-being, and comfort are our business" (as cited in Scholl & Ragan 2003, p. 322). Thus, the decorations indicated distancing the MIRTH unit and its patients from the typical units within the hospital (Scholl & Ragan, 2003).

Scholl and Ragan observed three themes that accounted for the spontaneous, emergent forms of humor in the MIRTH unit between patients and staff. The first theme involved reminiscing about youth and earlier times (Scholl & Ragan, 2003). The researchers pointed out that it can be therapeutic for older adults to remember their youth because most would consider them 'healthier' days. They added that thinking back to the past can help distract the patient from his or her current pains and illnesses (Scholl & Ragan, 2003). Scholl and Ragan also suggested that remembering the past can help the patients feel at home and comfortable in the hospital environment. Telling their stories encouraged social interactions with others in the unit and allowed the patients to feel 'normal' by engaging in an everyday conversation (Scholl & Ragan, 2003).

The MIRTH unit's therapeutic use of humor allowed patients to temporarily shed their assigned 'patient roles' that come with being in the hospital (Scholl & Ragan, 2003). The researchers claimed that patients must face the difference in hierarchy between the

medical staff and themselves (e.g., doctors wear white lab coats, patients are reduced to revealing smocks) (Scholl & Ragan, 2003). The researchers added that the patients are also at risk of losing their self-esteem due to the potential of embarrassing or painful procedures. If the patient can shed his or her 'patient' role then this may help the patients feel less like patients, enabling them to forget the potential undesirable side effects of the 'patient' role (Scholl & Ragan, 2003).

To help free the patients of this role, MIRTH patients were encouraged, but not required, to wear street clothes and to throw away their hospital smocks (Scholl & Ragan, 2003). The researchers discussed a specific instance in which wearing regular clothes helped the patients (Scholl & Ragan, 2003). For example, the researchers reported that an elderly man, E, wore a t-shirt, athletic pants, Nike sneakers, and to complete his look he wore a baseball cap backwards (Scholl & Ragan, 2003). The researchers noted this look was common for the average high school or college student. E's clothing choices and backwards hat went against the stereotypical image of a hospitalized older adult as weak, and created an image of being casual, carefree, and comfortable. The ability to wear what he wanted directly affected his mood and the moods of other patients who were around him (Scholl & Ragan, 2003). The researchers observed that by allowing patients to dress normally and providing care that allowed the patients to escape the 'patient' role, patients were more likely to talk less about their illnesses and more about themselves (Scholl & Ragan, 2003). The researchers stated that, "allowing patients to dress and appear as normal, healthy people encourages communicative behaviors that connote happiness and self-respect, arguably important health outcomes in addition to physical rehabilitation" (Scholl & Ragan, 2003, p 326).

The last theme was centered around the provider's ability in taking a personal interest in the patients (Scholl & Ragan, 2003). Health care professionals can use humor to get to know their patients, to learn about their needs, likes and dislikes, and about their background (Scholl & Ragan, 2003). The nurse in charge of the MIRTH unit made herself personally responsible to know each patient in detail (e.g., names, where they were from, special physical or psychological needs, favorite activities, and likes and dislikes) (Scholl & Ragan, 2003). She used these details to develop a personalized care for each patient, and used the details to enhance conversation with the patients (Scholl & Ragan, 2003). The health care providers took advantage of knowing patients' stories by using the stories and the humor that was often associated, to make jokes or encourage patients to talk (Scholl & Ragan, 2003).

Overall, the researchers found that there was a heightened interpersonal awareness that resulted from the incidence of humor within the MIRTH unit (Scholl & Ragan, 2003). The researchers suggested that humor did not necessarily have a causal relationship in promoting the patient's well-being, but instead through the use of humor (e.g., posters, jokes, etc.) and by having an attentive staff, they were able to place an emphasis on a more personalized and holistic type of care that helped create a patient-centered health care delivery system (Scholl & Ragan, 2003). The researchers noted that they observed the apparent contagion effect humor had on patients; if one patient appeared happy then the other patients picked up on these cues and became happy themselves (Scholl & Ragan, 2003). Scholl and Ragan (2003) concluded that the patient-centered culture was more important for the patient's well-being than humor. Humor was a tactic used by the staff to promote a patient's long-term goals (e.g., enhanced self-

esteem, psychological stability, and physical healing). The researchers suggested that humor is a “tool with which the therapy is administered, not unlike more tangible equipment that may be used to administer medicines or treatments” (Scholl & Ragan, 2003, p. 328). Humor could act as a catalyst in the creating of a more personalized, patient-centered health care delivery system (Scholl & Ragan, 2003).

Patient-Centered Care

The social role and privileges that the healer possesses is founded upon meaningful relationships within the health care setting (e.g., patients, families, and other professionals) instead of just a technically appropriate transaction between the healer and others (Beach et al., 2005). Patient-centered care is one proposed method to enhance the patient-practitioner relationship, communication between patient and practitioner, as well as improve overall quality of care (Beach et al., 2006; McCabe, 2004; Scholl, 2007; Scholl & Ragan, 2003). Patient-centered care focuses on the patient’s physiological and psychological needs via enhanced patient participation while receiving care from health care practitioners (Scholl, 2007). Patient-centered communication is defined as, “communication that invites and encourages the patient to participate and negotiate in decision-making regarding their [sic] own care” (Langewitz et al. as cited in McCabe 2004, p 42). Patient-centered care has four core concepts that differentiate it from other types of care: dignity and respect, information sharing, participation, and collaboration (McCarthy et al., 2013).

A study conducted by McCabe (2004) examined how nurses communicated with their patients and how this communication related to the patients’ experiences. The researcher conducted 30-minute interviews with patients who were admitted to the

hospital, in which they discussed questions concerning communication between the patient and nurses (McCabe, 2004). McCabe (2004) described four different themes that emerged from the communication between nurses and patients.

The first theme that emerged was the “lack of communication” which was referred to the most by the participants (McCabe, 2004). The participants discussed how the nurses seemed to be more concerned with completing their tasks, rather than talking to the patient (McCabe, 2004). Some participants became frustrated and felt the nurses did not care for them, whereas other participants accepted this as normal behavior (McCabe, 2004). All participants in the study attributed the lack of communication to the nurses being “too busy” and not to the nurses’ potential lack of communication skills (McCabe, 2004). The researcher suggested that patient-centered communication is important because it can empower the patient (McCabe, 2004). Patient-centered communication makes the patient a partner in making decisions about his or her needs instead of assuming what the patient needs (McCabe, 2004). According to McCabe (2004), this type of communication does not take extra time nor does it take up extra resources; the researcher also pointed out that the nurses can initiate patient-centered communication by the words they use and body language they choose when visiting a patient. It is important to note, however, that the lack of patient-centered communication in this study could be a result of the nurses use of task-centered communication as a defensive mechanism against the potentially difficult emotions that may arise (McCabe, 2004).

