EXAMINING THE RELATIONSHIP BETWEEN STRESS AND TIME PERCEPTION

2001

YATKO

APPROVAL SHEET

Title of Thesis: Examining the Relationship between Stress and Time Perception

Name of Candidate: Bonnie R. Yatko
Master of Science Degree
2001

Thesis and Abstract Approved:

Neil E. Grunberg, Ph.D.
Committee Chairman

1/26/01
Date

Michael Feuerstein, Ph.D.
Committee Member

2/20/01
Date

Wendy A. Law, Ph.D.
Committee Member

2/20/01
Date

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Bonnie R. Yatko
Department of Medical and Clinical Psychology
Uniformed Services University of the Health Sciences

ABSTRACT

Title of Thesis: Examining the Relationship between Stress and Time Perception

Bonnie R. Yatko, Master of Science, 2001

Thesis directed by: Neil E. Grunberg, Ph.D.

Professor

Department of Medical and Clinical Psychology

Changes in time perception are recognized among the symptoms of traumatic stress disorders, but the relationship between general stress and time perception is yet unclear. Three studies examined the relationship between stress and time perception. The Perception of Time and the Senses Survey (PTSS), a self-report measure of usual and stress-related time perception, was developed and administered to 412 people in Study 1 and was revised and extended to a broader sample (N=939) in Study 2. The PTSS II was then administered in the laboratory with other measures of time perception, stress, and mood in Study 3 (N=64). Stress was related to perceived rate of the passage of time by a quadratic function. Relative attention to past, present, and future was different under stress than usual with greater focus on the present and future. Findings are discussed relative to potential applications in stress prevention and stress management.

Examining the Relationship between Stress and Time Perception

by

Bonnie R. Yatko

Master's Thesis submitted to the Faculty of the

Department of Medical and Clinical Psychology

Graduate Program of the Uniformed Services University

of the Health Sciences in partial fulfillment

of the requirements for the degree of

Master of Science

2001

ACKNOWLEDGMENTS

This research would not have been possible without valuable help from a number of people. Michelle Barnhart, Kyla Black, Tracy Mathe, Robert Smay, and Katherine Steinkamp collected and entered data into the computer for Study 1 and Study 2 and helped with the revision of the survey. Joshua Mericle, Jennifer Sinibaldi, and Brian Saltsman also collected and entered data for Study 2, helped with telephone screening and subject recruitment for Study 3, and ran and entered data from the laboratory sessions. Paul Meyers arranged advertising and procured discount coupons for subject compensation in Study 3. Paul also did scoring for the projective tests in Study 3. Rachel Ceballos organized subject recruitment for Study 3 and graciously opened her home for our stay during the weeks of running the laboratory study. Jennifer Phillips, Brenda Elliott, and Martha Faraday helped review manuscript drafts and provided writing advice.

I want to thank the Pennsylvania State University Book Store and the Hair Construction Company for their generous donation of half-price gift certificates to use for subject compensation. I also wish to acknowledge the collaborative support of the Department of Biobehavioral Health at Pennsylvania State University under the guidance of Dr. Lynn Kozlowski (who also provided helpful suggestions for the improvement of the survey).

I want to express my appreciation to Dr. Wendy Law, Dr. Michael Feuerstein, and Dr. Neil Grunberg for recommendations and guidance as members of my master's committee. They very carefully read drafts of this thesis and their suggestions led to important improvements in the document.

I especially want to thank Michele McClellan Stine and Dr. Laura Cousino Klein. They provided instrumental help, conceptual guidance, and moral support through all phases of the project. Dr. Klein allowed me to collaborate with her lab, hosted all three studies and served a critical role in each. Shelli helped with each part of these studies including survey administration, focus groups, and supervision and training of research assistants. Shelli served as a tireless partner in the long hours of running the laboratory study. They both taught me much about the spirit of science; "you've got to have a vision."

My mentor, Dr. Neil E. Grunberg, showed courage and imagination in allowing me to pursue this line of research that was off the beaten path (and in many ways paved my way) and provided valuable guidance at every stage of the research. He contributed enthusiasm, structure, and an environment of intellectual freedom, critical to these projects.

Most especially, I could not have done this without the patience, support, and personal sacrifices given by my daughter Katherine.

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INTRODUCTION

The perception of time is an important element of human experience. When experience involves challenge to the individual, a process occurs, called stress, whereby the individual perceives the stressor and responds (Cannon, 1935; Baum, Grunberg, & Singer, 1982). Psychologists have emphasized the importance of perception in mediating the stress response (e.g., Lazarus & Folkman, 1984; Holmes & Rahe, 1967). Through physiological and psychological mechanisms, the stress response may cause perceptual alteration (see review to follow). There are some reports that stress affects perception of time (e.g., Langer, Wapner, & Werner, 1961; Rosenzweig & Koht, 1933; Fraise, 1984), but this literature is relatively sparse. Psychological disorders related to experience of traumatic stress (Acute Stress Disorder and Post Traumatic Stress Disorder) include the symptoms of a sense that the future will be brief. Symptoms also tend to direct attention to the stressful event of the past through the experience of reliving the traumatic event (American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders 4th edition, 1994). Reduced awareness of or detachment from the individual's surroundings and depersonalization are also symptoms of these disorders listed in the DSM IV (1994) that may involve an altered perception of time. Stress also affects physical and mental health (e.g., Baum, Gatchel, & Krantz, 1997). Therefore, additional knowledge of the relationship between stress and the perception of time may help to understand the causes and consequences of the stress process. Such knowledge may help to prevent and treat negative stress consequences.

Overview

Before the background literature relating stress and time perception can be meaningfully presented, it is necessary to provide definitions of what is meant within the headings of stress and of time perception. Because measurement methods are closely linked to operational definitions of perception, this section also discusses major methods of measurement in time perception. Following these introductory definitions and explanation of traditional measurement, the empirical studies of stress and perception of time are reviewed. The background review is limited to key theoretical and technical concepts related to the measurement of time perception and to studies of stress and time perception in humans. Finally, a series of three research studies is presented along with design rationale. These studies were conducted to explore the relationship of stress to perception of time. The hypotheses for each study are explained.

Background

Stress

Early use of the term "stress" referred to either the external event or challenge to the organism (Cannon, 1935) or to the organism's physiological response to challenge (Selye, 1973). Lazarus (1993) and Lazarus and Folkman (1984) proposed a psychological definition of stress involving the appraisal of an internal or external event as challenging an organism's coping resources. The response becomes part of the loop in continuous reevaluation of the event and assessment of response alternatives. The psychological definition of stress emphasized the process of event assessment and response as opposed to Selye's nonspecific response definition or Cannon's use of stress

to describe the challenging event. The Lazarus and Folkman definition clearly separated the subjective appraisal (requiring perception) of the threat from the objective threat posed by the event as the crucial factor in the stress process. More recent conceptualizations of stress clarify the breadth of stress responses to include behavior and cognition along with physiological adaptation (e.g., Baum, Gatchel, & Krantz, 1997) and clarify the conditions giving rise to the adaptation process. For example, Jensen and Toates (1997) proposed a motivational framework for understanding stress in which perception of internal or external events modulate physiological reactions that continue to occur if there is insufficient feedback to close the loop. Goldstein (1995) proposed that the stress process occurs when a discrepancy occurs between perceived or anticipated perceptions and expectations and the organism must adjust or reset homeostasis. Drawing from Faraday's (1998) emphasis of the two-way nature of the unitary process with psychological and biological components, the following definition of stress is used in this paper. *Stress is a psychobiologic process in which internal or external events (stressors) threaten or challenge an organism's existence and well-being, and interdependent psychological and biological stress responses occur that are directed toward reducing the event's impact.*

While stress may best be measured at multiple points in the process by using a combination of biochemical, physiological, behavioral, and self-report measures (Baum, Grunberg, & Singer, 1982), self-report scales for stress (e.g., the Perceived Stress Scale: Cohen, Kamarck, & Mermelstein, 1983) are widely used and can serve as a reliable and valid measure of perceived stress.

Time Perception

Definitions

Time perception as conceptualized in this research includes the broad scope of human experience of time. The experience of time may be highly individual; one person's instant may be another person's eternity. Yet, adaptation to social systems has led people to employ external references to time that may serve as a shared social time to synchronize various behaviors. These external references refer to periodic events in the physical world such as the rotation of the earth, the motion of gears on a clock, or the oscillatory frequency of radiation emitted by particular atomic transitions. Hereafter, the social reference time will be called *clock time*.

Subjective time perception can be divided into primary, secondary, and tertiary concepts. Primary concepts of time perception are sequence and simultaneity (James, 1891). Sequence describes ordering events relative to each other into before and after. Simultaneity is the experience of two events at the same time, two occurrences within a present moment or "now." For example in listening to a musical performance, the sound of violins may be heard before the vocals (sequence), and the horns and drums may be heard together (simultaneity). Secondary concepts in time perception include duration, rate, and rhythm. Duration is the length of some segment of experience with a discernable beginning and end, "how long" the event takes. Rate is the speed of experience relative to duration, "how quickly" time passes. The term *pace* as used in this research combines perceived rate with an attitude of urgency (e.g., concern of not having enough time). Rhythm describes the segmentation of experience. In the example of a

musical performance, the piece may last for five minutes (duration), but may have seemed to pass quickly compared to five minutes of traffic noise (rate). The musical performance is not one continuous note but breaks into patterns of segments (rhythm). Tertiary concepts in the perception of time often fall under the rubric of temporal perspective (e.g., Nuttin & Lens, 1985; Fraise, 1984). This includes the specific temporal domain (past, present, or future) that is the focus of an individual's attention. Another third order construct is temporal extension, or how far into the past and future are a person's thoughts located. The term temporal horizon has been used synonymously with temporal perspective, but has been more specifically defined as an individual's maximum temporal extension (Nuttin & Lens, 1985). For example a person may be thinking about the future (domain) and be thinking about two hundred years from now (extension). If two hundred years is the most distant point in the future about which the person thinks, then that is the person's future temporal horizon. Temporal integration refers to the extent to which an individual perceives the past, present, and future as integrated and continuous or as separate (Cottle, 1976).

Semantic variation and lack of standard descriptive language has burdened the time perception field. The term "temporal orientation" illustrates one such difficulty. In traditional clinical practice the phrase "oriented to time" refers to the individual's awareness of social time (e.g., the calendar day, the approximate clock time, etc.). In this sense, temporal disorientation means lack of awareness of social time. To avoid confusion, this work will use the term "temporal awareness" to denote the concept of awareness of social time. With very different meaning, the term temporal orientation has been used in recent literature to describe attention to the time domains along with attitude

toward the past, present, and future (e.g., Jones, Banicky, Pomare, & Lasane, 2000; Lennings, 1998). To be consistent with the nomenclature of recent literature and measuring scales, the term temporal orientation as used in this work will refer to the combination of attention and attitude toward the past, present, and future.

Scholars of psychological time have sometimes distinguished between the primary and secondary concepts as belonging to time perception and consider temporal perspective as distinct (Roeckelein, 2000). The larger umbrella for the concept of perception was used in this research because both direct and remote aspects of time experience may interrelate with stress.

Measurement

A number of aspects of time perception have been measured. A vast literature of reaction time, rhythm, and time in music studies exist but are not of immediate relevance to this research (see a recent bibliography by Roecklin, 2000). Reaction time and psychophysical measures of very short time intervals are abundant. There is a growing field of chronobiology that addresses biological cycles and perception of long time intervals (on the order of days). Additionally, social psychologists and linguists have measured pace of life in societies and the use of time in language on the level of cultures (e.g., Helfrich, 1996; Jones, 1988; Levine, 1996, 1997). The focus of this research is time perception relevant to the time period ranging from seconds to hours as well as more general or dispositional time experience at the level of the individual person. These aspects of time perception have either empirical research or anecdotal clinical data that suggest they are important in relation to stress. Measurement of time perception will be

discussed in three groupings: duration perception, temporal perspective, and other measures.

Duration. When one thinks of time perception, perception of duration is likely to come first to mind and has the longest research history. Classic methods of measuring human time perception (duration) as summarized by Allan (1979) and Fraisse (1984) include verbal estimation, production, reproduction, and method of comparison. Verbal estimation may be conducted prospectively such that the individual is told in advance the start of the interval to be judged. The method of verbal estimation also may be used retrospectively as when the subject is asked without prior warning to provide a verbal estimate of the time since an event or between two past events. The retrospective estimate may be requested immediately following the period or some time later (e.g., "How long did you spend waiting in the doctor's office?"). The method of production consists of asking an individual to produce a stated numerical duration (e.g., "Tell me when one minute has passed."). Reproduction requires the subject to repeat a stimulus duration. For example, a subject may hear a tone for some interval. When the tone begins again, the subject must push a button when the tone has occurred for the same duration. The method of comparisons involves the presentation of two intervals in succession and requires the individual to judge the relative duration.

