

THE EFFECTS OF NARRATIVE WRITING ON STRESS LEVEL  
IN AN EXERCISING POPULATION

THESIS

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By

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## CHAPTER 1

### INTRODUCTION

Emotional expression has played a central role in the theory, practice and study of psychology. Every individual has a different way of expressing his/her emotions, and there are many different ways to interpret emotional expression, thus allowing many different theoretical approaches to develop. In spite of theoretical diversity, psychologists have historically argued that the expression of emotions is important for mental and physical health. Most recently, there has been a growing body of research that suggests emotional expression can have a positive impact on well-being (Marlo & Wagner, 1999; Pennebaker & Seagal, 1999; Smyth, 1998).

Expressive writing, also known as narrative writing, developed from narrative psychology research. This approach is an alternative type of therapy where individuals are encouraged to express their emotions by writing about them. An important result of the written narrative (the narrative product) is the release of memories, thoughts, or experiences that may have been stressful or problematic for the individual. Research has demonstrated that inhibiting one's emotions can cause or exacerbate, stress-related diseases. The logic of the narrative approach is this: through writing one confronts upsetting topics, thus reducing the constraints, inhibitions, or stresses that are associated with not talking about the event (Pennebaker & King, 1999; Smyth, 1998).

One can use the intervention of narrative writing as a tool to help ease stressful topics and reduce some of the negative aspects of emotional inhabitation. There are other interventions that are helpful in the reduction of stress and one that is considered to be a successful outlet is exercise. Extensive research has documented that exercise is a positive and well-respected method to decrease stress and to improve one's health (Berger & Owen, 1992; Dyer & Crouch, 1987; Kerr & Van Den Wollenberg, 1997; Rodgers & Gauvin, 1998; Steptoe, Kearsley & Walters, 1993; Sutherland & Cooper, 1990).

In the studies just cited provide evidence that narrative writing and exercise reduce stress. However, there is no current research that has examined the effects of narrative writing in an exercising population. This study examines the interaction of narrative writing on stress within an exercising population of college students.

### *Narrative Approaches to Psychology*

There are many different disciplines that contribute to and shape the field of psychology. Some researchers and theorists within the psychology field seem to have little knowledge about the narrative studies conducted; others, may have some contact, but may simply suspect that this is the "latest fad or bandwagon" in the psychology field. This may lead individuals to ask, "What is narrative psychology, and how can it have a solid place in psychology?"

There are two fundamental planes on which these questions may be answered. The first plane is the methodological level, which focuses on the issue of what the idea of narrative can "do". The second is the theoretical level that is concerned with the specifics



of narrative thinking, in particular, how narrative can contribute a unique and useful language for human beings (Freeman, 1997).

Since the behavioral approach, psychology has tended to focus on variables that are observable, objectifiable, quantifiable, and replicable. Narrative can be deemed as an important aspect of human experience- an outward expression of inner stakes if you will. In fact, there may be no better way to look closely at people, nor there a more valuable way of doing so than through the stories that individuals share about their lives (Freeman, 1997).

Researcher Mark Freeman believes that there are some features of methodology that define narrative approaches in psychology. He suggests that the orientation of narrative is “idiographic”, because the analysis of an individual’s life is the main focus. Because there is an emphasis on inquiry into particular lives, the approach will be more qualitative than quantitative (Freeman, 1997).

There are several areas of psychology that theorize about the importance of self-disclosure. According to Social psychologists (Lazarus & Folkman, 1984) self-disclosure enables one to receive coping information and activate comparison processes. Relational theorists conclude one can connect and develop relationships with others that support and validate the individual (Classen, Koopman & Spiegel, 1993). Psychodynamic theorists propose that corrective emotional experience can lead to the reorganization and transformation of the interpersonal and intrapsychic dynamics (Schafer, 1983; Pennebaker & Francis, 1996). Humanistic theorists conclude an increase in self-knowledge can occur (Jourard, 1971). Lastly, cognitive psychologists propose that

narrative writing enables an individual to organize, assimilate, or assign meaning to an event or trauma (Marlo & Wagner, 1999).

Overall, narrative approaches to psychology theorize that human experience and behavior are meaningful. To help individuals understand themselves and others, we need to explore the influences and structures of meaning that make up our minds and world (Crossley, 2000).

Researcher Jerome Bruner (1994) supports the theory that narrative plays a large role in structuring one's life, in arriving at a self-concept, and in defining one's roles as agents in life. The mode of narrative is a way to organize "indefinitely long diachronic sequences" involving activities of fellow friends, oneself, others, and the culture of the world. This is a time for an individual to reflect and study the influences and changes that have occurred over a period of time.

Kenneth and Mary Gergen have focused on the use of narrative psychology for many years. To help an individual identify him or herself through the use of the narrative, Gergen & Gergen (1988) employed the term, "self-narrative", to describe when an individual can account for the relationship among self-relevant events across time. By developing a self-narrative, an individual attempts to establish coherent connections among life events. In particular, the goal here is to try to understand the life events as "systematically related" (p. 19). The narratives of "self" are often constructed from the influence of social actions (opinions, morals, proper behavior, etc.) (Bruner, 1994; Freeman, 1997; Gergen & Gergen, 1988). Here an individual is trying to understand his or her life events by seeing how they are related, and places them into sequences. In

other words, an individual wants to find and give one's life a sense of meaning and direction (Gergen & Gergen, 1988).

How individuals begin to understand themselves and others, they need to look beyond just analyzing themselves as a primary unit, but also analyze their culture- the language, communities, social actions, beliefs and so on because these influences help shape us. Crossley (2000) theorizes that every individual interprets events around him or her in terms of connections and relationships.

Often we ask ourselves (or others) how something is related or connected to someone or something else. Here it is the connections, or relationships, among events that constitute their meaning (Crossley, 2000). Bruner (1994) put the matter well: "it is man's participation in culture and the realization of his mental powers through culture that make it impossible to construct a human psychology on the basis of the individual alone" (p.12).

Through the participation of culture in narrative there should be interpretive style in its methodological approach. Bruner concludes that there are two distinct dimensions that help the interpretation that is involved in the study of lives and the development of "self". The first is the *episodic*, which looks at events or happenings that comprise one's past history. The second dimension is the *configurational*, which is the process of seeing-together past events and trying to understand their meaning.

Culture is not the only important factor influencing the development of narrative. Narrative is historical in orientation and contributes to the interpretive study of one's life through time. A person can reflect on different periods during his or her life and take specific memories and bring together the old with the new. Therefore, narrative can serve

as a bridge to bring people, memories, time, and misunderstandings together with each other (Freeman, 1997).

Gergen & Gergen have concluded that the use of the story form, also known as narrative, helps identify ourselves to others and to ourselves. Not only do individuals tell their lives as stories, but also there is a significant sense in which our relationships with others are lived out in the narrative form. Gergen & Gergen (1988) quote Hardy (1968): “we dream in narrative, daydream in narrative, remember in narrative, anticipate, hope, despair, believe, doubt, plan revise, criticize, construct, gossip, learn, hate and love by narrative” (p.18).

### *Narrative Writing: Review of the Literature*

Attention to narrative writing is premised on the assumption that human experience and behavior are meaningful. In order for us to understand others and ourselves, we need to explore the meaning and structures of what make up our thoughts, emotions, and environment through writing. To arrive at a meaningful life story a person needs to reflect on what has happened in his or her past, and what is happening around him or her today (Bootzin, 1997; Crossley, 2000).

A process is put into play when individuals begin to reflect upon their past: uncertainties, unresolved emotions and stresses associated with past experiences may come to the forefront. To help individuals resolve such issues, one needs to search for meaning to these experiences. Writing can be utilized as an intervention that can help one understand the meaning to these uncertainties, unresolved emotions and stresses.

Narrative writing may serve as a therapeutic tool because the process of engaging issues of personal meaning go to the core of what matters most: joys, tragedies, sadness,

happiness, meanings, moralities and identities. It can provide a mechanism for emotional expression in situations where interpersonal expression is not an option (Smyth, 1998).

