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Sense of Humor as a Mediator of the Effects of Stress on Physical Health and Psychological Well-Being

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SENSE OF HUMOR AS A MEDIATOR OF THE EFFECTS OF STRESS ON PHYSICAL HEALTH AND PSYCHOLOGICAL WELL-BEING

by

Timothy Eugene Spruill

A Dissertation
Submitted to the
Faculty of The Graduate College
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This paper explores the role of sense of humor as a mediator of the effects of stress on physical health and psychological well-being. One hundred subjects, selected from a population of hospital employees, were administered two measures of sense of humor. In addition, they completed a personal data form, and instruments assessing stressors, perceived stress, physical health and psychological well-being.

Results were evaluated using simple correlations and multiple regression analysis in order to determine whether or not knowledge of a subject's sense of humor enables prediction of their levels of physical health, psychological well-being and perceived stress. Analysis of the data revealed a modest relationship between sense of humor, as measured by the Coping Humor Scale (Lefcourt & Martin, 1986), and psychological well-being. No evidence was found to support a relationship between sense of humor and either perceived stress or health.
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Sense of humor as a mediator of the effects of stress on physical health and psychological well-being

Spruill, Timothy Eugene, Ed.D.

Western Michigan University, 1992
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Timothy Eugene Spruill
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CHAPTER I

THE PROBLEM AND ITS BACKGROUND

Introduction

Why is it that a sense of humor has been seen as such a valuable attribute? Aside from its social desirability, an ever increasing number of individuals have suggested that having a good sense of humor is advantageous to one’s overall health and psychological well-being (Cousins, 1979; Long, 1987; Moody, 1978; Walsh, 1928). Countless testimonials have been published concerning non-traditional treatments including those popularized by Cousins and Siegel promoting humor as a curative factor. Physicians and non-physicians alike have offered testimonials about isolated cases where terminally ill patients, overcame the odds by refusing to become disheartened and discouraged. Critics have accurately pointed out that these claims have been based on anecdotal evidence (Lefcourt & Martin, 1986). After reviewing the existing literature, including both anecdotal findings and those few experimental studies that exist, this research focuses on the validity of these claims from an empirical base.

It is interesting to note that one of the earliest
meanings attached to the word "humor" relates to semi-fluid substances or body fluids (Goldenson, 1984). Over 2,000 years ago, Hippocrates' personality typology was based on the idea that imbalances among four such body humors determined our health and disposition. It is ironic that it took so long for interest to be renewed in the role that "good humor" plays in our physical health, and psychological well-being.

Today, humor remains a key element in the social fabric of most, if not all, societies (Martineau, 1972). Goldstein (1976), in reviewing the literature on cross-cultural humor, noted that while there are differences in the content of jokes, there were no differences in the manner in which humor was utilized. In spite of this, within any given society there has been evidence put forth of a wide range of individual response to humor. What one has found hilarious, another often has found to be appalling (Levine & Redlich, 1955).

Although little, if any, research has attempted to explain these inter-individual differences, they may well be a function of basic personality differences between individuals. Personality is defined as "The configuration of characteristics and behavior that comprises an individual's unique adjustment to life, including major traits, interests, drives, values, self-concept, abilities, and emotional patterns" (Goldenson, 1984, p. 547).
Just as personality factors color other aspects of a person's overt behaviors, so they must influence the manner in which individuals express their sense of humor.

Although humor might be assumed to be normally distributed, Alport (1961) found that fewer than 6% of a sample of college students were willing to admit to a less than average sense of humor. This attests to the desirability of humor as a personal trait.

Nature and Importance of the Study

In recent years, the emphasis within psychology has shifted away from the observation of behaviors alone, to the important role played by cognitions. This has been paralleled by renewed interest in the relationship between mind and body. Although the dualistic view of Descartes still permeates contemporary medical thought, increasing numbers of psychologists and others involved in health care are advocating a holistic paradigm that views psycho-social factors as playing a role in all illness (Jemmott & Locke, 1984; Rabkin & Struening, 1976; Vaillant, 1979). Some physicians (Siegel, 1986) have joined the ranks of those that not only recognize the mind/body relationship but actively promote health and the amelioration of disease by taking full advantage of the powers of the mind to influence the body.

Considerable research has focused on the effects of
stress on physical and emotional health (Selye, 1982). From the early years following Selye's pioneering work in the mid-1930s continuing into the late 1970s, many researchers operated on the assumption that psycho-social stressor events lead directly to physical illness (Antonovsky, 1987; Holmes & Rahe, 1967). As additional studies were conducted it became increasingly clear that identical life events produced a wide range of subjective distress among different individuals (Johnson & Sarason, 1979; Rabkin & Struening, 1976; Vaillant, 1979). How the individual interpreted the potential threat appeared to be crucial (Coyne & Lazarus, 1980). Awareness of the importance of cognitive appraisal has intensified the search for intra-psychic variables that might moderate the effects of stress (Lazarus & Folkman, 1984).

A more recent trend among psychologists involved in theorizing and research alike is the shift away from a pathogenic perspective that focuses on variables predicting increased risk for psychopathology to what Antonovsky (1987) calls the "salutogenic" model. This paradigm attempts to discover those elements that may serve to buffer or prevent the onset of emotional disorders. O'Connell (1981), who examined the role sense of humor played in reducing psychological distress, noted that his research on humor was viewed as an oddity prior to this recent surge of interest in actualizing rather than
pathologizing attitudes.

One of the most famous of the pathogenic variables, commonly known as Type A behavior pattern, linked a number of personal attributes to increased risk of heart disease (Rosenman & Chesney, 1982). These characteristics included: ambitiousness, hostility and aggressiveness, competitiveness, impatience and time consciousness, excessive striving, need for control, hyperalertness, muscle tension, rapid and emphatic speech, irritability and outward expression of anger. More recently, variables initially thought to increase the risk of coronary disease among Type A personalities have been refined to the point where the most predictive attributes such as anger and hostility have been isolated from the other apparently less deleterious Type A characteristics (Wright, 1988).

Voltaire (cited in Shaw, 1966) suggested that laughter has always derived from a jocular orientation that is totally incompatible with contempt and indignation. These views were shared by Robinson (1983) who characterized rage as the opposite of laughter. Since it is impossible to be angry and amused at the same time, sense of humor appears to be a salutogenic antidote to anger and hostility. Those having frequent contact with persons manifesting Type A characteristics have attested to their seeming inability to laugh at themselves when faced
with an absurd task (Olson & Roberts, 1981). Some individuals who have been shaken by major heart attacks indicate that they have since modified their hostile, impatient approach to life by taking things less seriously. This seems but another way of saying that they have utilized their sense of humor as a means of coping.

One need not look far to find other examples of the high level of current interest in the relationship between intrapsychic variables and health. In the pathogenic vein, Hans Eysenck (1988), reviewed a landmark prospective study by Grossarth-Maticek for Psychology Today. In his review he argued for a very strong connection between certain personalities and specific illnesses. The December, 1988 issue of the American Psychological Association Monitor reported on several research studies focused on salutogenic variables thought to be related to health. Recent studies spotlighting hardiness (Kobasa, Maddi, & Kahn, 1982) and optimism (Scheir & Carver, 1987), have joined the growing ranks of research exploring Type-A behavior pattern, locus of control and numerous other variables thought to moderate the adverse effects of stress on overall health. In spite of this salutogenic thrust, one need only briefly survey the current literature to determine the continued dominance of the pathogenic orientation (Antonovsky, 1987).
Statement of the Purpose of the Study

The purpose of this study is to examine the role sense of humor plays as a potential prophylactic or mediator of the effects of stressful events on physical and emotional health. The research was approached in several stages. First, four bodies of literature were reviewed: (1) theories concerning the nature of humor, (2) research dealing with the link between stressful events and felt stress, (3) the relationship between sense of humor and psychological well-being, (4) the relationship between sense of humor and physical illness.

Second, questionnaires were administered to a sample of graduate students. In this pre-test, the subject's sense of humor was assessed along with the frequency of stressor events and the level of subjective distress experienced relative to these events. Additionally, the subject's physical health status and psychological well-being were assessed. This allowed for the refinement of methodology and identification of problems in the approach to gathering and analysis of data. Third, after making any necessary changes in methodology, the full scale investigation was conducted.

The hypotheses tested grew out of the current "common sense" views as reflected in the popular press, that sense of humor promotes health. Specifically, they
suggested that use of sense of humor distances the individual from potentially stressful events, reducing emotional distress and its corresponding physiological correlates, while at the same time providing pleasure. As a result, those persons who make frequent use of their sense of humor will report less distress related to potentially stressful events, experience a higher level of psychological well-being and superior physical health.

In an attempt to test the above model, the following four hypotheses were offered: (1) the extent to which individuals cope by using their sense of humor is unrelated to the number of potentially stressful events reported, (2) the extent to which individuals cope by using their sense of humor is inversely related to levels of felt stress reported, (3) the extent to which individuals cope by using their sense of humor is positively related to self-reported levels of psychological well-being, (4) the extent to which individuals cope by using their sense of humor is positively related to levels of physical health. The relationships identified between sense of humor and physical and psychological health were also evaluated relative to such demographic factors as age, gender, and education.

This study represents an endeavor to refine our understanding of the complex relationships between stressors, physical health, and psychological well-being. In
summary, it attempted to identify sense of humor as a factor which may serve as a prophylactic against the negative effects of stress.

Significance of the Study

In this era of high interest regarding the ways in which mind and body interact, many have come to accept the validity of the premises involved without the scientific data to substantiate it. This study should stimulate further discussion and research among psychologists in the scientific and practitioner communities. Researchers must move beyond the sizable body of anecdotal evidence if their arguments are to sway those who still hold to the dualistic approach which minimizes the interaction between physical and psychological factors.

If the relationship between sense of humor and physical and psychological well-being can be empirically established and its nature clarified, the potential impact on health care could be significant. For example, traditional medical and psychological treatments would be routinely augmented by such interventions as humor groups. Also, if it can be demonstrated that sense of humor has a prophylactic effect on the aftermath of stressors, more energy and resources will be devoted to understanding the individual psychodynamics of humor as reflected in the observation that some personality types seem incapable of
successfully utilizing humor to moderate stress. In addition, efforts could turn to the study of the wide variation in the way humor is expressed as a function of personality, an area that has yet to be explored at even an elementary level by researchers. If this puzzle can be solved, energy can shift to directly fostering the development of this means of coping among persons of all types, so as to reduce the need for reparative measures.

Operational Definitions of Terms

Sense of humor, stress, emotional health, and physical health are all commonly used terms. Yet, when an effort is made to determine exactly what is meant by these everyday terms it rapidly becomes apparent that there is very little agreement concerning their definitions. Until the time comes when a consensus is established, researchers must select the definitions that most closely fit their personal conceptions.

Sense of Humor

This study chooses to define sense of humor in the tradition of Freud; Mindess; Levine; Moody; O'Connell; Fry and Allen; and McGhee, as explained in the following paragraphs. Sense of humor is defined as a functional disposition, or an attitudinal stance, from which potentially distressing events are viewed from a macro per-
spective that refuses to see them as more than an opportunity to find some personal pleasure. As the definitions which follow illustrate, this is but one of many ways that humor has been defined. There would have been value in investigating humor from any of these perspectives. What makes the chosen definition preferable to the others, for the purposes of this study, is its functional nature.

There is value in an attempt to understand and differentiate the various definitions of humor. According to Lefcourt and Martin (1976), few words in the English language are so universally understood while remaining so ill-defined. The range of definitions is at least equal to the number of theories attempting to explain humor. Keith-Spiegel (1972) listed no fewer than 25 synonyms related to humor, each with its own flavor or slant. Consequently she described the terminology situation in the area of humor as perplexing.

Various theorists have taken different vantage points from which to study humor. Lefcourt and Martin (1986) have approached it from a perceptual, cognitive, or emotional angle. It has also been understood from the perspective of stimulus, or more specifically that which triggers or produces amusement; response, otherwise known as the behavioral manifestations (laughter or smiles); or disposition, an attitudinal stance to view things from a
humorous perspective (Chapman & Foot, 1976). Sometimes even this distinction has become blurred as the laughter response of one person served as a stimulus for the laughter of others (Cupchik & Leventhal, 1974), a phenomenon producers of television situational comedies utilize when they dub in pre-recorded laughter.

There are those who have suggested that a good sense of humor can be assumed to present in individuals who are readily amused by humorous stimuli (Moody, 1978). This definition is reminiscent of the circular depiction of intelligence as that which is measured by an intelligence test. One is left with the task of defining what "humorous stimuli" means. An egocentric variation of this asserted that a person is thought to have a good sense of humor only to the degree that she finds the same things funny as the person doing the evaluation (Lafave, 1976). Individuals are said to have a good sense of humor if they are able to create humorous stimuli that others appreciate. From this perspective, humorous stimuli are determined by consensus. A good sense of humor has also been equated to the size of a person's inventory of jokes and funny stories.

People are said to have a good sense of humor if they are amused at their own expense and can laugh at themselves (Lefcourt & Martin, 1986; Levine, 1977). Mindess (1971) sees this liberation from extreme alle-
giance to our own egos as the ultimate benefit of humor. He is referring to the freedom to detach from the need to always defend one's actions as infallible and champion one's egocentric perspective. In the absence of such a liberating viewpoint, the alternative is a sense that one must never be caught looking foolish, or be shown to have made wrong choices. One must never exhibit human weakness or frailties, or even do something with less than pure motives. It is not difficult to see the irrationality of such beliefs. Lefcourt and Martin (1986) addressed this issue by stating:

The sense of ourselves as heroic, and beyond the burdens of life's demands is an illusion with fallacies that become overly evident as we realize that there is no fountain of youth or immortality to be attained no matter what we construct or accomplish. (p. 126)

According to Mindess (1971), the meaning of a fully developed sense of humor goes beyond the ability to enjoy or even create spontaneous jests and beyond laughter itself. It represents a frame of mind, outlook or way in which personal meanings are derived from internal and external events. Moody (1978) describes this as humor in the cosmic perspective sense. Rather than becoming so entangled in life's contradictions that depression results, one chooses to maintain some emotional distance and to take a comic view of life's ups and downs.

In similar fashion, others have described this ulti-
mature form of sense of humor using phrases such as state of mind (Levine, 1977), perspective (O'Connell, 1976) or an attitude from which the shortcomings of humanity are understood as a comedy being played out on a stage. O'Connell further described this perspective as a non-blaming creative orientation to life.

As the chief coping capacity, humor has been viewed as giving a distancing perspective, a view from God's perspective, that nips constrictions in the bud (O'Connell, 1981). This outlook, essential to the appreciation of humor, has also been referred to as the context of play (Fry & Allen, 1976; McGhee, 1977).

Mindess (1971) broke down the humorous state of mind into the following characteristics: flexibility, spontaneity, unconventionality combined with shrewdness, playfulness, humility, and most important, the enjoyment of the ironies that permeate all human affairs. In order to appreciate these ironies, we must be able to demonstrate the ability so well articulated by Lefcourt and Martin, (1986) "To see disorder in order is to perceive the nonsense in what we take most seriously" (p. 126).

To be in a humorous state of mind involves assuming an orientation of invulnerability and mastery over whatever fate has in store, and refusing to be distressed by the provocations of reality (Levine, 1977). Freud (1928) referred to this as:
The triumph of narcissism, the ego’s victorious assertion of its own invulnerability. It refuses to be hurt by the arrows of reality or to be compelled to suffer. It insists that it is impervious to wounds dealt by the outside world, in fact, that these are merely occasions for affording it pleasure. (p. 2)

It is essential to make a clear distinction between wit and humor. In Longman’s Dictionary of Psychology and Psychiatry, wit was defined as "a verbal retort, jibe, or pun that suddenly and strikingly releases a repressed or hidden feeling or attitude" (Goldenson, 1984, p. 798). Freud (1928) saw wit as springing from the momentary abandoning of a conscious thought to unconscious elaboration, while in the process providing an outlet for aggressive tendencies and supplying some measure of pleasure.

Whereas wit springs from the unconscious, Freud (1928) characterized humor as a function of the super-ego. He believed that the humorous attitude occurred when the subject transfers large quantities of psychic energy from his own ego on to his super-ego. This inflation of the super-ego, relative to the ego, allowed it to look upon the ego as diminutive and all of its concerns as unimportant.

According to O’Donovan (1985), humor involved opposites, bringing together contradictions arising out of the absurdity of irreconcilable wishes. This involved original thinking that might have even been synonymous
with creativity, which was described as the bringing together of matrices of thought previously believed to be incompatible (Lefcourt & Martin, 1986). This relationship was experimentally verified by Hauck and Thomas (1972) when they discovered a strong correlation \( r = .89 \) between sense of humor and creativity among 80 fourth, fifth, and sixth graders.

Babad (1974) suggested that certain cognitive processes such as flexibility of thought and the production of novel solutions may underlie both creativity and humor, and that a producer of humor must, by definition, also be creative. He stopped short of describing the two processes as identical.

In selecting from among the above definitions it is tempting to maintain the more behavioral definitions since they lend themselves to objective measurement. However, in restricting the definition to observable behaviors such as laughter and smiles, the researcher loses the richness of inner experience that is not manifested in readily observable behaviors.

While humor and laughter are obviously related terms, there are significant differences between the two that would argue for their separate treatment (Keith-Spiegel, 1972; La Fave, Haddad, & Maesen, 1976). Potter (1954) aptly points out that each can be manifested independent of the other. Further complicating things is the

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fact that laughter doesn’t always indicate appreciation of humor any more than tears always designate sadness. Neither does the absence of observable laughter preclude the appreciation or production of humor. Jack Benny, Bob Newhart, and Pat Paulson represent a small sample of highly successful past and present comedians who rarely smile, let alone laugh in the delivery of their comedic material.