There are advantages and disadvantages to each of these classical methods. Verbal estimates are easy to administer, may be prospective or retrospective, and are appropriate for group administration formats. However, verbal estimation is subject to rounding bias in that people tend to make estimates in round units, fives, and tens (Fraise, 1984). The verbal estimate also requires the individual to have a cognitive concept of

clock time units. Method of production is free from rounding bias, but also requires cognitive concepts of clock time. The method of reproduction does not require any reference to clock time and can therefore be used with children and animals. The method of reproduction, however, has drawbacks. Method of reproduction requires both memory for the stimulus duration and attention to the produced duration, so prospective and retrospective processes (which may be distinct) are combined. Studies have found that the different perceptual duration measures do not necessarily correlate (e.g., Hornstein & Rotter, 1969; Allan, 1979), so in spite of more than 150 years of literature making use of these methods, the results cannot yet be separated from the nuances of the measurement method. (See Zakay 1990 for a discussion of measurement concerns in duration perception and Block & Zakay, 1997 for a discussion of prospective and retrospective relation.)

Temporal perspective. To measure temporal perspective, a variety of approaches have been used, including: behavioral measures, projective measures, interviews, and self-report scales. Behavioral measures have involved coding samples of speech or writing for verb tense and indications of attention to past, present, and future (e.g., Holman & Silver, 1998). Projective tests used in the assessment of temporal perspective have included projective story telling and projective drawing techniques (e.g., Cottle, 1967; Whitbourne & Dannefer, 1986). Nuttin and Lens (1985) described a motivational interview and coding scheme to assess aspects of time perspective with particular regard for future time perspective. Many self-report scales have been developed to measure elements of temporal perspective including: the Temporal Reference Inventory (Roos & Albers, 1965), the Temporal Orientation Scale (Holman & Silver, 1998), the Temporal

Orientation Questionnaire (Braley and Freed, 1971), the Temporal Orientation Scale (Jones et al., 2000), the Temporal Experience Scales (Sanders, 1986), the Stanford Time Orientation Questionnaire (Gonzales & Zimbardo, 1985), and the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999). Self-report scales have been the most widely used measures tapping temporal perspective.

Rate and awareness. While less commonly measured, rate and awareness of time (or lack thereof) merit mention. Lehman (1967) used a simple question to assess subjective rate, "How does time seem to be passing (slow, normal, fast)?" Sanders (1986) developed the Time Experience Scales that included scales of fast tempo and slow tempo although the items related to fast tempo covered general life and items related to slow tempo were stated in terms of specific situations (e.g., "Time passes slowly when I don't feel well."). [1] Melges (1990) developed a self-report scale (The Temporal Disintegration Scale) to assess loss of awareness of clock time that may occur with mental illness and traumatic stress.

Theta. One additional methodological convention must be explained in order to discuss studies of time perception and stress. The literature has been burdened by inconsistent use of terms in discussing results such as "underestimate," "overestimate," and "accuracy." For the sake of making comparisons of duration perception, a ratio convention will be employed throughout this thesis. To implement this convention, original measures reported in the literature have been converted to a ratio whenever possible. The Greek letter θ (theta) is defined as the ratio of subjective duration to clock interval. For verbal estimates, θ is the subjective estimate divided by the actual clock

[1] Sander's use of the term "tempo" is synonymous with the use of the term "rate" in this paper.

interval. For production measures, θ is the instructed interval divided by the actual interval produced, and for reproduction measures, θ is the produced duration divided by the stimulus duration.

Empirical Research of Time Perception Related to Stress and Mood

Experimental studies, field studies, and clinical case studies indicate effects of stress on time perception. Additionally, time perception in the form of time pressure and boredom has been shown to contribute to stress. In this section of the introduction, the literature of stress and perceived duration is discussed first, followed by stress and temporal perspective. Finally, time perception as a source of stress is discussed.

Perceived duration and rate

Physical stressors and danger. Overall, stress increases perceived duration relative to clock time (θ) and increases the variance of θ. For example, several studies have reported that estimations of short time intervals terminated by electric shock were greater than no-shock estimates (θ shock > θ control: Falk & Bindra, 1954; Frankenhauser, 1959; Hare, 1964). Subjects asked to produce a 5-second interval while blindfolded on a moving self-propelled cart made significantly shorter productions (greater θ) when headed toward a staircase and dangerous drop than when headed away from the staircase toward a safer area (Langer, Wapner, & Werner, 1961). Interval estimates of patients in pain were longer than estimates from normal volunteers (θ pain > θ normal), and the rank of θ correlated significantly with the clinician ratings of patient pain based on clinical diagnosis with a rank correlation coefficient of $r = 0.88$ (Biltine et

al., 1983). Additionally, the acute pain patients had greater θ than the chronic pain patients did, and the estimates (and θ) decreased significantly after treatment for the pain. Individuals trained with feedback to produce a 10-second interval reached high levels of accuracy under control conditions, but made significantly shorter (θ exercise > θ before or after exercise) and more variable productions during strenuous exercise (Vercruyssen, Hancock, & Mihaly, 1989). In another study, Hancock (1993) also found a relationship between θ and body temperature such that θ increased with arousal response to heat predicted by body temperature. In summary, a number of acute laboratory stressor conditions including electric shock, physical danger, pain, strenuous exercise, and heat all increased the perceived duration ratio θ.

Psychological stressors and individual characteristics. The studies above did not assess individual interpretation or perception of the experimental conditions, but several studies have manipulated or measured these more psychological aspects of the stress condition. Harton (1939) had subjects estimate time engaged in solving maze puzzles and found intervals in which the subjects succeeded in solving the puzzle were estimated as shorter than failure trials (θ failure > θ success). Rosenzweig and Koht (1933) gave unsolvable puzzles in two conditions: alone for practice and with an experimenter watching in a test of intelligence. Overall, subjects estimated the test period as longer than the practice period (θ test > θ practice). Rosenzweig and Koht (1933) observed a possible relation between subjects' attitudes expressed at the debrief interview and their estimates, "When (the subject) is bored or feels despair time seems long; when he is interested and eager, time seems short" (p. 759). Sarason and Stroops (1978) examined the interaction between trait test anxiety and task instruction (intelligence test or no

instruction) on time estimation. Individuals who were in the highest third of test anxiety estimated test conditions as longest and their estimate of waiting to take the test was longer than estimates by individuals with moderate or low test anxiety in any of the experimental conditions (θ high anxiety > θ medium or low anxiety). For medium and low anxiety subjects, the waiting period was estimated as longer than the test period. Watts and Sharrock (1984) also examined the relationship between individual characteristics (phobia) and time estimates by asking normal volunteers and volunteers with spider phobia to estimate a 45-second period spent looking at a spider. The estimates by individuals with spider phobia were more variable but were significantly longer than normal individuals' estimates for the second period (θ spider phobics > θ normal). Together, people perceived duration as longer (greater θ) when in conditions of failure and when tested on an unsolvable task. This trend was mediated by individual anxiety or fear related to the task (e.g., testing for test anxious, looking at spiders for spider phobics).

Field study and eyewitness research. Evidence from a field study and research on eye witness testimony supports the generalizability of increased θ with acute stress. Buckhout, Fox, and Rabinowitz (1989) found that individuals surveyed 30 days after a minor earthquake overestimated the duration of the quake (θ>1), and that individuals located in the zip code of the quake epicenter gave significantly longer estimates than did individuals outside the epicenter zone. The actual duration of the vibration was probably longer in the more distant zone as the wave slowed with distance from its source. However, the investigators expressed concern that social influences such as the desire to appear credible may have influenced the estimates. Indeed, researchers of eyewitness

testimony have demonstrated the tendency for witnesses of crime to report duration of events much longer than the actual event (e.g., Johnson & Scott, 1976; Buckhout, et al., 1989). In this line of inquiry, subjects were asked to watch a videotape of a mock robbery that was low stress or high stress. All durations were overestimated ($\theta>1$) but were significantly longer for the high stress compared to the low stress conditions (θ high stress > θ low stress; Loftus, Schooler, Boone, & Kline, 1987).

Clinical case observations. Case accounts of stress experiences lasting less than a day have been noted to show time lengthening (increased θ) while trauma lasting more than 24 hours is sometimes associated with underestimates of time (decreased θ). Terr (1983) reported clinical observations from unstructured assessment interviews of ten adults and twenty children who had experienced a major traumatic event (e.g., airliner crash, kidnapping, witnessing the murder of a family member). She observed that six of the patients reported time lengthening experiences, whereas none of the 30 patients experienced the time as shortened or condensed during their ordeal. Each of the six patients spontaneously reported that time was moving very slow. Terr's quotes from these patients suggest that some of the patients believed that the duration had been longer than it was (greater θ) while some realized that minutes were minutes yet the time seemed to pass slowly (a slower rate). Terr contrasts these findings with observations from the Chowchilla study of children whose school bus had been taken hostage and buried underground for 27 hours. Four of 23 children followed for five years after the event reported that the experience seemed shorter than the 27 hours (Terr, 1979). She notes similar reports of decreased θ by a woman buried for five days in an avalanche. Fraisse (1963) recounts two European mine disasters in which miners trapped between

two and three weeks estimated that they had been underground four or five days. In summary, acute stress is associated with increases in θ, more variance in θ, and decreases in perceived rate, while prolonged acute stress is sometimes associated with decreased θ. Little evidence is available regarding the effect of chronic stress on perceived duration.

Temporal perspective, depression and anxiety

Temporal perspective may change with the experience of depression and anxiety and has been theorized to relate to stress appraisal and coping. Depression appears to relate to slow rate and a past temporal orientation. Cohen and Mezey (1961a) reported that depressed patients most often reported that time moves very slowly but were more accurate than normal controls in the estimate of a 3-second interval. In Lehmann's (1967) study of hospitalized psychiatric patients, approximately two thirds of depressed patients said time passed slowly and the remaining third said time passed at a medium speed. In contrast, 80% of the manic patients reported time passed at a medium or rapid speed. Depression also correlated with a predominantly past temporal orientation with little future orientation and Mania with a predominantly future orientation. It is unclear from the research in inpatient populations what, if any, effect medication may have played in patients' perception. Short future extension and negative attitude toward the future correlate with suicide risk measures (Lennings, 1998). Suicide risk increases with a negative view of the past along with low temporal integration. Cohen and Mezey (1961b) report no differences in time estimates in doctors experiencing anticipatory speech anxiety but they did find alternation of perceived rates of time with anxiety (that

time passed either faster or slower than normal). Krauss (1967) found that use of future tense negatively correlated with measures of anxiety.

No research in the literature has experimentally examined the relationship between stress and temporal perspective. However, clinical research and case examples, as well as several hypotheses, relate temporal perspective to stress. Holman and Silver (1998) found that past orientation was associated with higher levels of distress following a traumatic event. Terr (1983), in her study of 30 clinical cases of trauma survivors, reported 11 patients who had foreshortened sense of future and five patients experienced time confusion. Melges (1990) and Braley and Freed (1971) proposed that identity is intimately tied to temporal horizon. The ability to remember oneself in the past and imagine oneself into the future, they hypothesize, provides a sense of self. The ability to project present action into future consequences may enhance the appraisal of resources and coping capacity in the face of stressful life events. For example, future temporal orientation correlates with a number of health behaviors (e.g., Keough, Zimbardo, & Boyd, 1999, 1997; Mahon, Yarcheski, & Yarcheski, 1997) and predicts treatment success of alcoholics (Lennings, 1996). Additionally, the tendency to carry the past into the present by continuing to think about stressful events may prolong stress responses or alter responses to new challenges. In summary, research supports a link between temporal rate, temporal awareness, and temporal orientation with psychological functioning after traumatic stress and with states of depression and anxiety that may be stress related. Also, temporal perspective is conceptually related to stress coping.

Time as a source of stress

Time pressure. The perception of time urgency or time pressure has been conceptualized as a stressor (e.g., Janis, 1982; Zakay, 1993a). In fact, asking subjects to perform tasks such as mental arithmetic while prompting them to work faster and more accurately is a commonly used stress induction technique in studies of stress (see review by Biondi & Picardi, 1999). External or machine pacing of work is more stressful than self-pacing (Steptoe, Evans, & Fieldman, 1997). When individuals perceive that time is limited or have less time than desired for a given task, time pressure exists. Individual differences have been noted in the influence of time pressure and the behavioral results of time pressure stress (Joslyn & Hunt, 1998). Time pressure has been widely studied because of important decrements in performance and decision making associated with time pressure for individuals in critical areas such as medical personnel, pilots, nuclear power plant operators, and so on.