Narrative writing can capture the reasons, intentions, beliefs, and goals of an individual's experiences. By identifying and combining thoughts, questions, and emotions together into a story, cognitive processes are engaged. A cognitive re-framing of life events may occur, as one begins to understand and recognize the meaning and significance of events, as well as one's emotional response to the events. As James Pennebaker puts it: "Cognitive processing must incorporate both emotions and perceived objective features of the event" (Pennebaker & Francis, 1996, p.603).

A basic principle of narrative writing is that individuals understand themselves through the medium of language- through talking or writing. Crossley believes that the understanding of selves to be key in narrative; through this process individuals are creating and understanding themselves (Crossley, 2000). Pennebaker & Francis (1996) hypothesized that when individuals used language to explain and understand their experiences, they translated emotions into language; they altered "inchoate" feeling states into conscious verbal labels. Bruner (1994) concludes that, "the influence of language becomes the backbone of narrative because it emerges in a compatible form with conceptualizing and telling about human intentions, actions and vicissitudes" (p.52).

Another researcher, Roy Baumeister, echoes Crossley and Bruner regarding meaning and narrative writing. First, Baumeister & Newman (1994) define narrative as a "mode of thought that best captures the experiential particularity of human action and intentionality, and it involves reasons, intentions, beliefs, and goals" (p. 677). Then he continues by theorizing that constructing narratives constitute a step towards

understanding an event or experience, an exercise in self-interpretation. Describing a detailed incident in story allows one to be “closer” to the experience (Baumeister & Newman, 1994).

In order to help one “make sense” or “find meaning” in one’s experiences through narratives, Baumeister & Newman (1994) concluded that there are four needs for meaning: purposiveness, justification by values, efficacy, and self-worth. These needs for meaning can be useful in the construction of narrative. However, before going into the needs for meaning, it is important to first focus on the basics in understanding the thought, structure, and memories in narrative.

Bruner (1994) believed that there are two modes that an individual uses to help with the structuring and processing of information, the paradigmatic and the narrative. The paradigmatic mode focuses on context-free abstractions, such as the abstract sphere of logic, mathematics and science. For example, personality traits and abstract traits are involved in this realm of thinking, because they help set up the generalizations that include events that an individual has experienced (Baumeister & Newman, 1994).

However, in the narrative mode, the focus is on “coherent stories” regarding particular concrete experiences that are temporally structured and context sensitive. Human actions- as well as beliefs, goals, reasons, or intentions are often captured by this mode of thought. Also, this mode of thought is well suited for helping individuals think about experiences that involve conflicts or contradictions, and reinterpreting and accommodating inconsistent information (Baumeister & Newman, 1994).

Research concerning the structure of story schemas has contributed to the understanding of narrative thinking. According to some of the research theories,

narrative stories are interrelated episodes that describe sequences of human action. These episodes are also known as “casual connectivity” (Georgesén & Solano, 1999). For example, an event triggers a psychological state, this state initiates goals, the goals justify the action that is taken, and an outcome results from the actions. This type of sequence plays a vital role in determining how information is integrated into the structure of narrative.

Another area that has furthered the development of narrative approaches is the research literature on autobiographical memories. Research indicates that there is a relationship between autobiographical memories and motives. These studies have led researchers to conclude that narratives may be sorted and stored in memory by the influence of the goals that guided the behavior (Baumeister & Newman, 1994).

Other researchers have concluded that narratives are influenced by how individuals interpret and integrate their social constructs, and the structure of narratives can be systematically studied. The investigation of modes on thought, story structure, and autobiographical memories led to the same assumption; the construction of narratives is related to the wants, needs and goals of the individual (Baumeister & Newman, 1994; Gergen & Gergen, 1988).

As cited previously, there are four needs for meanings (purposiveness, justification by values, efficacy and self-worth) that Baumeister and Newman believe to be useful in the construction of narrative. There is a need for purposiveness because situations arise, that demand interpretation and linking to future events or states. Baumeister concludes that there are two categories, goals and fulfillments, that can be

used to sort out future purposes. Fulfillments are defined as states that are desirable by subjects, and goals are desirable subjective states.

A story begins to develop through the use of goals, because one organizes and tries to make sense of the events and activities by connecting him or her to future objective circumstances (Baumeister & Newman, 1994; Gergen & Gergen, 1988). Georgesen and Solano refer to this as “story grammar” because the event typically becomes the setting of the story. The goals lead to actions that lead to outcomes-taking the form of a reinterpretation, which is often a beneficial feature of cognitive coping. The forms of fulfillments are often idealized notions and are less clear than the use of goals. Often individuals construct narratives to find fulfillment in experiences.

A second need for meaning is a strong need for value and justification. An individual becomes satisfied by finding ways to justify his or her actions, which furnishes a sense of being a good, moral person. Writing furthers this process by allowing one to describe events or questions that are creating uncertainty (Baumeister & Newman, 1994).

Third, is a need for a sense of efficacy. This sense is satisfied by recognizing that a person has, somehow, made a difference in the world, and he or she exerts control to achieve positive outcomes within a stable, predictable environment. The shape of a narrative is often constructed to increase or maximize one’s sense of efficacy.

The last contributing factor to meaning is self-worth. This attribute can be satisfied by affirming an individual’s good qualities or demonstrating that one can be superior to others (Baumeister & Newman, 1994).

These four needs overlap each other; however, one of the most important aspects of these needs is the total conceptual space that they occupy. Baumeister & Newman



contend, “that people have needs for meaning in the sense that they are strongly motivated to interpret their events in contexts and ways to satisfy these needs and that people who are unable to satisfy these needs for meaning will exhibit various signs of dissatisfaction and distress, as well as actively trying to find ways to satisfy the frustrated needs” (Baumeister & Newman, 1994, p.681).

Failure to satisfy a need for meaning does not mean that the individual will not be able to function or go on living. Often people will find themselves having continued rumination and inner questioning. When one does not find meaning in response to traumatic or personal issues, he or she may be avoiding the issues associated with the situation; not confronting an emotional experience is stressful (Baumeister & Newman, 1994).

There is a critical role of cognitive changes that arise when one is writing. However, there are different professional opinions about how effective narrative writing can be when compared to other forms of psychotherapy. Edward Murray has researched the emotional expression in narrative writing and psychotherapy (Donnelly & Murray, 1991; Murray, Lamnin & Carver, 1989; Murray & Segal, 1994). Many of his studies have been focused on the methodology that researcher James Pennebaker used in his studies.

In one study (1991), Donnelly and Murray focused on college students who either talked to a therapist or wrote a narrative in response to a trauma or a superficial topic over a course of four days. At first, students in the psychotherapy group showed more cognitive, self-esteem, and behavioral changes; however, this outcome changed. Both groups demonstrated that, after expressing themselves, they felt significantly better than

did the control group. Also, both groups showed an increase in cognitive and self-esteem changes, which led to a change from negative to positive emotions, suggesting a significant emotional process occurred (Donnelly & Murray, 1991).

Pennebaker, who has done extensive research on narrative writing, has found that not talking about traumatic experiences is correlated with a variety of health problems among college students and adult samples (Pennebaker & Susman, 1988). His research findings suggest that not talking with another person about significant emotional events or trauma can invoke an inhibitory process. Emotions such as guilt, fear, depression, or humiliation may develop, causing difficulty for an individual to think about these emotions as well as discuss them with another individual.

When traumatic experiences are not shared, there is often a misunderstanding of the meaning and significance of the event as well as the emotional response to it. The stress of inhibition creates a large demand on the individual's body, thus exacerbating a variety of psychosomatic processes and other physiological stresses (Finkenauer & Bernard, 1998; Pennebaker & Francis, 1996). In order for the developed physiological stresses and psychosomatic processes to subside, an individual needs to express and find meaning to his or her traumatic experience, and this can be done through self-disclosure.

The act of self-disclosure, such as written expression about important events, may help an individual organize the experience, come to term with the issue, and clarify one's psychological state. Self-disclosure provides a mechanism of emotional expression. Subjects who write about traumas spontaneously report that writing forced them to think about the events differently. Using language helps one to understand and explain events,

and this process of translating emotions into words may reduce the perceived intensity of the traumatic experience (Pennebaker & Francis, 1996).