**Stress**

For the purposes of this study, a clear distinction will be drawn between objective events judged to be potentially stressful and the level of subjective distress the individual associates with any particular event. Felt stress will be defined as the emotional distress triggered by the intervening variable of the individual’s appraisal of any potentially adverse event as upsetting in some way. As with the definition of sense of humor, personal meanings are at the basis of the definition of stress. It is at this subjective point of interaction where sense of humor is hypothesized to play a mediating effect.

Few terms have been as diversely defined as stress (Jemmott III & Locke, 1984). Depending on which study is reviewed, the term stress has been used to denote a stimulus, a response, or an interaction of the two. In spite
of this confusion among researchers, lay persons have demonstrated an ability to adequately understand the meaning of stress in their everyday lives. Holmes and Rahe (1967) verified this when they found general agreement among individuals who were asked to make impersonal social judgments as to the stressfulness of specific events.

Hans Selye (1982), the pioneer of stress researchers, believed stress to be the common consequence of any demand upon the body, whether mental or physical. His definition emphasized the universal consequences of varied stressors on the organism.

Physical Health

For the purposes of this study, physical health will be defined in a global integrative fashion identical to that used in the Rand Corporation research described below. Hence, general health perceptions will be operationally defined by subjects' ratings of their general health. These overall ratings will consist of prior, current and future health as well as three constructs indicative of general health perceptions; resistance or susceptibility to illness, health worry and concern, and sickness orientation (the extent to which people perceive illness to be a part of their lives).

For this research, two additional measures of health
will be derived from the number of days reported as missed due to illness and the number of physician visits in the past year. Though still self-report data, this will attempt to identify a behavioral correlate of overall health that can supplement the more subjective general health perceptions.

While at first glance a definition for overall health might seem obvious and easy to come by, it quickly becomes apparent that the concept is not so easily operationalized. Utilization of services (sum of clinic visits, days of hospitalization and laboratory tests in the last year) have been identified as useful indicators of overall health (Read, Quinn, & Hoefer, 1987). Others have devised self-report assessment tools in an effort to measure this construct. This difficulty in operationalizing health partially accounts for the fact that most of the evidence concerning the effects of humor on physical health has come from case histories and anecdotal accounts rather than empirical studies.

Health has been highly valued in our society as evidenced by the tremendous amount of resources devoted to preserving it. When it comes to defining health, we are once again dealing with a complex phenomenon. In 1948, the World Health Organization (WHO) defined health as, a condition of complete physical, mental, and social well-being. By their definition, the mere absence of disease
or sickness was not sufficient to qualify as the cardinal characteristic of health.

In our current-day, health-conscious, western society, it has not been enough to feel good and be free of disease. One is lead to believe that in order to be considered healthy, cholesterol and blood pressure measurements must fall beneath somewhat arbitrarily set levels. Being overweight has been viewed as incompatible with health. One must also engage in regular aerobic exercise program and eat sensibly, avoiding sugar, and saturated fats and consuming ample quantities of fiber.

Many of the more objective measures of health such as physician ratings, fall short of their goal of adequately representing actual physical health (Zautra & Hempel, 1985). Mossey and Shapiro (1982) tracked mortality rates of the elderly for eight years after obtaining subjective self-ratings of health and physician ratings of health. The subjective ratings correlated higher with mortality than the physician ratings.

Belloc et al. (1971) measured physical health in a general adult population. They conceptualized physical health as ranging from invalidism at one extreme through various levels of health, to physical vigor at the other pole. Optimum health was characterized as an absence of complaints and a high level of energy.

Due to the health insurance industry’s interest in
the differential effects of certain approaches to delivery of medical care on health, they commissioned the Rand Corporation to undertake an extensive study (Brook et al., 1979) in an effort to define health and develop an instrument for assessing it. Starting with the three WHO dimensions of physical, mental, and social health, they added physiologic health (the status and functioning of specific organ systems), and an integrative definition termed general health perceptions which has been adopted for use by this study.

**Psychological Well-Being**

Although they vary greatly in meaning, life satisfaction, morale, and happiness have often been used interchangeably with well-being in the research literature (Zautra & Hempel, 1984). For the purposes of this study, psychological well-being is defined as an intrapsychic and hence subjective phenomenon (Dupuy, 1984). It consists of affective and cognitive states ranging along a continuum from the sense of well-being at one extreme to distress at the other.

**Relationships Between the Variables**

Psychological well-being is not unrelated to health (Ware, Johnston, Davies-Avery, & Brook, 1979). However, the relationship has not been found to be as simple and
direct as one might expect. Psychological well-being has been viewed as even more global than that of health since it is ultimately based on peoples' perceptions of the reality of their life situations rather than verifiable physical conditions. Hence, persons with marked physical handicaps are not precluded from having a strong sense of psychological well-being, in spite of their functional impairment.

In an extensive review of the literature, Zautra and Hempel (1984) found correlations between self-reported health and a multiple item measure of subjective well-being ranging from $r = .32$ to $r = .45$. They attributed the differences to the variation in methods for measuring health. Less convincing relationships appeared when well-being was correlated with more objective indices of health and life satisfaction. Studies showing well-being to be quite stable over time seemed to suggest that it may be based on dispositional factors more than the health status of the subject.

While the negative effect of stress on physical health has been demonstrated by a myriad of studies, most have proposed a linear cause and effect relationship that fails to take into account the complex interactions of the variables involved. This may account for the occurrence of studies presenting confusing and occasionally contradictory results. Such findings fuel the arguments
of dualistic thinkers who continue to adhere to a strict medical model for understanding health.

An alternative to the linear approach suggests that these variables constantly interact with one another. While distress levels are related to physical and psychological health, ill health can play the role of a stressor. Psychological well-being may also affect physical health. Certain intervening variables may play a vital role in moderating these interactions in such a way that psychological well-being and physical health are simultaneously enhanced or reduced. Zautra and Hempel (1984) pointed out that while some studies controlled for age, income, and education, none of the 118 empirical studies reviewed by them adequately controlled for such third variables as personality attributes. As is the case with previous studies examining sense of humor, personality variables have, once again, been neglected. The present study will focus attention on the role of sense of humor, one of many possible third variables, as a mediator of the effects of stress on both physical health and psychological well-being.

Limitations of the Study

Limitations include a lack of universal agreement in the field on definitions of the variables being examined. In the case of sense of humor, more than one measure will
be taken to attempt to increase the chances of identifying a relationship between sense of humor, physical health, and psychological well-being. Another reason for using the multiple measures is to assess their relatedness to each other and establish their differential predictive power when considered alone or in combination with each other. The abstractness of the concepts being studied will complicate the measurement process.

In addition, the study will be looking for the existence of relationships between variables without untangling the causal relationships that may exist. To attempt to do so would be beyond the scope of this preliminary look at the subject. Accordingly, this will be left to subsequent studies using prospective designs.

The results will also depend on the validity of the self-report data provided by the subjects. Since sense of humor is highly valued as a personality characteristic, careful attention will be required in order to minimize the natural tendency of subjects to portray themselves as spuriously high in this attribute.
CHAPTER II

REVIEW OF THE LITERATURE

Theories of Humor

Attempts to understand and explain humor are almost as numerous as theories of personality. While there are many useful ways to categorize these theories, each seems to operate from the perspective of either a biological, psychological, or social paradigm.

Biological Theories

Biological or instinct theories have pointed to the universal early developmental appearance of laughter as evidence that the humor response is built into the organism from the start. They have emphasized the functional physiological benefits of laughter such as restoration of homeostasis, stabilization of blood pressure, massage of the vital organs, and the subjective sense of well-being to name a few (Keith-Spiegel, 1972).

Psychological Theories

Psychological explanations of humor have been the most abundant and therefore lend themselves to further sub-categorization. Though there is definitely overlap
between many of these approaches to understanding humor, they will be discussed under the headings of incongruity or surprise theories, superiority theories, arousal or release theories, and developmental theories.

**Incongruity or Surprise Theories**

Although the terms incongruity and surprise are not interchangeable, there are similarities that allow for considering them together. It might be said that the incongruity theories emphasize the cognitive recognition that the expected pattern has changed, while the surprise theories focus more on the affective response to such novelty.

Incongruity theories have characterized humor as a function of incongruous, yet resolvable, relationships between stimulus events that violate expectancies (Shaw, 1966). The incongruity may involve incompatible events, thoughts or feelings. From this perspective, a well-established set of expectancies must be present in order for humor appreciation to occur (McGhee, 1977).

The element of surprise at the moment that the observer is confronted by the incongruity has been thought to be a key factor. Is surprise an essential ingredient in humor appreciation? Certainly the foreknowledge of a punch-line can diminish the pleasure derived from a joke. Yet, we seem to have the capacity to laugh at our
favorite comedic play or movie, time and time again, even though the element of surprise has long since died out. This suggests that while surprise is often involved in the appreciation of humor, it is not always essential.

Mindess (1971) characterized this element of surprise as being jolted or jerked out of a rut. He explained the infant's laughter response to his mother's face-making or his father's tossing him in the air as the normal reaction to the disruption of routine. Whether listening or observing, one is led along a certain path of understanding and then is abruptly switched to another path by the punch-line or scene.

Superiority Theories

These were also referred to by Suls (1977) as disparagement theories since the basic assumption is that humor comes at the expense of other people's supposed inferiorities. When we observe or hear of the feeble actions of others, we then compare ourselves favorably to them as being less stupid, less ugly, less unfortunate or less weak. As a result, we feel ourselves to be better adapted to deal with life's circumstances than others (Keith-Spiegel, 1972).

Arousal or Release Theories

Arousal or release theories have emphasized the role
that humor plays in releasing nervous energy or excess tension. The laughter is triggered when the subject evaluates the stimulus as safe or inconsequential. In the course of this process, built-up tension or energy is discharged (Lefcourt & Martin, 1986).

After comparing psychiatric and non-psychiatric groups of subjects with respect to their responses to a series of cartoons, Levine and Abelson (1959) found that normals, presumably beset by a minimum amount of anxiety, preferred cartoons judged as more anxiety producing. Psychiatric patients, apparently plagued with anxiety, appreciated tamer cartoons. They concluded that one must be capable of mastering or coping with aroused anxiety if one is to enjoy more disturbing cartoons.

One possible explanation for the higher baseline anxiety level some people seem to maintain, can be derived from Apter and Smith (1977). They have suggested that at any point in time, a person will either be in a telic (serious-minded, goal-oriented) state or a paratelic (playful, process vs. outcome oriented) state. In the telic state, arousal is experienced as unpleasant in that it is interfering with the attainment of the goal. Such persons, presumably anxious about the completion of the task, are ill equipped to handle an additional boost in anxiety. In the paratelic state, where baseline anxiety levels are lower to begin with, arousal is experi-
enced as pleasurable since it is enhanced without boosting the anxiety levels into the uncomfortable range.

Developmental Theories

Freud's (1928) explanations of the mechanics of humor span both the categories of arousal/release theories and developmental approaches. Unconscious psychic energy, tied to infantile aggressive or sexual urges, was described as immobilized when the superego, by means of censorship, would block direct expression. Humor and the resulting laughter were seen as allowing the pleasurable release of this tension or energy in a way that was disguised so as to be acceptable to the superego.

Other psychoanalytic theorists have described the developmental course of humor in a manner reflected in the following statement by Martin Grotjahn (1957):

The sense of humor develops in stages and gradually during a lifetime. Every step is connected with mastery of a new anxiety, and each conflict mastered at the different developmental stages is marked by a growth of the sense of humor. (p. 258)

At younger ages, humor is very perceptually oriented. Haig (1986) noted the example of a mother hiding her face momentarily and then suddenly reappearing or somehow changing her expression to evoke her infant's laughter. Such hide-and-seek games represent a precursor of adult humor. The child experiences some anxiety when mother disappears due to inadequate object constancy.
When mother reappears the tension is released in laughter and delight.

When children achieve mastery of their body movements they begin to show a sense of enjoyment of comic situations that involve a lack of such mastery such as the uncoordinated, spastic antics of a clown (Grotjahn, 1957). When they have achieved a degree of mastery over their bowels, they begin to feel superior and are ready to appreciate the numerous comic situations related to this particular bodily function.

Those who have supported the incongruity theories have also addressed developmental issues. Cognitively speaking, an incongruous idea could be appreciated as funny only if the child already had an adequate understanding of the congruous relationship. In order to do this, the child must have acquired at least two stable categories or classes, or some kind of stable order. Jokes or cartoons involving animals talking, dancing or engaging in other human activities become funny only when the child has come to realize that animals and humans behave in distinctly different ways.

The appreciation of verbally communicated humor or wit follows on the heels of perceptually-based humor. According to Grotjahn (1957), "The enjoyment of wit is a sign of beginning intellectual growth and mastery of language. Laughter occurs where mastery marks the grave of
former anxieties" (p. 77). Experimenting with words the child is thought to develop an ability to enjoy the fun in verbal play and double meanings.

Sheppard (1976) conducted research comparing the humor of children and adolescents. She found that the humor of adolescence differed from that of childhood in its capacity to include self-reference, to ascribe a metaphorical assessment to events, and to locate social truths in humor or satire. Given these conclusions, the type of humor that involves amusement at one's own expense would not be anticipated prior to adolescence. A fully developed, mature sense of humor comes only after social relationships have been mastered and people have at least come close to accepting themselves (Grotjahn, 1957).

Despite the broad range of developmental theories pertaining to humor, none have directly addressed the relationship between the emergence of specific personality styles and the form of humor expression that ultimately emerges from those various personality types. Judging from the fact that people use humor so differently it seems apparent that sense of humor is embedded in the type of person that one is. Yet the lack of even theoretically based attempts at linking humor and personality poses a strong argument for further research on the relationship between personality type and sense of humor.
Social Theories

It is obvious that many humorous situations are socially defined. The contagiousness of laughter, the fact that individuals rarely laugh when alone, and the audible, attention-attracting qualities of laughter, clearly underline its social function (Keith-Spiegel, 1972). When someone begins a communication with, "Have you heard the joke about . . .?" we are signaled that it is time to change our perceptual set and be prepared to show signs of amusement (Langevin, 1972).

Greig (1923) recognized the relevance of ethnic factors to humor when he stated, "It is only people with the same social heritage who laugh easily at the same kind of jokes" (p. 71). Within this context, humor can function as either a social lubricant or a social abrasive (Martineau, 1972).

Humor has sometimes been used as a self-disclosure and probing tool where the humorist wanted to communicate a value, intention or motive to someone else in such a way as to be able to withdraw or invalidate it by qualifying it as only a joke (Kane, Suls & Tedeschi, 1977). This is but one example of the use of humor as a means of getting others to like the humorist.
Humor as an Adaptive Response to Psychological Illness

Psychological Correlates of Humor

While it seems reasonable to conclude that moderating variables impact on the relationship between stress and its emotional consequences (Nezu, Nezu & Blissett, 1988), there has not been universal agreement that a sense of humor is a psychologically healthy attribute (Lefcourt & Martin, 1986). Over the course of his lifetime, even King Solomon seems to have contradicted himself by first stating, "A merry heart doeth good like a medicine: but a broken spirit drieth the bones." (Proverbs 17:22, KJV), and later proclaiming, "Sorrow is better than laughter: for by the sadness of the countenance the heart is made better." (Ecclesiastes 7:3, KJV). Perhaps, both of these pronouncements can be understood as true in terms of his statement that there is, "A time to weep, and a time to laugh; a time to mourn, and a time to dance" (Ecclesiastes 3:4, KJV).

Because some have confused his use of the terms wit and humor, Freud has been mistakenly thought to have changed his views on the desirability of humor. In differentiating wit from humor, Freud (1928) described the appreciation of hostile wit as psycho-neurotic, whereas he argued that humor should be included among the highest of normal adaptive mechanisms.
Keith-Spiegel (1972) discussed four contemporary stances concerning this question. First are those who simply assume that a sense of humor is the hallmark of a physically and emotionally well-balanced person. This view has been common given the high value that has been placed on having a good sense of humor.

The second group has seen a preoccupation with the humorous as a sign of emotional imbalance. Such individuals are assumed to have twisted backgrounds characterized by tumultuous family circumstances and unmet emotional needs.

The third group has represented a compromise position in that they have agreed that emotional conflicts are the engine that drives humor. They have taken issue with the second group's conclusions by pointing out that the sublimation of aggression, sexuality, emotional conflict, and pain into pleasure is a sign of good coping and hence emotional health as stated by the first group. Mindess (1971), who agreed with this perspective, noted that in line with most other forms of art, humorous creativity provides its author a means of coping with, and possibly resolving, conflicts and anxieties arising from his personal life circumstances.

A fourth stance has refused to separate sense of humor from an individual's total personality. This approach allows for both healthy and unhealthy senses of
humor depending on the individual's personality structure. Lefcourt and Martin (1986) point out that humor may be used to belittle, mock or intimidate others or as a social lubricant to foster openness and unity with one another.

Some have theorized that humor serves a useful purpose by helping individuals deal more effectively with anger, aggression, and sexually unacceptable impulses through the use of catharsis. Grotjahn (1957) explained this position when he stated:

Increasing demands for repression through the ages have changed aggression from assault into wit. Where we would have struck a person in earlier times, we restrict our hostility now and often repress it entirely. Aggressive wit gives us a new way of admitting dangerous aggression to our consciousness—but it has to be done in cleverly disguised form... Hostile jokes lift repressions and open up otherwise inaccessible sources of pleasure. (pp. 10, 11)

Often, the theme of a cartoon or joke deals with some familiar inhibited wish, conflict, or fear which is socially disapproved. Humor permits individuals to say things they otherwise would not say, or to take things they otherwise would not take (Levine, 1977). Murray (1934) found supporting evidence for these views when he demonstrated that subjects higher in hostility-derision get greater enjoyment from derisive humor than subjects low in these characteristics. Mindess (1971) summed it up by pointing out that humor's most important function
is to liberate us from the many inhibitions and prohibitions under which we live our daily lives. Such freedom is bound to be pleasurable (p. 237).