Secondly, “attending” was another theme that emerged from the interviews of patients in this study (McCabe, 2004). Attending behavior is the, “physical demonstration

of nurses' accessibility and readiness to listen to patients through the use of non-verbal communication" (McCabe, 2004, p. 44). For attending to occur in patient-centered care model, the provider must exhibit genuineness, warmth, and empathy (McCabe, 2004). Possible behaviors that would be valued as attending behaviors could be giving time and being there, open and honest communication, and genuineness (defined as "beyond professionalism and phoniness", p. 45) (McCabe, 2004). When the participants experienced these behaviors from the nurses they felt reassured, safe, and cared for (McCabe, 2004). According to McCabe (2004), these behaviors do not require more time or resources than task-centered behaviors (McCabe, 2004). The participants needed the nurses to be open and honest, understanding of their condition, and needed the nurses to be available for the patients to trust their care (McCabe, 2004).

The next theme that was suggested by the data was "empathy" (McCabe, 2004). Empathy is defined as, "the ability to perceive and reason as well as the ability to communicate understanding of the other person's feelings and their attached meanings" (Reynold & Scott as cited in McCabe, 2004, p. 46). If the providers are not able to empathize with the patient, then they may not be able to help them cope or understand their illness (McCabe, 2004). When nurses were empathetic towards the participants in this study, the participants felt that the nurses understood their feelings and distress as well as felt that they cared for them personally (McCabe, 2004). The participants did not expect the nurse to fix everything, but the nurses' empathy alleviated participants' anxiety and uncertain thoughts and feelings about their illness (McCabe, 2004). These findings support the understanding that empathetic communication is an essential prerequisite in the delivery of high quality health care (McCabe, 2004).

The final theme that was suggested from the data, is referred to as the “friendly nurse” (McCabe, 2004). All participants in this study praised nurses who were friendly, chatty, and humorous (McCabe, 2004). Friendly nurses provided a social function that helped to relax the patients, helped to pass the time, and helped the patients to forget their troubles (McCabe 2004). The participants in this study favored nurses who used informal humor exchanges (McCabe, 2004). Through the use of humor as a type of communication, the patient was given the opportunity to step out of his or her ‘sick role’ and gave the nurse and patient the ability to communicate effectively (McCabe, 2004).

The researcher concluded that patient-centered communication is essential to create a positive nurse-patient relationship and must not be considered an optional ‘extra’ (McCabe, 2004). McCabe argued that staff shortages and being ‘too busy’ cannot be used as excuses for poor communication between nurses and patients, because it is the quality of the interaction that determines if the relationship is positive or not (McCabe, 2004). McCabe added that if nurses commit to providing patient-centered care through the use of positive communication, then the result would be that patients would receive a high quality of care from the nurses.

Humor and Laughter’s Role in Patient-Centered Care

If patient-centered care is a viable health care delivery method that produces high quality care, then what can be used to enhance this method of care? Physicians and other health care professionals can encourage the patient to ask questions, show more immediacy, give more emotional support, and exchange verbal statement for written instructions, through the use of an interpersonal-oriented approach to treating a patient (Scholl, 2007). Health care professionals who practice medicine using this approach tend

to be perceived by their patients as sincere and caring (Scholl, 2007). Humor, as a therapeutic tool, could potentially help promote patient-centered care within the hospital setting (Scholl, 2007). Humor can be used to help create an environment that allows patients to become less guarded and more likely to interact with others present (Scholl, 2007). Sharing a skillfully executed humorous experience, “could go a long way towards helping patients and provider establish the rapport that is pivotal to the development of their ongoing relationship” (Scholl 2007, p. 159).

In a grounded theory study, Scholl (2007) studied how humor and laughter were used in relation to patient-centered care; he also examined whether humor and laughter improved the patient-practitioner relationship. The study was conducted in the same rehabilitation unit, MIRTH, as mentioned previously (i.e., Scholl & Ragan, 2003). At the time, Scholl’s (2007) study was conducted, the MIRTH unit expanded from 20 beds to 80 beds. As in the previous study there was no causal relationship between the use of humor and the patient’s well-being, but by using humor providers could place an emphasis on holistic health care which facilitated patient-center health care delivery (Scholl, 2007).

Scholl’s (2007) first research question focused on how humor was manifested when patient-centered care was promoted. He concluded that humor within MIRTH was a type of spontaneous play that encouraged goodwill, caring, and responsibility to the patients’ humanity (Scholl, 2007). The activities director, GG, used a ‘joke of the day’ during each initial visit in the morning with the patients (Scholl, 2007). GG justified using the ‘joke of the day’, even when the jokes were too cliché to be funny, as a way to break the ice with patients to transform the room visit from clinical and intimidating to informal and friendly (Scholl, 2007). Once the provider could initiate a conversation with

the patient, Scholl observed that the provider had the ability to gently collect information from the patient; this method kept the patient calm, allowed the provider to gain a better understanding of the patient's needs, and allowed the provider to gain the patient's trust. These are all considered essential components of patient-centered care (Scholl, 2007). The providers did not stop at understanding the medical and physical needs of each of the patients, but instead they also obtained an exhaustive history, including socio-psychological information that gave a holistic understanding of the patient (Scholl, 2007). Humor promoted personal interest that enabled providers the ability to gain a complete understanding and background of each patient which helped to create a personalized health care plan for each patient (Scholl, 2007). Patients reported feeling that the staff in the MIRTH unit truly cared for them because of the interest in knowing everything about the patient (Scholl, 2007).

Scholl (2007) reported that patients in the MIRTH unit seemed to be liberated from the concern of bothering the providers and were free from being labeled as a 'bad' patient. These patients were able to freely voice concerns about their pain and illness to the staff (Scholl, 2007). The researcher discussed an interaction between patients during one of the daily activities. One began to complain about his condition and how he was suffering from multiple illnesses; at this point, the other patients around him started to provide support and started to complain about their illnesses as well (Scholl, 2007). The patients seemed to gain more energy as each story was being told, and they felt more courageous in expressing their frustrations around company of others (Scholl, 2007). This interaction between patients was an example of how a patient-centered environment can give patients a voice to freely express concerns (Scholl, 2007). Scholl concluded that

humor, in this setting, could be used as a tool to create an environment in which patients feel open to express opinions, concerns, and complaints (Scholl, 2007). According to Scholl (2007), this allowed patients to be truly transparent with the providers, thus allowing the providers to provide patient-centered care that accounted for the patient's needs, whether spoken or not.

Scholl (2007) further concluded that humor appeared to be a conduit between patients and providers that helped both sides achieve a great sense of immediacy, cooperation, and positive affect. These humorous instances did not always directly induce laughter, but mirth and amusement tended to emerge without solicitation (Scholl, 2007). The providers within the MIRTH unit were focused on making the patients feel happy and comfortable (Scholl, 2007). Scholl stated that, "Positive physiological and psychological health outcomes depend a great deal on the level of immediacy between patient and provider, and on a mutual understanding of each other's expectations" (p. 170). Thus, humor has the potential to be supplemental alongside traditional approaches to enhance interpersonal immediacy in the health care setting and enable providers to provide a more patient-centered care (Scholl, 2007).