*Pennebaker and the Narrative Approach*

Several of Pennebaker's laboratory studies have explored the value of writing about emotional experiences (Pennebaker, 1997; Pennebaker, Glaser & Kiecolt-Glaser, 1988; Pennebaker & Graybel, in press; Pennebaker & King, 1999; Pennebaker & Francis, 1996; Pennebaker, Mayne & Francis, 1997; Pennebaker & Seagal, 1999; Pennebaker & Susman, 1988; Pennebaker, Zech & Rime, 1998). He has focused his work on the psychosomatic theory of inhibition. As mentioned earlier, he found that confronting deeply personal issues promotes physical health, subjective well-being and selected adaptive behaviors.

Many of the subjects, who range from children to the elderly, have disclosed traumatic experiences, thus allowing Pennebaker to conclude that when individuals are given the opportunity to disclose deeply personal aspects of their life, often they do so readily. An overwhelming majority of participants reported that the writing experience was valuable and meaningful in their lives (Pennebaker, 1997).

There have been a variety of physical and mental measures used to evaluate the effect of writing on well-being, all of which have had significant positive results. Often, self-reports indicated that the disclosing of upsetting experiences- although painful during the days of writing- produce long-term improvements in mood and indicators of well-being compared to the control group. Meta-analysis on written disclosure indicates that writing about emotional topics correlates with significant improvements in psychological well-being (Pennebaker & Graybel, in press).

Improvements in well-being due to writing have been demonstrated in behavioral changes. In 1996, Pennebaker and Francis studied 72 first-year college students randomly divided into two writing groups. The first group was assigned to write for 20 minutes about their thoughts and feelings about coming to college, and the second group was assigned to write for 20 minutes about superficial topics. The study ran for three consecutive days. A questionnaire was administered three days later and again at the end of the semester.

The purpose of the study was to find which cognitive process accounted for behavioral changes and improved health associated with narrative writing about emotional events. The results indicated that those who disclosed emotional topics demonstrated improvements in grades and a decline in visits to the doctor during the months that followed the study. Analysis of participants' writings demonstrated that they attempted to understand and find meaning in their college experience-consistent with the "needs theory" discussed previously. Furthermore, participants attempted to construct coherent narratives. Overall, this study suggests that translating emotional experiences into language does provide positive physical and psychological benefits. This research also provides evidence that a simple writing strategy may help students adapt to a new school (Pennebaker & Francis, 1996).

Pennebaker has followed a similar format in other studies, but using a different participant pool. Senior professionals, laid off from their jobs, report they obtained new jobs more quickly, due to narrative writing. In another study, university staff members had lower rates of absenteeism than the control group members- who did not participate in the emotional writing component of the study (Pennebaker & King, 1999).

Research findings support the fact that the number of days an individual writes for can influence the results. The length of time researchers have asked participants to write has varied. Often individuals have been asked to write for 1 to 5 days, ranging from consecutive days to sessions separated by a week. The length of time has ranged from 15 to 30 minutes (Bootzin, 1997; Greenberg & Stone, 1992; Marlo & Wagner, 1999; Pennebaker & King, 1999; Pennebaker & Francis, 1996; Pennebaker, Mayne & Francis, 1997; Pennebaker & Seagal, 1999).

In a meta-analytic study, Smyth (1998), found that the more days included in the study the stronger the effects. This information suggests that writing once a week over a month may be more effective than writing four times within a single week. He found that self-reports of the writing do not distinguish shorter writing from longer writing sessions. (Pennebaker & Graybel, in press; Smyth, 1998).

Overall, narrative writing research supports the hypothesis that writing about emotional experiences helps individuals find, organize, and come to terms with their experiences. Is it possible, then, narrative writing decrease stress levels that are associated with these emotional experiences?

### *Stress*

By definition, every individual experiences psychological “stress”. Stress has been defined in several different ways by researchers and theorists. Stress can be defined in terms of a stimulus event- as life events or changes that affect individuals, whether these events were welcomed or not (Gazella, Masten, & Stacks, 1998).

Lazarus and Folkman (1984) see stress as a stimulus-response transaction. Stress that a person experiences is not in the person, nor in the situation, but rather in the

transaction between the person and the environment. The ramifications of this transaction are according to how the individual appraised the interaction and adapted to it. For example, when an individual's optimal environment is changed, challenged, or exceeds the resources available, a disruption occurs, thus causing complications to develop (Soars & Prestridge, 1992; Gazella, Masten & Stacks, 1998). These complications, known as stressors, demand one to respond, and often these responses (such as negative emotions or thoughts, physical strains, etc.) take the form of stress.

Stress comes about by the interaction between stressors and the individual's perception and reaction to those stressors (Ross, Niebling, & Heckert, 1999). Some examples of stressors are daily hassles (being placed in an unfamiliar situation or financial difficulties) or major life events (sexual assault, death of a loved one, divorce, etc.). A certain amount of stress is normal, and can be an effective motivation; however, too much stress can also have devastating consequences. The degree to which stress is experienced may be influenced by the individual's coping ability with stressful events and situations. Some individuals may not effectively cope with stressful events, while others may be very efficient with their coping style. How one copes with stressful events can effect his or her reaction to the stress produced.

Often one's reaction to stress can lead to several different symptoms. Some of the symptoms of stress are tension, anxiety, depression, exhaustion, and a variety of physiological or psychosomatic disorders (Soares & Prestridge, 1992; Ross, Niebling & Heckert, 1999).

When stress is not effectively addressed, often some side effects like loneliness, nervousness, insomnia, a decrease in self-esteem, and changes in locus of control,

interpersonal sources, intrapersonal sources, and excessive worrying may result (Ross, Niebling & Heckert, 1999). Interpersonal sources result from interactions with other individuals, such as a fight with a significant other, friends or parents. Intrapersonal sources result from internal sources, such as changes in sleeping or eating habits (Ross, Niebling & Heckert, 1999).

A group particularly prone to stress is college students. There are many adjustments that must be made when an individual begins at a university and during the years before college completion. Some of these adjustments include entering a new social environment, adjusting to being away from home, changed living arrangements, financial issues, maintaining academic achievement, pressures to find an internship/job, relationship issues, and juggling to keep everything balanced (Dill & Henely, 1998; Fontana, 1994; Frazier & Schauben, 1994; Goldman & Wong, 1997; Hudd, Dumlas, Erdmann-Sager, Murray, Phan, Soukas & Yokozuka, 2000; Rawson & Bloomer, 1994; Ross, Niebling & Heckert 1999; Soars & Prestridge, 1992).

In 1994, Rawson & Bloomer conducted a study of stress, anxiety, depression, and physical illness in undergraduate students. Through a set of four questionnaires, he found that within the college population he surveyed, both stress and anxiety differed among the students. Within the studied population, sophomores had higher levels of stress than the upperclassman and freshman. Rawson concluded that the sophomores did not have the strong social support that freshman have through special programs, advising, etc, and they had not developed the coping mechanisms used by older students to deal with college stress.

The degree of stress experienced may influence an individual's coping ability with stressful events. Interventions need to be incorporated to help an individual's coping ability with stressful events. Therefore, could exercise affect the stress levels of an individual? If an individual used the intervention such as, narrative writing, can this provide an efficient intervention to reduce stress in an exercising population?

### *Stress, Exercise and Well-Being*

The effects of exercise on psychological well-being are supported by recent research (Emery & Blumenthal, 1988; Folkins & Wesley, 1981; Gruen, Folkman, & Lazarus, 1988; Kerr & Van Den Wollenberg, 1997; Long & Haney, 1988; Maltby & Day, 2001; Moses, Steptoe, Mathews & Edwards, 1989; Plante, 1999; Roth & Holmes, 1987; Stephens, 1988; Steptoe & Bolton, 1988; Steptoe, Edwards, Moses & Mathews, 1989; Szabo, Mesko, Capato & Gill, 1998). Exercise is thought to be a coping technique that may reduce stress levels. Regular exercise is defined as participating in aerobics, swimming, jogging, weight training, or aerobics for at least two to three times per week for 20 minutes, or participating in sports (e.g., golf, hockey, football) at least two to three times per week for 20 minutes (Maltby & Day, 2001; Szabo, Mesko, Capato & Gill, 1998).