Boredom. Although not as widely studied, the perception that one has too much time or the lack of control over what activities fill one's time may also cause stress. For example, studies of U.S. Army personnel deployed in recent peacekeeping operations have found a key source of stress reported during the middle and later phases of the deployment was boredom (Bartone, 1998).

Gaps in Previous Research and Current Study Rationale

While research tentatively supports a two-way relationship between stress and time perception, much is yet unknown. Studies of time perception have manipulated conditions associated with stress but have not specifically examined stress with

perception and have particularly neglected the various constructs within temporal perspective in relation to stress. This paucity of information on the relationship between stress and time perception exists in spite of the fact that stress and behavioral consequences of stress may contribute to many of the major leading causes of death in the industrialized world (Baum, Gatchel, & Krantz, 1997). Adverse consequences of stress cost a high toll in human life, productivity, mental and physical health, and happiness. While much excellent research occurs each day to better understand stress, an understanding of its relationship to time perception may be critical to illuminate this complex process and point the way to improve intervention and prevention techniques.

To begin to tackle this daunting charge, the relatively simple, broad and straightforward approach possible in a survey study made the most sense. It was hypothesized that basic time perception is not closely related to social desirability and that individuals are capable of observing and reporting their perceptual experiences. A survey enabled broad sampling across different factors of time perception in relation to stress for a normal population. Three studies were conducted toward this aim and are presented in this thesis. The first study consisted of developing a survey instrument (as none of the available measures of time perception included stress) and administering it to the classic normal sample of convenience in psychological research, undergraduate students. The next study used a second version of the Perception of Time and the Senses Survey to examine the relationship between stress and perceptual reports in a larger and more diverse sample. The third study served to validate the survey in a laboratory setting with community volunteers and determine the relationship between Perception of Time and the Senses Survey measures and stress, mood, and other time perception measures.

Hypotheses

Based on the overall hypothesis that stress and time perception are related and on the literature to date, the following basic hypotheses of this research are listed in Table 1. In addition to the basic hypotheses that apply to each of the three studies, hypotheses unique to each study are also listed in Table 1.

Table 1. Study Hypotheses

Overall Hypotheses

1) *Stress and perception of time are related.* The literature reports examples in which stress affects perception and perception affects stress, so a bi-directional relation is hypothesized.

2) *Individuals differ in usual time perspective.* Time perspective has often been considered as an individual difference variable and this individual difference may be important in the stress process.

    a) Regarding a specific kind of time perspective relevant to stress – that of continuing to think about a past stressful event (or maintain it in the present perspective) – women and men differ. *Specifically, women continue to think about psychologically stressful events longer after their conclusion than do men.*

Study 1

3) *The Perception of Time and the Senses Survey I contains three composite time factor scales in addition to individual item scales for time domain attention and affect valence: temporal pace, stress extension, and temporal awareness.*

Study 2

4) *The Perception of Time and the Senses Survey II contains four composite time factor scales in addition to individual item scales for time domain attention, domain affect valence, and temporal integration: temporal pace, stress extension, temporal awareness, and temporal extension.*

Study 3

5) *Domain attention past, present, and future scales are positively related to temporal orientation scales of past, present, and future.* Temporal orientation includes attention to time domains and attitude toward the time domains.

6) *Perceived stress, time perception factors, and mood are related.* From hypotheses 1 and 2, stress, time perception, and mood are related. The third study includes measures of stress and mood to test this hypothesis.

METHODS

Study 1 Methods

The Perception of Time and the Senses Survey was developed to measure self-reported sensory and time perception. The instrument was reviewed by a team of psychologists, revised for clarity, and administered to a university sample along with a time estimation procedure based on the classic time estimation technique as reviewed in Allan (1979) and Fraisse (1984).

Part A: Survey Development

An original survey was developed to explore how stress relates to time and sensory perception and to establish normative values for factors of time perception and frequency of sense perception elements. To construct a self-report survey instrument, face valid items were created that asked about a number of time perception concepts and aspects of sense perception. The portion of the survey related to time perception is the focus of the studies presented here.

Specifically, time perception items related to domain attention (relative attention to past, present, and future), rate (how quickly time seems to pass), pace (rate together with an attitude of time urgency), awareness of time (e.g., how people tell time, knowing the time), and changes with stress. Items also asked about a very specific aspect of time perspective, which is how long the person continues to think about different types of stressful events after the event is completed. Domain attention items asked the percentage of thought about the past, present, and future both usually and when under

stress. The survey items included questions about the time domain that the individual attends to in different moods. Nine psychologists and graduate students of psychology reviewed the initial draft of the survey (Appendix A) in October, 1999, and made suggestions to improve clarity, logic, and readability of the questions before conducting the first study. Improvements yielded the Perception of Time and the Senses Survey I (Appendix A).

Part B: Survey Administration

Participants

Recruitment. The Perception of Time and the Senses Survey was administered to 412 undergraduate students (98 men and 314 women) at Pennsylvania State University from November, 1999, through January, 2000. Respondents were students enrolled in courses offered by the Department of Biobehavioral Health and were provided the opportunity to answer the anonymous survey during class time. No credit or compensation was provided for participation. Students consenting to participate after receiving and reviewing an informed-consent document (more than 80% of students present in the classes sampled; personal communication, Stine, 1999) completed the survey and deposited it inside of a covered box to maintain anonymity. A copy of the informed consent document is included in Appendix D. It took approximately 15 minutes to complete the survey.

Demographics. Most of the participants were majors in Biobehavioral Health and all of the participants majored in programs within the College of Health and Human Development. Participants ranged in age from 18 to 43 with an average age of 20.4

years. Participants were asked to provide racial/ethnic identification; 81.6% self identified as Caucasian, 6.6% African American, 2.7% Latino/Hispanic, 4.6% Asian/Pacific Islander, and 1.5% other. Four participants did not provide demographic information.

Procedure

With permission from course instructors, one of the investigators came to the classroom at the start of class and explained the informed consent to the students. Before completing the survey, participants made a prospective time estimate. Participants were asked to write down how much time had passed during an interval (60 seconds) denoted by directions of "start" and "stop." This time estimate was converted to a ratio, theta, of subjective estimate to clock duration (θ = time estimate in seconds/ 60 seconds).

Data Entry and Analysis

A team of three undergraduate research assistants was trained by a senior graduate student investigator to enter survey data into a computer statistical software program (SPSS 9.0) according to a scoring code book (Appendix B). Another research assistant checked all entries for accuracy. Exploratory factor analysis was conducted to determine if factor structure was consistent with *a priori* factor scales and scale scores were computed for each factor.

Study 2 Methods

A second study was conducted using a revision of the Perception of the Time and the Senses Survey (version 2) to attempt to replicate the findings of the first study with a larger and more heterogeneous sample of students (in terms of academic discipline and age). Study 2 was also intended to clarify and expand some of the constructs assessed in the first study using an improved measure.

Participants

Recruitment. The Perception of Time and the Senses Survey II was administered to 939 undergraduate students (418 men and 521 women) at Pennsylvania State University from March to April, 2000. Students enrolled in a variety of introductory and general requirement courses at Pennsylvania State University participated in the second study. Respondents were provided the opportunity to answer the anonymous survey during class time in a general requirement course and more than 80% of students present volunteered to participate (personal communication, Stine, 2000). No credit or compensation was provided for participation. Students who consented to participate after receiving and reviewing an informed-consent document (see Appendix D) completed the survey and deposited it inside of a covered box to maintain anonymity.

Demographics. The participants represented a variety of academic majors and all of the colleges of study at Pennsylvania State University. Participants ranged in age from 18 to 41 with an average age of 20.9 years. Asked to provide racial/ethnic identification, 86.8% self identified as Caucasian, 2.8% African American, 1.9% Latino/Hispanic, 4.6%

Asian/Pacific Islander, 0.6% Native American or Pacific Islander, and 2.4% other. Eight participants did not provide demographic information.

Measures

Perception of Time and the Senses Survey II. A focus group was conducted after Study 1 to determine how respondents who completed the PTSS I interpreted the questions, to assess any ambiguities, and to garner any additional insights and questions that the survey raised. Seven undergraduate and graduate students who had taken the survey and who played a role in entering the data at Pennsylvania State University were led in focused discussion. They discussed what they believed the questions meant and uncertainties of meaning as well as additional questions that occurred to them while entering the data and reviewing the survey. The focus group also reviewed written comments provided on the surveys from Study 1 to elaborate and consider additional insights by respondents.

Information from the focus group comments, survey comments, and analysis of the administration of the first version suggested revision to the time perception portion of the survey in the following areas:

- define past, present, and future and assess temporal extension
- assess time of day factors on stress and performance
- assess temporal integration and pace trends

The Perception of Time and the Senses Survey II is included in Appendix A.

Prospective Time Estimate. Before completing the survey, participants were asked to write down how much time had passed during an interval (45 seconds) denoted

by directions of "start" and "stop." This time estimate was converted to a ratio, theta, of subjective estimate to clock duration (θ = time estimate in seconds / 45 seconds).

Data Entry and Scoring

Two undergraduate research assistants, trained in data entry and entry coding by a senior graduate student, worked as a team to enter the survey data into a computer statistical software program (SPSS 9.0) according to a scoring code book (Appendix B). A third trained research assistant checked all entries. Exploratory factor analysis was conducted to determine if factor structure was consistent with *a priori* factor scales and scale scores were computed for each factor.

Study 3 Methods

Next, a laboratory study was conducted in which the Perception of Time and the Senses Survey II along with a number of other self-report measures of stress, mood, health, and perception were given to a community sample of people. The long-term goal of this research effort is to forward the knowledge of perceptual factors that may aid in development of interventions for clinical and health psychology. Therefore, it was useful to begin to determine how the constructs measured in the first two studies relate to clinically-relevant factors including stress, depression, and anxiety. Stress is a process that people normally experience in the course of life, but stress is also associated with states of depression and anxiety that may fall along a continuum of impact to functioning ranging up to clinical levels. Therefore, it is useful to determine whether relationships between time factors and negative mood states, if any exist, are similar or distinct from the relationships between time perception factors and self reported stress. Several time

perception measures from the literature also were included in the laboratory study to enable comparison of the factors measured in the survey with the time perception factors that have been used before. Importantly, the laboratory setting enabled us to measure prospective and retrospective time estimation (performance tasks) along with the pencil and paper self-report of time perception. In particular, the third study assessed the convergent and divergent validity of the revised survey in relation to established time perception and psychosocial measures.

Participants

Recruitment. Posted flyers on Pennsylvania State's University Park Campus (Appendix C), advertisements in the college newspaper (Appendix C), and class announcements during the summer school session informed potential participants about the study. A research assistant or investigator called interested individuals to screen for inclusion criteria and schedule a laboratory session using the telephone script in Appendix E. Specifically, participants were at least 18 years of age and were able to read the questionnaire battery in English. No interested individuals failed to meet these requirements. A research assistant provided each volunteer with directions to the laboratory through mail or electronic mail and gave a reminder phone call on the day prior to the scheduled session. Participants completed informed consent (Appendix D) as described with the laboratory procedures. As compensation, participants chose from three compensations: a coffee mug, a $10.00 gift certificate to the Hair Construction Company, or a $10 gift certificate to the Student Book Store.

Demographics. Sixty-five volunteers participated in the study (18 men, 42 women, and 4 missing gender information). One volunteer was removed from the study because of suicidal ideation on the depression screen leaving a final sample size of 64. Participants' ages ranged from 18 to 57 with a median age of 22 years. Most of the volunteers in this community sample were undergraduate students at Pennsylvania State University, along with some graduate students, staff, and area residents. Consistent with student demographics, 80.3% of participants self identified as Caucasian (n=49), 6.6% African American (n=4), 1.6% Latino/Hispanic (n=1), 8.2% Asian/Pacific Islander (n=5), and 3.1% other (n=2). Three participants did not provide demographic information.

Measures

The measures used in the study were compiled into a 26-page battery on pages numerically coded and designed to be recognizable by computer software when scanned. The battery was designed to take 2 hours or less to complete, and all but a few participants finished in less than 90 minutes. In order to have a questionnaire battery of sufficient length to allow retrospective time estimates, measures for other studies were given along with the measures for this study. Each of the measures used in the battery for this and the other studies is described below. A copy of the complete battery and instructions is included in Appendix A.