Humor serves to reduce feelings of inferiority in two ways (Mindess, 1971). First it does so by degrading those who enhance our sense of inferiority. Grotjahn (1957) explained, "In the comic situation the victim is usually deprived of authority and dignity. This gives the onlooker a feeling of superiority" (p. 17). Second, humor often seeks to deride the entire enterprise of getting ahead.

Rigidity could rightfully be described as the antithesis of humor. Humor can be a highly effective reframing tool that enables a person to substitute less painful meanings for more typical, and often more upsetting, interpretations of life's frustrations and disappointments. In this manner, it can appropriately be considered an antidote to rigidity. Since rigid behaviors that have outlived their usefulness often provide the raw material for humorists, such behaviors are sometimes modified in the direction of increased adaptiveness.

Our sense of humor serves the purpose of releasing us from our naive belief that we are reasonable, fair, and trustworthy creatures (Mindess, 1971). In this same vein, Tavris (1982) saw humor as a form of reappraisal whereby injustice is transformed into absurdity. Exer-
cising humor in its ultimate form involves taking a more objective and indifferent perspective on one's personal suffering.

O'Connell (1976) suggested that a good sense of humor fosters adeptness at rapidly switching perceptual-cognitive perspectives. He argued that by making this rapid shift, the person achieves some distance from the immediate threat of a stressful situation and thereby softens the often intense feelings of anxiety and powerlessness.

Stroebel (1983) addressed the subject of reframing when he stated, "Laughter is often a sudden marvelous way of revising your life history in a useful direction" (p. 62). Commenting further, he stated, "The cognitive change laughter brings is the realization that what felt like a tragedy turns out to be a melodrama which could become a comedy" (p. 65). Such a meta-view, one that transcends our egos, can help a person to endure great difficulties (Mindess, 1971).

Humor serves to attract social reinforcement and support (Nezu & Nezu, 1987; Valliant, 1979). By this means, isolation and its corresponding sense of loneliness and alienation is replaced with affirmation and affiliation with others, factors known to reduce the negative effects of stress.

Comparisons of sense of humor to other defenses have
revealed a number of similarities. Like other defense mechanisms, humor is described as providing some freedom or escape from reality (Levine, 1977). On the other hand, it may at times represent an escape from unreality in the form of rigid beliefs about the way the world is supposed to be. Mindess (1971) likened it to an escape from the ruts of our minds. The organizing systems such as conventions, logic, language, and morals, by which we structure our raw experience, tend to impose structure and restrictions that split us off from our authentic selves. He argued that when our sense of humor is operative, we are liberating ourselves from our own controls.

In his 1928 treatise, Freud described humor as the loftiest of the defensive processes. He believed that, "The essence of humour is that one spares oneself the affects to which the situation would naturally give rise and overrides with a jest the possibility of such an emotional display" (p. 216).

Certain types of humor involve regression to more childish behaviors (Freud, 1928; Mindess, 1971). Mindess explained,

In the enjoyment of humor, the comic, or wit, we enjoy a partial return to an earlier level of development, and we also enjoy the release of energy no longer needed for repression... We need free communication with our unconscious in order to make full use of the creativity which always originates in the unconscious. Such communication between our conscious and unconscious makes us healthy, mature, creative, free, and human. (p. 82)
A humorous orientation was described by Mindess (1976) as the initial step in the relaxation process. It involves adopting a certain amused distance from upsetting situations. This perspective fosters the self-observing capacity by requiring people to adopt an outside perspective or humorous detachment from their subjective experience (Haig, 1986).

Evidence From Research Concerning the Psychological Benefits of Humor

O'Connell (1960) conducted a study to test the possible adaptive values of Freudian mechanisms of humor, hostile wit, and nonsense wit for subjects grouped according to self-ideal discrepancies, gender, and the presence or absence of external stressors.

The following two instruments were administered to 332 undergraduates: (1) the Self Activity Inventory (SAI) renders an absolute discrepancy score between the subjects' self-rating and their ideal ratings that can be used as a measure of adjustment/maladjustment; (2) the Wit and Humor Appreciation Test (WHAT), a new instrument made up of 10 jokes in each of three categories, Hostile Wit, Nonsense Wit, and Humor. Subjects were asked to rate their preference for each joke on a scale from 0 (dislike very much) to 4 (like very much).

The subjects were divided into stress and non-stress
groups. Testing was presented over a period of two days and carried out with identical instructions on day one when the SAI was administered. On the second day, immediately before the stress group was given the WHAT, a confederate posing as a professor of clinical psychology, expressed shock and dismay over the attitude of the class in taking the SAI the day before. He went on to accuse them of lying on the test and suggested they consider leaving college or changing majors. After belaboring the point, he told them they would be given another test, and that they would hopefully take a more mature attitude toward this second task.

He found that: (1) exposure to experimentally induced stress had little effect on subject's appreciation of jokes other than a modest effect that was limited to males; (2) under non-stressful conditions, maladjusted male subjects appreciated hostile wit more than well adjusted male subjects; (3) under stressful conditions, well-adjusted male subjects appreciated hostile wit more than maladjusted male subjects; (4) males tended to appreciate hostile wit more and females preferred nonsense wit more than males; (5) under both non-stressful and stressful conditions, well-adjusted female subjects appreciated hostile wit more than maladjusted females; (6) well adjusted subjects, in general, appreciated humor more than poorly adjusted subjects.
In spite of the interesting finding of this pioneering study, O'Connell was unable to identify significant increases in humor appreciation immediately following stressful circumstances. Accordingly, he failed to empirically establish that humor appreciation has any situation specific adaptive value in coping with stress.

A possible explanation for this failure relates to the method used to induce distress. It may be that the students were not all that stressed after being chided by the unfamiliar professor. In addition, simple appreciation of humor has subsequently been found to be a poor predictor of adaptive coping skills when compared with humor recognition (Lefcourt & Martin, 1986). The fact that subjects show preferences for one joke as opposed to another doesn't necessarily mean that they are capable of perceiving, creating or enjoying humor in the various experiences of daily life.

Safranek and Schill (1982), using self-report measures, were also unsuccessful in their attempt to demonstrate that humor use and appreciation have a moderating effect on life stress. Subjects were 82 male and 79 female Introduction to Psychology undergraduates. Five measures were administered: (1) Sarason's Life Events Survey (LES) which assesses the degree of life stress during the past year; (2) Beck Depression Inventory (BDI); (3) State-Trait Anxiety Inventory (STAI); (4)
Angell's Humor Use Inventory (HUI) which indicates how frequently and how funny a person tries to be in various situations; (5) in order to assess humor appreciation, subjects rated two jokes in each of the categories of nonsense, sick, ridicule, hostile, and sexual on a scale of 1 (not funny) to 4 (very funny).

Stress (LES) correlated significantly with depression (BDI) and both state and trait anxiety (STAI) for all subjects. Separate analyses were performed for humor use and stress and humor appreciation and stress for each of the outcome measures, but none of the regression coefficients associated with the interaction terms were significant.

In summary, adding the humor variables to a regression equation failed to improve on stress alone when predicting depression or anxiety. Critics (Lefcourt & Davies-Avery, in press; Nezu, Nezu & Blisset, 1988) suggest that the failure of this study to demonstrate the expected results relates to the measures of humor utilized by the researchers. Babad (1974) demonstrated that humor scales based on the subject's ratings of jokes bore no relationship with other criteria such as peer ratings and self-report of sense of humor.

Martin and Lefcourt (1986) conducted a series of correlational and laboratory studies suggesting that humor is a mediator of the effects of stress. Three out of
four self report measures and two behavioral measures of humor appeared to possess moderating effects.

In the first study, 56 Introduction to Psychology undergraduates completed the five following self-report measures: (1) the Life Events of College Students checklist (LECS) involved selecting which events they had experienced and weighting the degree of the impact of those events on a 4-point scale from Very Negative to Very Positive; (2) the Profile of Mood States (POMS), was used to derive a total mood disturbance score, an assessment of the predominant current mood levels of the subjects; (3) the Situational Humor Response Questionnaire (SHRQ) measured the frequency with which subjects display mirth across various life situations; (4) the Sense of Humor Questionnaire's (SHQ) three subscales assessed the degree to which subjects report noticing humorous stimuli in their environment, the value they attach to humor, and the extent to which subjects express their emotions (including humor); (5) the Coping Humor Scale (CHS) identified the degree to which subjects admit to using humor to cope with stress.

Regression equations, designed to predict mood levels, were computed for each humor measure by first entering the negative life events score, then the measure of humor, and finally, the product of these two factors. The first study, based on self-report measures, showed a
reduction of the negative effects of stress for those who were more inclined to: (1) laugh and smile across a wide variety of situations; (2) value humor as a personal attribute; (3) make use of humor as a way of coping with stress; (4) the ability to recognize humorous circumstances in the environment, when considered by itself, was not sufficient to soften the effects of stress.

The second study, moving in the direction of an experimental design, made use of 62 undergraduates as subjects. Three measures were administered: (1) the Life Experiences Survey (LES) required subjects to indicate which events they had experienced and to specify whether each event had produced a negative or positive impact; (2) the Profile Of Mood States (POMS) was used to derive a total mood disturbance score, an assessment of the predominant current mood levels of the subjects; (3) the Situational Humor Response Questionnaire (SHRQ) measured the frequency with which subjects display mirth across various life situations.

After completing the above measures, subjects were seated at a table containing a dozen miscellaneous objects such as an old tennis shoe, an aspirin bottle, and a drinking glass. They were asked to make up a 3-minute comedy routine, ad-libbing as humorously as possible with the objects in front of them. The subject’s verbalizations were recorded and scored for both the num-
ber of witty remarks and the overall wittiness (using a scale of 0-3 with 0 = no humorous comments and 3 = a regular comedy routine).

As might be expected, the number of witty remarks correlated highly with the overall wittiness. Therefore, the two measures were converted to Z-scores and summed for each subject. This composite score for humor production was then entered into a multiple regression equation as in the first study.

When the data were divided via a median split on Humor Production, subjects with low scores on this measure obtained a correlation of .63, \( p < .001 \), between negative life events and Total Mood Disturbance, whereas those with higher scores obtained a correlation of only .23 (n. s.). In conclusion, the second study clearly demonstrated that individuals who are more capable of generating humor on demand routinely show a lower correlation between life stressors and disturbed moods.

The third study relied even less on self-report and more on laboratory measures. Subjects were 25 Introduction to Psychology undergraduates. They had previously taken several self-report measures including; (1) the Life Events of College Students Checklist (LECS) which involved selecting which events they had experienced and weighting the degree of the impact of those events, (2) The Profile Of Mood States (POMS) from which a total mood
disturbance score was derived, and (3) the Coping Humor Scale (CHS) which identified the degree to which subjects admit to using humor to cope with stress.

Subjects were required to view a film entitled Subincision which had been shown to be mildly stressful in prior research studies. During the silent film, the subjects were directed to create a witty monologue which was taped and later rated for overall humorousness, once again using a scale of 0-3 (0 = No humorous comments and 3 = a regular comedy routine). Subjects also completed a brief questionnaire indicating on a scale of 1-5 the degree to which they would ordinarily use humor in a similar situation (1 = I would not use humor in this sort of situation, 5 = I would always use humor in this sort of situation). Multiple regression analyses demonstrated even stronger relationships than previous studies between the subjects tendency to use humor as a coping mechanism and the reduction of the negative effects of life stressors.

The fourth study divided 69 Introduction to Psychology undergraduates into three groups. Members of each group individually viewed the film Subincision with different instructions. Group one subjects were instructed to create a humorous narrative. Group two subjects were told to construct an intellectual narrative while group three subjects were told to silently view the film. Sub-
jects from groups one and two were audio-taped allowing researchers to rate the narratives on a four-point humorousness scale. All subjects were videotaped for subsequent coding of behaviors such as frequency and duration of laughter, grimacing, frequency and duration of averted gaze, posture shifts, frequency and duration of adaptors such as fidgeting, scratching, or rubbing parts of the body.

Following the film, subjects were asked to complete a mood scale describing how they felt at the moment. The mood scale consisted of 6 sub-scales (five from the Mood Adjective Checklist and one from the POMS) measuring aggression, pleasantness, social affection, depression, anxiety, and tension.

The researchers found that: (1) female subjects, who created a humorous narrative, reported less situational mood disturbance and displayed fewer behaviors indicative of negative mood states, such as averted gaze, and grimaces than those females who created the intellectual narrative or watched in silence; (2) subjects who acknowledge that they routinely use humor as a coping strategy, revealed less mood disturbance than those who do not cope with humor.

For males, no significant effects were uncovered. Further analysis of the data led the authors to point out that all measures of negative affect among males indi-
cated that the film was not as stressful to begin with, creating a floor effect.

Nezu, Nezu, and Blisset (1988) conducted a prospective study demonstrating that humor serves as a mediator of stress where depressive, but not anxiety related symptomology is concerned. Subjects consisted of 87 undergraduates. Overall, five measures were taken. The first testing included two measures of psychological distress, the Beck Depression Inventory (BDI) and the State Trait Anxiety Inventory (STAI). Stress was assessed with the Life Events Survey (LES). Two measures of humor were the Coping Humor Scale (CHS) and the Situational Humor Response Questionnaire (SHRQ).

Two months later the LES, BDI and STAI were repeated. The data were analyzed in cross-sectional and longitudinal fashion relative to both depression and anxiety. The cross-sectional analysis revealed that sense of humor was a mediator of stress-related depressive symptoms, accounting for just over 20% of the variance, but not for the anxiety symptoms. Longitudinal analysis, which controlled for pre-existing levels of depression/anxiety, reinforced this finding. Evidently, it is the person low in sense of humor, undergoing highly stressful experiences, who is most destined to become depressed.

Nezu, Nezu, and Blisset (1988) pointed out that both
the physiological correlates of humor and anxiety are those of sympathetic nervous system arousal. The correlates of depression involve parasympathetic dominance. The humor response may counteract the typical depressive reaction whereas it imitates the concomitants of anxiety making them hard to differentiate. They also suggest that anxiety is associated with the anticipation of negative events whereas depression tends more to reflect a response to events that have already occurred. Hence they have argued that sense of humor is more useful in coming to terms with past events than dealing with ongoing or upcoming threats.

Humor as an Adaptive Response to Physical Illness

Christiansen, (1981) reminded us that even though an ever increasing number of studies identify a relationship between stress and overall health, the scope of this relationship is fairly modest with most studies finding correlations between stress and illness clustering around .30. This mild correlation has been shown to account for less than 10% of the variance in predicting illness (Nezu & Ronan, 1985). Johnson and Sarason (1979) pointed out the wide range of individual responses to similar life events. Given these facts, some have concluded that certain individual attributes serve to either minimize or exacerbate the harmful effects of stress.
Those who have seen humor as facilitating health have suggested several possible means of accomplishing the goal. Dixon (1980) argued that humor represents a more highly evolved alternative to the primitive adrenergic responses essential to lower animals faced with fight/flight circumstances. Since the physiological responses in laughter are similar to those found in emotional arousal, he suggested that humor and mirth are wired-in substitute responses for other more unpleasant responses such as anxiety or anger.

Moody (1978) drew from his experiences as a physician noting a number of instances in which patients used their sense of humor as a very positive and adaptive response to their illness. This has lead him to believe in the therapeutic effects of humor. If nothing else, responsiveness, an element essential to the physician-patient relationship and patient compliance, was shown to increase when clowns interact with hospitalized children.

Physiological Correlates of Humor

If we are to understand the relationship between humor and physical health, we must identify the physiological correlates of humor. Many are familiar with Norman Cousins' best-selling book Anatomy of an Illness (1979), an autobiographical account of his remarkable recovery from an extremely painful and debilitating disease. He
delineates the effects of humor on his serious medical condition as: (1) reduced inflammation as measured by the sedimentation rate, and (2) anesthetic effects such that 10 minutes of laughter allowed him two hours of pain-free sleep.

Mazer (1981) has pointed out that humor and laughter may relieve pain by distracting the patient. When the author’s five-year-old son was hospitalized with cellulitis, an extremely painful tissue infection, playing with a hand-held video game seemed to be more effective at reducing his pain than the strong medications that had been ordered for him. Two experiments by Cogan et al. (1987) found that laughter increased discomfort thresholds as effectively as relaxation. In controlling for the effects of distraction, they demonstrated that the effects are due to the humorous nature of the material rather than diversion.

While most have been willing to accept the idea that laughter promotes health, relatively little research has been done to back up this truism with hard data (Chapman & Foot, 1976; Fry & Stoft, 1971; Langevin, 1972; Lefcourt & Martin, 1986; Mazer, 1981; O’Donovan, 1985). Perhaps this is due to the tendency of researchers in psychology to focus more on the negative aspects of emotion.
Evidence From Research Concerning the Physical Benefits Of Humor

The research that does exist, has supported the commonly held view that humor is profoundly associated with physiological states such as arousal level. Schacter and Wheeler (1962) found that subjects whose arousal was increased with an injection of epinephrine judged a movie more amusing than control subjects who were injected with saline. The saline group found the movie more humorous than a third group injected with chlorpromazine, a major tranquilizer.

Langevin (1972) found that galvanic skin response amplitude and heart rate correlate positively with humor appreciation. Averill (1969) also demonstrated mirth-associated increases of heart rate and concluded that mirth stimulates sympathetic nervous system arousal. After examining urinary output of adrenaline and noradrenaline during a number of different emotional states, Levi (1963) concluded that mirth is related to increased sympathetico-adrenomedullary activity.

Among other physiological correlates, muscle tone is evidently enhanced by the humor response (Fry, 1977). In addition, Cousins (1979) claimed that humor enhances the respiratory process. Averill (1969) supported this view characterizing respiratory changes as the hallmark of mirth. Other physiological changes may in fact be a sec-
ondary reaction to the respiratory changes.