The Therapeutic Value of Humor and Laughter for Physician Burnout

Defining Physician Burnout

According to Shanafelt et al. (2015), practicing medicine is a very rewarding profession because of the meaningful relationships that practicing physicians develop with their patients, the intellectual stimulation that comes with working in the health care field, and due to the satisfaction of helping fellow human beings in their time of need. Although practicing medicine can be very rewarding for the practitioner, medicine can

also be very demanding as well (Shanafelt et al., 2015). Physicians' work tends to be highly technical and intellectually demanding (Shanafelt et al., 2015). This requires the physicians to make complex, high-stakes decisions despite encountering substantial uncertainty throughout their work (Shanafelt et al., 2015). Researchers have also suggested that health care professionals are routinely exposed to severe occupational stressors, "such as time pressure, low social support at work, a high workload, uncertainty concerning patient treatment, and predisposition to emotional responses due to exposure to suffering and dying patients" (Portoghese, Galletta, Coppola, Finco, & Campagna, 2014, p. 152). Practitioners are tasked with listening and caring for patients who are suffering due to the lack of viable treatment as they approach death (Wanzer et al., 2005). This can take an emotional toll on the health care practitioner (Wanzer et al., 2005). Interestingly, medical students begin medical school with significantly better mental health profiles compared to other college graduates who are pursuing other fields outside of medicine (Shanafelt et al., 2015). This trend in mental health profiles of college graduates is reversed for medical students within the first two years of medical school (Shanafelt et al., 2015). These changes in well-being may be due to a high level of professional burnout and dissatisfaction with the integration of their work with their personal life (Shanafelt et al., 2015).

Health care employees, mainly the medical staff, are exposed to a specific type of occupational hazard at an increasing rate within recent years (Portoghese et al., 2014). This occupational hazard is referred to as 'burnout' (Portoghese et al., 2014; Shanafelt et al., 2015; van Mol, Kompanje, Benoit, Bakker, & Nijkamp, 2015). Burnout, in general, is defined as, "a syndrome of emotional exhaustion, loss of meaning in work, feelings of

ineffectiveness” (Shanafelt et al., 2015, p. 1601). This emotional exhaustion is related to how the individual experiences stress, which then can cause a decline in emotional and physical resources (Portoghese et al., 2014). In addition, cynicism, loss of meaning in work, refers to the professionals who detach themselves from their work which results from exhaustion (Portoghese et al., 2014). Lastly, the feelings of ineffectiveness are derived from professional inefficacy, which occurs when the individual has lost confidence in his or her work (Portoghese et al., 2014)

Burnout among physicians could also impact the quality of care patients receive and can impact physician turnover rate, which, in turn can negatively impact the quality of the health care delivery system overall (Shanafelt et al., 2015). Patients tend to wait longer and receive less attention and care when health care practitioners suffer from professional burnout (Wanzer et al., 2005). According to Portoghese et al. (2004), some research has suggested that, burnout also poses risks to others, in the form of workplace accident, injuries, and fatalities. On the other hand, physician burnout can lead to profound complications for the individual and his or her family (Shanafelt et al., 2015). Job burnout among health care practitioners has also been associated with a multiplicity of health problems for the practitioner (e.g., hypertension, gastrointestinal disorders, and sleeplessness) (Wanzer et al., 2005).

Prevalence of Physician Burnout

To further understand physician burnout, Shanafelt et al. (2015) conducted a survey that examined the prevalence of physician related burnout compared to the general population of working adults. The researchers sampled American physicians from all specialty disciplines through the American Medical Association (AMA) Physician

Master File (PMF) (Shanafelt et al., 2015). The PMF is a nearly complete registry of all 835,451 physicians in the United States throughout all major specialty disciplines (Shanafelt et al., 2015). For the control sample, the researchers surveyed a probability-based sample of individuals from the general United States' population (Shanafelt et al., 2015). This control sample allowed the researchers to compare physician burnout rate to the general population burnout rate within their respective professions (Shanafelt et al., 2015). Shanafelt et al. (2015) measured burnout (i.e., Maslach Burnout Inventory, MBI; Maslach, Jackson, & Leiter as cited in Shanafelt et al., 2015), symptoms of depression and suicidal ideation among physicians, and satisfaction levels with work-life balance (WLB) (i.e., "My work schedule leaves me enough time for my personal/family life"; Shanafelt et al., 2015, p. 1602).

Of the physicians that received and opened the invitation to participate (35,922), 19.2% (6,880) responded and completed the survey (Shanafelt et al., 2015). The demographic characteristics of the survey sample were similar relative to all US physicians (Shanafelt et al., 2015). The researchers found that, "46.9% of US physicians had high emotional exhaustion, 34.6% had high depersonalization, and 16.3% had a low sense of personal accomplishment" (Shanafelt et al., 2015, p. 1604). Shanafelt et al. (2015) also found that 54.4% of physicians reported at least one symptom of burnout, as well as only 40.9% felt that their "work schedule left enough time for personal/family life" (Shanafelt et al., 2015, p 1604). These rates among physicians were significantly higher when compared to results from a 2011 survey: rates of burnout increased from 45.5% to 54.4% ($P < .001$), and satisfaction with WLB decreased from 2011 to 2014, 48.5% to 40.9% respectively ($P < .001$) (Shanafelt et al., 2015). In contrast to these

differences, there was little to no difference in the percentage of physicians who reported symptoms of depression (39.8% vs. 38.2%; $P=.04$) and rates of suicidal ideation (6.4% vs. 6.4%; $P=.98$) (Shanafelt et al., 2015). The prevalence of burnout increased in all specialty disciplines from 2011 to 2014 (Shanafelt et al., 2015).

On the other hand, burnout rates in the general US population from 2011 and 2014 did not show a significant difference (28.4% vs. 28.6%; $P= 0.85$) (Shanafelt et al., 2015). The general population did show a slight improvement from 2011 to 2014 in satisfaction with their WLB (55.1% vs. 61.3%; $P<0.001$) (Shanafelt et al., 2015). The data also suggested that physicians tend to work on average 10 hours more per week compared to the general population (Shanafelt et al., 2015). Overall, physicians had significantly higher burnout rates, emotional exhaustion, and depersonalization when compared to the general working population (Shanafelt et al., 2015).

Therefore, the researchers concluded that burnout is a pervasive problem among American physicians that seems to be getting worse with time (Shanafelt et al., 2015). They noted that there was a 10% increase in overall prevalence of burnout among physicians over a span of three years (Shanafelt et al., 2015). Shanafelt et al. (2015) also suggested that there was a substantial erosion in physicians' satisfaction with their work-life balance, even though there was no increase in the median number of hours that the physicians worked per week. These trends among doctors is the opposite of what is found in the general working population (Shanafelt et al., 2015). The researchers argued that in order to help alleviate this problem meaningful progress must be taken at the individual level and the organization or system level (Shanafelt et al., 2015). Shanafelt et al. (2015) suggested that, "Health care organizations should focus on improving the efficiency and

support in the practice environment...and create an environment that nurtures community, flexibility, and control, all of which help cultivate meaning in work” (Shanafelt et al., 2015, p. 1609). Health care organizations could help physicians to better self-calibrate and learn how to promote their own wellness, which all could be very beneficial for the physician (Shanafelt et al., 2015). Shanafelt et al. (2015) added that the skills needed to promote resilience during challenging situations can be developed and learned through programs that train in mindfulness-based stress reduction.