Beck Depression Inventory 2. (BDI 2: Beck, Steer & Garber, 1988 - Psychological Corporation). The BDI is the most commonly used clinical self-report screen for depression and consists of 21 multiple choice questions, each with four response choices. Meta-analysis gave internal consistency estimates of the BDI of a

mean $\alpha = 0.81$ for nonpsychiatric subjects (Beck, Steer, & Garber, 1988). Internal reliability was $\alpha = 0.77$ in the Study 3 sample. Beck, Steer, and Garber (1988) report an average correlation of $r = 0.73$ between the BDI and clinical ratings of depression using the Hamilton Psychiatric Rating Scale for Depression. Depression was assessed in this study to determine the relationship between sub-clinical depression and time perception. Measurement of self-reported symptoms of depression in a non-clinical population may help determine if the altered time perception reported in the literature in hospitalized depressed patients (e.g., Cohen & Mezey, 1961a; Lehmann, 1967) is related to depressive symptoms or to unique elements of those populations (e.g., severe depression, hospitalization, or medication).

Dissociative Experiences Scale. (DES: Bernstein & Putnam, 1986). This is a measure of dissociative experiences generally associated with detachment from awareness of time and sensation. The scale consists of 28 items scored on a visual analogue scale. Fourteen of the items from this scale have been taken from the DES to form an abbreviated scale for this study. This measure was chosen based on dissociative symptoms in the diagnostic criteria for Acute Stress Disorder and Post Traumatic Stress Disorder in the DSM IV (1994) that may be related to alterations in time perception also associated with those disorders of traumatic stress exposure. Dissociative symptoms of the traumatic stress disorders include amnesia, derealization, depersonalization, and emotional numbing.

Marlowe-Crowne Social Desirability Scale. (Marlowe & Crowne, 1960). Survey items are not expected to correlate with social desirability. This 33 item true and false measure is the widely accepted standard for measuring social desirability with a mean of

13.72 and standard deviation of 5.78 reported by Marlowe and Crowne (1960) in a college sample. Marlowe and Crowne (1960) reported an internal consistency of α = 0.88 and test-retest correlation of r = 0.89. This social desirability measure was included in this study to establish divergent validity of the Perception of Time and the Senses Survey factors and the tendency to respond to items to meet expectations of society. Divergent validity must be established to show that the PTSS II measures something distinct from desirability in order for the PTSS II to be useful in assessing time perception factors.

Multiple Adjective Affective Checklist. (MAACL: Zuckerman & Lubin, 1965). The MAACL is a 132 adjective checklist with scales for depression, anxiety, and hostility. This measure enabled analysis of mood states with time and sensory factors. Reliability and psychometric information is not available.

Perceived Stress Scale. (PSS: Cohen, Kamarck, & Mermelstein, 1983). This 10-item measure with five point response is a widely used measure of an individual's perceived level of stress in the past month. Internal reliability for the PSS was α =.85 in a college sample reported by Cohen et al. (1983) and was α = 0.81 in the study 3 sample. A key hypothesis of this series of studies is that stress relates to perception of senses and time, so a measure of stress was included to enable the evaluation of the hypothesis.

Taylor Manifest Anxiety Scale. (Taylor MAS: Taylor, 1953). Anxiety may relate to temporal pace, duration estimation, and domain attention. This widely used anxiety measure consisted of 20 true and false questions intermingled with the Crowne-Marlowe Social Desirability Scale questions. Symptoms of anxiety are listed in the diagnostic criteria for Acute Stress Disorder and Post Traumatic Stress Disorder (DSM IV).

Alterations of time perception are also symptoms of these disorders of exposure to traumatic stress. Measures of anxiety were included in this study to determine if sub-clinical anxiety itself is associated with time perception factors.

Temporal Disintegration Scale. (TDS: Holman & Silver, 1998). The TDS is a 7-item Likert scale that measures the extent to which an individual can distinguish past, present, and future. Holman and Silver (1998) reported a Chronbach alpha of .83 for the TDS. Temporal disintegration was expected to correlate negatively with temporal integration items and accuracy of time estimations because acuity in estimation of clock time and an integrated sense of time would not be consistent with inability to distinguish past, present, and future. The TDS was included in this study to establish convergent validity with the PTSS.

Temporal Orientation Scale. (Holman & Silver, 1998) To distinguish the Holman and Silver Temporal Orientation Scale from the Jones et al. Temporal Orientation Scale (TOS) the abbreviation "TOI" will be used for this measure. The TOI has 28 items answered on a 5-point Likert scale which yields independent scores for Past, Present, and Future Orientation. The three subscales have reported Cronbach alphas of .82, .73, and .74 (Holman & Silver, 1998). This measure of temporal orientation was included to compare temporal orientation with domain attention. Multiple measures of temporal orientation were included because no clear standard existed in the literature and it was unclear whether different common measures were in fact measuring the same construct.

Temporal Orientation Scale. (Jones, 1994; Jones et al., 2000) The TOS has 15 items answered on a 7-point Lickert scale that yields independent scores for Past, Present, and Future Orientation. The three subscales have reported Cronbach alphas of .81, .65,

.79, respectively, and test-retest correlations ranging from .63 to .86 (Jones et al., 2000). This measure of temporal orientation also was included to allow comparison of temporal orientation with domain attention.

Circle Test. (Cottle, 1967). The Cottel Circle test is a measure of temporal integration (how closely the past, present, and future are related) and a measure of time domain dominance or temporal orientation. This measure and Cottle's Line test described below have been widely used in studies of temporal perspective in spite of lack of established validity and were included to allow comparison of the survey temporal integration items and domain attention with the previous literature. Subjects are asked think of the past, present, and future as circles and to draw the circles as they would view them. The circles do not have to be the same size. Circle size is coded as an indicator of temporal orientation such that the largest circle is the dominant domain. Amount of overlap of the circles is coded as a measure of temporal integration. Information on reliability and validity is not available.

Life Line. (Cottle, 1976). This task requires subjects to place four marks on a 10-inch line that represents time: one to indicate their birth, one to mark the start of the present, one to mark the end of the present, and one to mark their death. The Line Test gives a measure of extension and temporal orientation and has been widely used in the literature. Information on reliability and validity of this measure is not available.

Additional Measures. Additional measures in the battery that were not part of Study 3 are described in Appendix A. These were the Barratt Impulsiveness Scale (Patton, Stanford, & Barratt, 1995), the Caffeine and Tobacco Use Questionnaire (Klein,

Lerner, & Stine, 2000), the Cook-Medley Hostility Scale (Cook & Medley, 1954), and the Tellegen Absorption Scale (TAS: Tellegen & Atkinson, 1974).

Procedure

Laboratory setup. Laboratory sessions were conducted at Pennsylvania State University at 8:30 a.m., 11:00 a.m., 2:00 p.m., 4:30 p.m., and 7:00 p.m. over a two-week period in the summer of 2000 with attendance ranging from 1 to 6 participants per session. Each session lasted two hours. When participants arrived at the Biobehavioral Health Studies Laboratory, then they were greeted by the investigator, shown to a seat at the study table, and offered bottled water. If participants arrived early, then they were asked to wait a few minutes until the start of the session. Copies of the college newspaper were available to read while participants waited. Participants were seated at one of six seats around a rectangular table. The experimental room contained no clocks or windows. An air filter, dehumidifier, and air conditioner provided environmental consistency and white background noise. In front of each seat was a plastic carton with a seat number label. Pens and pencils were available in the center of the table. On a few occasions, a volunteer arrived after the start of a session. In these cases, one of the investigators seated the late volunteer at a desk in a nearby room, also without a clock, and conducted the session individually for that participant.

Informed consent and preliminary instructions. At the start of the session, investigators introduced themselves and reviewed the informed consent form with participants. Each participant signed two copies of the consent form (Appendix D) after all questions were answered. One copy of the consent form was placed into a

confidential file for the Institutional Review Board and the other copy was placed in the labeled carton in front of each participant. Next, packets in a traditional blue folder were distributed to participants with the questionnaire battery in the right pocket and the final page for comments and time estimates in the left pocket of the folder. As soon as packets were distributed, participants were asked to remove all watches and time keeping devices including cellular phones and pagers and to place them in the containers in front of their seats. One of the investigators took the cartons to another room until the end of the session. This precaution prevented automatic hour chimes and alarms from causing distraction or providing time cues during the session. A seating chart was used for each session to record participant identification numbers, handedness, and whether or not the participant had a watch, pager, or cellular phone. The seating chart (Appendix E) served the dual purpose of allowing investigators to easily track this information and to insure participants' correct belongings were returned to them at the conclusion of the session.

Prospective time estimate. After all watches were removed, participants were read the following instructions for the first prospective time estimate.

> Please open your folders and take out the page in the left side. In a moment I will say, "start" and after a period of time I will say "stop." When I say stop, please write down how much time you feel went by from start to stop in the section labeled A. Try not to count, just write down how much time it felt like in seconds. Do you have any questions?

Participants were given the "start" and "stop" signals at the beginning and end of a 78-second interval as measured on a stopwatch (Fisher Traceable Utility Digital Stopwatch and Chronograph #14-649-7) to the nearest 0.01 second. There is a common

tendency to round to multiples of five and whole minutes in prospective time estimates (Allan, 1979), and this phenomenon may have distorted the time estimate measures in Studies 1 and 2 (which used periods of 60 seconds and 45 seconds respectively). For this reason, periods that were not multiples of five seconds and, therefore, expected to more accurately assess perception (78 seconds and 47 seconds) were chosen for Study 3.

Battery instructions. After the prospective estimate, participants were asked to complete the questionnaire battery until reaching directions to "stop and wait for investigator instructions" printed at the bottom of a page. Verbatim instructions to participants are included in the script in Appendix E. Participants were told to place completed pages to the side for periodic collection by the investigators and to record any comments during the study on the comment page. Participants also were advised that they might be asked individually into another room to answer additional questions in order to clarify information. Participants completed the demographics page, the MAACL, the Beck Depression Inventory 2, the Perceived Stress Scale, and the combined Taylor/ Crowne-Marlowe.

BDI screening and referral procedure. Pages of the battery were collected as subjects finished several pages. As participants completed the questionnaires, the Beck Depression Inventory was scored to assess possible depression and suicidality (question 9). The protocol required that any individuals who indicated active suicidal intent or severe depression scores be removed for immediate clinical assessment and referral (assessment script is included in Appendix E). No one indicated active suicidality (a 2 "I would like to kill myself" or 3 "I would kill myself if I had the chance" on BDI item 9) or severe depression (a BDI score greater than 29). However, exercising caution on the first

day of the study, one individual with mild depression and suicidal ideation (a 1 "I have thoughts of killing myself, but I would not carry them out" on BDI question 9 with a total score of 15) was removed from the study. Subsequently, it was decided that removal from the study short of the established criterion was more disruptive to the participant than completing the protocol and receiving a mental health referral at the end of the session. Therefore, the higher cut off (i.e., score of 2 or 3 on item 9 or 29 overall) was maintained for the rest of the study. All participants who scored greater than 9 on the BDI or 1 on question 9 (9 participants total) were counseled and referred during debrief as an ethical service.

Second prospective estimate. When all participants had reached the end of page 7 of the battery (see Appendix A), a second prospective time estimate was administered as described previously. The second interval was 47 seconds as measured on a stopwatch to the nearest 0.01 second. Participants then were told to continue with the battery where they had stopped.

Retrospective estimates. The first retrospective time estimate was conducted after an equal interval for all participants. Specifically, a countdown stopwatch, set to 37 minutes, was started when subjects were instructed to remove their watches. When the time elapsed, subjects were instructed to "right now on your comment page in the section labeled C write down in minutes how long it has been since you were instructed to remove all watches." Participants were then asked to continue with the questionnaires. As participants finished the battery, they were individually asked to write down how long it had been since they were handed the blue folder. Clock time also was recorded in

order to calculate the time that actually elapsed during the second retrospective period for each participant.

Debrief. After providing any additional written comments about the study, participants were taken individually into another room for debrief. A clinical psychology trainee provided counseling and a depression referral if needed in a private room. For all participants, the purpose of the study was explained, any questions were answered, and consent form copies and belongings were returned. We thanked participants for their time and provided their choice of compensation items. The laboratory session took approximately 75 minutes to complete.

Data Entry and Scoring

Data entry. Questionnaire batteries were electronically scanned into a file for statistical analysis. Computer coding assignment was checked visually and (if necessary) corrected manually for all entries with less than 80% certainty of mark identification by the software package. The investigators personally reviewed all written comments to gather qualitative information concerning the interpretation of questions, any confusion, and participant's experience in the session.

Syntax. Standard scoring for published scales and subscales were used (MAACL, BDI, PSS, TOI, TOS, TAS, TDS, Taylor, and Crowne-Marlowe). By intention, only 14 of the items from the Dissociative Experiences Scale were included. The DES score is an average of the millimeter length of a 10-centimeter visual analogue scale.

Derived variables. Several variables from the measures Perception of Time and the Senses Survey (version 2) were derived. Specifically, change scores were calculated

for percentage of thought in each time domain under stress (i.e., [% time thinking about a time domain under stress] – [% time thinking about that time domain usually]). Five subscales were calculated (temporal extension, stress extension in time, temporal pace, clock time awareness, and environmental time awareness)[2]. The syntax code for all scoring is included in Appendix B.