While none of these changes are connected in an ob­
vvious way to general health, a growing collection of re­
search in the burgeoning field of psychoneuroimmunology
has demonstrated a relationship between psychological
factors and the potency of our immune systems. One exam­
ple comes from the research of David McClelland at Boston
University.

Secretory immunoglobulin A (S-IgA) is the body’s
first line of defense against invaders associated with
respiratory illness. When studying the effects of dif­
ferent emotions on the immune system, McClelland’s re­
search (Cited in Long, 1987) revealed that watching a hu­
morous film was related to temporary increases in the se­
cretion of S-IgA into the saliva. Averill’s findings
(1969) would also support the transitory impact of humor
in that mirth turned out to be a physiologically labile
response that is somewhat fleeting in nature. Though
levels of S-IgA returned to baseline after an hour, an
enduring sense of humor may help maintain increased lev­
els.

Martin and Dobbin (1988) also measured changes in
S-IgA levels over a six-week interval as a function of
sense of humor and degree of stress. They hypothesized
that sense of humor moderates immunosuppressive effects
of stress. While their results failed to show a simple
relationship between sense of humor and S-Iga concentrations in saliva, subjects with low scores on the Situational Humor Response Questionnaire, the Coping Humor Scale, and the Sense of Humor Questionnaire, demonstrated a stronger negative relationship between hassles and S-Iga than did those with high humor scores. Though unable to demonstrate consistently higher levels of S-Iga in subjects scoring high on measures of sense of humor, they did demonstrate a relationship between an impoverished sense of humor and depression of immune functioning following stress.

Other promising clues concerning the effects of humor on our immune system include Lee Berk's research at Loma Linda University. Berk (cited in Long, 1987) found that humor reduces blood levels of epinephrine and cortisol which suppress the immune system. To further test the hypothesis, Berk, Tan, Napier, Eby, and Fry (1989) studied 10 healthy male subjects for release of adrenocorticotropic hormone (ACTH), epinephrine and norepinephrine, and 3,4 dihydroxyphenylacetic acid (dopac), the major catabolite of dopamine. Cortisol levels were also measured. Cortisol can affect the synthesis of interleukin-2, a substance important to immune function, by reducing its production. Lower levels of interleukin-2 result in less natural killer cell activity, a measure of immunity.
From the total of 10 healthy male subjects, five in the experimental group viewed a humorous 60-minute video of the comedian Gallagher, while five control subjects did nothing. At 10-minute intervals, blood samples were obtained through an indwelling intravenous catheter. A total of 12 samples were obtained (three before, six during, and three after) and analyzed for the above substances. While variations in blood levels of ACTH remained below methodological sensitivity and levels of norepinephrine were equivalent for both groups, ANOVA revealed significantly lower levels of the stress-related components plasma cortisol, epinephrine, and dopac in the experimental humor group.

Even though it might be argued that the placement of an indwelling catheter resulted in increased levels of stress hormones to begin with, this effect was not specific to either the experimental or control group. In addition, the researcher's failure to use a third group of subjects, who would view a non-humorous video, removed their ability to control for the effects of distraction. Nevertheless, significantly lower post-treatment levels found in the humorous video group, argues for the moderating effects of humor and laughter on stress hormones.

Dr. Berk and his associates have conducted other studies also aimed at understanding how humor may have a direct influence on the immune system. In one of these
studies, subjects who were shown a humorous video showed significantly greater proliferation of lymphocytes. Another similar study found increased natural killer cell activity in those who viewed the humorous video. Both of these types of cells are known to be directly related to one's degree of immunity.

It is quite evident that additional research is necessary in order to more thoroughly examine the effects of humor on overall health. If such research continues to support the idea that humor is an adaptive mediator of the effects of stress, implications exist for health care providers regardless of whether their focus is that of the psychological or physical realm of their patients.

Discussion of Implications for Psychotherapists

Of central concern, is the question as to whether or not psychologists and other health care providers can somehow enable their patients to discover, develop, and mobilize their senses of humor as a prophylactic against physical and psychological illness. Cassel (1974) states that no therapist training programs he is aware of, teach the use of humor as a part of the treatment process.

Medical schools are even less likely to deal with this subject in the training of physicians. This may be due the fact that many within the mainstream medical community have openly spurned non-traditional methods of
treatment such as those advocated by Norman Cousins in favor of more orthodox, medically-oriented procedures.

Support for the Use of Humor

In spite of the lack of formalized support and training, some therapists, believing that humor is an adaptive coping mechanism, have sought to use it as well as foster its use by clients in the course of therapy (Cohen, 1977; Mindess, 1971). Amplifying Freud's views on the coping value of humor, Gordon Alport stated, "the neurotic who learns to laugh at himself may be on the way to self-management, perhaps to cure" (Alport, 1950, p. 280).

In reviewing the literature on the role of humor in therapy, it becomes clear that there are two separate issues involved. First, are the studies and treatises on the appropriateness or inappropriateness of the therapist's use of humor as a therapeutic technique. While many of these studies are supportive, others warn of the preemptive effects of therapist humor which is used to break the tension or interrupt a moment of grief with a light-hearted comment. They also caution against the potential for misunderstanding should the patient interpret or misinterpret the humor as a form of ridicule or mocking. Second, and much less common, are the studies addressing how patients' use of their own senses of humor,
or lack of one, influences their coping skills.

In comparing the use of humor by the therapist, with efforts aimed at fostering the client's use of humor, Grotjahn states, "An ultimately more valuable kind of humor therapy would consist not just in telling a patient jokes and getting him to laugh at them, but in helping him to be able to take a humorous perspective on life" (p. 120).

The research findings of Lefcourt and Martin (1986) have provided support for their belief that humor is the antithesis or antidote to seriousness. This has definite implications for the treatment of persons suffering from depressive disorders. Since a key aspect of dysphoria relates to the person's loss of pleasure in life (American Psychiatric Association, 1980), finding a means of enhancing the capacity of depressed people to recognize and enjoy the humor that can be derived from life's vicissitudes would logically seem to be of benefit to them. In providing support for this line of reasoning, Lefcourt and Martin have joined the ranks of others who advocate for the judicious use of humor by psychotherapists.

In order to qualify as judicious, great care must be taken in whatever approach is employed to avoid the use of humor in a mocking or ridiculing way or in a preemptive manner that aborts catharsis. Otherwise, there is
danger in patients misinterpreting the therapist's methods as reflecting insensitivity to the emotional states that they are experiencing. Thus it is important to contrast the thoughtful use of humor and bad techniques.

Other support for making use of humor in treating depression comes from Nezu, Nezu, and Blisset's study (1988) in which sense of humor was found to be a mediator of stress-related depressive symptoms. It is their contention that the humor response's effect of sympathetic nervous system arousal may serve to counteract the typical depressive reaction of parasympathetic nervous system dominance.

The Nature and Nurture Debate Concerning Humor

While virtually everyone sees the value of a humorous perspective, no one seems certain as to how to cultivate a sense of humor (Mindess, 1971). Is humor a personality trait or something that can be acquired or taught? Clinical observation makes it quite evident that persons with certain personality styles have great difficulty in their efforts to effectively use humor. Are these styles a matter of temperament or learning? Hellyar (1927) argued that while humor sense can be strengthened through intellectual effort, the appropriate inborn temperament must be there or it cannot be achieved at all.
While no proof was offered for Hellyar's somewhat deterministic opinion, the research literature is surprisingly silent regarding the role of personality in humor development and expression. While it stands to reason that personality variables must be related in a significant way to the development of a sense of humor and the ultimate expression that a particular individual's humor finds, the specific details of the interaction have yet to be studied and identified.

Nias and Wilson (1976) failed to identify a genetically determined humor factor when comparing identical and fraternal twins on their humor preferences. They concluded that environmental influences rather than genetic factors determine humor preference. Unfortunately, this study looked only at humor appreciation and not the ability to generate humor or take a humorous perspective on otherwise serious situations.

Levine and Redlich (1960) conducted research suggesting that there is a close correlation between intelligence quotient and the comprehension of humor stimuli. Mindess (1971) agreed that intelligence contributes to humor, but pointed out that many astute individuals suffer from a sad shortage of wit, while many who would not score high on intelligence tests, enjoy a playful capacity for laughter. Koppel and Sechrest (1970) pointed out that prior research on the relationship be-
tween IQ and sense of humor is equivocal. Their own research suggested that intelligence accounts for only a small fraction of the variance in sense of humor.

Intelligence is not the only attribute needed to appreciate humor. The perceived funniness of a humor stimulus has also been found to be directly related to a person's capacity to empathize with the characters in the humorous stimuli (Roberts & Johnson, 1957).

Whether one believes sense of humor to be genetically determined, environmentally determined, or some combination of the two, the relative stability of humor characteristics is basic to conducting research. O'Connell (1976) states that his research has shown humor to be a relatively stable personality trait associated with maturity.

Mindess (1971) has stated that while inborn qualities may predispose it, our sense of humor can be cultivated. He has advocated a strategy that attempts to discover the "inner obstacles which block the unfolding of our humorous potentials and point out the possibilities of overcoming them" (p. 14). In order to make use of one's sense of humor, one must be ready to periodically slip out of the organizing, adult modes of being and to revert back to the less structured experience of the child who more readily takes delight in being uninhibited and at times revels in utter silliness.
Specific Aspects of Adjustment Where Humor Plays a Role

It is to our advantage as adults to remain aware of life's plethora of paradoxes. There is danger for those who have not moved beyond an overly simplistic, concrete approach to life, as reflected in a need to see the world in black and white terms. Such a view can deceive a person into oversimplifying their experience and failing to humorously appreciate that there can often be truth in opposites.

We also need to become elastic with regard to society's demands (Mindess, 1971). This may mean critically examining the "shoulds" that seem to be controlling our lives. This includes becoming more open to our sexual and aggressive impulses, tendencies we normally attempt to control. In order to do this, these proclivities must be accepted as normal, vital parts of our humanity and not rejected as evil or disgusting. This is consistent with the findings of Levine and Redlich (1960) who demonstrated that psychiatric patients failed to understand many cartoons because they perceptually distorted them in the direction of overlooking or mitigating sexual and aggressive elements.

In spite of the risk of offending religiously oriented people, Mindess (1971) suggested that "Nothing is sacred" become our motto. (p. 204) He readily qualified
his statement by pointing to fanaticism of any kind as the polar opposite of humor, noting that those who place blind faith in various causes routinely lack a sense of humor regarding the subject of their fanaticism. Finally, he noted that playfulness or the inclination for fun is more vital to one's sense of humor than any other characteristic.

Specific Applications of Humor That Enhance Coping

Though Tavris (1982) found no research to support the commonly held view that ventilating anger has cathartic value, she concluded that ridicule and humor can be effective antidotes to anger. For example, in some Eskimo tribes, one male may challenge another to a song duel or drum match that begins with an exchange of audacious insults that escalate into a hilarious attempt to out-insult the other. Onlookers determine the winner by laughing loudest at the barbs of the victor (Levine, 1977; Tavris, 1982).

Without suggesting specific techniques, Walsh (1928) argued that depressives can, in time, be taught to appreciate the humor in situations. O'Donovan (1985) has used a method aimed at helping the depressed client emotionally reinterpret their current life circumstances. In order to do this, his clients are instructed to write or tell a story in which the hero was victimized, with the
goal of making the listener feel sorry for the hero. The follow-up task requires the client to take the same basic events and modify the story so that the listener's humor is aroused.

Although most find this to be an extremely difficult task, in order to accomplish it, they are required to take a different perspective than that of a victim. Mindess (1971) states that recognizing one's own plight in a humorous light, is the first step along the path to overcoming its debilitating effect on one's being.

Some psychologists have treated angry clients with humor therapy, a counter-conditioning approach to treatment that is based on the assumption that you cannot simultaneously laugh and be angry (Smith, 1973). The best remedy for anger might be a night out at one of the hundreds of comedy clubs springing up around the country or a comedic play or movie. While this may replace an angry mood with a joyous one, a more preventative approach requires the adoption of a perspective that refuses to take life's curves as deadly serious.

A more comprehensive humor-based approach to therapy is called Natural High therapy. Described by its author, Walter O'Connell (1981) as focusing upon the sense of humor as the key element of the actualization process, this approach emphasizes the responsibility of individuals for the creation of their own perceptual judgements.
For O’Connell, (1981) a fully actualized person feels a sense of belonging or connectedness to other living beings. Another necessary condition involves the development of a love for life’s paradoxes and the ability to make quick perceptual shifts between the poles of these paradoxes. This qualifies the actualized person as a humorist. For O’Connell, the enemy within is that aspect of the ego identity which, for some, gradually evolves into a constriction of what one must think, feel, and do, as well as how one must behave towards others.

In order to better understand what O’Connell is saying, it is useful to define what is meant by ego identity. The Longman Dictionary of Psychology and Psychiatry defines ego identity as "the experience of the self as a recognizable, persistent entity resulting from the integration of one’s unique ego ideal, life roles, and ways of adjusting to reality" (Goldenson, 1984, p. 248). While one’s ego identity is an essential process in personality development, O’Connell is attempting to point out its potential limitations and pitfalls when the ego ideal, that part of the ego identity which acts as a model of how one wants to be, becomes rigid, inflexible, and internalizes the belief that one must never make mistakes or look foolish.

Just as the ego identity can develop into a humor inhibiting factor, if the individual identifies with
parental values encouraging playful self-examination and creative, flexible approaches to attaching meaning to life's events, it provides a foundation for an adult mode of adjustment that encourages sense of humor.

O'Connell (1976) also suggests that the therapist can assist the client in developing their sense of humor by teaching, modeling, and reinforcing from the strength of having built a strong therapeutic alliance. Obviously, care givers must first achieve a humorous life perspective themselves if they are to help their patients adopt such an outlook (Mindess, 1971; O'Connell, 1976).

In this same vein, Mindess (1971) warns therapists of the danger of taking their cherished beliefs too seriously when he states:

As long as we fail to contemplate the likelihood that our professional activities are useless, that psychotherapy of any sort is absurd in the larger scale of things, we remain bound to the very outlook from which we need to free our patients. (p. 220)

In essence, the above statement is nothing more than a warning against rigid, fanatical allegiance to our cherished ideas about psychotherapy and how it should be done. It also warns against over-inflating our sense of importance in the therapeutic process.

While to some therapists this statement by Mindess might seem a bit strong, the widespread popularity of such publications as the Journal of Irreproducible Results and the Journal of Polymorphous Perversity would
suggest that many professionals derive pleasure in looking at the usually serious endeavors of psychotherapy from a satirical perspective.

O'Connell (1976) described the dawning of humor appreciation as occurring when the client realizes, without regret or blame, that they have habitually lowered their self-esteem while demanding compensatory esteem (or 'love') from others. This awareness serves as a springboard to accepting life's paradoxes and defining the self as an active agent rather than a passive victim.

Specific Applications of Humor That Enhance Health

Even less research has been published examining the value of specific humor-based interventions on health. Implementation of humor therapy in an effort to reduce disease symptoms was illustrated in a uncontrolled pilot study by Ljungdahl (1989). Eight consecutive outpatients were selected of which six agreed to participate. These women, ranging in age from 26-48 years, all suffered from painful musculo-skeletal disorders and depressive moods. They participated in 13 sessions of a humor group. The sessions were relaxed and jovial, focusing on funny books, records, and videos. Lectures and discussions on humor attempted to encourage subjects to give humor a higher priority.

Pretest and post-test measures of the subjects sense
of humor showed no change. However, measures of their psychological general well-being increased significantly and a correlation was found between humor response and self-reported symptom reduction, $r = .44$, $p < .001$. Though merely a pilot study, the author concludes that a humor therapy program can increase the quality of life for patients with chronic problems and that laughter has an immediate symptom-relieving effect when it is induced at regular intervals. Also of interest is the fact that the subject's sense of humor did not seem to improve as a result of their membership in the group. Clearly, more is involved in developing one's sense of humor than merely appreciating humorous stimuli.

Summary

Interest in the subject of humor appears to have increased over the last 10 years. Those who have written on the topic seem to agree that a sense of humor softens both the physical and emotional consequences of stress. However, little hard research exists to substantiate this consensus.

The number of theories attempting to explain a sense of humor are exceeded only by the number of different definitions of what it means to have a sense of humor. Some emphasize appreciation of cartoons, others have measured humor creation and use, and still others see the
sense of humor as an attitude or state of mind that enables one to step back in a detached fashion and refuse to be dismayed by life's paradoxes. Unfortunately, what little empirical research that has been done, has not until recently begun to zero in on the effects of this more global orientation toward making sense out of events.

Preliminary experimental evidence is beginning to accumulate that supports popular beliefs concerning humor and health. However, much more research needs to be done. If the evidence continues to build, therapists and other health-care providers will need to do more than utilize their own sense of humor as they conduct therapy. Additionally, there will be an increasing need to develop methods and strategies by which their patients can be enabled to discover and mobilize their own senses of humor as a prophylactic against the effects of stress.
CHAPTER III

METHOD

Introduction

This chapter presents the details of the research design and methods selected to evaluate the research questions posed in chapter one. First there is a discussion of the research design and listing of the null hypotheses. Next, details of the trial administration of the questionnaire are presented. This is followed by information concerning the selection of subjects, instrumentation, and data collection.

Because of the complexity of the variables of interest, and the exploratory nature of this study, a correlational design was utilized rather than an experimental one. The independent variable is the extent to which the subjects use sense of humor as a coping mechanism. The dependent variables are the subjects': (1) degree of felt stress, (2) psychological well-being, (3) physical health.

Null Hypotheses

The null hypotheses can be stated as follows: (1) there is a significant difference in the frequency of
potentially stressful events reported as a function of
the subject's sense of humor, (2) there is no signif­
cant difference in levels of self-reported subjective
stress as a function of the subject's sense of humor,
(3) there is no significant difference in levels of
self-reported psychological well-being as a function of
the subject's sense of humor, (4) there is no signifi­
cant difference in levels of physical health as a func­
tion of the subject's sense of humor.