Therapeutic Intervention for Health Care Practitioner Burnout

In order to help physicians and other health care practitioners deal with the stresses and events that can lead to the development of burnout and low WLB, health care workers may need some therapeutic intervention to help cope with the pressures of the job (Shanafelt, et al., 2015; Wanzer et al., 2005). Researchers in behavioral medicine and mental health professionals have suggested that the coping methods, if any, that an individual uses to manage stress has the possibility to affect their emotions (Folkman & Lazarus, as cited from Wanzer et al., 2005). Folkman and Lazarus (as cited in Wanzer et al., 2005) defined coping as, “a transactional process in which a harmful, threatening, challenging, or difficult situation leads to an emotional response that is either negative or positive. Emotional responses are then interpreted and treated in some way” (Folkman & Lazarus as cited in Wanzer et al., 2005, p. 109). Health care professionals experience crises and difficulties throughout their job which can produce negative emotional responses (Wanzer et al., 2005). Thus, health care professionals need to release these negative emotions so that they can more effectively cope with their negative emotions and maintain their satisfaction with their job (Wanzer et al., 2005).

One proposed coping strategy, involves the use of humor and laughter within and among health care professionals (Wanzer et al., 2005) Humor has been valued by health care professionals as a coping mechanism for some time (Wanzer et al., 2005). But few studies have been conducted to gain more knowledge about whether humor can be used as a coping strategy to decrease health care professional burnout and job satisfaction (Wanzer et al., 2005). Some research indicates that health care professionals who score high for humor-orientation (HO: “an individual’s predisposition to enact humor regularly in communication with others”; Wanzer et al., 2005, p. 106) reported greater coping efficacy (Wanzer et al., 2005). There are also reports that indicate that physicians who use humor and laugh more are less likely to receive malpractice claims against them (Wanzer et al., 2005). Bellert (1989) suggested that humor has a positive impact on the health care team and could have the potential to increase employee productivity, reduce work-related tensions, and assist in preventing burnout.

Chenoweth et al. (2014) conducted a study that examined the possible impact that exposure to humor had on health care staff in an aged care facility. The study was conducted as single-blinded, two-group, cluster-randomized longitudinal study, with one group being exposed to the humor intervention (humor), whereas the other group was not exposed to any humor intervention (control) (Chenoweth et al., 2014). The humor intervention consisted of weekly humor sessions that were attended by professional performers (ElderClowns), trained staff (LaughterBosses), and participating residents (Chenoweth et al., 2014). ElderClowns included, “Experienced humor performer from the Australian Humor Foundation” (Chenoweth et al., 2014, p. 49). LaughterBosses included individuals who were selected by their managers to help facilitate the

ElderClown during humor sessions; the LaughterBosses were required to attend a one-day training session with the ElderClown before the study started (Chenoweth et al., 2014). Health care staff that were assigned to the control condition were instructed to continue their usual care regimens and were not exposed to the humor intervention (Chenoweth et al., 2014).

The results from the study showed that nursing staff who were assigned to the humor condition reported an increase in enthusiasm for their work at the follow-up time period (26 weeks after the start of the study), compared to the control group which showed no significant difference in work enthusiasm (Chenoweth et al., 2014). Likewise, health care staff who were older than 45 years of age reported more enthusiasm towards their work at the follow-up compared to participants of the same age who were in the control group (Chenoweth et al., 2014). Chenoweth et al. (2014) interviewed LaughterBosses from 15 out of 17 intervention groups, in which they discussed whether the humor intervention influenced themselves and how they perceived incidental effects on the health care staff (Chenoweth et al., 2014). The LaughterBosses, who were a part of the health care staff, reported that they were satisfied with what they achieved in their role during the humor sessions (Chenoweth et al., 2014). They also reported that they were able to provide better care for their residents due to the happiness that occurred from finding humor in everyday occurrences and through the use of humor sessions (Chenoweth et al., 2014). The LaughterBosses reported four incidental effects that the humor intervention had on the staff (Chenoweth et al., 2014).

First, the staff enjoyed watching the humorous interactions between the residents, LaughterBosses, and ElderClowns which lasted for days after the incidental exposure to

humor (Chenoweth et al., 2014). Secondly, the humor interventions had an observable positive change to the attitudes and approach of health care delivery of the staff (Chenoweth et al., 2014). Thirdly, there was a reduction in the health care staffs' stress during the humorous activities. The LaughterBosses also perceived that the "direct care staff reacted more positively to stressful care events" (Chenoweth et al., 2014, p. 51). Similarly, the LaughterBosses observed a positive change in the residents' moods which led to a positive impact on the staffs' moods as well (Chenoweth et al., 2014). Lastly, there was an observable improvement in communication, teamwork, relationships, and empathy among the health care staff (Chenoweth et al., 2014). The staff began to help other staff members maintain their well-being within their work (Chenoweth et al., 2014). One LaughterBoss reported, "It [using humor] makes you think 'Hang on, stop everything, stop. Give it a minute, smile.'" (Chenoweth et al., 2014, p. 51).

In addition, Chenoweth et al. (2014) collected ratings from 35 staff managers of global perceived staff enthusiasm at work pre- and post-intervention. Out of the 18 control groups, all manager ratings suggested there was no change in staff enthusiasm levels, (i.e., low to medium throughout the course of the study) (Chenoweth et al., 2014). On the other hand, 13 of the 17 managers' ratings, from the humor condition, showed a change in their staffs' enthusiasm throughout the course of the study (Chenoweth et al., 2014). The majority of managers gave their staff a medium to high/very high (47%) at the follow up time period, whereas others gave a low to high (11.8%) rating or a low to medium (17.6%) rating (Chenoweth et al., 2014). Out of the 17 managers who were a part of the humor group, 16 considered the humor intervention, "to be a mostly positive experience [for the staff] and a useful adjunct to other recreational programs"

(Chenoweth et al., 2014, p. 51). Chenoweth et al. (2014) concluded that working in elderly care can be difficult which could cause stress and low morale within the health care staff. Thus, this study provides promising evidence that humor could have the potential to improve health care staffs' satisfaction with their work (Chenoweth et al., 2014). Chenoweth et al. (2014) pointed out that, "promoting humor at work is not a strategy that can be applied in isolation – it needs to be part of a person-centered, organizational culture supportive of staff development" (p. 52).

To further understand if humor could help address the increasing prevalence of health care practitioner burnout and decrease satisfaction with their work, Wanzer et al. (2005) conducted a study that sought to examine how humor could be functionally enacted within the health care setting. Specifically, their research focused on how humorous strategies were used to cope, how health care situations produced humor, differences between individuals' humor-orientation and how these could relate to coping efficacy and job satisfaction (Wanzer et al., 2005). As previously stated, humor-orientation (HO) is an individual's predisposition to use humor regularly when communicating with other individuals (Wanzer et al., 2005). The researchers predicted that individuals who scored high for HO would exhibit a more elaborate repertoire of humor-eliciting skills (Wanzer et al., 2005). For these individuals, they tend to rely on making people laugh and are successful in doing so (Wanzer et al., 2005). This should allow these individuals to be able to cope with the daily stressors that are associated with working in the health care field (Wanzer et al., 2005). Also, the researchers predicted that those who commonly express their emotions maybe able to cope more effectively than those who repress their feelings (Wanzer et al., 2005). This prediction was based on

previous research that suggests that when health care professionals repress their strongly felt emotions this can lead to poorer health outcomes (Wanzer et al., 2005).