Theta. Time estimates were transformed into a ratio, theta, of subjective time to objective time to avoid the confusion of terminology common to the time perception literature in which terms such as "over estimate," "underestimate," and "accuracy" have been often used with conflicting definitions.

Cottle circle scoring procedure. Cottle's circle test, a projective drawing procedure, was independently scored by a research assistant and one of the investigators. Each circle (past, present, and future) was ranked as not clearly larger than any other circle (0), clearly larger than one other circle (2) or clearly larger than both other circles (4). This ranking yielded a separate score for temporal dominance in each domain. Each combination of circles (past-present, present-future, and future-past) was ranked according to the degree of relatedness between the circles: completely separated (0), touching at one point (2), overlapping (4), or one inside the other (6). The sum of the three combination scores served as the temporal integration score (0 to 18). Inter-rater score correlation was greater than $r = .95$ for all ratings. An average of the scores of the two raters was used in all subsequent analyses.

Cottle line scoring procedure. Cottle's line test is another projective drawing procedure. From the four marks that the subject places on the 10-inch line (birth, present

[2] Scales were derived from factor analysis of studies 1 and 2. See results section for a detailed description of scale factors.

outliers were 0.64 to 2.82, 0.11 to 2.55, 0.41 to 3.38, and 0.48 to 2.22. Two subjects out of 64 were excluded in each of the retrospective estimate ratios and one subject out of 64 was excluded in the second prospective estimate ratio. The minimum excluded value meeting the criteria was $\theta = 9.3$, which was greater than three times the standard deviation from the mean. Before removal of extreme values, the skewness statistics for the four thetas (first prospective, second prospective, first retrospective, second retrospective) were 1.34, 7.29, 5.99, and 6.76, respectively, and after removal of extreme values the skewness statistics were 1.34, 1.00, 2.02, and 0.24, respectively. All results reported for the third study involving theta values were calculated with the extreme outliers (2 out of 64) removed.

RESULTS

The first part of the Results section presents psychometric analyses of the survey instrument (i.e., the factors structure, reliability, and correlations among the factors). The next part of the Results presents time perception findings. Included in this part are findings regarding attention to the different time domains and temporal pace. In addition, this part of the Results presents how time perception, measured by the Perception of Time and the Senses Survey (PTSS), compares with time perception measured by other instruments. Also presented are results relating time perception to stress, mood, and other variables. Results unique to each study are presented separately (e.g., factor structure of PTSS versions, comparisons between PTSS and other scales administered only in Study 3). Results of analyses common to each of the three studies (e.g., distribution of responses within the PTSS) are presented for the three studies together.

Part I: Psychometrics

Factor Structure.

Hypothesized structure. The Perception of Time and the Senses Survey I (PTSS I) was hypothesized to measure the area of domain attention and the following three factors of time perception: pace (sense of how fast time goes), stress-extension (how long respondents continue to think about a stressful event), and awareness (how aware respondents are of the time). The PTSS II was hypothesized to measure the same factors along with the additional factor of temporal extension (how far the past, present, and future time periods extend in the person's thought). Domain attention items asked respondents about which domain they most often think and about what percentage of

time they usually think about each domain. This question construction on these face valid domain attention items is not suited to factor analysis.

PTSS I factor analysis. Factor analysis of the PTSS I scale items intended to measure pace, awareness, and stress-extension gave a 5-factor solution using principle component analysis of the correlation matrix. Table 2 presents the items for each factor and their respective factor loadings derived from Varimax rotation with Kaiser Normalization.

Factors were identified as stress-extension, pace, awareness of clock time, time concern, and awareness of event time. The questions asking about length of time to think about different types of stressful events formed a factor scale called "Stress-Extension." Questions related to rate (how fast time seems to go) and urgency (time goes too fast) formed the scale called "Pace." Questions that involved knowing the clock time formed a factor labeled "Clock Time Awareness." "Event Time Awareness" consisted of items with positive loading for telling time by events and waking oneself at a previously determined time and negative loading for using a watch. The factor labeled "Time Concern" has items regarding thinking about time and having enough time.

PTSS II factor analysis. Factor analysis of the PTSS II scale items intended to measure pace, awareness, temporal extension, and stress-extension gave a 6-factor solution using principle component analysis of the correlation matrix. Varimax rotation with Kaiser Normalization was performed and the resulting factor loadings greater than 0.4 are listed in Table 3. Factors were identified as stress-extension, pace, temporal extension, awareness of clock time, time concern, and awareness of event time. The factor structure replicated that of the first study with the addition of the factor of temporal

extension. The factor labeled "Temporal Extension" contained the three items that were added for the second version of the survey about how far into the past and future the person thinks and how long the present extends in time. Also the item "I have enough time each day" loaded onto pace rather than time concern in the PTSS II factor structure.

Table 2. PTSS I Structure and Item Loadings

Factor Items that loaded on each factor with a loading greater than .4	Rotated Factor Loading
Stress Extension	
How long do you think about a minor physical stressor?	.690
How long do you think about a major physical stressor?	.739
How long do you think about a minor psychological stressor?	.740
How long do you think about a major psychological stressor?	.705
Pace	
How quickly does time pass usually?	.726
Time drags.	-.736
Time goes too fast.	.771
Clock Time Awareness	
I know what time it is.	.782
I lose track of time.	-.787
Time Concern	
I have enough time each day.	-.589
I think about time.	.740
Event Time Awareness	
I look at a clock or watch to tell time.	-.634
If you want to wake up at a specific time other than when you normally would, can you wake yourself (without an alarm) within 10 minutes of the chosen time?	.651
I tell time by the events around me.	.623

Resulting structure. Before the first study was conducted, it was hypothesized that the response to many of the questions would be grouped into three factors. In fact, factor analysis confirmed two of these hypothesized factors (i.e., stress extension and pace) and revealed that the hypothesized third factor split into clock time awareness, event time

Table 3. PTSS II Factor Structure and Item Loadings

Factor Items that loaded on each factor with a loading greater than .4	Rotated Factor Loading
Stress Extension	
How long do you think about a minor physical stressor?	.616
How long do you think about a major physical stressor?	.679
How long do you think about a minor psychological stressor?	.806
How long do you think about a major psychological stressor?	.773
Pace	
How quickly does time pass usually?	.737
Time drags.	-.660
Time goes too fast.	.809
I have enough time each day.	-.478
Clock Time Awareness	
I know what time it is.	.779
I lose track of time.	-.798
Time Concern	
I think about time.	.811
I look at a clock or watch to tell time.	.418
Event Time Awareness	
I look at a clock or watch to tell time.	-.592
If you want to wake up at a specific time other than when you normally would, can you wake yourself (without an alarm) within 10 minutes of the chosen time?	.608
I tell time by the events around me.	.597
Temporal Extension	
When you think about the past, how far back are you most often thinking?	.765
When you think about the present, what time frame do you think about?	.474
When you think about the future, how far into the future are you most often thinking?	.776

awareness, and time concern. Focus group discussions after Study 1 indicated the need to add questions expected to form another factor (temporal extension). Factor analysis after study 2 confirmed three of the hypothesized factors (i.e., stress extension, pace, and

temporal extension) and again revealed that hypothesized awareness was in fact three factors (clock time awareness, event time awareness, and time concern). A confirmatory factor analysis with the factor structure from Study 1(using PTSS I) was not performed for Study 2 because items for another factor (temporal extension) were included in the PTSS II.

Factor Scale Internal Reliability and Correlations Among Scales

Cronbach's α was calculated for each of the factor scales for each of the three studies with reverse coding on the negative loading items (see Table 4 for these values).The Pearson correlation coefficient was computed between each of the time scales and θ (time estimation ratio). Because each of the scales showed comparable internal reliability in the three studies, inter-scale correlations were computed using the three samples combined in order to have greater power to detect any overlap in the factor elements. Table 5 presents these correlation values. The different factor scales of time perception were orthogonal within this sample based on the fact that all values were less than 0.1. Because the six factors in the principle component analysis accounted for 57% of variance and the scales are orthogonal, each scale must account for one sixth of the 57% of variance, or approximately 10%, to be considered to have adequate reliability.

Table 4. Chronbach's α for Time Scales

	Study 1	*Study 2*	*Study 3*
Pace	.5866	.6028	.7382
Temporal Extension		.4756	.5233
Stress Extension	.7144	.6864	.6691
Clock Awareness	.5523	.6254	.7336
Event Time Awareness	.3241	.2797	.3069
Time Concern	.3051	.3448	.4927

Using this reliability criterion, only scales with consistent Cronbach alphas of at least 0.32 were used. Stress-Extension, Pace, Temporal Extension, and Clock Time Awareness met this Cronbach's α standard for use. Taken together, the results of these analyses suggest that these four time perception subscales were reliable, had a stable factor structure, and were independent of each other.

Table 5. Correlation Matrix for Time Scales and Theta

		Pace	*Clock*	*Event*	*Exten*	*Theta*
Stress	Pearson Correlation	.037	-.032	-009	.021	-.015
	Sig. (2-tailed)	.170	.233	.727	.507	.589
	N	1382	1386	1392	976	1351
Pace	Pearson Correlation	1.000	-.025	.021	.074*	.069*
	Sig. (2-tailed)	.	.347	.439	.021	.011
	N		1395	1402	973	1360
Clock	Pearson Correlation		1.000	.021	.023	.006
	Sig. (2-tailed)		.	.507	.469	.812
	N			976	978	1363
Event	Pearson Correlation			1.000	-.021	0.031
	Sig. (2-tailed)			.	.518	.245
	N				983	1369
Exten	Pearson Correlation				1.000	.019
	Sig. (2-tailed)				.	555
	N					951

* Correlation is significant at the 0.05 level (2-tailed).

Part II: Time Perception

Perception of Time and the Senses Survey results

Domain Attention. Domain attention was assessed in two ways. One question asked which domain (past, present, or future) participants usually think about. Figure 1 presents the percentage of participants for each study that report usually thinking about each time domain. Another question asked participants to give the percentage of time they usually think about the past, present, and future (such that the three add to 100%).

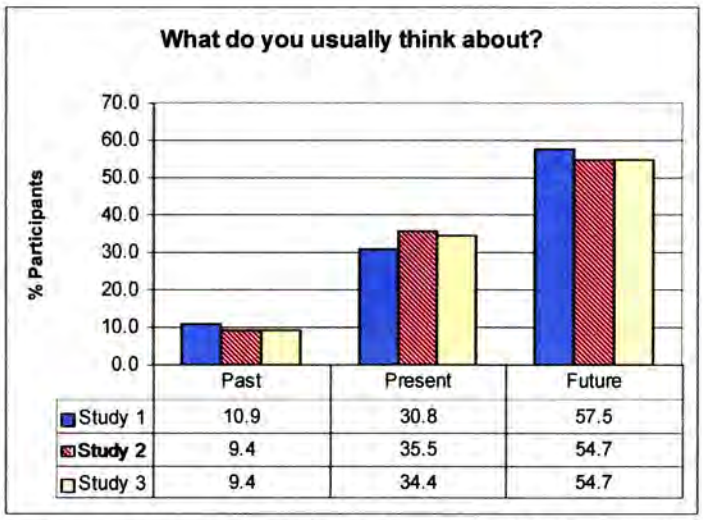


Figure 1. Percentage of participants from each of the three studies who usually think about the past, present, and future.

Table 6 presents the mean percentage of time that participants reported thinking about each time domain. The college population used in Studies 1, 2, and 3 was predominantly future dominant as 55 to 58% in each study reported usually thinking about the future. However, when asked the percentage of time usually spent thinking about each domain, the average of the reported percentage of time spent thinking about the present was the greatest of the three for the second and third studies. Figure 2 presents the average percentage of thought in each domain for the overall sample, collapsed across all three studies.