Trial Administration of Questionnaires

Several self-report instruments were employed to
generate data. As noted previously, the variables under
study have been historically defined in a multitude of
different ways. In an effort to increase the chances of
uncovering significant relationships, a decision was made
to use more than one measure of each variable whenever
possible. This was felt to be particularly important
where the independent variable (sense of humor) was con­
cerned.

One potentially useful instrument, for the purpose
of assessing sense of humor, the Coping Humor Scale, has
undergone prior validation studies (Lefcourt & Martin,
1986). Since the Humorous Perspective Scale was con­
structed specifically for the purposes of this study, a
trial run of the proposed study was conducted to refine
the instrument and to identify any potential problems related to its use. The preliminary administration of each of the instruments provided information concerning the amount of time required to complete the entire battery of tests, as well as problems with the questionnaires and the instructions.

Subjects consisted of a non-randomly selected group of students enrolled in two graduate-level courses taught in the Counselor Education and Counseling Psychology Department at Western Michigan University. The battery of assessment instruments was administered and collected during one class period for each group. Data were collected only from those students who voluntarily agreed to participate in the study. Assessment tools did not require identifying information such as name or social security number so as to preserve confidentiality. Following the completion of the self-report measures, participants were queried for critical comments and observations having a possible bearing on the subsequent research study.

The actual data were not analyzed statistically since the purpose of the pilot study was to try out the procedures in order to locate problems with the manner in which the questionnaires were laid out and presented.
Subjects

No single sub-population can be said to be similar in all respects to the population of adults as a whole. Selection of a population is often based on practical considerations such as availability. The sampling population selected consisted of between 1,400 and 1,500 employees of Mercy-Memorial Medical Center, Inc., a not-for-profit 332-bed community based hospital located in St. Joseph and Benton Harbor, Michigan. The executive council of the hospital reviewed the research proposal and granted permission to conduct the study (Appendix A). In addition, the Human Subjects Institutional Review Board at Western Michigan University granted its approval to proceed with the study (Appendix B).

From a computer generated listing of all employees, three samples of 100, 20, and 10 subjects were randomly selected under the assumption that some subjects would refuse to participate or be unavailable. A personal letter (Appendix C) was mailed to each member of the initial group of 100 subjects introducing them to the purpose of the study and inviting their voluntary involvement. Within the following two weeks, subjects were contacted personally to answer any of their questions after having read the letter, and to determine their willingness to participate. Those who agreed to take part were asked to
sign an informed consent form (Appendix D).

As anticipated, the first sample of 100 names selected failed to generate the desired number of subjects. Additional subjects were recruited from the second list of 20 names but in order to produce 100 subjects, the third list had to be used as well. Out of the 130 subjects, nine refused to participate and the remaining 21 could not be contacted since they had left the employment of the Hospital after the employee list had last been updated.

Those subjects who chose not to participate were at first asked to provide basic demographic data by completing the personal data form (Appendix E). However, only two of the non-participating subjects were willing to comply with the personal data form thus rendering it useless for comparison with participants.

Data Collection Procedures

Once individual subjects agreed to participate, a time was prearranged for the experimenter to deliver the survey in person. Based on subjects' estimates of completion time, the experimenter arranged to return and retrieve surveys. In most cases the surveys were completed and picked up at the prearranged times. Subjects unable to meet their own deadlines, agreed to new deadlines and were revisited until the surveys were completed.
When picked up, each survey was briefly examined and returned to the subject if any missing data were noted. By using this approach the problem of deciding how to treat missing data was avoided. Due to special circumstances, 12 of the subjects were mailed the surveys along with a stamped self-addressed return envelope. Using this approach all of the data were collected in approximately six weeks.

Instrumentation

Personal Data Form

Since this study sought to classify subjects in terms of four different variables, several instruments were used. As noted previously, the wide range of acceptable definitions for the variables studied lead to a decision to employ multiple measures of each variable whenever possible. To augment these, a personal data form (Appendix D) was included to gather relevant demographic information about respondents. The personal data form included questions about age, gender, education, the number of physician visits during the past year, sick days, as well as mental health days which were defined as days absent from work due to excessive stress or burnout. It also included an item asking the subject to rate their overall health on a scale from 4 to 1.
Common Concerns Scale

The frequency of potentially stressful events as well as the level of subjective stress experienced, were measured by a modified version of the Hassles Scale (HS), an instrument created by Kanner, Coyne, Schaefer, and Lazarus (1981). The adapted version was named the Common Concerns Scale (CCS) in an effort to present a more neutral sounding stimulus. The authors define hassles as follows:

Hassles are the irritating frustrating, distressing demands that to some degree characterize everyday transactions with the environment. They include annoying practical problems such as losing things or traffic jams and fortuitous occurrences such as inclement weather, as well as arguments, disappointments, and financial and family concerns. (p. 3)

This instrument was originally devised as an alternative to major life events (Holmes & Rahe, 1967) as a predictor of the effects of psycho-social stress on health status. Hassles have been demonstrated to be better predictors of physical and psychological health than major life events (Delongis, Coyne, Dakof, Folkman, & Lazarus, 1982; Kanner et al., 1981; Monroe, 1983; Weinberger, Hiner, & Tierney, 1987; Zarski, 1984).

Both the HS and the CCS consist of a list of 117 hassles related to work, health, family, friends, the environment, practical considerations, and chance occurrences. Subjects were instructed to circle only those

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hassles/concerns that happened to them in the past month and then to indicate the degree of distress, if any, associated with each circled hassle.

As noted above, for the purposes of this study it was necessary to modify the HS. One problem arises from the narrow range of response options when an event is identified as stressful. On the HS, subjects are not allowed to circle an event as having occurred without identifying it as having been subjectively stressful to some degree. Further complicating matters, the subject must choose between somewhat severe, moderately severe, and extremely severe, a range of allowed responses restricted to the severe end of the spectrum.

In order to correct these problems, the CCS (Appendix F) allows for the following four responses to degree of felt stress associated with potentially stressful events; None, Mild, Moderate, and Severe.

Coping Humor Scale

When it comes to sense of humor, various approaches have been used in attempting to assess it. Some examples include, subject ratings of the humorousness of cartoons or jokes, the use of independent judges to rank humor production by subjects under experimentally induced circumstances, peer ratings or sociometric approaches, behaviorally based self-report measures such as Martin and
Lefcourt's Situational Humor Response Questionnaire (1984), and their more straight-forward self-report measure, the Coping Humor Scale (1983).

Since ranking of the humorousness of jokes has been shown by Babad (1974) to have little to do with external validity measures, this approach was rejected. The use of behaviorally based self-report scales overlooks the aforementioned distinctions between laughter, mirth behaviors, and sense of humor. Sociometric approaches are useful but cumbersome and time consuming.

Since Babad (1974) was able to demonstrate that subjects perceive their own sense of humor in much the same way as they were perceived by their peers, the sociometric approach was forsaken in favor of a simple straight-forward self-report of the extent to which subjects perceive themselves as coping with humor.

With these facts in mind, sense of humor was assessed using one previously validated scale and one new scale devised by the author. The preexisting measure, the Coping Humor Scale (CHS), was constructed by Martin and Lefcourt (1983). This 7-item instrument (Appendix G) is aimed directly at assessing the degree to which subjects report using humor as a means of coping with stressful experiences. The validity of this instrument has been demonstrated by several experiments (Lefcourt & Martin, 1986; Trice & Price-Greathouse, 1986).
Humorous Perspective Scale

While the above humor measure has been validated against behavioral measures of humor and used with sufficient subjects to generate adequate norms, the second instrument, The Humorous Perspective Scale (HPS) was created specifically for this study. The HPS (Appendix H) was designed to augment the Coping Humor Scale which may be subject to the effects of social desirability.

The HPS is an attempt to identify the capacity of subjects to take a humorous cognitive perspective toward three fairly common sets of circumstances that might, in the absence of such a capacity, also be interpreted as major sources of distress. In avoiding the requirement for behavioral manifestations, this tool attempts to measure that underlying disposition that for some leads to mirth behaviors. The HPS consists of three items, each of which briefly describes a scenario. Subjects were instructed to complete the scenario by writing out as many different humorous endings as they can think of. A sample item is provided at the top of the questionnaire as an illustration (Appendix H).

This study made use of four independent judges to rate the degree of humor in each subject's collection of responses on a scale of zero to three (see Appendix I). One of the judges was a member of the researcher's imme-
diate family of origin and the other three were related to the researcher through marriage. Demographic information on the judges can be found in Appendix L.

Inter-rater reliability ranged from .64 to .77 among the four judges. That these figures are not higher comes as no surprise since judges were untrained and humor appreciation is to some extent idiosyncratic in nature. Complete descriptive statistics concerning inter-rater reliability are summarized in Appendix L.

The total quantity of responses was also tallied in an effort to test the, as yet unconfirmed, assumption that the number of humorous endings generated is directly related to the subject’s creative capacity for taking an alternative perspective. From this point of view, only the individual’s assessment of the ending as humorous matters. Nothing is made of the fact that the content of the ending might be highly personal and subjective so as to not be judged as humorous to others.

The number of endings provided, along with the qualitative estimate of the endings, are hypothesized to provide a rough gauge of the subject’s ability to take a humorous perspective when faced with potentially trying circumstances. The validity of the assumptions inherent in the HPS are untested. Any validity that this instrument has will derive from a comparison of it’s predictive utility as compared with the previously validated CHS.
Psychological General Well-Being Index

The Psychological General Well-Being Index (PGWB) was devised by Dupuy (1984) in order to provide a self-report index that would reflect intrapsychic affective states ranging from a sense of subjective well-being at one extreme, to distress at the other. Designed in order to study the impact of different health care financing mechanisms on health status over a three to five-year period, this instrument (Appendix J) consists of 22 items, further broken down into six non-overlapping scales composed of 3-5 items each. The scales assess anxiety, depressed mood, positive well-being, self-control, general health, and vitality. For each item there are six response options that are scored on a scale of 0-5, resulting in an overall range of scores from 0-110.

Data collected in the Rand Corporation’s national health insurance study (Brook et al., 1979), provide descriptive statistics for several psychometric properties of the PGWB index. These data indicate that there is a wide range of individual differences on the PGWB index; that the items in the sub-scales are internally consistent, and the sub-scales can therefore validly be used; and that the 22 items forming the PGWB index show a very high internal consistency reliability (.94) and can be
used to construct an overall index score. Concurrent validity studies reported on by Dupuy (1984) produced findings in the expected directions.

General Health Rating Index

The General Health Rating Index (GHRI) also emerged from the Rand Corporation’s national health insurance study (Davies & Ware, 1981) after an extensive review and analysis of existing health assessment tools. The final version (Appendix K) consists of 26 statements concerning health which the subject identifies as either definitely true, mostly true, don’t know, mostly false, or definitely false. In addition to providing a general health ratings index, items are grouped into the six following scales; Current Health, Prior Health, Health Outlook, Resistance, Health Worry/Concern, and Sickness Orientation.

Davies and Ware (1981) report that the pattern of relationships between the GHRI and validity variables such as the presence of acute and chronic physical health limitations, physical ability and physical limitations, age, as well as use of services, substantially confirmed the validity hypotheses they had for the measures. The only sub-scale that was not generally related to the measures of physical health was the Sickness Orientation Scale.
Statistical Analysis

The data were examined for the presence of any missing or unclear data due to transcription errors. When it was determined that the data were acceptable, each subject's total scores for each of the many variables assessed was examined for the presence of outliers. The most obvious outliers were three subjects who had missed 100 or more workdays in the past year (two had missed the whole year) due to chronic health problems. Since the intent of the study was to look at the relationships between health, well-being, and humor in normal adult subjects, the data for these three subjects were removed from the study reducing the N from 100 to 97.

Since the CCS represents a new instrument, an item analysis was conducted in order to identify and remove those items determined to be inconsistent with the overall scores for the subjects. In accordance with recommendations by Lewis (1975), those individual items failing to correlate with the total CCS score at a .05 level of significance were removed. A total of 17 items met this criteria and thus the total number of items in the CCS was reduced from 118 to 101. The specific items deleted from analysis were items, 3, 16, 17, 18, 20, 22, 31, 39, 53, 54, 59, 60, 66, 69, 76, 88, and 118.

Since several different measures were collected on
each of the four main variables, a simple correlation matrix was derived in order to examine the extent to which the within-category measures were related to one another, as well as to those measures of the other variables assessed. From this matrix the best predictors and the best measures of the dependent variables within each category could be easily identified.

As noted above, the original intent was to combine the separate measures of sense of humor by conducting two separate multiple regression analyses. One would attempt to use the three measures of humor derived from the two instruments to predict psychological well-being and the other would use them to predict health. This strategy had to be modified when it was discovered that the two separate measures of humor were essentially uncorrelated with each other.

Another effect of this discovery was the splitting of each of the last two hypotheses into two separate hypotheses so as to be consistent with the lack of correlation between the two proposed measures of sense of humor. Hypothesis 3 became 3(a) The extent to which individuals cope by using their senses of humor, as measured by the CHS, is positively related to self-reported levels of psychological well-being; and 3(b) The extent to which individuals cope by using their senses of humor, as measured by the HPS, is positively related to self-reported
levels of psychological well-being.

Hypothesis 4 was divided into 4(a) The extent to which individuals cope by using their senses of humor, as measured by the CHS, is positively related to self-reported levels of physical health; and 4(b) The extent to which individuals cope by using their senses of humor, as measured by the HPS, is positively related to self-reported levels of physical health.

To be certain, a multiple regression analysis was conducted combining both humor measures. Combining the non-correlated measures failed to improve on the predictive power of either one alone, just as had been anticipated. Since the more complex multiple regression approach failed to increase the predictive power of the simple correlation matrix, the hypotheses were tested using the data derived from the correlation matrix.

Limitations

One of the limitations relates to deficiencies in the sample. Specifically, there were significantly fewer males in the sample. This was due, in part, to the gender imbalance in the sampling population which contained a predominance of occupations traditionally dominated by females such as nursing, housekeeping, and secretarial services. It may have also been an artifact of the random sample selected. The fact that the sample consisted
of hospital employees must also be seen as a limitation since hospital workers no doubt differ from workers in other settings and certainly from those who are not in the work force.

Another limitation relates to the judges used to rate the quality of the humorous endings. Their educational levels being above the average, may have resulted in a bias in the manner in which they judged humor produced by less well-educated subjects.

The use of relatively transparent self-report measures introduces the potentially confounding effects of acquiescent, oppositional, and socially desirable response sets. In examining these effects on the GHRI, Davies and Ware (1981) report results showing that acquiescent and oppositional sets were effectively controlled by alternating favorably and unfavorably worded test items.

To estimate socially desirable responding, Davies and Ware (1981) interspersed eight items adapted from the Comrey Personality Scales (Comrey, 1970) in the mental health and general-health questionnaires given to subjects. They found socially desirable response set to be correlated with all the general-health perceptions except the self-rating of health as either excellent, good, fair, or poor.

When controlling statistically for the effects of
social desirability, only slight changes occurred and then they were typically in the direction of underestimating differences, rather than overestimating them. Accordingly, any significant effects revealed by analysis are likely to be underestimates of the true relationships between the variables in this study.

Finally, the design of this study does not allow for drawing causal conclusions. If, for example, a relationship is demonstrated between sense of humor and health, it might just as readily be argued that good health causes a good sense of humor as to propose the opposite. Just as plausible would be the suggestion that some third factor causes both. Only a prospective design which identifies subjects as low or high in sense of humor and then periodically evaluates the health of these same subjects over a number of years, could begin to shed light on this issue. Such a design is beyond the scope of this preliminary attempt to identify relationships between these variables.
CHAPTER IV

PRESENTATION AND ANALYSIS OF THE DATA

This chapter will begin with the presentation of the descriptive statistics derived from the analysis of the data. Following this, each of the hypotheses will be tested, in turn.

Table 1

Descriptive Statistics for the Demographic Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Mode</th>
<th>Range</th>
<th>SD</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>39.5</td>
<td>31</td>
<td>50</td>
<td>12.4</td>
<td>.50</td>
</tr>
<tr>
<td>Education</td>
<td>14.1</td>
<td>16</td>
<td>10</td>
<td>1.93</td>
<td>-.28</td>
</tr>
</tbody>
</table>

The sample consisted of 17 males and 80 females. This imbalance in favor of females was primarily due to the relative proportions of females to males in the sampling population. This resulted from the fact that medical hospitals are typically staffed by female-dominated occupations such as nursing, secretarial, housekeeping, dietary, etc. Table 1 summarizes the remaining demographic information concerning the age and educational
level of the 97 subjects included in the final sample.

Table 2
Descriptive Statistics for the Stress Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Mode</th>
<th>Range</th>
<th>SD</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Stress</td>
<td>70.7</td>
<td>25</td>
<td>216</td>
<td>44.8</td>
<td>1.39</td>
</tr>
<tr>
<td>Stress Frequency</td>
<td>29.5</td>
<td>12</td>
<td>87</td>
<td>16.7</td>
<td>1.35</td>
</tr>
<tr>
<td>Mean Stress</td>
<td>2.4</td>
<td>2.5</td>
<td>2.3</td>
<td>.45</td>
<td>.09</td>
</tr>
</tbody>
</table>

The summary data for the measures of stress are listed in Table 2. Total Stress represents the sum of all distress reported on the CCS. Stress Frequency refers to the total number of potentially stressful concerns endorsed as having occurred. Mean Stress refers to the average amount of distress experienced for each potential stressor endorsed.