Some authors hypothesize that there is a strong and significant relationship between exercise and well-being (Maltby & Day, 2001), and representatives of the International Society of Sports Psychology contend that exercise reduces anxiety, depression, and stress for people of all ages and both sexes (Plante, 1999).

Despite researcher and clinician confidence that exercise improves psychological functioning, there is no comprehensive theory that can adequately explain why and how



this effect occurs (Kerr and Van Den Wollenberg, 1997; Maltby & Day, 2001; Plante, 1999). While there are biological influences that contribute to explanations for psychological benefits associated with exercise, the biological paradigm alone may not adequately explain the connection to well-being (Plante, 1999). Could the amount of exercise influence one's psychological well-being?

To help understand the effects of exercise on psychological mood states, researchers Steptoe, Kearsley and Walters (1993) suggested two reasons to focus on short-term effects of exercise. Their first reason is that there may be a connection between short-term psychological responses and the long term effects of habitual exercise on psychological well-being. The accumulation of short term positive mood changes that result from exercise may be the primary source of longer term beneficial effects (Kerr & Van Den Wollenberg, 1997; Steptoe, Kearsley & Walters, 1993). The second reason is that the formation of and adherence to habitual exercise may have more to do with immediate psychological benefits rather than long term advantages (Kerr & Van Den Wollenberg, 1997).

In a 1993 study, Kerr and Vlaswinkel looked at the effects of running among regularly exercising college students. The participants were divided into two groups, and psychological mood measures that focused upon stress and arousal were given to both groups of participants, in pre and post-test running conditions. The first group was enrolled in a 7-week fitness course. The second group was divided by sex, and participants ran different distances (Male 6.6km and female 5.0km).

Results from both groups indicated a significant increase for both male and female self-reported arousal levels. Measures of stress were low for both groups, but for

the second group stress levels did change significantly as measured by a decrease in scores associated with running. This outcome led Kerr and Vlaswinkel to conclude that improvements in mood and psychological well-being associated with exercise occur as a result of increased levels of arousal (Kerr & Vlaswinkel, 1993).

Having one's arousal levels change due to exercise is consistent with the argument that the positive effects of exercise are mediated by changing levels of energetic arousal, and the rational can encompass other cognitive-based explanations (Kerr & Van Den Wollenberg, 1997). Cox and Mackay (1985) developed the orthogonal model of stress and arousal, which focused on the influence that cognitive mechanisms have on participants' subjective experience of arousal (Kerr & Van Den Wollenberg, 1997). Different arousal levels, either high or low, can be combined with either high or low stress, and the experience from this can range from pleasant to unpleasant.

These studies demonstrated the effectiveness of exercise as an intervention on mood and psychological well-being. Another intervention, like exercise, that has been successful to resolve uncertainties and stresses is narrative writing.

The majority of narrative writing studies have focused on writing about traumatic experiences because when these experiences are not expressed they can create more emotional turmoil and uncertainties. However, traumatic experiences are not the only difficult times for individuals. For example, when students begin college for the first time, it can be a stressful period, because college entails many changes and uncertainties. Therefore, other topics in addition to traumatic experiences can be used for narrative writing.

As mentioned previously, many studies indicate a positive relation between exercise and stress; however, there have been no studies looking at narrative writing as an intervention on the further reduction of stress in an exercising population of college students.

I hypothesize that (1) participants who write about the stress of coming to/and being in college will have a decline in their stress levels over the course of the study; followed by participants who write about their opinions about exercise. (2) The Control-Writing Group will not have a decline in their stress levels over the course of the study.

The following procedures of narrative writing will be used to examine the effects on stress levels. There will be three different topics of narrative writing, and those will be: a control-writing group that writes about a neutral, non-emotional topic; a stress-writing group that focuses on the stress of coming to college, and an exercise-writing group that also writes their thoughts on exercise. Lastly, participants' exercise routines will be assessed and measured over a three-week period.

## CHAPTER 2

### METHOD

#### PARTICIPANTS

All participants were recruited from Texas State University undergraduate Physical Fitness and Wellness (PF&W) classes. When participants were recruited, they were asked to attend three, 30-45 minute experimental sessions over three weeks. Each week, the participants signed up for a session with the experimenter.

Overall, 73 participants (38 female, 35 male) completed all three sessions. Twenty-six of the seventy-three participants were freshman, and there were eleven sophomores, twelve juniors and twenty-four seniors.

#### MEASURES

*Demographics*- Four questions were used to identify the ethnicity, age, gender, and classification for each participant.

*Stress Questionnaire- Life and Work Stress*, by Kanner, Coyne, Schaefer and Lazarus (1981), which taps into stressors at work, family, friends, the environment, practical considerations and chance occurrences, that may account for stress. This scale asked participants to rate the hassles within the last month. Such hassles included: misplacings or losing things, troublesome neighbors, and social obligations. The Kanner, Coyne, Schaefer and Lazarus scale consists of 117 items scaled from 1 to 3 (i.e., somewhat severe or serious, moderately severe or serious, extremely severe or serious).

Three summary scores were obtained for the hassles scale: Frequency, which is the number of stressor items checked, that ranged from 0 to 117; Cumulated severity, the sum of the 3-point severity ratings from all 117 items, which ranged from 0 to 351 (3x117); and Intensity, the sum of the severity ratings divided by their frequency, that ranged from 0 to 3. Kanner, Coyne, Schaefer and Lazarus (1981) have reported that the intensity index did not prove very reliable over the duration of their study, while Frequency and Severity have been shown to be highly related ( $r = 0.95$ ) (Lazarus, 1990).

*Health-Related Activities Questionnaire*- This questionnaire was used to evaluate the participants exercise behaviors, and was obtained from the Stanford Patient Education Research Center. It consisted of six questions that addressed the participants exercise behaviors. Participants were asked to rate the amount of time they participated in different exercise behaviors, such as stretching/strengthening and aerobic activity within the past month. The Stanford Patient Education Research indicated that the test-retest reliability for the questions that addressed stretching/strengthening are  $r = .56$ , and for the aerobic exercise the test-retest reliability is  $r = .72$  (Lorig, Stewart, Ritter, Gonzalez, Laurent & Lynch, 1996).

*Narrative Writing Instructions*- Three different writing groups were used in this experiment: the control-writing group, the stress-writing group, and the exercise-writing group. The control and stress writing instructions were developed by Pennebaker and Francis in their 1996 research, and were incorporated into this study. Furthermore, the exercise writing instructions were based on the work from the Pennebaker and Francis (1996) study.

Participants were asked to write for 20 minutes for each of the three sessions, and the experimenter timed them. All participants received the same writing assignment for all three sessions. Participants in the control group were provided with the following topic to write about:

Your task is to describe in writing any particular object or event of your choosing. In your writing, try to describe some object or event as objectively and as dispassionately as you can without mentioning your emotions, opinions, or beliefs. It is important for you to write continuously and don't worry about grammar, sentence structure, or spelling (Pennebaker & Francis, 1996, p.607).

Participants randomly assigned to the stress-writing group were provided with the following topic to write about:

Your task is to write about your very deepest thoughts and feelings about coming to and adjusting to college. In your writing, try to let yourself go and write continuously about your emotions and thoughts related to leaving home, coming to [college], and preparing for the future. You can write about leaving your friends, family, high school, or about adjusting to a new social and academic world here. You could also focus on classes, your future, your parents' or your own expectations. The primary task, however, is for you to reflect on your most basic thoughts and emotions about coming to and adjusting to college. It is important for you to write continuously and don't worry about grammar, sentence structure, or spelling (Pennebaker & Francis, 1996, p.607).