The Wanzer et al. (2005) study included a total of 81 nurses (87% female) from a wide variety of areas within the medical field (e.g., large state hospitals, home health, long-term care facilities, hospice, school nurses, physicians' offices) that participated in this study. Wanzer et al. (2005) measured the nurses' perceived coping effectiveness (8-item measure about abilities to cope with everyday stresses), humor-orientation (HO 17-item scale), emotional expressivity (e.g., "is the predisposition to communicate both verbal and nonverbally the feeling one is experiencing"; Wanzer et al., 2005, p. 113), and lastly participants were asked to fill out a questionnaire that asked for descriptive accounts of humor and humorous coping strategies (Wanzer et al., 2005).

The results indicated that there were nine different humorous coping strategies used by nurses: low humor, nonverbal, impersonation, language/word play, other orientation, expressiveness/general humor, laughter, funny props, and seek other (Wanzer et al., 2005). Language or word play (e.g., "verbal communication that is witty or clever and includes teasing, poking fun at self or others, and telling jokes"; Wanzer et al., 2005, p. 114) was the most used strategy used by nurses (38.66%), and the second most (20.66%) used strategy was expressiveness (e.g., "communication that is positive, light-hearted, happy, and includes general references to humor and joking"; Wanzer et al., 2005, p. 114). Low humor (e.g., communication that is spontaneously silly and clumsy) was used by 15.33% of nurses; nonverbal (e.g., specific behaviors noted performed such as smiling, accents, and gestures) accounted for 4%; 1% of nurses reported using impersonation (e.g., communication that attempts to imitate or portray another person,

action, or situation); 4.66% of nurses used the strategy other orientation (e.g., communication that shows that the individual is aware of and adapting to others); 6% of nurses used laughter (e.g., laughing or giggling due to various work situations); funny props (e.g., health care practitioners use work-related objects or funny objects to encourage humor) were used by 5.33% of nurses; and lastly, 2% sought others (e.g., health care providers will seek out someone who they find funny) (Wanzer et al., 2005).

Nurses were most likely (almost 75%) to express humor through a form of witty or clever language, silly humor, or general expressions of happiness and optimism (Wanzer et al., 2005). Wanzer et al. (2005) pointed out that nurses' use of humor was not denigrating to either the patient or the seriousness of the situation. Therefore, "the humor is not targeting patients, but rather is a method for the nurses to cope with the uniquely difficult situations and still remain effective in their jobs" (Wanzer et al., 2005, p. 120). The use of humor as a coping strategy to relieve negative affective states was popular among nurses in this study, and 18.8% of nurses reported using humor coping communication due to general stress (Wanzer et al., 2005). Interestingly, 21.4% of nurses reported that the most stressful situation that caused them to use humor was routine patient care (e.g., cleaning patients, moving patients, and helping patients perform simple tasks) (Wanzer et al., 2005). Thus, providing more evidence that humor has the potential to be a popular therapeutic coping strategy among nurses and potentially other health care providers (Wanzer et al., 2005).

After the researchers analyzed the results from the various measurements, they suggested that, "Humor orientation was not directly related to job satisfaction, but had influence only as job satisfaction was affected by coping" (Wanzer et al., 2005, p. 118).

Thus, humor orientation did not have a direct effect on job satisfaction, but when mediated by coping efficacy humor affected job satisfaction (Wanzer et al., 2005). Trait HO was positively correlated with coping efficacy ($r=.45$; $p < .001$, $n = 141$), which indicates that the higher the individual's predisposition to use humor, the more likely the person's confidence in coping with job stresses will increase (Wanzer et al., 2005). The quantitative results also suggested that higher HO individuals may feel more accomplished and competent about using humor (Wanzer et al., 2005). This could provide new information as to why health care professionals, among other stressful fields, use humor as a means to contend with the difficulties and stress that is associated with their work (Wanzer et al., 2005). Lastly, nurses who were highly humor oriented were also more likely to be emotionally expressive in general (Wanzer et al., 2005). The researchers suggested that this could be because these individuals express their emotions through humorous performances (Wanzer et al., 2005).

Wanzer et al. (2005) concluded by stating that high humor-oriented individuals are able to cope better because:

They felt that they solved the problem, relieved the tension, or in general made people feel better around them. In addition, the process of encoding the humorous message may focus the health care providers outward, toward their receivers and away from their own internal distress. (Wanzer et al., 2005, p. 121)

The redirection of the individual's attention could potentially explain why health care providers who produce humor have a relatively lower level of dissatisfaction with their jobs (Wanzer et al., 2005). This interpretation is supported by the findings that indicated that the predisposition to use humor helped individuals cope more effectively, which then

led to a potential increase in job satisfaction (Wanzer et al., 2005). Thus, humor appears to be a potentially effective “release” if used as a coping strategy (Wanzer et al., 2005).

The findings of this study are important because humor appears to alter negative affect within the health care provider and for the surrounding individuals (Wanzer et al., 2005). Wanzer et al. (2005) proposed that nursing education classes should incorporate information about the utility of humor, when used well, so that nurses, and potentially other health care providers, are able to begin to build a humor repertoire to use while practicing medicine. The researchers pointed out that they, “are not advocating the creation of a hospital full of comedians” (Wanzer et al., 2005, p. 122). Humor strategies could be developed, in similar ways as any other communication skill, in order to lower stress due to the difficult situations to which health care providers are exposed. In addition, humor strategies could increase morale and job satisfaction among health care practitioners, as well (Chenoweth et al., 2014; Wanzer et al., 2005). Thus, humor and laughter have the potential to be viable therapeutic interventions that could combat burnout within the health care field (Bellert, 1989; Chenoweth et al., 2014; Wanzer et al., 2005).

Discussion

Summary

One of the significant things about serious illness is that it separates you from that which gave you hope and strength and makes you someone else. The word support comes from two words: to hold from underneath and to carry. Humor itself or people who use *humor as a therapeutic tool* [emphasis added] use it not necessarily to make someone feel better but *to give support* [emphasis added] -- to

give people the freedom to be able to see the resources they have in order to obtain the answers they need – Hospital Chaplain (Francis et al., 1999, p. 155)