The descriptive statistics for the two separate measures of sense of humor are summarized in Table 3. Total Humor refers to the quantity of humorous endings offered to the root sentences in the HPS, whereas Humor Quality refers to the quality of the endings as determined by the four independent judges. It is interesting to note the close similarity between the mean
Table 3
Descriptive Statistics for the Humor Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Mode</th>
<th>Range</th>
<th>SD</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coping Humor Scale</td>
<td>20.6</td>
<td>21</td>
<td>16</td>
<td>3.29</td>
<td>-.56</td>
</tr>
<tr>
<td>Total Humor (HPS)</td>
<td>7.9</td>
<td>3</td>
<td>26</td>
<td>4.85</td>
<td>.51</td>
</tr>
<tr>
<td>Humor Quality (HPS)</td>
<td>8.3</td>
<td>9</td>
<td>15</td>
<td>3.28</td>
<td>-.39</td>
</tr>
</tbody>
</table>

(20.6) and standard deviation (3.29) of the sample studied and those of the normative sample for the CHS (M = 20.2, SD = 3.56) as supplied by the co-author of the CHS, H. M. Lefcourt (personal communication, Jan 15, 1990).

Table 4
Descriptive Statistics for the Health Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Mode</th>
<th>Range</th>
<th>SD</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated Health</td>
<td>3.21</td>
<td>3</td>
<td>3</td>
<td>.61</td>
<td>-.42</td>
</tr>
<tr>
<td>GHRI global score</td>
<td>91</td>
<td>85</td>
<td>38</td>
<td>8.62</td>
<td>-.49</td>
</tr>
<tr>
<td>Workdays missed</td>
<td>5.2</td>
<td>0</td>
<td>45</td>
<td>8.26</td>
<td>2.81</td>
</tr>
<tr>
<td>Physician visits</td>
<td>2.88</td>
<td>1</td>
<td>20</td>
<td>3.67</td>
<td>2.42</td>
</tr>
</tbody>
</table>
The descriptive statistics for the four separate measures of physical health are summarized in Table 4. Self-rated refers to the subject's assignment of a value of 4, 3, 2, or 1 to represent excellent, good, fair, or poor health. GHRI refers to the global health index. The other two measures are simple frequencies of workdays missed and physician visits.

In this instance it is interesting to note the differences between the mean and standard deviation of this sample (M = 91, SD = 8.62) and those reported for the GHRI, M = 83.36, SD = 13.54 (Davies & Ware, 1981, p. 36, Table 11). The difference of eight points in the means suggests that this sample of hospital employees are on the average somewhat healthier than subjects drawn from the general population.

Table 5

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Mode</th>
<th>Range</th>
<th>SD</th>
<th>Skewness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mental health days</td>
<td>.7</td>
<td>0</td>
<td>9</td>
<td>1.6</td>
<td>3.2</td>
</tr>
<tr>
<td>PGWB global score</td>
<td>77.1</td>
<td>78</td>
<td>80</td>
<td>14.7</td>
<td>-1.1</td>
</tr>
</tbody>
</table>
The descriptive statistics for the two separate measures of psychological well-being are summarized in Table 5. Workdays missed due to stress are termed mental health days. PGWB refers to the global well-being index.

There was reasonably close correspondence between the mean (77.1) and standard deviation (14.7) of the sample studied and those of a normative sample of 6,913 American adults (M = 80.31, SD = 17.67) studied from 1971-1975 as a part of the National Health and Nutrition Examination Survey conducted by the Division of Health Examination Statistics, National Center for Health Statistics, U.S. Department of Health and Human Services (Dupuy, 1984, p. 178, Table V). However, the slightly lower score by the hospital employees in this study does suggest slightly lower average levels of general well-being.

The next step in the analysis of the data involved the generation of a correlation matrix made up of all of the variables listed in Tables 1-5. In order to simplify this complex array of data, the correlations among the variables in each related cluster are first summarized in a separate table. Then correlations between each set of variables and the remaining variables are summarized in subsequent tables.
Table 6
Matrix of Correlations Among Demographic Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Age</th>
<th>Gender</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>--</td>
<td>.0236</td>
<td>-.2164*</td>
</tr>
<tr>
<td>Gender</td>
<td>--</td>
<td></td>
<td>-.0840</td>
</tr>
<tr>
<td>Education</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Significant at < .05 level.

Table 6 reveals the correlations among the demographic variables. As age increases for the subjects, there is a greater likelihood that they have less education. Even so, age accounts for only 4.7% of the variation in education. No other significant relationships emerged.

Table 7 summarizes the correlations between the demographic variables and the remaining variables. There is a positive relationship between years of education and self-rated health which accounts for 12% of the variance. This relationship also emerged between years of education and GHRI global health score, except the correlation only accounts for 8% of the variance.

While there were no significant correlations between demographic variables and the CHS, interesting relationships were identified between all of the demographic variables and the HPS. Age was negatively correlated
with both the quantity and quality of humorous endings accounting for 6% and 8% of the variances respectively.

Table 7

Matrix of Correlations Between Demographic, Stress, Health, Well-Being and Humor Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Age</th>
<th>Gender</th>
<th>Education</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total stress</td>
<td>-.1313</td>
<td>.1881</td>
<td>-.0717</td>
</tr>
<tr>
<td>Stress frequency</td>
<td>-.1867</td>
<td>.1910</td>
<td>-.0340</td>
</tr>
<tr>
<td>Mean stress</td>
<td>.1144</td>
<td>.0643</td>
<td>-.1170</td>
</tr>
<tr>
<td>Self-rated health</td>
<td>-.0482</td>
<td>-.0221</td>
<td>.3510***</td>
</tr>
<tr>
<td>GHRI</td>
<td>-.0857</td>
<td>-.0199</td>
<td>.2790**</td>
</tr>
<tr>
<td>Workdays missed</td>
<td>-.0821</td>
<td>.0709</td>
<td>-.1034</td>
</tr>
<tr>
<td>Physician visits</td>
<td>-.1133</td>
<td>.0809</td>
<td>-.1415</td>
</tr>
<tr>
<td>PGWB</td>
<td>.1530</td>
<td>-.0206</td>
<td>.1693</td>
</tr>
<tr>
<td>Mental Health Days</td>
<td>-.1895</td>
<td>.1326</td>
<td>-.0173</td>
</tr>
<tr>
<td>CHS</td>
<td>.0419</td>
<td>.0072</td>
<td>.0150</td>
</tr>
<tr>
<td>Humor quantity</td>
<td>-.2506**</td>
<td>.2057*</td>
<td>.4903***</td>
</tr>
<tr>
<td>Humor quality</td>
<td>-.2858**</td>
<td>.1282</td>
<td>.4871***</td>
</tr>
</tbody>
</table>

**Significant at < .01 level.
***Significant at < .001 level.

Gender data revealed that females tend to produce a greater number of humorous endings accounting for 4% of the variance in the total quantity of endings generated.
by the subjects. The reasons for this difference are not clear. There were no significant gender differences in the quality of the endings.

The strongest relationships discovered were between years of education and both quantity and quality of humorous endings on the HPS. In both instances knowledge of educational level accounts for 24% of the variance.

Table 8
Matrix of Correlations Among Stress Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Stress of Stress</th>
<th>Frequency</th>
<th>M Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Stress</td>
<td>--</td>
<td>.9496***</td>
<td>.4432***</td>
</tr>
<tr>
<td>Frequency of Stress</td>
<td>--</td>
<td>-.1695</td>
<td></td>
</tr>
<tr>
<td>M Stress</td>
<td></td>
<td></td>
<td>--</td>
</tr>
</tbody>
</table>

***Significant at < .001 level.

Table 8 shows the correlations among the stress variables. As expected, the positive correlation between total stress and stress frequency is very high such that 90% of the variance is shared. It is also no surprise that mean stress is positively correlated with total stress sharing 20% of its variance.
Table 9
Matrix of Correlations Between Stress, Health, Well-Being and Humor Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Total Stress</th>
<th>Frequency of Stress</th>
<th>M Stress</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated health</td>
<td>-.1492</td>
<td>-.1067</td>
<td>-.1446</td>
</tr>
<tr>
<td>GHRI</td>
<td>-.3191***</td>
<td>-.2758**</td>
<td>-.2267*</td>
</tr>
<tr>
<td>Workdays missed</td>
<td>.3562***</td>
<td>.3400***</td>
<td>.1760</td>
</tr>
<tr>
<td>Physician visits</td>
<td>.2278*</td>
<td>.1816</td>
<td>.2051*</td>
</tr>
<tr>
<td>PGWB</td>
<td>-.3028**</td>
<td>-.1965*</td>
<td>-.4504***</td>
</tr>
<tr>
<td>Mental Health Days</td>
<td>.3128**</td>
<td>.3045**</td>
<td>.1132</td>
</tr>
<tr>
<td>CHS</td>
<td>-.0881</td>
<td>-.0863</td>
<td>-.0824</td>
</tr>
<tr>
<td>Humor quantity</td>
<td>.0579</td>
<td>.0841</td>
<td>-.0250</td>
</tr>
<tr>
<td>Humor quality</td>
<td>-.0048</td>
<td>.0162</td>
<td>-.1018</td>
</tr>
</tbody>
</table>

*Significant at < .05 level.
**Significant at < .01 level.
***Significant at < .001 level.

Table 9 summarizes the correlations between the stress variables and the remaining variables. There are negative correlations between all three indicators of stress and the GHRI and PGWB global scores showing that as stress increases, health and psychological well-being decrease. Also, as scores on total stress and stress...
frequency go up, the numbers of physician visits, total work days missed, and mental health days taken also increase. Self-rated health was not significantly correlated with any of the three stress measures. Neither were there significant correlations between stress variables and any of the humor variables.

Table 10

Matrix of Correlations Among Humor Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>CHS</th>
<th>HPS Quantity</th>
<th>HPS Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHS</td>
<td>--</td>
<td>.0810</td>
<td>.0755</td>
</tr>
<tr>
<td>HPS (Quantity)</td>
<td>--</td>
<td>--</td>
<td>.6526***</td>
</tr>
<tr>
<td>HPS (Quality)</td>
<td></td>
<td></td>
<td>--</td>
</tr>
</tbody>
</table>

***Significant at < .001 level.

Table 10 shows the correlations among the humor variables. It is not surprising that the two measures derived from the HPS, were highly intercorrelated sharing 43% of their variance. Often, those subjects who produced more endings, were also independently judged to be more humorous. Quite unexpectedly, the two independent instruments used to assess sense of humor were virtually uncorrelated with each other. Whether the CHS was correlated with the HPS's measure of humor quality or humor
quantity failed to alter the results. Both shared less than 1% variance with the CHS.

Table 11

Matrix of Correlations Between the Humor Variables, Psychological Well-Being, and Health

<table>
<thead>
<tr>
<th>Variables</th>
<th>CHS</th>
<th>HPS Quantity</th>
<th>HPS Quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>PGWB</td>
<td>.2222*</td>
<td>-.0279</td>
<td>-.0526</td>
</tr>
<tr>
<td>Mental Health Days</td>
<td>-.1955*</td>
<td>-.0032</td>
<td>-.0131</td>
</tr>
<tr>
<td>Self-rated health</td>
<td>.1358</td>
<td>.1956*</td>
<td>.1071</td>
</tr>
<tr>
<td>GHRI</td>
<td>.1107</td>
<td>.1745</td>
<td>.2047*</td>
</tr>
<tr>
<td>Workdays missed</td>
<td>-.1912</td>
<td>-.0368</td>
<td>.0264</td>
</tr>
<tr>
<td>Physician visits</td>
<td>-.1039</td>
<td>.0533</td>
<td>.0942</td>
</tr>
</tbody>
</table>

*Significant at < .05 level.

Table 11 summarizes the correlations between the humor, psychological well-being, and health variables. While the CHS correlates with measures of psychological well-being, p < .05), neither measure derived from the HPS correlates significantly with psychological well-being. When it comes to physical health, the opposite seems to be true. Humor quantity correlates with self-rated health $r = .196$, p = .05, whereas humor quality is significantly correlated with the GHRI global measure of
health, \( r = 0.205, p = 0.04 \).

The correlation between the two psychological well-being variables of PGWB score and mental health days missed was \( r = -0.2679, p = 0.008 \). This negative correlation was highly significant and in the expected direction since persons with greater well-being, would be less likely to require impromptu days off due to emotional distress.

Table 12

Matrix of Correlations Among Health Variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Rated Health</th>
<th>GHRI</th>
<th>Work Missed</th>
<th>M.D. Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated health</td>
<td>--</td>
<td>0.6328***</td>
<td>-0.1487</td>
<td>-0.3275***</td>
</tr>
<tr>
<td>GHRI</td>
<td>--</td>
<td>--</td>
<td>-0.3980***</td>
<td>-0.4572***</td>
</tr>
<tr>
<td>Work missed</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>0.5661***</td>
</tr>
<tr>
<td>M.D. visits</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

***Significant at < .001 level.

Table 12 shows the correlations among the four measures of health. As with the measures of psychological well-being, highly significant correlations were found between all of the independent measures (\( p = 0.001 \)) except for the relationship between self-rated health and work days missed.
Table 13

Matrix of Correlations Between the Psychological Well-Being and Health Variables.

<table>
<thead>
<tr>
<th>Variables</th>
<th>PGWB</th>
<th>Mental Health</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated Health</td>
<td>0.3372***</td>
<td>-0.3248***</td>
<td></td>
</tr>
<tr>
<td>GHRI</td>
<td>0.2844**</td>
<td>-0.2856**</td>
<td></td>
</tr>
<tr>
<td>Work days missed</td>
<td>-0.2205*</td>
<td>0.4802***</td>
<td></td>
</tr>
<tr>
<td>M.D. visits</td>
<td>-0.3778***</td>
<td>0.2850**</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at < .05 level.
**Significant at < .01 level.
***Significant at < .001 level.

Table 13 summarizes the correlations between the variables for psychological well-being and health. All of the various indicators for both psychological well-being and health were intercorrelated. The level of significance for these relationships ranged from \( p = 0.03 \) at one extreme to \( p = 0.0001 \) at the other. The relationship between these variables appears to be a very meaningful one in that knowledge of the status of any one of the various measures representing each variable will contribute knowledge concerning the status of the other variable.
Analysis of the Findings

The original intent of this study was to show that it is possible to predict both health and psychological well-being if a measure of the subject's humor is known. Two measures of humor were selected in light of the wide range of definitions that exist for sense of humor. The expectation was that these two measures would overlap to some degree. They could then be combined through the use of a multiple regression equation in order to show some improvement over the predictive power of either one alone.

However, when a simple correlation matrix was constructed between all of the different variables assessed, the two separate instruments designed to measure humor were, for all practical purposes, unrelated to one another, \( r = 0.08, p = 0.43 \) and \( r = 0.07, p = 0.46 \). Whatever the two measures were assessing, it became obvious that both could not be measuring the same thing with such a low intercorrelation.

In reexamining each of the humor instruments, a major difference emerges. The CHS seems to be assessing the subject's self-reported belief in the value of humor in their own past as a means of coping with problems. In a sense, it is like an interest test, reflecting an orientation or leaning towards valuing humor.
Another way of differentiating the CHS from the HPS would be to view the CHS as more of a measure of the subjective identity of the individual as a person who uses humor as a coping mechanism, regardless of how humor is defined and/or expressed. As already noted, individual variations in personality could be expected to influence the ultimate form of expression that the humor takes for that individual.

On the other hand, the HPS is similar to an aptitude or skills test in that it requires the subject to creatively produce alternative humorous endings to situations that might be viewed anywhere from non-humorous irritations to catastrophic events. This instrument requires the subject’s humor to take on a certain format which depends on specific skills in creative thinking and writing.

While it might logically follow that a belief in the value of humor leads to effective humor production, this may not be the case at all. The extremely low correlation between the two humor measures would seem to support the idea that the two factors are separate.

For the sake of clarification, the CHS will be viewed as a measure of the subject’s belief that humor, however it may be expressed within the bounds of their unique personality characteristics and personal identity, plays a positive role in coping with stress. The HPS
will be understood as a measure of the ability to generate in written format alternative meanings to potentially aggravating circumstances, a tool that has obvious value when facing unexpected hassles.

Since the two measures of humor are uncorrelated, there is no advantage to using a multiple regression analysis over the simpler correlation matrix. Hence, the validity of the four hypotheses are judged on the basis of the correlations.

Hypothesis Testing

In creating the hypotheses, a decision was made to test the widely held belief that exercising one's sense of humor promotes health and counteracts illness. The popularity of such beliefs is shown in the best-selling status of books such as Anatomy of an Illness by Norman Cousins and Love Medicine & Miracles by Bernie Siegel.

If such beliefs are true, one should be able to demonstrate that persons who are more adept at exercising their sense of humor, while experiencing the same number of potentially stressful events, would demonstrate the following three characteristics; lower levels of distress or felt stress, superior health, and superior psychological well-being.
Hypothesis 1

The extent to which individuals cope by using their sense of humor is unrelated to the number of potentially stressful events reported. The correlation between the CHS and the frequency of stressful events was $r = -0.086$, $p = 0.40$. The correlation between the HPS humor quantity measure and the frequency of stressful events was $r = 0.084$, $p = 0.41$. The correlation between the HPS humor quality measure and the frequency of stressful events was $r = 0.016$, $p = 0.87$. Hypothesis one is supported by the absence of any significant correlations between the measure of stress frequency and the three measures derived from each of the two instruments used to assess sense of humor (see Table 9).

Even the highest of the three above correlations accounts for less than 1% of the variance and falls short of being significant by a wide margin. This clearly suggests that individual variations in the number of stressful events reported by the subject's were not related to their individual senses of humor as assessed with the CHS and HPS. This finding argues against the idea that the frequency of stressful events actually determines the level of one's sense of humor.
**Hypothesis 2**

The extent to which individuals cope by using their sense of humor is inversely related to levels of felt stress reported. Evidence relevant to this hypothesis is also found in Table 9 which lists the correlation between each of the two measures of distress intensity (total stress and mean stress) and the three humor indices.