Participants randomly assigned to the exercising writing group were provided with the following topic to write:

Your task is to write about your very deepest thoughts and feelings about exercise. In your writing, try to let yourself go and write continuously about your emotions and thoughts related to exercising. You can write about your personal workouts, or the recommended amounts of exercise. You could also focus on exercise classes, your future regarding exercise, or your own

expectations. The primary task, however, is for you to reflect on your most basic thoughts and emotions about exercise. It is important for you to write continuously and don't worry about grammar, sentence structure, or spelling.

### PROCEDURE

The experiment was conducted during the 2003 Fall academic semester that spanned from approximately October 6<sup>th</sup> to 23<sup>rd</sup>. Prior to the first day of the study there was a list of all the participants' names. The researcher went down the list of the participants' names and randomly assigned each participant a five-digit number that ended with a one, two, or three. The one, two, or three number indicated which writing group the participant would be placed in. Group one was the control writing; group two was the stress-writing group, and group three was the exercise-writing group. This five-digit code became the subject number for the participant and was how the researcher was able to identify the participant.

At each session a packet was distributed with the participant's assigned subject number on it. The first session packet contained the following: page one had nothing but the participant's subject number; page two were the Narrative Writing instructions; pages three-five were lined paper for writing; page six were the demographic questions; pages seven-ten were the stress-questions; page eleven were the health-related activity questionnaires. The last item in the packet was a scantron for the participants to bubble in their answers. The scantron had the five-digit subject number already bubbled in. The packets for the second session were ordered differently. Page one had the assigned subject number; page two had the writing instructions and pages three- five had lined

paper for writing. The third session packets were structured the same as the first session, except the demographic questions were removed.

The author conducted all three sessions, and they lasted from twenty to thirty-five minutes. Each week there were sign-up sheets that listed the room number and session times. These times ranged from 8am to 6pm, Monday through Thursday. The groups ranged from 2-30 participants. Participants signed up to participate one time a week for three consecutive weeks, thus each participant participated for a total of three times.

*Writing Manipulation.* Individuals who volunteered for the study met in a lecture room once a week for three weeks. Participants were randomly assigned to the Type of Writing Group (i.e., Control, Stress or Exercise Writing Groups). Before each writing, the experimenter, Tricia Jarmer, distributed the packets to all the participants. A consent form was handed out at the first session, and assured participants of their anonymity by the use of their assigned subject number that was placed on all three of their writings and scantrons answers.

*Questionnaires.* After the writing assignment, with the exception of the second session, participants continued onto the questionnaire section that contained the demographic items, the stress questionnaire, and the health-related activity questionnaire. However, the questionnaires for the third session differed slightly from the first session in that the demographic questions were removed.



## CHAPTER 3

### RESULTS AND DISCUSSION

#### RESULTS

Six measurements were computed from the two administered stress questionnaires, and those were Pre/Post Frequency, Pre/Post Cumulated Severity and Pre/Post Intensity (“pre” is the measurement taken during the first week, and the “post” is second measure taken during the third week). The Frequency score was the number of hassles selected by the participant; Cumulated Severity was the sum of severity ratings from the selected hassles; and the Intensity was computed as a ratio of the Cumulative Severity divided by the Frequency. In order to assess if the Type of Writing Group (i.e., Control, Stress and Exercise Writing Groups) produced a significant effect on the dependent variables an exploratory one-factor ANOVA between groups was conducted. The results of the analysis revealed that the only significant difference found from the stress questionnaires was the Intensity Post-Test [ $F(2, 70) = 3, p < .047$ ].

In order to investigate the effect of the Type of Writing Group (i.e., Control, Stress and Exercise Writing Groups) on the stress Intensity, a mixed factorial ANOVA 3 (Type of Writing; between-groups factor) x 2 (Intensity Pre/Post; within groups factor) was conducted. The results indicated that there was no significant effect of the Type of Writing Group [ $F(2, 70) = 2.4, p < .097$ ]. There was no significant interaction between the Type of Writing Group and the Intensity Pre/Post [ $F(2, 70) = 1.2, p < .307$ ]. However,

there was a significant effect of the Intensity Pre/Post [ $F(1,70) = 8.59, p < .005$ ]. See Table 1. The overall average of the stress Intensity reported by participants during the first session (i.e., Pre Intensity) was significantly higher ( $M=1.54$ ) than the overall average of the stress Intensity reported during the third session (i.e., Post Intensity [ $M=1.41$ ]). The planned comparisons conducted on the Intensity Pre/Post for each Type of Writing Group separately revealed a significant decline in the stress Intensity for the Stress Writing Group [ $F(1,70)=8.2, p < .005$ ]. In addition, the Control Writing Group was almost approaching a significant decline [ $F(1,70)=3.59, p < .062$ ]. However, there was no significant change in the stress Intensity for the Exercise Writing Group [ $F(1,70)=.22, p < .640$ ]. Graph 1 illustrates the differences in stress Intensity Pre/Post in the Type of Writing Group (i.e., Control, Stress and Exercise Writing Groups). (See Table 2 for the exact averages in each type of writing group).

The analysis of the effect of the Type of Writing on stress Intensity Pre/Post was repeated; however, this analysis included only two writing groups: the Stress and Exercise Writing (i.e., the two groups that produced the highest and lowest average Intensity). A 2 (Stress Writing Group vs. Exercise Writing Group; between-group factor) x 2 (Stress Intensity Pre/Post; within-groups factor) ANOVA showed a significant effect of the Type of Writing (i.e., Stress Writing and Exercise Writing Groups). The average stress Intensity Pre/Post in the Exercise Writing Group was significantly lower than in the Stress Writing Group [ $F(1, 49) = 5.20, p < .03$ ]. Consistent with the previously discussed results from the ANOVA (i.e., ANOVA conducted on all three Types of Writing), the results from only two extreme groups (i.e., the Stress and Exercise Writing Groups) also

demonstrated a significant decline in the stress Intensity between the first and third week of the study (i.e., stress Intensity Pre/Post for the First and Third week [ $F(1,49) = 4.95, p < .03$ ]). However, there was no significant interaction between the Stress and Exercise Writing Groups and stress Intensity Pre/Post [ $F(1,49) = 2.32, n.s.$ ].

Previous studies have found that exercise can help with psychological well-being (Kerr & Van Den Wollenberg, 1997; Maltby & Day, 2001; Plante, 1999). All participants conducted exercise on a regular routine in this study. Therefore, the Exercise Questionnaire was used to assess participants exercise routines over the course of the three-week study. Based on this questionnaire three measurements of Exercise Intensity were computed: Intensity of Stretching/Strengthening Activities, Intensity of Aerobic Activities, and a Combination Exercise score (i.e., a sum of Stretching/Strengthening and Aerobic Exercise). These measurements were taken twice during the three-week study. The first measurement (i.e., “pre”) was taken during the first week, and the second measurement (i.e., “post”) was taken during the third week.

To explore if there were any differences between the Type of Writing (i.e., Control, Stress and Exercise Writing Group) and the overall Exercise Intensity, a 3(Type of Writing Group; between groups) x 2 (Pre/Post Combined Exercise; within groups factor) ANOVA was computed. The results demonstrated that there were no significant differences between the Type of Writing Group on the Combined Exercise intensity [ $F(2,70) = .67, p < .52$ ]. In addition, there was no significant interaction between the Type of Writing Group (i.e., Control, Stress and Exercise Writing Groups) and the Pre/Post Combined Exercise [ $F(2,70) = .19, p < .83$ ]. However, there was a significant increase in the Combined Exercise level between the first and third week of the study (i.e.,

significant effect of the Pre/Post Combined Exercise [ $F(1,70) = 33.3, p < .001$ ]). See Table 3. The results of the planned comparison tests revealed that the significant increase in the Combined Exercise occurred in each of the writing groups. See Table 4.