Table 6. Mean Percentage of Thought in Each Time Domain

		Study 1	*Study 2*	*Study 3*
Past %				
	Mean	24.04	23.15	21.70
	Stdev	12.96	11.86	12.16
	Range	2 to 85	0 to 90	1 to 60
Present %				
	Mean	35.86	40.71	42.08
	Stdev	17.23	17.02	17.45
	Range	0 to 96	0 to 90	5 to 85
Future %				
	Mean	40.18	36.10	36.55
	Stdev	16.43	15.41	15.40
	Range	2 to 85	0 to 90	5 to 70

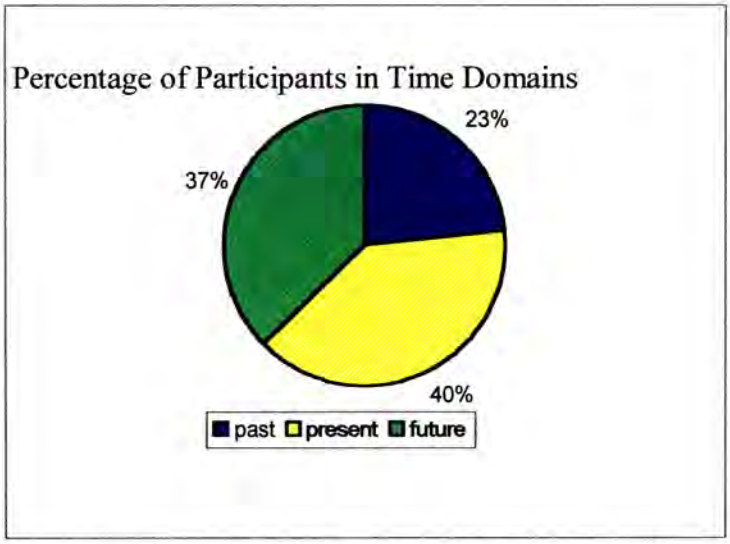


Figure 2. Average percent of thought in each time domain for all subjects combined.

Temporal Rate and Pace. Four questions combine to form the temporal pace scale. One of these questions assesses temporal rate (how fast does time seem to pass). The other questions tap both rate and urgency (e.g., not having enough time, feeling time goes too fast). Results from each of these related constructs are given because both of these two constructs relate in interesting ways to perceived stress. Figure 3 presents the percentage of participants reporting each of the time passage rates for each study. The

majority of participants (49 to 59%) reported time usually passes quickly for them. Only three participants of the 1415 participants in the three studies reported that time passes very slowly, so these responses were combined into one category with the cases that reported time to pass slowly.

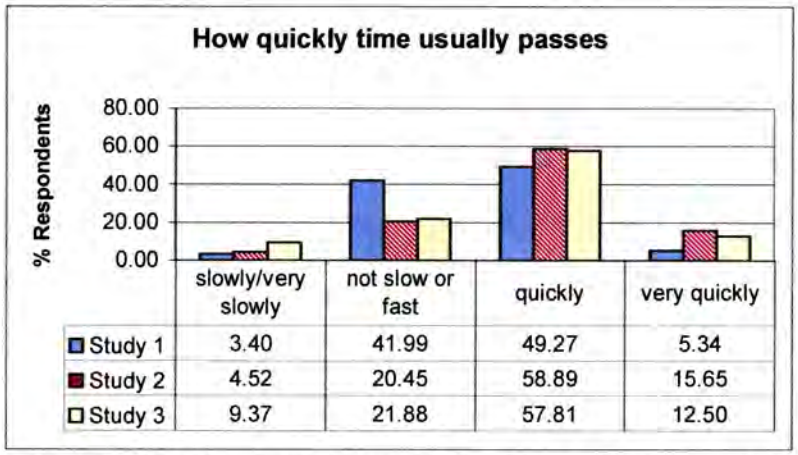


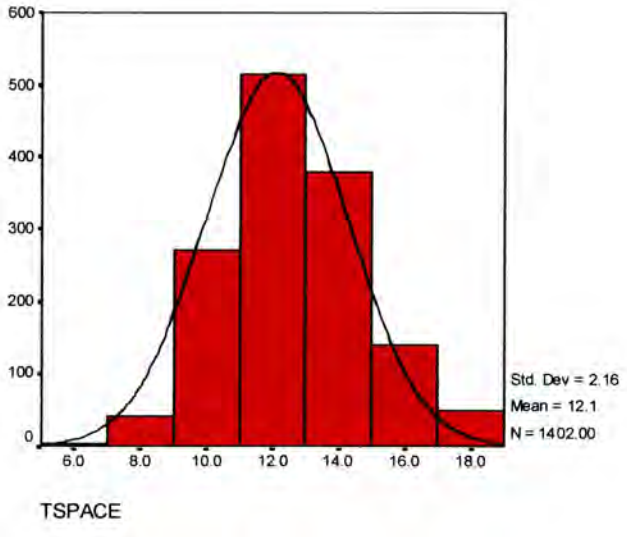
Figure 3. Percentage of participants in each of the three studies that reported time passes the different rates.

The four question pace scale had a mean of 12.1 and a range of 5 to 18 (potential range 4 to 20) for the combined sample with similar responses for each study (see Table 7) and individual values reflecting a normal distribution (see Figure 4). Responses to items related to rate and pace were psychometrically sound and were related in interesting ways to stress (see sections to follow).

Table 7. Average Pace

	Study 1	*Study 2*	*Study 3*
μ	11.8	12.3	11.8
St. Dev.	2.02	2.17	2.43
N	411	927	64

Figure 4. Histogram of Pace scale distribution and normal curve.



Convergence and Divergence of Time Factors and Other Time Measures

Study 3 included the PTSS II, time estimation tasks, other time perception self-report measures, and several questionnaires not related to time perception for validation of the new scale. This part of the Results section compares the time-related measures among the PTSS factors, time estimation tasks, and other time perception self-report measures.

Temporal perspective and domain attention. Tables 8, 9, and 10 present the Pearson Correlation coefficients for past, present, and future scales.[3] Each table gives the PTSS percent of thought in the domain, how far the domain extends in time, and how the person feels about that domain. The PTSS measures of domain attention (percent and category of past, present, and future), domain feel, and domain extension correlated significantly with some of the other measures of temporal perspective. Comparison scales are Cottle Circle Dominance, Cottle Line Scale (Historic and Personal for past and future), the Temporal Orientation Scale (TOI), and the Temporal Orientation Survey (TOS). The relationships suggest that domain attention is a related but unique construct from temporal orientation. The greatest overlap between measures occurs in the past domain. Past extension is directly related to TOI and TOS past orientation scales and is inversely related to Cottle historical past line. Past percent is significantly correlated with the TOI and TOS past scales ($r = 0.478, 0.393$ $p<0.001$). Present percent and present feeling are significantly correlated with the TOS present scale ($r = 0.373, 0.303$, $p<0.05$). The PTSS domain attention and extension were not significantly correlated with the other

[3] A complete correlation table including past, present, and future scales is included in Appendix F.

Table 8. Past by Past Factor Scale Correlations

		%	*Valence*	*Circle*	*Line H*	*Line P*	*TOI*	*TOS*
Exten	**r**	**0.067**	**-0.181**	**-0.043**	**-0.307**	**0.103**	**0.276**	**0.297**
	p	0.597	0.153	0.737	0.015	0.427	0.027	0.018
	N	64	64	63	62	62	64	63
Past %	**r**	**1**	**-0.009**	**0.103**	**0.064**	**0.028**	**0.478**	**0.393**
	p	.	0.944	0.423	0.620	0.827	0.000	0.001
	N		64	63	62	62	64	63
Valence	**r**		**1**	**-0.144**	**0.030**	**-0.263**	**-0.102**	**-0.171**
	p		.	0.262	0.814	0.039	0.424	0.181
	N			63	62	62	64	63
Circle	**r**			**1**	**0.217**	**0.015**	**0.152**	**0.004**
	p			.	0.093	0.906	0.236	0.974
	N				61	61	63	62
Line H	**r**				**1**	**-0.337**	**-0.020**	**-0.003**
	p				.	0.007	0.880	0.983
	N					62	62	62
Line P	**r**					**1**	**0.308**	**0.201**
	p					.	0.015	0.117
	N						62	62
TOI	**r**						**1**	**0.715**
	p						.	0.000
	N							63

Table 9. Present by Present Factor Scale Correlations

		%	*Valence*	*Circle*	*Line*	*TOI*	*TOS*
Exten.	**r**	**0.054**	**0.058**	**0.150**	**0.114**	**-0.061**	**-0.028**
	p	0.674	0.648	0.242	0.378	0.632	0.828
	N	64	64	63	62	63	63
%	**r**	**1**	**0.038**	**0.012**	**0.238**	**-0.026**	**0.303**
	p	.	0.765	0.927	0.063	0.840	0.016
	N		64	63	62	63	63
Valence	**r**		**1**	**-0.041**	**0.189**	**0.111**	**0.373**
	p		.	0.749	0.141	0.386	0.003
	N			63	62	63	63
Circle	**r**			**1**	**0.032**	**0.150**	**0.163**
	p			.	0.807	0.246	0.206
	N				61	62	62
Line	**r**				**1**	**0.028**	**0.202**
	p				.	0.831	0.119
	N					61	61
TOI	**r**					**1**	**0.422**
	p					.	0.001
	N						62

Table Legends for Tables 8 and 9: "Valence" is Domain Feeling Valence. "Circle" is Cottle Circle Score. "Line" in Cottle Present Line Score. "Line" (H or P) is Cottle Line Score for Historic or Personal Past. "TOI" is the Temporal Orientation Scale from Holman and Silver (1998). "TOS" is the Temporal Orientation Scale from Jones et al. (2000). Statistically significant results are highlighted.

Table 10. Future by Future Scale Correlations

		%	*Valence*	*Circle*	*Line H*	*Line P*	*TOI*	*TOS*
Exten.	**r**	**0.002**	**0.165**	**0.086**	**-0.011**	**0.050**	**0.149**	**0.187**
	p	0.985	0.192	0.505	0.932	0.697	0.244	0.141
	N	64	64	63	62	62	63	63
%	**r**	**1**	**0.137**	**-0.012**	**0.008**	**0.248**	**0.024**	**-0.101**
	p	.	0.281	0.928	0.953	0.052	0.852	0.429
	N		64	63	62	62	63	63
Valence	**r**		**1**	**-0.091**	**-0.008**	**-0.054**	**0.310**	**0.066**
	p		.	0.480	0.953	0.677	0.013	0.605
	N			63	62	62	63	63
Circle	**r**			**1**	**-0.050**	**0.115**	**0.014**	**0.016**
	p			.	0.701	0.377	0.917	0.904
	N				61	61	62	62
Line H	**r**				**1**	**-0.320**	**-0.003**	**0.031**
	p				.	0.011	0.981	0.814
	N					62	61	61
Line P	**r**					**1**	**0.198**	**0.046**
	p					.	0.125	0.725
	N						61	61
TOI	**r**						**1**	**-0.320**
	p							0.011
	N							62

Table Legends for Table 10: "Valence" is Domain Feeling Valence. "Circle" is Cottle Circle Score. "Line" (H or P) is Cottle Line Score for Historic or Personal future. "TOI" is the Temporal Orientation Scale from Holman and Silver (1998). "TOS" is the Temporal Orientation Scale from Jones et al. (2000). Statistically significant results are highlighted.

future scales. Future feelings did correlate with the TOI future orientation scale ($r=0.31$, $p<0.05$). In summary, the past scales are most related, the relationship between present domain attention and feelings with temporal orientation depends on the orientation measure used, and future domain attention does not closely relate to temporal orientation.

PTSS Time Factors and Temporal Disintegration. The percentage of time that participants reported thinking about the present and future under stress correlated with temporal disintegration, or the inability to distinguish past, present, and future ($r=0.29$, $p<0.05$; $r=-0.34$, $p<0.01$). Also, shift in thought to the present and away from the future correlated with temporal disintegration ($r=0.29$, $p<0.05$; $r= -0.27$, $p<0.05$). Temporal disintegration correlated negatively with valence of feelings about the past and present ($r= -0.25, -0.28$, $p<0.05$, respectively). Temporal disintegration correlated with

significantly longer prospective time estimate θ's (r=0.29, p<0.05; r=0.40 p<0.01). In sum, feeling bad about the past and present and becoming more present and less future focused under stress relates to temporal disintegration.

PTSS II Time Factors and Time Estimation. Table 11 presents the time estimate theta correlations with time scales. Indications of consistency included strong significant correlations between the two prospective time estimate θ's (r= 0.729, p<0.0001) and the two retrospective time estimate θ's (r= 0.617, p<0.0001). As the prospective and retrospective estimates were not significantly correlated, these appear to be independent measures. Pace correlated positively with retrospective thetas and negatively with prospective thetas, although only the first prospective theta showed correlation reaching statistical significance (r=-0.268, p<0.05). The interesting directional split suggests that a faster perceived pace of time relates to longer remembered time and shorter perceived

Table 11. Time Estimate and Time Factor Correlations

	Pace	*Extension*	*Stress ex.*	*θ 1-r*	*θ 2-r*	*θ 1-p*	*θ 2-p*
Pace r	**1**	**0.111**	**0.135**	**0.172**	**0.158**	**-0.268**	**-0.130**
p		0.382	0.288	0.182	0.219	0.032	0.312
N		64	64	62	62	64	63
Extension r		**1**	**0.264**	**0.057**	**0.087**	**0.079**	**0.266**
p			0.035	0.662	0.503	0.532	0.035
N			64	62	62	64	63
Stress ex. r			**1**	**0.283**	**0.333**	**-0.067**	**0.000**
p				0.026	0.008	0.601	0.998
N				62	62	64	63
θ 1-r r				**1**	**0.617**	**0.070**	**0.028**
p					0.000	0.591	0.831
N					62	62	61
θ 2-r r					**1**	**-0.162**	**-0.090**
p						0.209	0.491
N						62	61
θ 1-p r						**1**	**0.729**
p							0.000
N							63

Table legend. Theta designation for prospective is "p" and for retrospective time estimate ratio is "r". Statistically significant results are highlighted.

duration while occurring. Remembered duration varied with stress extension for both the first ($r = 0.28$, $p<0.05$) and second retrospective estimates ($r = 0.33$, $p<0.01$). Time estimation thetas were not correlated with domain attention items. Summarizing, the time perception factors that relate to estimation of time intervals are pace (how quickly time seems to pass along with a negative valence) and stress extension (how long thoughts of a stressful event extend in time).