Taken together, the current findings help to provide insight in the potential therapeutic value of humor and laughter within the health care field. Although the research in this field of study is relatively new, the vast majority of studies provide support that humor and laughter can have profound psychological and physiological effects on an individual. To what extent and what exactly happens to the human body is still up for debate. Overall, humor and the physical production of laughter can positively influence a person's pain tolerance (Dunbar et al., 2011; Tse et al., 2010), cardiovascular function (Berk, 2001; Miller & Fry, 2009), could improve lung function (Berk, 2001; Mora-Ripoll, 2011), exercises muscles in the chest cavity and face (Berk, 2001), might lead to a post-laughter relaxation of muscles (Bennett & Lengacher, 2007; Berk, 2001; Mora-Ripoll, 2011; Overeem et al., 2004), could reduce stress which can lead to an enhancement in immune functioning (Bennett et al., 2003; Berk, 2001; Berk et al., 2001; Chang et al., 2013; Mora-Ripoll, 2010), and could be modified to serve as a possible exercise (Laughter Yoga; e.g., Shahidi et al., 2010) for individuals who are not able to participate in normal aerobic exercise. Laughter and the use of humor has also been shown to have a potentially positive influence on depression (Falkenberg et al., 2010; Ko & Youn, 2001; Konradt et al., 2012; Shahidi et al., 2010), hospital induced anxiety in patients and families (Bertini et al., 2011; Fernandes & Arriaga, 2010; Finlay et al., 2014; Golan et al., 2009; Kingsnorth et al., 2011; Tener et al., 2010; Tener et al., 2012), short-term memory in elderly individuals (Bains et al., 2014), and could influence an individual's sense of empathy (Hampes, 2001; Hampes, 2010). Humor and laughter does

not only have an effect on a single individual but its effect is felt beyond just one person (Chenoweth et al., 2014; McCabe, 2004; Scholl, 2007; Scholl & Ragan, 2003; Wanzer et al., 2005). Humor in medicine has been shown to play a crucial role in helping health care practitioners provide patients quality patient-centered care. Humor can help the health care provider build a relationship with his or her patients, as well as with other members of the health care team. Patients have been shown to use humor to help facilitate expressing their concerns and feelings to the health care providers (McCabe, 2004; Scholl, 2007; Scholl & Ragan, 2003). Humor and laughter could bridge the gap caused by the use of professional distance, which could lead to a higher quality of health care delivery for patients (Dharamsi et al., 2010; Francis et al., 1999; McCabe, 2004). Humor and laughter could also help treat the current increase in professional burnout among physicians and other health care providers (Chenoweth et al., 2014; Wanzer et al., 2005). As Scholl and Ragan (2003) pointed out, it is important to remember that humor and laughter are not, and will not, be a cure-all treatment, but rather could be used to improve other typical medical interventions.

Limitations and Challenges in the Current Research

Throughout the research that was examined for this paper, there were several limitations and challenges for the research dealing with humor and laughter. The major limitation in the humor research is the lack of experimental research. Most studies consist of case studies, correlational relationships, or quasi-experimental research. This is because of the very difficult task of controlling every variable within a laboratory setting under controlled conditions. Humor varies greatly between individuals, which makes it difficult for researchers to test for laughter because the person simply may not perceive

the humorous stimulus as funny. Also, most of the participants of humor research are patients in a hospital; although field studies can enhance “reality” of the setting, researchers cannot control the multitude of variables like they can inside a laboratory.

Adding to the shortcomings of the humor and laughter research, some studies had a small sample size (e.g., < 10 participants), no randomized design, no standard baseline, or did not have an adequate control group. Research dealing with the use of humor and laughter within medicine must also fight against the negative stigma that is commonly associated with this type of intervention. Many skeptics think that the researchers, who are advocating for the use of humor, are trying to diminish the seriousness of the medical professional, which could have detrimental effects on the reputation of institutions and health care providers. None of the researchers/authors involved in this review of the literature has suggested a need or desire to diminish the seriousness of the medical profession; in fact, the opposite tends to be found.

There are other potential health benefits of laughing and using humor within the scientific literature, but the ones discussed within this paper are currently the best understood and most researched topics within the field. Although conducting studies that examine the therapeutic value of humor and laughter prove to be difficult, it is still very important to continue so that the medical field can further understand the power of humor and laughter. More studies should be conducted in order to better establish a causal relationship between humor or laughter and improving specific psychophysiological factors within an individual. Likewise, more studies need to be conducted to further understand the importance of patient-centered care and how humor can facilitate such a delivery system. Such research could further inform scientists and practitioners that

health care professionals can be trained how to effectively communicate with patients, while using a patient-centered approach.

Professional Medical Comedians

One practical application of how humor and laughter can be introduced to the health care field is through the use of medical clowns. The clown, in some form, has been around in almost all cultures since prehistoric times and has been entertaining people throughout the world (Finlay et al., 2013). A clown's basic job is to use various forms of humor to elicit laughter and joy from his or her observers. This idea of clowning can be adapted to fit within the health care field to help spread humor and laughter throughout the hospital. Before discussing why medical clowning is important, it is important to remember the common fear of clowns, known as coulrophobia or ballatrophobia (Finlay et al., 2013). The fear of clowns could be due to a previous traumatic encounter with a clown or due to the loud and obnoxious clothing and make-up used in normal clowning practices (Finlay et al., 2013). There are several protocols that can be developed to help protect patients from experiencing fear caused by a visiting clown.

First, medical clowns do not wear extensive make-up that can sometimes cause fear, but instead the medical clown may use a minimal amount of make-up accompanied by a red nose to help develop his or her unique character (Finlay et al., 2013). Second, medical clowns should not wear normal clowning attire that is commonly seen in the circus or the media, but instead medical clowns should wear humorous attire (i.e., dress shirt, tie with humorous symbols or characters, large shoes, colorful hats, etc.) that is appropriate for the medical setting while also contributing to their overall character. Medical clowns tend to wear white coats, with some type of colorful patterns, pins, or

stickers, so that they can signify to the patients and families that they are a part of the medical team and belong in the hospital. It could also be interesting to examine whether medical clowns that wear white coats similar to the coats worn by doctors, can have an effect on “white coat syndrome”, thus allowing patients to be comfortable around not just the medical clown’s white coat but other health care professionals. Third, in order to protect patients from experiencing fear induced by clowns, medical clowns should always ask the patient for an invitation to enter the patient’s room. Thus, providing consent will give the patient a sense of power and control over his or her hospital room, and will allow the patient to decide who can enter the room. If a patient expresses concern about the clown entering the room, then the medical clown will respect the patient’s qualms and leave. The medical clowns can slowly diminish a patient’s fear of clowns by respecting his or her wishes and showing kindness and humor from a distance. In time, these quick encounters could help chip away at the patient’s fear, and, thus, eventually help the patient to view the clown as kind and fun rather than frightening and mean.

Along with these potential protocols, I would suggest another possible improvement that could protect the practice of medical clowning from the individual’s preconceived ideas about what a clown is. In order to rid the negative stigma that is currently associated with clowning, I suggest changing the name of a medical clown to a “professional medical comedian”. Most individuals do not hold the same basis of judgment towards comedians that they do towards clowns. Comedians typically are viewed publicly as relatively favorable and they do not elicit the same fears that are associated with the word “clown”. Studies could be conducted to examine if changing the name from “medical clowns” to “professional medical comedian” can improve public

perception of the implementation of medical clowning into the health care field. For the purposes of this discussion, I will refer to medical clowns as medical comedians in order to enhance the perception of the practice of medical clowning.