The analysis was repeated for the intensity of the Stretching/Strengthening Exercise only. A mixed ANOVA 3(Type of Writing Groups; between factor) x 2 (Pre/Post Stretching/Strengthening - within groups factor) showed no significant effect of the Type of Writing Group [ $F(2,70) = 1.97, p < .45$ ], and there was no significant interaction between the Type of Writing Group (i.e., Control, Stress and Exercise Writing Groups) and the intensity of the Pre/Post Stretching/Strengthening Exercise [ $F(2,70) = .38, p < .69$ ]. However, there was a significant decline in the reported intensity of the Stretching/Strengthening exercise over the course of the study [ $F(1,70) = 5.5, p < .022$ ]. See Table 5 and 6. The planned comparison tests conducted on the Pre/Post Stretching/Strengthening Exercise revealed that this decline in intensity was not significant for any of the writing groups when analyzed separately; however, there was a difference approaching a significant level in the Exercise Writing group. See Table 7.

Lastly, the analysis of the differences between the Type of Writing (i.e., Control, Stress and Exercise Writing Groups) and the Intensity of Aerobic Activity was conducted. A mixed ANOVA 3(Type of writing-between groups factor) x 2 (Pre/Post Aerobic Activity-within group factor) demonstrated no significant difference between the Type of Writing and Aerobic Activity [ $F(2,70) = .38, p < .68$ ]. There was no significant effect for Pre/Post Aerobic Activity [ $F(1,70) = .002, p < .96$ ]. In addition, there was no significant interaction between the type of writing and the Pre/Post Aerobic Activity [ $F(2,70) = .88, p < .42$ ]. See Table 8.

## DISCUSSION

I hypothesized that participants' who expressed their emotions in writing about the stress in coming to/and being in college would show a decline in their stress levels. The Pre/Post stress Intensity measures from the Stress Questionnaire demonstrated that there was a slight improvement in the stress levels for participants in the Stress-Writing Group. The overall average of the stress Intensity reported by participants during the first session was significantly higher than the overall stress Intensity reported during third session.

Furthermore, it was hypothesized that participants' in the Exercise-Writing Group would have a decline in their stress levels, but not lower than the Stress-Writing group. The analysis demonstrated a significant effect of the Stress and Exercise-Writing together; however, there was no significant interaction. Further analysis demonstrated that the Exercise-Writing Group was lower in both the Pre/Post stress Intensity than the Stress-Writing Group, and there was no significant change from the Pre to Post in the Exercise-Writing Group.

In addition to the Stress and Exercise-Writing Group there was one more writing group, the Control-Writing Group. It was hypothesized that there would be no decline in the stress Intensity Pre/Post for the Control-Writing Group; however, analysis revealed the Control-Writing Group was approaching a significant decline.

One interpretation of these results is that simply writing about the stresses in coming to college, or about exercise does not have as great of a psychological effect when compared to participants who wrote about traumatic experiences. Research has demonstrated significant results occur among participants who focused on writing about

traumatic experiences (Pennebaker, 1997; Pennebaker, Glaser & Kiecolt-Glaser, 1988; Pennebaker & Graybel, in press; Pennebaker & King, 1999; Pennebaker and Susman, 1988). The results for this study concluded that there was a slight reduction in the Stress Levels in the Stress-Writing Group. However, for future research with narrative writing, it would be best to use this intervention for more serious and traumatic experiences, rather than the stresses of coming to/and being college.

Research has documented that exercise can be used as an intervention in the reduction of stress. Many of the study's participants were engaged in regular exercise routines, and could not be asked to stop exercising. Therefore, the effects of exercise had to be assessed. The Health-Activity questionnaire was used to identify the participants' exercise routines over the three-week study, but was also used as a self-report to check the Exercise Intensity. There were three exercise intensities calculated: strengthening/strengthening activity, cardio activity and the combined exercise, which combined the stretching/strengthening activity and cardio activity into one. In addition to identifying the participants' exercise routines, the Exercise Intensities were analyzed with the Type of Writing Group to determine if there were any differences between the two.

The analysis of the Stretching/Strengthening Activity indicated there was a decrease in the Stretching/Strengthening Activity over the course of the three-week study. There was no interaction, nor any differences found between the Type of Writing Groups and the Stretching/Strengthening Activity. For the Aerobic Activity Intensity, there was no indication that the Aerobic Activity varied by the Type of Writing Group, and there were no changes in the participants Aerobic Activity over the duration the study.

The analysis of the Combined Exercise indicated that the participants within each Type of Writing Group (Control, Stress and Exercise Writing Groups) did increase in their Combined Exercise behavior over the three-week study. However, there were no results that indicated there were any differences, or interactions between the Combined Exercise and the Type of Writing Group.

Another factor that could contribute to the lack of significant results could be due to external factors. The third week of the study overlapped with midterms for Texas State students. Participants were answering their second Stress Questionnaire during this time. External factors such as, approaching tests, could have significantly affected their stress levels. Therefore, stress reduction might have been more clearly demonstrated across the three stress variables if the past data had not been collected during this time period.

In addition, the midterms could have disrupted the measurements of the participants' Exercise Behaviors. The participants' normal amount of exercise may have declined during this time, thus affecting their answers about their exercise routines within the past month. These factors may have given the researcher an inaccurate estimate of their exercise behaviors.

Another explanation could be that exercise acted more as an intervention than the results demonstrated. Participants' stress levels could have already been lower prior to participating in this study because of their established exercise activities. The impact of narrative writing to further lower stress levels may be harder to demonstrate in this sample.

A further explanation for the lack of significant results could be the instruments used to measure the Stress Levels. There could be a large amount of error variance, thus not allowing the researcher to obtain a true reading of the participants' Stress Levels. Research over the Stress Questionnaire has reported that the Intensity index has not proved very reliable over the duration of the research.

Another plausible explanation is that the Narrative Writing intervention used in this study may have been too short in duration. Research (Smyth, 1998) has found that writing over longer time periods may be more beneficial than conducting the writing in consecutive days. However, other researchers (Pennebaker, 1997; Pennebaker, Glaser & Kiecolt-Glaser, 1988; Pennebaker & Graybel, in press; Pennebaker & King, 1999) conducted their writing assignment on consecutive days, but waited 6 weeks after the last writing assignment before giving the final questionnaire to assess the final measures; thus, the total duration of their study was over 4 months.

This study lasted for a total of three weeks, and the writings were spread out during this time. However, after the third writing was completed the last questionnaire was immediately given. Future research could focus on the spacing and timing of both the narrative writing and final stress assessment.

Life is filled with stresses. Exploring ways of managing and reducing stress levels, to make the quality of life better, is an ideal objective. In research regarding stress reduction there will be many success and disappointments of theses, dissertations and experiments. May the research within this area help contribute to a happier, more productive and stress-free life.



## Figure Caption

Figure 1

Line plot of difference in averages of Pre/Post Intensity of Stress in Type of Writing Group