Time Perception, Mood, and Stress

Within PTSS. It was hypothesized that time perception relates to stress. Specifically, domain attention was predicted to change with stress and mood. Table 12 shows the percentage of thought reported in each domain usually and under stress. Changes in attention to past, present, and future when under stress were evident. The percentage of time for each domain (past, present, and future) changed significantly with stress (see Table 13). Generally, participants reported thinking less about the past and more about the present and future when under stress.

Participants reported which time domain they usually think about when they are happy, sad, anxious, and angry. Figure 5 shows the percentage of responses for each time domain in each study. Most participants reported thinking about the present when happy and angry, the past when sad, and the future when anxious. The distributions were significant in Chi-square test for each mood at $p<.001$ for each of the studies. On the whole, these data point to mood dependence of domain attention.

Table 12. Percentage of thought in each time domain

		Usual			*Stress*		
		Study 1	Study 2	Study 3	Study 1	Study 2	Study 3
Past %							
	Mean	24.04	23.15	21.70	16.76	14.51	15.75
	Stdev	12.97	11.86	12.16	16.14	15.52	15.61
	Range	2 to 85	0 to 90	1 to 60	0 to 90	0 to 95	0 to 75
Present %							
	Mean	35.86	40.71	42.08	40.37	45.37	53.34
	Stdev	17.23	17.02	17.45	23.12	23.98	25.63
	Range	0 to 96	0 to 90	5 to 85	0 to 100	0 to 100	0 to 95
Future %							
	Mean	40.17	36.10	36.55	43.06	39.89	31.72
	Stdev	16.43	15.41	15.40	22.80	23.34	22.20
	Range	2 to 85	0 to 90	5 to 70	0 to 100	0 to 100	1 to 90

Table 13. Paired T-test for difference between usual and stress percentage in time

	Study 1	*Study 2*	*Study 3*
Past % t(N)	(406) =9.013 p<.000	(922)=16.880 p<.000	(62)=2.843 p<.01
Present % t(N)	(405) =-3.662 p<.000	(920)=-6.141 p<.000	(63)=-3.805 p<.000
Future % t(N)	(406) =-2.598 p<.010	(921)=-5.322 p<.000	(63)=1.58 p=.119

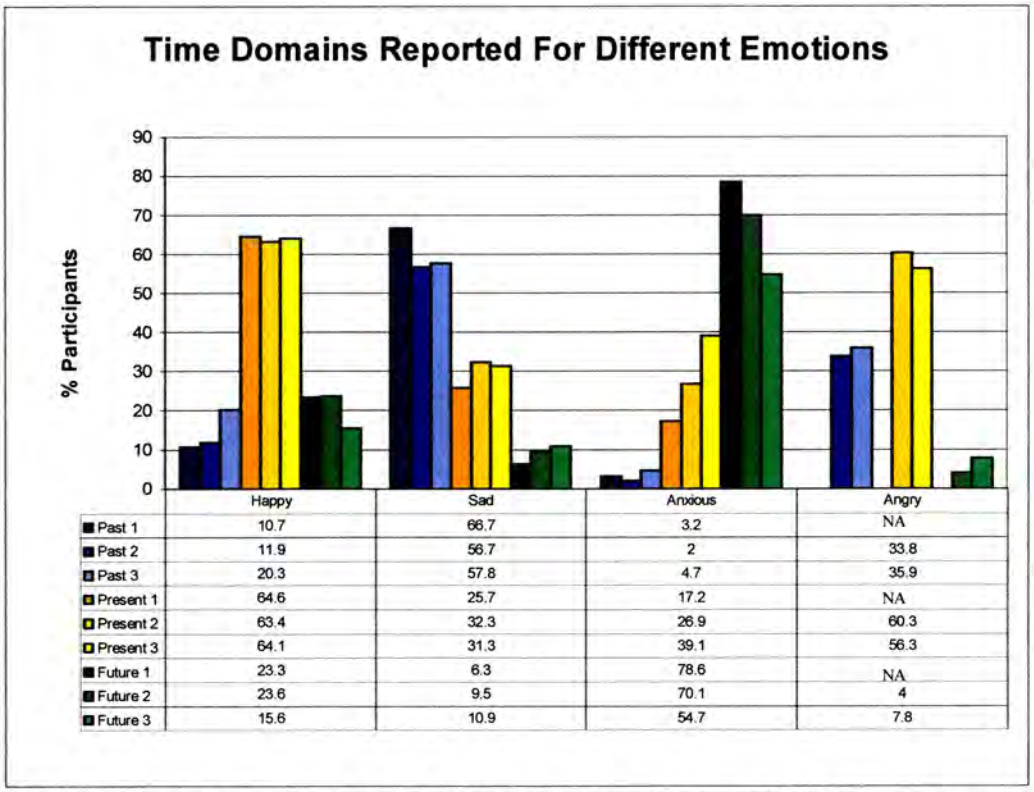


Figure 5. Percentage of participants in each study listing past, present, and future thoughts for each emotion. The question for thought when angry was not included in the first study.

Participants were asked to rate how they feel about their past, present, and future on a 5-point scale from very bad (1) to very good (5). This measure will be referred to as Domain Feeling Valence. Figure 6 presents average present feeling valence versus reported rate of time. Present Feeling Valence ranged from 1 to 5. How participants.

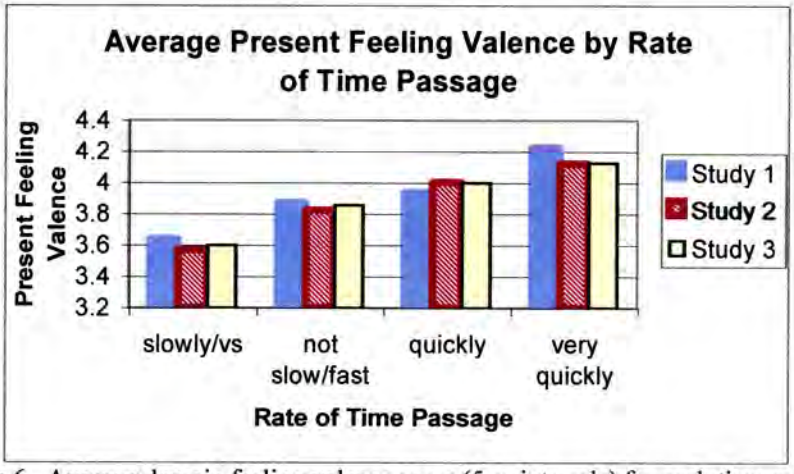


Figure 6. Average domain feeling valence score (5-point scale) for each time rate in each study.

reported feeling about their present was significantly related to how quickly time usually passes.[4] The more quickly time passes, the better people feel about the present or the better people feel about the present, the more quickly time passes. A significant linear relationship exists between reported time rate and present feelings $t(1405)=6.025$, $p<.001$.

A fourth area of interest relating to time and stress is how long people continue to think about a stressful event after it is over and assuming no permanent consequences. Individual items asked about how long participants continue to think about four kinds of stressors: major physical, minor physical, major psychological, and minor psychological. Together, the four items form the Stress-Extension Scale. Stress extension is

[4] The survey asked "how do you feel about your present?" Participants answered on a five point scale from 1=Very Bad to 5=very good.

approximately normally distributed as shown in Figure 7. Table 14 presents the average stress extension for men and women in each study. Women were significantly higher than men on the composite stress extension scale scores in each study (Study 1 $F(1,399)=11.66$ $p<.001$, Study 2 $F(1,920)=7.53$ $p<.01$, Study 3 $F(1,60)=4.38$ $p<.05$).

Table 14. Mean Stress Extension

	Men	*Women*
Study 1	13.04 (3.08)	14.30 (3.12)
Study 2	13.73 (3.34)	14.29 (2.08)
Study 3	12.39 (3.24)	14.33 (3.32)

Table legend: mean (standard deviation)

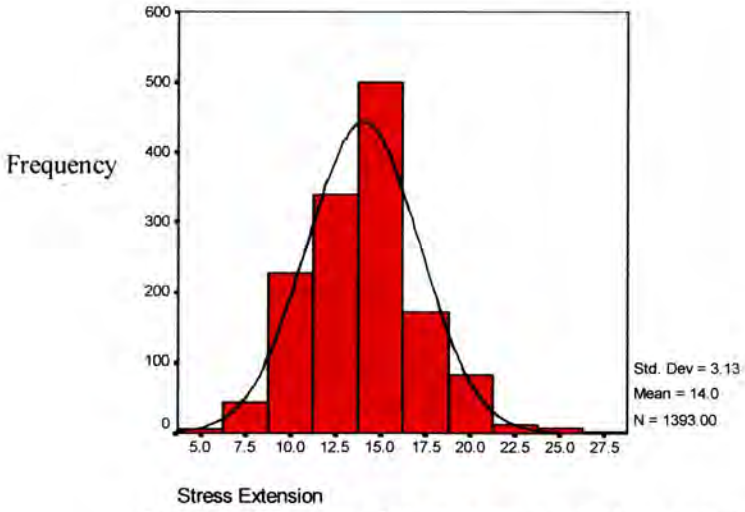


Figure 7. Histogram of Stress-Extension Scale Distribution

Figure 8. Percentage of men and of women that reports thinking about a minor psychological stressor for each time length.

It was hypothesized that gender differences exist for extension of psychological stressors with women thinking about the event for a longer time period then men. Figure 8 shows thought period by gender for minor psychological stress. Women did think longer than men about minor psychological stressors in each of the three studies (Mann-Whitney U=10464, 84477, and 257.5, respectively, z = -4.55, -5.98, and -2.13, all p's <.05). In the first study, women reported thinking significantly longer about major psychological stressors as well, but the differences were not statistically significant in the other two studies.

Time Perception from the PTSS Compared to Other Measures

Relations of PTSS time factors to perceived stress. Stress relates to several time perception factors. Stress as measured by the Perceived Stress Scale is negatively correlated with valence of feelings about the past and present ($r = -0.45, -0.34, p<0.01$) but not significantly with feelings about the future ($r = -0.16, p = 0.22$). Perceived stress also correlated with reduced thought about the future when under stress ($r=-0.34, p<0.01$). Trends were evident between stress and the percentage of thought about the past under stress ($r = 0.24, p=0.052$) and between stress and pace ($r = 0.24, p =0.062$). Stress did not correlate with any of the time estimation measures.[5] Perceived stress, then, goes along with feeling bad about the present and past, thinking less about the future and more about the past under stress, and experiencing a slightly faster pace of time.

Subjective rate of time passage relates to stress in an interesting way. Figure 9 shows PSS versus rate on a 5-point scale and a quadratic model. Perceived stress did not vary directly with how fast time usually passes but instead fit a quadratic U-shaped

[5] For a table of all correlations see Appendix F.

function. Participants who reported that time passes not fast or slow had lower stress than those who reported time passes slowly or quickly. The quadratic fit with b_0=29.16, b_1=11.64, and b_2=1.90 is significant, $F(53)$=5.8 $p<0.01$.