Neither of the two measures of distress were found to be correlated with any of the three humor measures at a level greater than \( r = -.10, p = .32 \), though five of the six relationships were in a negative direction as predicted. Based on this data, it would seem that the degree of felt stress or distress associated with stressors does not co-vary significantly with the subject's sense of humor. Therefore, hypothesis two is rejected.

**Hypothesis 3a**

The extent to which individuals cope by using their sense of humor, as measured by the CHS, is positively related to their self-reported level of psychological well-being. The CHS score is positively correlated with the PGWB score \( r = .222, p = .03 \) and, negatively correlated with mental health days taken \( r = -.195, p = .05 \). A knowledge of the subject’s sense of humor score on the CHS allows one to predict approximately 20% of the vari-
Hypothesis 3b

The extent to which individuals cope by using their sense of humor, as measured by the HPS, is positively related to their self-reported level of psychological well-being. Of the two HPS scores, the one correlating highest with well-being was Humor Quality, $r = -0.053, p = 0.61$. Since both HPS measures were not significantly correlated with psychological well-being (see Table 11) hypothesis 3b is rejected.

Hypothesis 4a

The extent to which individuals cope by using their sense of humor, as measured by the CHS, is positively related to levels of physical health. The CHS fails to correlate with any of the benchmarks of health used in this study. Of the four health measures the one correlating highest with the CHS was Work Days Missed, $r = -0.191, p = 0.06$. While this comes close to the .05 level of significance, one must nevertheless reject hypothesis 4a.

Hypothesis 4b

The extent to which individuals cope by using their
sense of humor, as measured by the HPS, is positively related to two of the four measures of physical health. It is interesting to note that each of the two HPS indices correlates significantly with a different one of the four health measures. Humor quality correlated with the total score on the GHRI, $r = .205$, $p = .04$, while the quantity of humorous endings generated correlated with self-rated health, $r = .196$, $p = .05$. Neither of the HPS measures correlated significantly with either work days missed, nor physician visits.

Since significant correlations were found between the HPS measures and the two primary measures of health, one might at first suggest that hypothesis 4b be accepted. However, the correlation matrix also revealed strong correlations between educational level and both measures derived from the HPS, $r = .49$, $p < .0001$ for both. A correlation this high shows that educational level accounts for 24% of the variance in HPS scores. Clearly, the possibility exists that the relationship between humor, as measured by the HPS, and health is mediated by educational level.

In order to remove the effects of educational level from the relationship between health measures and HPS scores, a partial correlation analysis was run between the HPS measures and the health measures, controlling for the effects of educational level. The outcome of this
additional analysis was a non-significant correlation between the HPS measures and health, $r = .082$. It appears that rather than humor, as measured by the HPS, it is actually educational level that functions as a fairly strong predictor of health. This additional analysis leads to the rejection of hypothesis 4b.

**Two-Predictor Model**

Perhaps a more meaningful question to ask is whether or not sense of humor, as measured by the CHS, adds significantly to the predictive power of stress when attempting to forecast levels of psychological well-being. As already noted, (Table 9) total stress experienced is a significant predictor of both health and psychological well-being by itself. The 10% of the variance in health accounted for by knowledge of total stress, as measured in this study, is consistent with prior research as summarized by Christianson (1985). Likewise, knowing total stress in this study allows for prediction of 9% of the variance in well-being.

A step-wise multiple regression analysis was done in which total stress was used along with the CHS total score as a predictor of psychological well-being. Whereas the one-predictor stress model predicted 9% of the variance, $R$-square = .092, $p = .002$, the two predictor model, in which the CHS total score was added, in-
creased the amount of variance explained to 13%, R-square = .130. Although 4% may not seem like a large amount, the analysis revealed that the additional variance accounted for was significant, p = .05. Based on this multiple regression analyses, it seems safe to conclude that a person's sense of humor exerts some sort of moderating effect on the impact of stress on the psychological well-being of the individual. While significant, the meaningfulness of this relationship is open to interpretation.
CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

In this chapter, the statement of the problem, the related literature, the purpose of the study, the methodology and the findings will be briefly summarized. Discussion of the results, conclusions and recommendations will follow.

Through the years much has been written about the positive effects of sense of humor on both health and to a lesser degree, psychological well-being. The extent to which this is true is reflected in the popularly held belief that a good sense of humor is a major asset to the individual. Unfortunately the overwhelming majority of this published material has been anecdotal and not empirically derived. This study represents a preliminary attempt to address these important issues through the gathering of data.

Empirical studies have established that stress is related to the health and well-being of individuals. However, stress is not a particularly strong or powerful predictor of health or well-being, accounting for only about 10% of the variance.
This study set out to evaluate the role of sense of humor as a mediator of the effects of stress on physical health and psychological well-being. A model was suggested in which sense of humor is portrayed as a buffer of the deleterious effects of stress on the human mind and body. Issues of definition were reviewed since all of the variables being measured have been defined in a myriad of ways. Instruments were selected that most closely reflected the definitions chosen.

The first source for generating data was a personal data form (Appendix D) designed to gather relevant demographic information about respondents. It included questions about age, gender, education, sick days, and mental health days, and the number of physician visits during the past year, as well as an item asking the subject to rate their overall health on a scale from 4 to 1.

While most of the tests used had been previously validated, the second instrument, the Common Concerns Scales (CCS), was a modification of a prior scale called the Hassles Scale which was created by Kanner, Coyne, Schaefer, and Lazarus (1981). The CCS (Appendix F) consisted of a list of 117 hassles related to work, health, family, friends, the environment, practical considerations, and chance occurrences. Subjects were instructed to circle only those hassles that happened to them in the
past month and then to indicate the degree of distress, if any, associated with each circled hassle.

Sense of humor was assessed using one previously validated scale and one new scale devised by the author. The Coping Humor Scale (CHS), the pre-existing measure of sense of humor, was constructed by Martin and Lefcourt (1983). This brief instrument (Appendix G) is aimed directly at assessing the degree to which subjects report using humor as a means of coping with stressful experiences.

The other instrument used to assess humor, The Humorous Perspective Scale (HPS), was created specifically for this study. The HPS (Appendix H) was an attempt to identify the capacity of subjects to take a humorous cognitive perspective toward three fairly common sets of circumstances that might, in the absence of such a capacity, also be interpreted as major sources of distress. The HPS consists of three items, each of which briefly describes a scenario. Subjects were instructed to complete the scenario by writing out as many different humorous endings as they could think of. Both the number of endings offered and the overall humorousness of the endings were evaluated.

The Psychological General Well-Being Index (PGWB) was devised by Dupuy (1984). The PGWB (Appendix J) consists of 22 items, further broken down into six non-
overlapping scales composed of 3-5 items each. While the six scales assess anxiety, depressed mood, positive well-being, self-control, general health and vitality, only the overall index score was used in this study.

The final instrument, the General Health Rating Index (GHRI), consists of 26 statements concerning health which the subject identifies as either definitely true, mostly true, don’t know, mostly false, or definitely false. In addition to providing a general health ratings index, the GHRI (Appendix K) items are grouped into the six following scales: Current Health, Prior Health, Health Outlook, Resistance, Health Worry/Concern, and Sickness Orientation. As with the PGWB, only the overall health-index score of the GHRI was analyzed in this study.

A randomly selected sample of subjects was selected from the sampling population of hospital employees. From this sample, 100 subjects completed the questionnaire. When outliers were eliminated, 97 subjects remained that were deemed suitable for inclusion in the study.

Before the final analysis of the data, the modified instrument (CCS) was subjected to an item analysis to evaluate the internal consistency and further refine the tool. The data were then analyzed and a simple correlation matrix was generated to show the inter-relationships between the following four groups of variables; demo-
graphics (age, gender, education), psychological well-being (PGWB score, mental health days missed), physical health (self-rated health, GHRI total, work days missed, physician visits), stress (total stress, mean felt stress, frequency of stressors), and sense of humor (CHS total, HPS quantity, HPS quality).

Although the original intent was to combine the sense of humor data in a multiple regression equation and thus derive a two-predictor model for health and another one for psychological well-being, the two humor measures were virtually uncorrelated with each other. This lead to a modification of hypotheses 3 and 4 such that each was split into two hypotheses, one for each of the two non-correlated humor measures.

Findings

Hypotheses Confirmed

The data from the simple correlation matrix was used to test the six primary hypotheses. In doing so, two of the six hypotheses received support while the other four did not. The first to receive support was hypothesis 1, the extent to which individuals cope by using their sense of humor is unrelated to the number of potentially stressful events reported. Also supported was hypothesis 3(a) The extent to which individuals cope by using their
sense of humor, as measured by the CHS, is positively related to their self-reported level of psychological well-being.

Hypotheses Not Confirmed

Hypothesis 2, the extent to which individuals cope by using their sense of humor is inversely related to levels of felt stress reported, was not supported by the data. Neither were hypothesis 3(b), the extent to which individuals cope by using their sense of humor, as measured by the HPS, is positively related to their self-reported level of psychological well-being, hypothesis 4(a), the extent to which individuals cope by using their sense of humor, as measured by the CHS, is positively related to physical health, or hypothesis 4(b), the extent to which individuals cope by using their sense of humor, as measured by the HPS, is positively related to physical health.

Additional Analysis

An effort was also made to determine whether or not knowledge of a person's sense of humor adds significantly to the power of stress as a predictor of either health or psychological well-being. The answer was determined by combining sense of humor measures with stress measures in a two-predictor multiple regression equation. The re-
sults showed that knowing a person’s sense of humor explained an additional 4% of the variance in either health or well-being as opposed to knowing only the amount of stress experienced. Although 86% of the variance still remains unaccounted for, an empirical argument can now be made for including sense of humor in the complex matrix of factors impacting on health and well-being.

Discussion of Findings

A number of pertinent issues are worthy of further discussion in light of the fact that only one of the four original primary hypotheses and one of the two secondary hypotheses were confirmed by the data. One such issue involves the unexpected finding that the two independent measures of humor were essentially uncorrelated with each other.

As noted in Chapter I, many definitions exist for sense of humor. Likewise, varied attempts have been made to design tools to measure it. While it was not necessarily expected that the new instrument (HPS) would correlate highly with the existing measure selected (CHS), neither was it anticipated that the two would be virtually uncorrelated. The lack of correlation, leaves only two possible explanations. First, one and perhaps both of the instruments fail to measure sense of humor. Second, both instruments are measuring different facets or
aspects of sense of humor.

In exploring the first hypothesis, the contents and nature of the two instruments must be compared. The CHS, is a rather transparent attempt to extract from the subject a self-report of the extent to which they use their sense of humor as a means of coping with stress. To some extent, it equates the presence and extent of audible laughter with possession of a sense of humor. It makes no attempt to measure their adeptness at actually being humorous. What it does seem to do is identify those subjects whose identity is made up, in part, of the personal philosophy that their sense of humor is an effective means of coping with stress.

The second instrument, forces the subject to generate what they judge to be humorous alternative endings to fairly common yet potentially stressful situations. In essence, it is a skills test whereas the former is merely a measure of the subject's belief in the value of humor as a coping tool.

Another unexpected finding relates to the fact that the HPS turned out to be positively correlated with educational level. This raises additional questions concerning its nature. One reasonable explanation suggests that education increases a person’s cognitive resources and intellectual flexibility in a way that increases their ability to appreciate humor. An alternate hypothe-
sis would state that intelligence serves as the basis for both educational level and sense of humor. While both of these represent viable possibilities, the data from this study is useless in determining which may offer the best explanation.

Previously cited research by Levine and Redlich (1960) has shown that there is a positive relationship between sense of humor and intelligence. It is also a well documented fact that IQ and educational level are strongly related. Kaufman (1990) describes the relationship between these two variables as "monstrous in magnitude" (p. 172). He goes on to point out that the relationship is even stronger for verbal intelligence than it is for non-verbal intelligence. A landmark study by Chastain and Joe (1987) found that the best predictor of the unrelated, first factor of principal factor analysis, commonly known as the general factor of intelligence, was years of education.

In light of these facts, it is conceivable that the reason for the strong positive correlation between HPS scores and educational level is related to the third variable of general intelligence. If this is true, those with higher general intelligence would be expected to have attained a higher educational level as well as a superior score on the HPS, when compared with those with a lower level of educational attainment.
Taking this line of reasoning one step further, perhaps sense of humor is one of many facets of intelligence, not unlike comprehension, judgement, planning, visual-spatial skills, etc. Just as these other previously identified facets of intelligence load heavily on the general factor, one might hypothesize the same to be true for sense of humor.

It seems that actual skill in producing humorous endings, as measured by the HPS, fails to predict health, when educational level is controlled for. This same skill has no significant relationship to psychological well-being whereas, a philosophy which values humor as a coping mechanism fails to predict health at all while doing a modest job of predicting psychological well-being.

It would be interesting to be able to understand the effects that different personality styles may have had on the ability of the CHS to predict well-being. Since none of the instruments administered in this study assessed this factor, clarifying the relationship between personality variables and sense of humor remains as a goal for further research. Perhaps the only meaningful finding of this present study is that psychological well-being is modestly predicted by the personal philosophy which regards sense of humor, however expressed, as worthwhile. If this is true, this study may have actually demonstrated the extent to which one's self-view, or personal
identity moderates stress rather than the actual role of sense of humor as a mediator of stress.

Based on the above considerations, the idea that neither of the two instruments are measuring sense of humor is rejected in favor of the suggestion that they each measure different facets of sense of humor. Additional research which focuses on the relationship between sense of humor and intelligence may prove fruitful in further untangling the relationship between humor and health.

Another interesting finding relates to the fact that no relationship was found between the levels of felt stress or distress experienced by subjects and their senses of humor as had been predicted by hypothesis 2. One must conclude that sense of humor, as measured in this study, fails to appreciably mediate the degree of negative affect associated with potential stressors. While humor may afford one some temporary pleasure in the midst of stressful circumstances, the overall net effect is not appreciable enough to have been measured by the modified Hassles Scale used in this research.

To some degree the sought after evidence may have been lost due to problems with the CSS since many subjects seemed to have difficulty with the format of the instrument. Specifically, a number of the instruments had to be returned to subjects who were having difficulty understanding the directions. It is quite possible that
instead of circling the item numbers of all potentially stressful concerns that had occurred in the past month, many subjects circled only those events which they associated with some degree of felt stress.

Additional evidence that this may have been a confounding influence comes from the nature of some of the concerns listed. While most of the concerns were events that may or may not have occurred for any subject, some, by definition, had occurred for virtually all. Note the following examples; item 40—Having to wait, item 51—Physical appearance, item 62—Filling out forms, item 93—Television, item 99—The weather, item 108—Shopping, item 110—Property, investments or taxes, item 114—Noise, item 116—Traffic, and item 117—Pollution. In spite of the universal nature of these concerns, very few of the subjects identified them as having occurred. One plausible interpretation would be that since they were not seen distressing, they were bypassed. This approach to the test would have defeated the original intent of the researcher to identify the presence or absence of each potential stressors independent of the extent of distress associated with each event. Any future use of the CCS should look for a better way of separating the occurrence of events from the distress associated with them.

A final question relates to the generalizability of
the findings. Although randomized selection procedures were used to generate a sample, there are at least two dimensions on which the sample differed from the population as a whole. First, the sample was made up of hospital employees. Although a cross section of over 20 professional, skilled, semi-skilled, and unskilled occupations was represented, there was a disproportionate number of professionals and women represented. The largest group represented was nurses. In spite of this fact, the descriptive statistics for the sample closely approximated those for the GHRI and PGWB, the only instruments for which national norms were available. The normative data on the CHS, although much less extensive, was also consistent with the values obtained for the sample under study.

The issue of the gender imbalance seems to have had a minimal impact on the data since only one significant correlation was found between gender and any of the other variables (Table 7). Specifically, females were found to produce a greater number of humorous endings \((p = <.05)\) on the humorous perspective scale. This carries less significance since the quantity of endings offered by subjects was ultimately rejected in favor of the overall quality of the endings as a predictor. Hence, from what is known about the similarity of the sample to available norms, it would appear that there is some justification...
for some generalization to the broader population of employed adults.

Further discussion regarding the non-causal nature of the study seems appropriate. While the relationships between humor, health and psychological well-being have been shown, the directionality of those relationships remains in question. It must be clearly understood that correlation does not suggest causation. The two safe conclusions that can be drawn from the data in this study are that: (1) humor and psychological well-being are related, but either could be caused by the other, or both could be caused by some unexamined third variable; and (2) stress and health are unrelated to humor.

With the above caveats in mind, if we are to generalize the findings to employed adults, what are the implications? First, it would seem that the commonly held belief in the practical value of sense of humor is mildly supported by this study though only for psychological well-being. However, the power of humor as a predictor, as operationlized in this study, must be seen as modest at best. It seems likely that it is but one of a number of inter-related factors such as hardiness, optimism, past experiences, genetic or constitutional factors, and perhaps general intelligence, which are somehow related to psychological well-being. An awareness of the value of humor may still prove useful to those whose business
it is to marshall all the potentially salutatory factors in their effort to combat emotional illness and further self-actualization in the clients they serve.

Of the existing tools available to professionals, humor promises one unique characteristic. Specifically, it can afford pleasure to an otherwise unpleasant situation. Even if it has no palliatory effects, this ability to provide momentary pleasure in the midst of an otherwise distressing situation may be of some value in and of itself. With increasing evidence that humor is capable of creating physiological changes, further research in psychoneuroimmunology will hopefully clarify the means by which this process takes place.

In the mean time, controlled experimental studies need to be done that will compare therapeutic techniques built on promoting humor use, with other, more traditional approaches to treatment. It is the intent of this researcher to design and carry out such research, beginning with a comparison between humor group therapy and more traditional interpersonal group therapy. Additional avenues of research may further elaborate on the relationship between personality, intelligence, and sense of humor.
Appendix A

Letter of Permission From the Hospital to Conduct Research
MEMORANDUM

TO: Timothy E. Spruill
Clinical Psychologist

FROM: Frederick M. Gibby
Vice President Human Resources

DATE: May 25, 1990

RE: Research Project

On behalf of the Executive Council of Mercy Memorial Medical Center, Inc., I am authorized to grant you permission to conduct your research project. Permission has been given with the understanding that you will update me as you progress with the project.