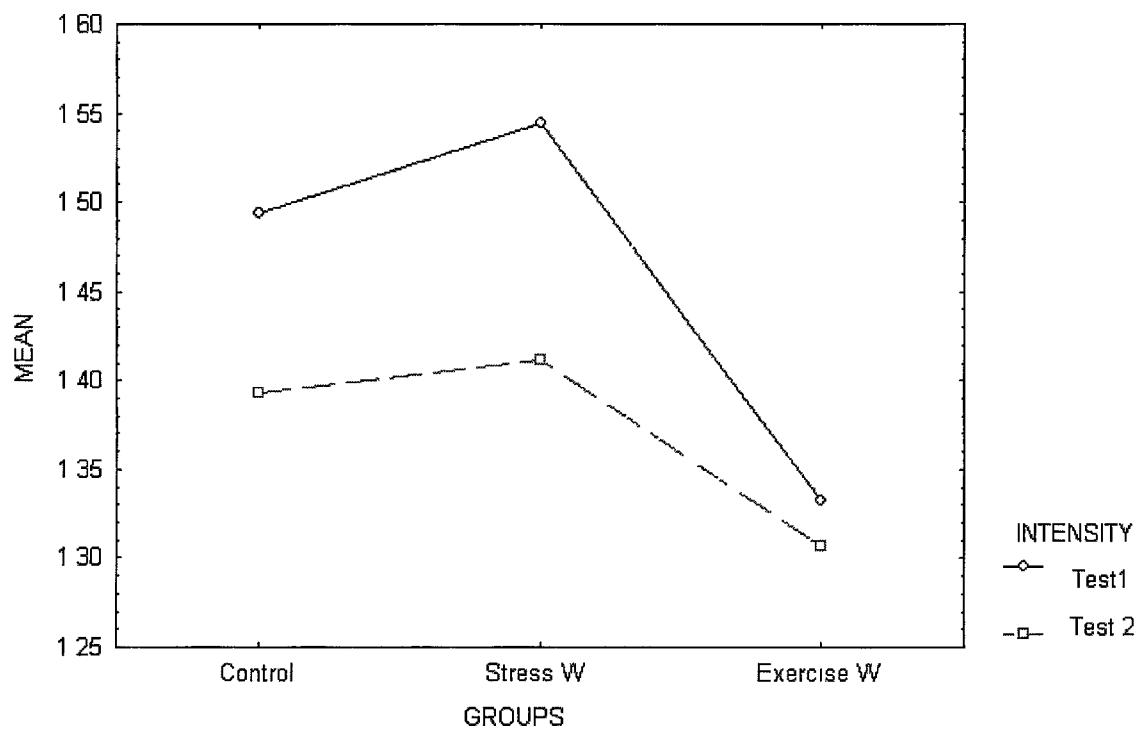


Table 1

*Type of Writing Group and Pre/Post Stress Intensity*

Effect	df Effect	ms Effect	df Error	ms Error	F	p-level
Writing groups (control, stress and exercise)	2	.333	70	.138	2.4	.098
Pre/Post Intensity	1*	.266*	70*	.031*	8.5*	.005*
Interaction of writing groups + Pre/Post Intensity	2	.037	70	.031	1.2	.307

\*Indicates Significance at  $p < .05$  level

Table 2

*Average Pre/Post Stress Intensity for the Type of Writing Group*

Group	Average Stress Intensity (Pre)	Average Stress Intensity (Post)	Number of Participants
Group 1-Control Writing	1.49	1.39	22
Group 2-Stress Writing	1.54	1.41*	29
Group 3-Exercise Writing	1.33	1.30	22

\*indicates significance at  $p < .05$  level

Table 3

*Type of Writing Group and Pre/Post Combined Exercise Intensity*

Effect	df Effect	ms Effect	df Error	ms Error	F	p-level
Writing groups (control, stress and exercise)	2	8.7	70	13.1	.666	.517
Combined Exercise Group	1*	339.3*	70*	10.2*	33.28*	.001*
Interaction of writing groups + Pre/Post Combined Exercise	2	1.9	70	10.2	.186	.831

\*indicates significance at  $p < .05$  level

Table 4

*Planned Comparison of Pre/Post Combined Exercise in Type of Writing Group*

Effect	df Effect	ms Effect	df Error	ms Error	F	p-level
Control Writing Group	1	134.8	70	10.2	13.2	.001
Stress Writing Group	1	107.6	70	10.2	10.6	.002
Exercise Writing Group	1	99.0	70	10.2	9.7	.003

Table 5

*Type of Writing Group and Intensity of Pre/Post Stretching/Strengthening Activities*

Effect	df Effect	ms Effect	df Error	ms Error	F	p-level
Type of writing groups (control, stress and exercise)	2	1.59	70	1.97	.807	.450
Pre/Post Stretching/Strengthening	1*	2.39*	70*	.435*	5.50*	.022*
Interaction of writing groups + Pre/Post Stretching/Strengthening	2	.165	70	.435	.379	.686

\*indicates significance at  $p < .05$  level

Table 6

*Average Pre/Post Stretching/Strengthening Intensity for Type of Writing Group*

Group	Average Stress Intensity (Pre)	Average Stress Intensity (Post)	Number of Participants
Group 1-Control Writing	2.7	2.4	22
Group 2-Stress Writing	2.6	2.5	29
Group 3-Exercise Writing	2.4	2.0*	22

\* Approaching significance at  $p < .10$  level

Table 7

*Planned Comparison of Pre/Post Stretching/Strengthening by Type of Writing Group*

Effect	df Effect	ms Effect	df Error	ms Error	F	p-level
Control Writing Group	1	1.4	70	.43	3.3	.072
Stress Writing Group	1	.27	70	.43	.63	.429
Exercise Writing Group	1	.81	70	.43	1.8	.175



Table 8

*Type of Writing Group and Intensity of Pre/Post Aerobic Activities*

Effect	df Effect	ms Effect	df Error	ms Error	F	p-level
Type of writing groups (control, stress and exercise)	2	3.72	70	9.68	.384	.682
Pre/Post Aerobic Activities	1	.004	70	2.02	.002	.963
Interaction of the type writing groups + Pre/Post Aerobic Activities	2	1.77	70	2.02	.876	.421

## APPENDICES

## APPENDIX A

**Your Name (Printed):** (last)\_\_\_\_\_ (first)\_\_\_\_\_ Participation#\_\_\_\_\_

**For recording extra credit: Your PF&W class/Instructor: Circle One:**

Walking or Weights-Traci R. Jogging-Dann B. Jogging- Molly Z. Weightlifting- Susan

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**Required Informed Consent Statement:**

This study for which you are volunteering to participate requires about 30-40 minutes of your time, once a week for the three weeks. The study examines the effect of students adjustment to college and their exercise behaviors. You are not under any obligation to participate and you have the right to withdraw from the research at any time. Your instructor may have arranged to give you some extra course credit for completing the study. Your participation is voluntary, refusal to participate will involve no penalty or loss of benefit to which you are otherwise entitled, and you may discontinue participation at any time without penalty or loss of benefit, to which the subject is otherwise entitled. However, you may also obtain the same extra credit by writing a six page, double-spaced paper in APA format style about research on stress and exercising. The alternative paper should be e-mailed to [tj1009@txstate.edu](mailto:tj1009@txstate.edu) as a word attachment no later than October 21, 2003.

In this study, you will be asked to provide some biographical information and some information about your opinions on exercise and stress over a three week period. You will write for 20 minutes and then take a questionnaire regarding stress and exercise. To assure anonymity, you will be assigned a research number. This research number will be placed on all three of your writings and survey answers. To further assure confidentiality, data will be entered by the participants' numbers, and a group-statistical analysis will be performed upon the data. No individual's scores and writings will be identified by name. The only individual who will have access to your name will be the graduate student, Tricia Jarmer and Dr. Christopher Frost.

At the conclusion of the study, you will be debriefed about the questions the study examined and what anticipated results may occur. The results of the study will be made available through the Texas State Department of Psychology. If you feel that this study has brought up feelings and emotions that you would like to talk to someone about, references for counseling services will be provided. In event that you have questions, please contact the principal investigator, graduate student Tricia Jarmer, Texas State Psychology Department at the e-mail above or at 512-245-2526.

I have read and understand this informed consent statement. I voluntarily agree to participate in the research.

\_\_\_\_\_  
Your signature

\_\_\_\_\_  
Date

---

## APPENDIX B

**Directions:** Listed below are a series of questions.

For each question, please bubble in your answer according to the letter on the scantron. Thank you.

- 1.) Which of the following categorizes you as a Texas State student?
  - a.) Freshman
  - b.) Sophomore
  - c.) Junior
  - d.) Senior
  - e.) Graduate student
- 2.) What is your age?
  - a.) 17-19 years old
  - b.) 20-22 years old
  - c.) 23-26 years old
  - d.) 27-30 years old
  - e.) 31 years old & older
- 3.) What is your gender?
  - a.) Female
  - b.) Male
- 4.) What is your ethnic background?
  - a.) Caucasian
  - b.) African American
  - c.) Hispanic/Mexican American
  - d.) Asian American
  - e.) Other

## APPENDIX C

**Directions:** Listed on the following pages are a number of ways in which a person can feel hassled. If in the **past month** the hassle **did not occur**, then please bubble in [a] for “none”. However, if the hassle **has happened** to you within the **past month**, please indicate by **bubbling on your scantron** either [b], [c] or [d] on how *severe that hassle has been for you in the past month*.