Study after study, especially across the early 21st century, has provided more information that supports the potential that professional medical comedians could positively influence the quality of care that patients receive, the patient's overall health, and the medical team's wellness. Studies have shown that exposure to a medical comedian's humorous intervention has the potential to improve patients' overall health. As previously discussed, the medical comedian's use of humor to produce laughter concurrently with typical medical interventions carried out by health care professionals, has the potential to alleviate a patient's pathological symptoms more quickly than just normal medical treatment by its self. Patients' diastolic blood pressure and respiratory rate can also be significantly improved by introducing a medical comedian to the treatment of a patient's illness (Bertini et al., 2011; Finlay et al., 2014). In addition, the performance of medical comedians was also observed to have a potential effect on a patient's temperature. For example, Bertini et al. (2011) observed an unexpected phenomenon in which patients who were exposed to the humor treatment condition experienced a significant reduction in body temperature. The presence of medical comedians has also been observed to improve patient's reported pain levels (Finlay et al., 2014; Tener et al., 2010; Tener et al., 2012). Lastly, patients experienced less anxiety from the impending medical procedure when a medical comedian was introduced into pre-operative care environment (Fernandes & Arriaga, 2010; Finlay et al., 2014; Golan et al., 2009). It may be that the reduction of pre-operative anxiety can play a vital role in enhancing a patient's

health post-operatively and reduce the need for physicians to use pharmaceutical treatments to calm the patient before surgery. The reduction in anxiety goes beyond the patient and is also felt in patient families as well (Fernandes & Arriaga, 2010; Finlay et al., 2014; Golan et al., 2009; Tener et al., 2010; Tener et al., 2012). Taken altogether, professionally trained medical comedians have the possibility of providing patients health-enhancing alternative intervention within the hospital ward.

Implementing medical comedians into the medical care team may also help health care professionals perform the necessary medical procedures. One of the most important studies that provides an example about how medical comedians can help patients receive the highest quality of care, involves the research dealing with the examination of sexually abused children (Tener et al., 2010; Tener et al., 2012). Performing an anogenital examination on a potentially abused patient is unimaginably difficult for the patient and for health care professionals. There is a high risk for re-traumatizing the patient after performing the medical procedure, and has the potential to cause the practitioner distress as well. When professionally trained, medical comedians are introduced into the invasive medical examination of a sexually abused child, they can help physicians to perform the procedure so that the patient receives the physiological care that is needed regarding the sexual abuse, and aids in the collection of forensic evidence (Tener et al., 2010; Tener et al., 2012). It is important to note that the medical comedians would not actually perform the examination, but rather they would act as the patient's advocate to enhance cooperation between the physician and patient. The medical comedian can potentially transform the threatening environment (through the use of humor and laughter) into a playful, less threatening environment that is more comfortable for the child. Using humor

could decrease the patient's stress, anxiety and pain levels. This could subsequently help facilitate the children in connecting with the medical comedian because the comedian would be perceived as a friend and protector. These children would then be able to understand that the comedian is on their side, which could help to build trust between the traumatized child and medical comedian. The comedian could also use humor that teases the physician and use pranks and props to "embarrass" the physician, which then could transfer the patient's embarrassment and shame to the physician (Tener et al., 2010; Tener et al., 2012). Thus, the medical comedian would have the unique opportunity to bridge the gap between the patient and health care practitioner. Once the relationship between patient and comedian has been established, then the comedian would be able to focus on providing for the emotional, physical, and mental well-being of the child. These effects of stress and anxiety reduction has also been found in the families of the abuse victims, and were also found to be helpful for medical professionals (Tener et al., 2010; Tener et al., 2012). Future research may reveal an array of other benefits that medical comedians can provide as enhancements to the quality of patient care delivery within the hospital setting.

Medical comedians should be established as important members of the interdisciplinary health care team. I suggest that a professional comedian should be in every hospital to act as a patient advocate, following other specialized health care team members (such as a Child Life Specialist, social worker, respiratory therapist, etc.). The comedians would not include just any amateur that decides to enter a hospital and starts to make people laugh. Rather, these comedians must be professionals who have been appropriately trained in the therapeutic value of humor and laughter, how to use unique

methods to provide therapeutic interventions, and have been trained to have an adequate understanding of the medical environment. Using medical comedians could be a cost-effective, easy-to-use alternative treatment option that not only has the potential to help patients receive quality health care and that could help improve the psychological and physiological wellbeing of the patient, but also could potentially bring joy and happiness back onto the hospital floor.

Medical Education

Health care providers should be taught a basic understanding about who will benefit from the use of humor and laughter, what to say or do, when the appropriate time is, where humor or laughter is needed, why it is important, and how to effectively use humor. Humor and laughter should be incorporated in the education of medical professionals for several reasons: to develop a potential coping strategy, to enhance the quality of health care delivery, and to be used as a strategy to benefit patients and their families.

First, however, it is important to address the potential stigma associated with using humor in the hospital or clinic; that is, it will be important to provide evidence that challenges the idea that humor and laughter will take away from the seriousness of practicing medicine. If medical education can teach physicians, nurses, nurse practitioners, social workers, and other health care providers how to develop humor as a social skill and learn how to use humor to enhance communication, then these professionals could be able to use humor effectively within the medical field during the appropriate situations. Thus, this attitude about the use of humor could potentially protect

the seriousness of practicing medicine, while establishing the importance of understanding humor as a social skill that can be used to enhance health and well-being.

The current health care system in the United States is facing a crisis that involves physicians developing professional burnout at an increasing rate (Shanafelt et al., 2015). These practitioners are experiencing high levels of stress that is commonly associated with the practitioners' daily exposure of distressing events that are unique to the health care field in general (Shanafelt et al., 2015). Physicians seem to be expected and trained to continue treating patients without regard to their own mental and physical well-being. Such situations may allow for negative feelings and stress to build up, which potentially can then lead to the development of symptoms associated with professional burnout.

Coping mechanisms could be taught to physicians to proactively protect them from the potential of developing the psychological symptoms of burnout and dissatisfaction with the balance between their professional work and personal lives. Humor and laughter has been shown to have the potential to be a viable therapeutic coping mechanism that physicians can use to better cope with the extreme circumstances that are commonly experienced in the health care environment (Portoghese et al., 2014; Shanafelt et al., 2015; van Mol et al., 2015). Studies also have shown that humor programs can improve depression scores when the individuals learn how to use humor as a coping mechanics. For example, one such proposed program is referred to as the Laughing Qigong Program (LQP), which instructs individuals how to expel negative emotions through the use of stimulated laughter and emotional expression (Chang et al., 2013). Such methods allow participants to discover how to accept and transform negative emotional states internally, instead of feeling overwhelmed or helpless (Chang et al.,

2013). This program reduced participant's stress levels, potentially because the participants were able to find humor in new ways and used stimulated laughter to release negative emotion (Change et al., 2013). Studies also have suggested that using humor as a coping mechanism can also improve an individual's depressive symptoms (Falkenberg et al., 2010; Ko & Youn, 2011; Shahidi et al, 2010). In fact, there is some evidence that suggests laughter and humor can be useful therapies that have the potential to improve the individual's satisfaction with life while also improving the individual's depressive symptoms. These studies suggest that humor may help an individual to express his or her feelings openly, while also bringing joy and happiness into the health care environment (Scholl, 2007; Scholl & Ragan, 2003). Thus, if medical education includes information about the importance of using potential coping mechanism (with humor being one such mechanism) then practitioners may be able to better protect themselves and their coworkers from developing professional burnout. These professional could also pass their knowledge of humor therapeutic value as a mechanism to facilitate coping with distressing events along to their patients and provide them with the knowledge about how they too could use humor to improve their emotional and mental states.