The Human Resource department will gladly assist you as your specific needs arise. Please contact me with any requests. Tim, Mercy Memorial is pleased to be able to assist you as we anticipate the project results will be of value to each of us.
Appendix B

Letter of Permission From the Human Subjects Institutional Review Board to Conduct Research
Date: July 24, 1990
To: Timothy Spruill
From: Mary Anne Bunda, Chair
Re: HSIRB Project Number: 90-07-13

This letter will serve as confirmation that your research protocol, "Sense of Humor as a Mediator of the Effects of Stress on Physical Health and Psychological Well-Being," has been approved under the exempt category of review by the HSIRB. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the approval application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

xc: Edward L. Trembley, CECP

Approval Termination: July 24, 1991
Appendix C

Letter Inviting Subjects to Participate
(Date)

Dear (Name of employee),

You have received this letter because your name was randomly selected from the Mercy-Memorial employee roster to participate in a research study. The study is designed to explore the relationship between sense of humor, physical health, and psychological well-being.

Recently, much has been written in the popular press promoting the value of a person's sense of humor in reducing the harmful effects of stress. Unfortunately, there is surprisingly little research evidence to back up this commonly held belief. By participating in this study, you will have an opportunity to add to the understanding of this important subject.

The study will involve completing several questionnaires that will provide current information on your levels of stress, your sense of humor, your physical health and your general psychological well-being. Even though virtually all of the information sought from you is not highly personal or threatening, you will be asked not to write your name on the questionnaires in order to preserve your confidentiality.

The hospital administration has granted their permission for this study to be conducted. Although your participation is completely voluntary, it is very important to the integrity of the study that those who
have been randomly selected take part. I will be contacting you personally within the next week to answer any further questions you may have and to determine your willingness to help with this research.

Thank you.

Sincerely yours,

Tim Spruill, M.A.
You are being invited to participate in a research study that will look at the relationship between a person's sense of humor, their physical health and their psychological well-being. If it can be shown that having a well developed sense of humor protects against the negative effects of stress, health care providers can begin efforts to enable their patients to discover, develop and mobilize their sense of humor as a means of improving their physical and psychological health.

Your direct involvement will be limited to the completion of a set of survey questionnaires. The time required will vary among individuals but should not take longer than approximately one hour. The questionnaires deal with subjects that are not highly sensitive. For these reasons, no foreseeable risks are involved. Even so, participation is completely voluntary and you are free to either skip any individual question(s) you object to or withdraw from the study at any time you chose. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled.

The confidentiality of the individual will be protected by using a coded number to identify the questionnaires. Only the principal investigator will be able to link the questionnaires to your name. No administrators or other hospital staff will have access to the data. Once the data has been collected the coded
list will be destroyed to preserve your confidentiality. If you should have further questions about the research or wish to discuss issues raised by your participation, you may contact Tim Spruill (983-8335).

I, the undersigned, have read and understood the above information and do voluntarily choose to participate.

Signature of research subject Date

Witness Date

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Appendix E

Personal Data Form
PERSONAL DATA

Please complete the following information.

1. Age___

2. Gender Male___ Female___

3. Education (Circle Years Completed)

<table>
<thead>
<tr>
<th>Elementary</th>
<th>High School</th>
<th>College or Graduate</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 2 3 4 5 6 7 8</td>
<td>9 10 11 12</td>
<td>13 14 15 16</td>
</tr>
<tr>
<td>School</td>
<td>Professional</td>
<td>School</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. Occupation____________________________________________________

5. Estimate the total number of days that you stayed home from work/school or were hospitalized due to illness during the past year.____

6. Of the total in item 4, how many of the work/school absences were "mental health" days where you stayed home due to excessive stress or burnout?____

7. Estimate the number of visits you have made to a physician during the past year.____

8. In general, would you say your health is:

(Circle One)

<table>
<thead>
<tr>
<th>Excellent</th>
<th>Good</th>
<th>Fair</th>
<th>Poor?</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>
Appendix F

Common Concerns Scale
common concerns annoyances to difficulties. They have occurred

Do NOT Stress. Extreme

Wtf, "mole" P S T R E S S
COMMON CONCERNS SCALE

Directions: Listed below are some common concerns that can range from non-stressful to minor annoyances to fairly major pressures, problems, or difficulties. They can occur few or many times or they may not have occurred at all for you.

First, circle the item number of each concern that has occurred for you in the past month. Then look at the numbers to the right of the item numbers you circled. Indicate by circling 0, 1, 2 or 3 how much felt stress, each concern has generated in you during the past month. If a concern did not occur in the last month do NOT circle it.

---------------------------------------

DEGREE OF FELT STRESS

<table>
<thead>
<tr>
<th>Concerns</th>
<th>None</th>
<th>Mild</th>
<th>Moderate</th>
<th>Extreme</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Misplacing or losing things</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>2. Troublesome neighbors</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>3. Social obligations</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>4. Inconsiderate smokers</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>5. Troubling thoughts about your future</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>6. Thoughts about death</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>7. Health of a family member</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>8. Not enough money for clothing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Concerns</td>
<td>None</td>
<td>Mild</td>
<td>Moderate</td>
<td>Extreme</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------</td>
<td>------</td>
<td>----------</td>
<td>---------</td>
</tr>
<tr>
<td>9. Not enough money for housing</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>10. Concerns about owing money</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>11. Concerns about getting credit</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>12. Concerns about money for emergencies</td>
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</table>
HAVE WE MISSED ANY OF YOUR CONCERNS? IF SO, WRITE THEM IN BELOW:

118. __________________________ 0 1 2 3

ONE MORE THING: HAS THERE BEEN A CHANGE IN YOUR LIFE THAT AFFECTED HOW YOU ANSWERED THIS SCALE? IF SO, TELL US WHAT IT WAS:

__________________________________________________________________________

Appendix G

Coping Humor Scale
COPING HUMOR SCALE

This questionnaire is concerned with the way you express and experience humor. Obviously, there is wide variation among individuals and therefore no right or wrong answers to these questions. Below you will find a list of seven statements. Please indicate the degree to which you agree or disagree with that statement by circling a 1 (strongly disagree), 2 (mildly disagree), 3 (mildly agree), or 4 (strongly agree).

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<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Mildly Disagree</th>
<th>Mildly Agree</th>
<th>Strongly Agree</th>
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<td>2. I have often found that my problems have been greatly reduced when I tried to find something funny in them........1</td>
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<td>3. I usually look for something comical to say when I am in tense situation................1</td>
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</table>
4. I must admit my life would probably be easier if I had more of a sense of humor ........ 1 2 3 4

5. I have often felt that if I am in a situation where I have to either cry or laugh, it's better to laugh ............. 1 2 3 4

6. I can usually find something to laugh or joke about even in trying times .................. 1 2 3 4

7. It has been my experience that humor is often a very effective way of coping with problems ....... 1 2 3 4

Appendix H

Humorous Perspective Scale
HUMOROUS PERSPECTIVE SCALE

INSTRUCTIONS: Below are brief descriptions of common situations you have most likely encountered in your past. Each ends with an incomplete sentence. As you think about the situation described, complete the sentence in a way that you see as humorous. Write down as many humorous endings as you can think of. Remember, the purpose is not to write down only the most humorous, but all of the humorous endings that come to mind. Below is a sample item and some endings that are potentially humorous.

SAMPLE

You are in a public rest room, taking care of business. You know you're in trouble when:

you notice too late that there's no toilet paper.
you sit down and immediately feel a wet sensation.
when standing up, your wallet or comb accidently falls in the toilet.
you hear several voices of the opposite sex.
the fire alarm goes off.
the person in the next stall passes you a note.
your feet stick to the floor.
1. You’re in a restaurant you haven’t tried before. You know you’re in trouble when:

2. You’ve gone to your physician for a check-up. You know you’re in trouble when:

3. You’re standing in line at the checkout. You’re in a hurry. You know you are in trouble when:
Appendix I

Qualitative Humor Ratings
### Qualitative Humor Ratings

**NAME OF JUDGE____________________ DATE __/__/__**

**NOTE: NO RESPONSE IS CODED AS 0.**

<table>
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Appendix J

Psychological General Well-Being Index
THE PSYCHOLOGICAL GENERAL WELL-BEING INDEX

READ: This section of the examination contains questions about how you feel and how things have been going with you. For each question check [ ] the answer which best applies to you.

1. How have you been feeling in general? (DURING THE PAST MONTH)
   [ ] In excellent spirits
   [ ] In very good spirits
   [ ] In good spirits mostly
   [ ] I have been up and down in spirits a lot
   [ ] In low spirits mostly
   [ ] In very low spirits

2. How often were you bothered by any illness, bodily disorder, aches or pains? (DURING THE PAST MONTH)
   [ ] Every day
   [ ] Almost every day
   [ ] About half of the time
   [ ] Now and then, but less than half the time
   [ ] Rarely
   [ ] None of the time
3. Did you feel depressed? (DURING THE PAST MONTH)
   [ ] Yes— to the point that I felt like taking my life
   [ ] Yes— to the point that I did not care about anything
   [ ] Yes— very depressed almost every day
   [ ] Yes— quite depressed several times
   [ ] Yes— a little depressed now and then
   [ ] No— never felt depressed at all

4. Have you been in firm control of your behavior, thoughts, emotions, or feelings? (DURING THE PAST MONTH)
   [ ] Yes, definitely so
   [ ] Yes, for the most part
   [ ] Generally so
   [ ] Not too well
   [ ] No, and I am somewhat disturbed
   [ ] No, and I am very disturbed

5. Have you been bothered by nervousness or your "nerves"? (DURING THE PAST MONTH)
   [ ] Extremely so— to the point where I could not work or take care of things
   [ ] Very much so
   [ ] Quite a bit
   [ ] Some— enough to bother me
   [ ] A little
   [ ] Not at all
6. How much energy, pep, or vitality did you have or feel?
   (DURING THE PAST MONTH)
   [ ] Very full of energy—lots of pep
   [ ] Fairly energetic most of the time
   [ ] My energy level varied quite a bit
   [ ] Generally low in energy or pep
   [ ] Very low in energy or pep most of the time
   [ ] No energy or pep at all—I felt drained, sapped

7. I felt downhearted and blue DURING THE PAST MONTH.
   [ ] None of the time
   [ ] A little of the time
   [ ] Some of the time
   [ ] A good bit of the time
   [ ] Most of the time
   [ ] All of the time

8. Where you generally tense or did you feel any tension?
   (DURING THE PAST MONTH)
   [ ] Yes—extremely tense, most or all of the time
   [ ] Yes—very tense most of the time
   [ ] Not generally tense but did feel fairly tense
       several times
   [ ] I felt a little tense a few times
   [ ] My general tension level was quite low
   [ ] I never felt tense or any tension at all
9. How happy, satisfied, or pleased have you been with your personal life? (DURING THE PAST MONTH)

[ ] Extremely happy—could not have been more satisfied or pleased
[ ] Very happy most of the time
[ ] Generally satisfied—pleased
[ ] Sometimes fairly happy, sometimes fairly unhappy
[ ] Generally dissatisfied, unhappy
[ ] Very dissatisfied or unhappy most of the time

10. Did you feel healthy enough to carry out the things you like to do or had to do? (DURING THE PAST MONTH)

[ ] Yes—definitely so
[ ] For the most part
[ ] Health problems limited me in some important ways
[ ] I was only healthy enough to take care of myself
[ ] I needed some help in taking care of myself
[ ] I needed someone to help me with most or all of the things I had to do
11. Have you felt so sad, discouraged, hopeless, or had so many problems that you wondered if anything was worthwhile? (DURING THE PAST MONTH)

[ ] Extremely so— to the point that I have just about given up
[ ] Very much so
[ ] Quite a bit
[ ] Some— enough to bother me
[ ] A little bit
[ ] Not at all

12. I woke up feeling fresh and rested DURING THE PAST MONTH.

[ ] None of the time
[ ] A little of the time
[ ] Some of the time
[ ] A good bit of the time
[ ] Most of the time
[ ] All of the time

13. Have you been concerned, worried, or had any fears about your health? (DURING THE PAST MONTH)

[ ] Extremely so
[ ] Very much so
[ ] Quite a bit
[ ] Some, but not a lot
[ ] Practically never
[ ] Not at all

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14. Have you had any reason to wonder if you were losing your mind, or losing control over the way you act, talk, think, feel or of your memory? (DURING THE PAST MONTH)

[ ] Not at all
[ ] Only a little
[ ] Some—but not enough to be concerned or worried about
[ ] Some and I have been a little concerned
[ ] Some and I am quite concerned
[ ] Yes, very much so and I am very concerned

15. My daily life was full of things that were interesting to me DURING THE PAST MONTH.

[ ] None of the time
[ ] A little of the time
[ ] Some of the time
[ ] A good bit of the time
[ ] Most of the time
[ ] All of the time
16. Did you feel active, vigorous, or dull, sluggish?

(DURING THE PAST MONTH)

[ ] Very active, vigorous every day
[ ] Mostly active, vigorous—never really dull, sluggish
[ ] Fairly active, vigorous—seldom dull, sluggish
[ ] Fairly dull sluggish—seldom active, vigorous
[ ] Mostly dull, sluggish—never really active vigorous
[ ] Very dull, sluggish every day

17. Have you been anxious, worried, or upset? (DURING THE PAST MONTH)

[ ] Extremely so—to the point of being sick or almost sick
[ ] Very much so
[ ] Quite a bit
[ ] Some—enough to bother me
[ ] A little bit
[ ] Not at all

18. I was emotionally stable and sure of myself DURING THE PAST MONTH.

[ ] None of the time
[ ] A little of the time
[ ] Some of the time
[ ] A good bit of the time
[ ] Most of the time
[ ] All of the time
19. Did you feel relaxed, at ease or high strung, tight, or keyed-up? (DURING THE PAST MONTH)

[ ] Felt relaxed and at ease the whole month
[ ] Felt relaxed and at ease most of the time
[ ] Generally felt relaxed but at times felt fairly high strung
[ ] Generally felt high strung but at times felt fairly relaxed
[ ] Felt high strung, tight, or keyed up most of the time
[ ] Felt high strung, tight, or keyed up the whole month

20. I felt cheerful, light-hearted DURING THE PAST MONTH.

[ ] None of the time
[ ] A little of the time
[ ] Some of the time
[ ] A good bit of the time
[ ] Most of the time
[ ] All of the time

21. I felt tired, worn out, used up, or exhausted DURING THE PAST MONTH.

[ ] None of the time
[ ] A little of the time
[ ] Some of the time
[ ] A good bit of the time
[ ] Most of the time
[ ] All of the time

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22. Have you been under or felt you were under any strain, stress, or pressure? (DURING THE PAST MONTH)

[ ] Yes—almost more than I could bear or stand
[ ] Yes—quite a bit of pressure
[ ] Yes, some—more than usual
[ ] Yes, some—but about usual
[ ] Yes—a little
[ ] Not at all

Appendix K

General Health Rating Index
GENERAL HEALTH RATING INDEX

Please read each of the following statements, and then circle one of the numbers on each line to indicate whether the statement is true or false for you.

THERE ARE NO RIGHT OR WRONG ANSWERS

If a statement is definitely true for you, circle 5.
If a statement is mostly true for you, circle 4.
If you don't know whether it is true or false, circle 3.
If a statement is mostly false for you, circle 2.
If a statement is definitely false for you, circle 1.

SOME OF THE STATEMENTS MAY LOOK OR SEEM LIKE OTHERS. BUT EACH STATEMENT IS DIFFERENT, AND SHOULD BE RATED BY ITSELF.

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A. According to the doctors

I've seen, my health is

now excellent ........... 5 4 3 2 1

C. I seem to get sick a

little easier than

other people............. 5 4 3 2 1

D. I feel better now than

I ever have before...... 5 4 3 2 1

E. I will probably be sick

a lot in the future..... 5 4 3 2 1

F. I never worry about

my health.............. 5 4 3 2 1
G. Most people get sick
   a little easier
   than I do...............5 4 3 2 1
I. I am somewhat ill........5 4 3 2 1
J. In the future, I expect
to have better health
   than other people
   I know....................5 4 3 2 1
K. I was so sick once I
   though I might die.......5 4 3 2 1
L. I'm not as healthy now
   as I used to be........5 4 3 2 1
M. I worry about my health
   more than other people ..5 4 3 2 1
O. My body seems to resist
   illness very well........5 4 3 2 1
P. Getting sick once in a
   while is a part of
   my life....................5 4 3 2 1
Q. I'm as healthy as
   anybody I know............5 4 3 2 1
R. I think my health will be
   worse in the future than
   it is now................5 4 3 2 1
S. I've never had an illness that lasted a long period
of time......................5 4 3 2 1

T. Others seem more concerned about their health
than I am about mine.....5 4 3 2 1

V. My health is excellent...5 4 3 2 1

W. I expect to have a very healthy life..........5 4 3 2 1

X. My health is a concern in my life..............5 4 3 2 1

Y. I accept that sometimes I'm just going to be sick.........................5 4 3 2 1

Z. I have been feeling bad lately......................5 4 3 2 1

BB. I have never been seriously ill...............5 4 3 2 1

CC. When there is something going around, I usually catch it.................5 4 3 2 1

DD. Doctors say that I am now in poor health......5 4 3 2 1
Definitely | Mostly | Don't | Mostly | Definitely
True    | True   | Know  | False  | False

FF. I feel about as good now as I ever have......5 4 3 2 1

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Appendix L
Humor Judges Demographic Information
### Humor Judges Demographic Information

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