SEVERITY				
None	Somewhat Severe	Moderately Severe	Extremely Severe	
[a]	[b]	[c]	[d]	
5. Misplaced or losing things	[a][b][c][d]		17. Someone owes you money	[a][b][c][d]
6. Troublesome neighbors	[a][b][c][d]		18. Financial responsibility for someone who does not live with you	[a][b][c][d]
7. Social obligations	[a][b][c][d]		19. Cutting down on electricity, water, etc.	[a][b][c][d]
8. Inconsiderate smokers	[a][b][c][d]		20. Smoking too much	[a][b][c][d]
9. Troubling thoughts about your future	[a][b][c][d]		21. Use of alcohol	[a][b][c][d]
10. Thoughts about death	[a][b][c][d]		22. Personal use of drugs	[a][b][c][d]
11. Health of a family member	[a][b][c][d]		23. Too many responsibilities	[a][b][c][d]
12. Not enough money for clothing	[a][b][c][d]		24. Decisions about having children	[a][b][c][d]
13. Not enough money for housing	[a][b][c][d]		25. Non-family members living in your house	[a][b][c][d]
14. Concerns about owing money	[a][b][c][d]		26. Care for pet	[a][b][c][d]
15. Concerns about getting credit	[a][b][c][d]		27. Planning meals	[a][b][c][d]
16. Concerns about money for emergencies	[a][b][c][d]		28. Concerned about the meaning of life	[a][b][c][d]

<b>SEVERITY</b>			
<b>None</b>	<b>Somewhat</b>	<b>Moderately</b>	<b>Extremely</b>
	<b>Severe</b>	<b>Severe</b>	<b>Severe</b>
<b>[a]</b>	<b>[b]</b>	<b>[c]</b>	<b>[d]</b>

29. Trouble relaxing	[a][b][c][d]	47. Not enough money for healthcare	[a][b][c][d]
30. Trouble making decision	[a][b][c][d]	48. Fear of confrontation	[a][b][c][d]
31. Problems getting along with fellow workers	[a][b][c][d]	49. Financial security	[a][b][c][d]
32. Customers or clients give you a hard time	[a][b][c][d]	50. Silly practical mistakes	[a][b][c][d]
33. Home maintenance (inside)	[a][b][c][d]	51. Inability to express yourself	[a][b][c][d]
34. Concerns about job security	[a][b][c][d]	52. Physical illness	[a][b][c][d]
35. Concerns about retirement	[a][b][c][d]	53. Side effects of medication	[a][b][c][d]
36. Laid-off or out of work	[a][b][c][d]	54. Concerns about medical treatment	[a][b][c][d]
37. Don't like current work duties	[a][b][c][d]	55. Physical appearance	[a][b][c][d]
38. Don't like fellow workers	[a][b][c][d]	56. Fear of rejection	[a][b][c][d]
39. Not enough money for basic necessities	[a][b][c][d]	57. Difficulties with getting pregnant	[a][b][c][d]
40. Not enough money for food	[a][b][c][d]	58. Sexual problems that result from physical problems	[a][b][c][d]
41. Too many interruptions	[a][b][c][d]	59. Sexual problems other than those resulting from physical problems	[a][b][c][d]
42. Unexpected company	[a][b][c][d]	60. Concerns about health in general	[a][b][c][d]
43. Too much time on hands	[a][b][c][d]	61. Not seeing enough people	[a][b][c][d]
44. Having to wait	[a][b][c][d]	62. Friends or relatives too far way	[a][b][c][d]
45. Concerns about accidents	[a][b][c][d]	63. Preparing meals	[a][b][c][d]
46. Being lonely	[a][b][c][d]	64. Wasting time	[a][b][c][d]

<b>SEVERITY</b>			
<b>None</b>	<b>Somewhat</b>	<b>Moderately</b>	<b>Extremely</b>
	<b>Severe</b>	<b>Severe</b>	<b>Severe</b>
<b>[a]</b>	<b>[b]</b>	<b>[c]</b>	<b>[d]</b>

65. Auto maintenance	[a][b][c][d]	82. Overloaded with family responsibilities	[a][b][c][d]
66. Filling out forms	[a][b][c][d]	83. Too many things to do	[a][b][c][d]
67. Neighborhood deterioration	[a][b][c][d]	84. Unchallenging work	[a][b][c][d]
68. Financing children's education	[a][b][c][d]	85. Concerns about meeting high standards	[a][b][c][d]
69. Problems with employees	[a][b][c][d]	86. Financial dealings with friends or acquaintances	[a][b][c][d]
70. Problems on job due to being a woman or man	[a][b][c][d]	87. Job dissatisfaction	[a][b][c][d]
71. Declining physical abilities	[a][b][c][d]	88. Worries about decisions to change jobs	[a][b][c][d]
72. Being exploited	[a][b][c][d]	89. Trouble with reading, writing or spelling abilities	[a][b][c][d]
73. Concerns about bodily functions	[a][b][c][d]	90. Too many meetings	[a][b][c][d]
74. Rising prices of common goods	[a][b][c][d]	91. Problems with divorce or separations	[a][b][c][d]
75. Not getting enough rest	[a][b][c][d]	92. Trouble with arithmetic skills	[a][b][c][d]
76. Not getting enough sleep	[a][b][c][d]	93. Gossip	[a][b][c][d]
77. Problems with aging parents	[a][b][c][d]	94. Legal problems	[a][b][c][d]
78. Problems with your children	[a][b][c][d]	95. Concerns with weight	[a][b][c][d]
79. Problems with persons younger than yourself	[a][b][c][d]	96. Not enough time to do the things you need to do	[a][b][c][d]
80. Problems with your lover	[a][b][c][d]	97. Television	[a][b][c][d]
81. Difficulties seeing or hearing	[a][b][c][d]	98. Not enough personal energy	[a][b][c][d]





## APPENDIX D

During the **past month** (even if it was not a typical month for you), how much total time (for each entire week) did you spend on each of the following? (Please bubble in one letter for each question)

<b>How much time during the past few weeks.....</b>	<i>None</i>	<b>Less than 30 minutes/week</b>	<b>30-60 minutes/week</b>	<b>1-3 hours/week</b>	<b>More than 3 hours/week</b>
122. Stretching or strengthening exercises (range of motion, weights, etc.)	A	B	C	D	E
123. Walk for exercise	A	B	C	D	E
124. Swimming or aquatic exercise	A	B	C	D	E
125. Bicycling (including stationary exercise bikes)	A	B	C	D	E
126. Other aerobic exercise equipment (Stairmaster, rowing, skiing, machine, etc.)	A	B	C	D	E
127. Other aerobic exercise	A	B	C	D	E

**This concludes the questionnaire. Please turn in the packet and scantron to the researcher. Thank you for your participation.**

## APPENDIX E

### Writing Instructions

Control Group: Your task is to describe in writing any particular object or event of your choosing. In your writing, try to describe some object or event as objectively and as dispassionately as you can without mentioning your emotions, opinions, or beliefs. It is important for you to write continuously and don't worry about grammar, sentence structure, or spelling.

Stress Group Writing: Your task is to write about your very deepest thoughts and feelings about coming to and adjusting to college. In your writing, try to let yourself go and write continuously about your emotions and thoughts related to leaving home, coming to college, and preparing for the future. You can write about leaving your friends, family, high school, or about adjusting to a new social and academic world here. You could also focus on classes, your future, your parents' or your own expectations. The primary task, however, is for you to reflect on your most basic thoughts and emotions about coming to and adjusting to college. It is important for you to write continuously and don't worry about grammar, sentence structure, or spelling.

Exercise Group: Your task is to write about your very deepest thoughts and feelings about exercise. In your writing, try to let yourself go and write continuously about your emotions and thoughts related to exercising. You can write about your personal workouts, or the recommended amounts of exercise. You could also focus on exercise classes, your future regarding exercise, or your own expectations. The primary task, however, is for you to reflect on your most basic thoughts and emotions about exercise. It is important for you to write continuously and don't worry about grammar, sentence structure, or spelling.

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