Secondly, humor and laughter should be incorporated into the medical education of health care professionals because of humor's role in reducing social distance between provider and patient, thus helping build the patient-practitioner relationship. Humor has been shown to be an effective tool that practitioners can use, that enables the practitioner to begin successfully building the patient-practitioner relationship. The way health care providers treat their patients can play a critical role in improving patients' health. There should be a shift from focusing on treating a person's disease, to a more holistic

understanding focused on treating the person and the disease. This shift of thinking could have the potential to improve the patient-practitioner relationship and patient outcomes in the hospital setting.

A major component that greatly influences the development of the patient-practitioner relationship is effective communication. In order for a physician to treat a patient effectively, he or she must have all the important information from the patient. Thus, communication between patients and the medical professional is key to providing the patient with the best care possible. Health care practitioners should be trained how to use humor and how humor is used by the patient during the patient-practitioner interaction. Patients may use humor to express feelings about their illness that they cannot overtly express. These feelings could otherwise be repressed because the patient is too fearful of being labeled as a bad patient or fear of expressing uncomfortable or awkward information to a person in power. Physicians who are well trained in humor can decipher how a patient uses humor and laughter to communicate, so that they are able to fully understand what the patient is saying. Thus, increasing the physicians' awareness of the patient's concerns and wellness priorities is likely to enhance the relationship with the patient and potentially enhance compliance on the part of the patient.

On the other hand, a health care provider may be the one to introduce the use of humor and laughter during the initial, and subsequent, medical interactions with patients. Humor could help the provider to "break the ice" with the patient during the initial interaction. Studies suggest that the provider can gently get important information from the patient during their interaction through the use of humor (Scholl, 2007; Scholl & Ragan, 2003). When providers appropriately use humor during medical interactions with

a patient, they have the potential to establish trust and develop a personal interest in the patient. This type of interaction between patient and a practitioner shifts the communication from being solely focused on biomedical topics to a mixture of biomedical topics and patient's feelings. Training physicians how to creatively use humor while communicating with patients can potentially help the practitioners keep the patients at the center of their care.

As previously discussed, humor and laughter can have a wide range of therapeutic benefits on the human body. If laughing and having a better sense of humor can significantly improve an individual's overall health, then it is important to teach medical professionals about these potential benefits. This will equip them with the understanding that it is important to incorporate laughter into their daily lives and help patients do the same.

Technological Application

Researchers studying humor and laughter continue to provide support that there is some link between humor, laughter and an individual's psychophysiological health. Most of the studies agree that the overall effects on the individual's well-being are positive improvements, but as to what the exact effect humor and laughter have on human psychophysiological health is still not yet clear. As previously stated, humor and laughter have the potential to positively affect several aspects of a person's physiology, such as: increased pain thresholds (Dunbar et al., 2011; Tse et al., 2010), act as a buffer to the immunosuppressive effects of stress (Bennett et al., 2003; Chang et al., 2013), increase Natural Killer cell activity (Berk et al., 2001), reduce muscle tension (Overeem et al., 2004), provide cardio-protective properties which improves vascular health (Miller &

Fry, 2009), and can exercise the muscles in the face, lungs, and chest cavity (Berk, 2001). On the other hand, some of the major psychological aspects that are potentially affected by humor and laughter include: improvement of depression (Falkenberg et al., 2010; Ko & Youn, 2001; Konradt et al., 2012; Shahidi et al., 2010), increases hippocampus activity leading to an increase in short-term memory (Bains et al., 2014), increase an individual's mood (Konradt et al., 2012), influences empathic concern towards others (Hampes, 2001; Hampes, 2010), and decrease anxiety (Finlay et al., 2014). If humor and laughter can provide these therapeutic effects to patients, then a viable delivery system must be created to ensure patients, or people in general, have the ability to receive the potential benefits that are associated with laughing and developing a strong sense of humor.

How could 21st-century technology be used as a viable health care delivery option that could deliver humor and laughter to patients and to the general public? Technology plays a major role in the day-to-day lives of the average American's life. According to the Pew Research Center (Smith, 2017), as of 2016, 77% of Americans own a smartphone and 88% of Americans use the internet. Given that the majority of Americans have access to a smartphone and use access to the internet there should be some way to use technology to promote humor and laughter relative to its therapeutic value to patients, regardless of where they are.

Thus, I propose the idea of developing a smartphone application (app) (and email system to encompass the greatest majority of technology users) that would be used to promote humor and laughter's psychophysiological therapeutic value. After downloading the app to a smartphone, the individual would have to take a humor survey that would test for his or her specific sense of humor type. This survey would ask the respondents

questions pertaining to what they find to be funny (e.g., pranks, dirty humor, clean humor, puns, slap-stick comedy, stand-up comedy, animals, etc.), based on the idea that every individual's sense of humor is unique. After completing the initial survey, among other basic demographic questions, the app would provide the individual with access to humorous content that is specific to each person. This step will be very important because each person has unique preferences as to what makes him or her laugh, thus allowing the app to have the ability to provide content that is "tailor-made" for each individual which could enhance the effect of a single smartphone application.

After the app is manipulated to best fit the owner, a humorous stimulus can be sent to the smartphone in a form of a short video, joke, cartoon, meme, gif, etc. as many times a day as the individual desires or on an as needed basis (e.g., once a day, twice a day, every 4 hours, after a stressful event, etc.). For those who do not own a smartphone but who use the internet, there would be the option to set up an email service that would provide the same intervention as the smartphone application. Through the use of this type of technology, there is a potential to effectively deliver humor and laughter to a large majority of Americans. Health care practitioners could use this application as an alternative intervention concurrently with normal pharmaceutical or other medical interventions. For instance, imagine that patient X has been recently diagnosed with depression and suffers from chronic pain. Patient X then expresses his or her concern about using opioid-medication for pain because of family history of drug addiction. The patient's doctor, who was trained in the value of humor and laughter, "prescribes" patient X to use laughter by instructing him or her to download the smartphone application, while also prescribing non-addicting pain medication. The patient does as instructed and

“fills” both prescriptions. Assuming the patient follows the treatment regimen, the patient should have a greater potential to experience an improvement in his or her depressive symptoms and an increase in pain tolerance due to the improvement in overall chronic pain. While this is a fictional case study, it illustrates how a smartphone application could be used by medical professionals as a tool to provide patients with the potential therapeutic values of humor and laughter.

The smartphone application (or email service) would be free for individuals to download which would allow patients and practitioners to have an inexpensive treatment option. Individuals could use this humor (e.g., a good joke that produces a hardy laugh once in the morning and another at night), just like taking their daily medication. Or if individuals are having a very stressful and difficult day, they could pull up the application and see some of their favorite humorous stimuli that would help them cope with the stress that accumulated throughout the day.

Brushing one’s teeth, scrolling through social media, and showering have all become a part of the daily routine of many individuals; thus, exposure to optimal humorous stimuli through the use of a smartphone application could become a part of the daily routine of many individuals, as well. Thus, we can potentially use technology, humor, and laughter to contribute to the individual’s overall well-being. Although this idea is certainly in the germinal stages of thought, research should be conducted to investigate the viability of such an application. This unique use of technology has the potential to help provide many individuals with an inexpensive, non-pharmaceutical intervention that could potentially improve joy, happiness, and overall wellness. Humor may not be the best medicine, but it may make medicine better.

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