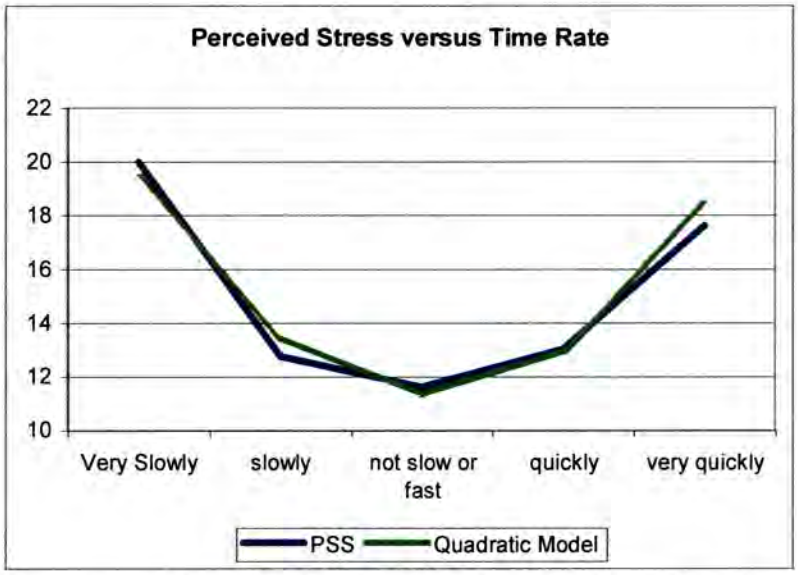


Figure 9. Average perceived stress scale score for each time rate and a quadratic model of PSS as a function of five point scale rate score.

Relations of the PTSS domain valence and mood measures. The four areas of mood measured (depression, happiness, anxiety, and hostility/anger) related to valence of feeling about the different time domains and to time estimation. Depression (BDI 2, MAACL Depression scale) correlated negatively with past feeling valence. Valence of feelings about the present correlated negatively with BDI depression, MAACL depression, Taylor MAS, MAACL anxiety, and MAACL hostility. Valence of feelings about the future correlated negatively with MAACL depression and MAACL anxiety. Pearson correlation coefficients and significance values for the correlations that are significant at the $p<0.05$ level are shown in Table 15. In sum, a number of mood states appear to influence feelings about the present. Depression is more strongly correlated

with feelings about the past than the future, whereas anxiety and hostility measures are more strongly associated with feelings about the future than about the past.

Table 15. Significant Mood Correlates of Domain Feeling Valence

	Past Feelings	Present Feelings	Future Feelings
BDI Depression	r= -0.49 ***	r= -0.49 ***	
MAACL Depression	r= -0.52 ***	r= -0.49 ***	r= -0.34 **
Taylor Anxiety		r= -0.41 ***	
MAACL Anxiety	r= -0.31 *	r= -0.52 ***	r= -0.37 **
MAACL Hostility		r= -0.43 ***	r= -0.37 **

Table 15 legend: * p<.05 ** p<.01 *** p<.001

Relations between time estimation and mood. The MAACL mood scales correlated with the time estimation thetas. MAACL anxiety and hostility scales were negatively correlated with the retrospective time thetas; meaning, anxiety (r=-0.27, -0.28, $p<0.05$), and hostility (r= -0.27, $p<0.05$; r= -0.44 $p<0.001$) correlated with shorter estimates given after an unannounced period of 37 to 110 minutes. MAACL depression correlated positively with the prospective time thetas; meaning, depression correlated with long estimates of an announced 78 or 47 second period (r= 0.42, $p<0.001$; r=0.29 $p<0.05$). Individuals higher in anxiety and hostility remembered a medium interval of time as shorter than other people did. People with higher affective depression asked to estimate a minute order interval of empty time felt it as longer than other people did.

Relation between temporal orientation measures and stress and mood. Table 16 gives the correlation matrix between orientation scales and mood measures. Temporal orientation significantly correlates with different mood measures. The TOS past scale correlated with the Taylor anxiety, Perceived Stress Scale, and the Beck Depression Inventory 2. TOS present orientation scale correlated negatively with each of the anxiety measures and perceived stress. TOS future orientation correlated negatively with anxiety

and depression measures and correlated positively with social desirability. Results suggest that temporal orientation as operationalized by the TOS scales (and to a lesser degree by the TOI scales) taps emotional and mood components or that temporal orientation plays a significant role in mood.

Table 16. Correlation Between Temporal Orientation and Mood.

	MDEP	*MHOS*	*MANX*	*Taylor*	*PSS*	*BDI*	*CM Soc Des*
TOS Past r	**0.162**	**-0.004**	**0.015**	**0.255**	**0.344**	**0.276**	**-0.079**
p	0.205	0.977	0.905	0.047	0.006	0.036	0.553
N	63	63	63	61	62	58	58
TOS Pres r	**-0.222**	**-0.163**	**-0.338**	**-0.385**	**-0.279**	**-0.202**	**0.214**
p	0.080	0.201	0.007	0.002	0.028	0.128	0.103
N	63	63	63	61	62	58	59
TOS Fut r	**-0.405**	**-0.205**	**-0.355**	**-0.434**	**-0.340**	**-0.374**	**0.410**
p	0.001	0.107	0.004	0.000	0.007	0.004	0.001
N	63	63	63	61	62	58	59
TOI Past r	**0.154**	**-0.133**	**0.027**	**0.218**	**0.239**	**0.233**	**-0.203**
p	0.224	0.295	0.835	0.089	0.059	0.076	0.123
N	64	64	64	62	63	59	59
TOI Pres r	**0.055**	**-0.076**	**-0.031**	**0.063**	**0.041**	**0.166**	**-0.027**
p	0.669	0.553	0.810	0.631	0.754	0.212	0.839
n	63	63	63	61	62	58	58
TOI Fut r	**-0.235**	**-0.085**	**-0.237**	**-0.210**	**-0.242**	**-0.168**	**0.237**
p	0.064	0.506	0.061	0.104	0.058	0.207	0.074
N	63	63	63	61	62	58	58

Table legend. Highlighted values are significant at $p<0.05$. TOS is the Temporal Orientation Scale from Jones et al. (2000) and TOI is the Temporal Orientation Scale from Holman and Silver (1998). MDEP, MHOS, and MANX are the MAACLE depression, hostility and anxiety scales respectively. PSS is the Perceived Stress Scale. BDI is the Beck Depression Inventory 2. "CM socdes" is the Crowne-Marlowe Social Desirability Scale.

Social desirability. Few relations were found between the PTSS time perception factors and social desirability and absorption. None of the PTSS time scale measures correlated significantly with the Crowne-Marlowe Social Desirability Scale. Temporal extension showed a slight positive but not statistically significant correlation ($r= 0.22$, $p=0.095$). Self-reported time perception does not appear be influenced by desirability. [6]

DISCUSSION

This series of studies sought to examine perception of time and the relationship of time perception to stress and mood using self-report measures and experimental time estimates. Two versions of the Perception of Time and the Senses Survey were developed for use in this research because no self-report instrument of time perception in relation to stress was available. In the third study, the PTSS II was compared with other measures of time perception, stress, and mood. In addition to examining the relationship between perception, stress, and mood, a purpose of the third study was to determine the relationship between a variety of self-report measures of various aspects of time perception to start to place results in the context of previous research. These studies serve as a beginning in research to determine the range of usual time perception and to explore the bi-directional relationship of stress and time perception with particular implications to understand time perception alteration in stress-related clinical disorders.

Stress and Time Perception

The first basic hypothesis that time perception and stress are related is supported by findings of a quadratic relationship between perceived stress and rate and by demonstration of changes in attention to past, present, and future domains under stress. These findings may have implications for clinical treatment and prevention of stress related disorders.

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[6] For a complete table of correlations see Appendix F.

Rate

Quadratic relationship between rate and stress. In these studies, two relationships were found with rate. Consistent with the old adage, "time flies when you are having fun," rate at which time seems to pass increases slightly with positive feelings about the present. Although feelings about the present vary negatively with stress, the link between rate, positive feeling, and stress was far overshadowed by a quadratic component of the relation between rate and stress. This quadratic function relates rate and perceived stress such that participants who reported that time usually passes very slowly and participants who reported that time usually passes very quickly had greater perceived stress than did participants who reported that time passes not slow or fast. The same quadratic relationship was found in measures of depression and anxiety.

Rate and perceived duration. Although a handful of research studies (e.g., Cohen & Mezey, 1961a, 1961b; Lehman, 1967) have reported alterations in subjective time rate with stress and clinical mood disorders, and numerous anecdotal and clinical accounts exist of time passing quickly or slowly (e.g., Flaherty, 1999; Fraise, 1984; Terr, 1983), this factor has been largely overlooked in the time perception literature. Consistent with previous studies, reported rate and time estimates did not correlate in this study. It could be that usual rate of time passage may not reflect the subjective rate during the estimation period.

Acute versus chronic stress. An alternate explanation is that people use information in addition to subjective rate in judging time duration, so acute stressful events will have more effect on estimates of brief duration. Under ongoing or chronic stress, duration estimates will be based on other contextual factors. Such an explanation

would be consistent with contextual change models of time perception (e.g., Block, 1990; Block & Zakay, 1997). Therefore, people may base a duration estimate on internal or environmental cues but still feel that duration passes quickly or slowly. For example, an individual may accurately judge that he has been stuck in traffic for an hour but may still perceive that hour passed much more slowly than an hour at home.

Causal direction. The quadratic relation between rate and stress does not reveal the causal direction. Perhaps, variations in rate (feeling that time is rushing or dragging) is, in itself, stressful. Alternatively, stress may cause people to perceive that time is moving more quickly or more slowly. The direction of the change may depend on some characteristic of the stressor or the individual. It is also possible that a third factor affects both stress and time perception. These research findings point to the importance of subjective rate as distinct from duration judgment in studies of time perception relations to stress and mood.

Domain attention

Stress and mood influenced attention to the past, present, and future. Relative attention to past, present, and future changed with stress with less attention to past and more attention to present and future. Mood also influenced participants thoughts of time such that most participants reported thinking of the present when happy or angry, the past when sad, and the future when anxious. The finding of changed attentional focus with stress and different moods leads to two hypotheses for future research. First, attentional shifts under stress and mood conditions may uniquely affect focus on demands of a current task as compared to goal directed planning and decision making. Therefore, time

perspective may be an important consideration in understanding stress and performance. Second, therapeutic interventions or experimental manipulations that alter domain attention (e.g., directing an individual to think about the future or the present, etc.) may alter stress and mood.

Individual Differences in Usual Time Perspective

The second hypothesis that individuals differ in usual time perspective was supported by the range and distribution of values found in each of the time perspective factors of the PTSS. While it may be possible to say that the normal college student focuses most attention on the future and present, feels good about the future and the present, and feels that time usually passes quickly, considerable individual differences were found in rate, temporal extension, domain attention, and stress extension. The results from these studies are of use in beginning to establish normative values for this population. It would be a mistake, though, to ignore the individual differences in characterizing time perspective. In fact, an ongoing field of research conceptualizes temporal perspective as an individual trait characteristic in study of behavioral correlates (e.g., Jones et al., 2000; Lennings, 1998; Zimbardo & Boyd, 1999). More is needed to understand trait-like compared to state-like elements of time perspective, but this research clearly points to the need to consider each.

Gender Differences in Time to Think about Psychological Stressors

For psychological stressors, women tend to think about the stressful event longer than men do as demonstrated in the three studies. This finding supports the third hypothesis. For physical stressors there was no gender difference in amount of time to

continue to think about the stressors. The extension in time that individuals continue to think about a stressful event varies considerably from person to person and the distribution of responses from men and women overlapped considerably. The trend suggests that women may perceive psychological or interpersonal stress as more threatening than do men. This cognitive style factor may influence stress vulnerability and coping and merits further research.

Comparison Among Different Measures of Time Perception

Although some overlap exists between different measures of elements of time perception and temporal orientation in particular, overall differences in results with different measures point to the lack of construct and/or measurement standardization. As such, caution is required in generalizing findings from the literature regarding temporal orientation as the findings appear to depend heavily on the particular measure used. Domain attention and temporal orientation scales for the past correlated significantly in several cases and appear to capture something of the same construct. The Jones et al. (2000) Temporal Orientation Scale present scale correlated significantly with domain present percent, positive feeling about the present, and the Holman and Silver (1998) Temporal Orientation Scale present scale. Few consistent relationships existed among the future scales, and the projective measures correlated with almost no other scale measures of temporal orientation. The lack of correlation between the projective measures and the other scales may indicate that these scales are not measuring the same construct or that they have insufficient reliability. The varied relationship of the various Temporal Orientation measures in general indicates that they are measuring somewhat

different constructs. In the present study, domain attention is valence neutral with regard to the time domains, whereas the self-report scales of temporal orientation seek to capture both attitude toward and attention to the time domains. Although the different approaches converge in assessing past focus, one may speculate that the orientation scales of present and future may more or less tap the respondent's willingness to sacrifice one for the other. In other words, is the person willing to sacrifice the present for the future (delay gratification) or sacrifice the future for the present? This attitude may not necessarily be the same as their attention to the future or the present. It is obvious from this comparison of scores across measures in the same individuals that the terms "present oriented" and "future oriented" are meaningless without reference to the measurement instrument.

Strengths and Limitations of the Research

The broad scope of this study and the focus on perception in relation to stress and mood made this research unique from previous studies of time perception that have not examined contributions from stress. The results reflect the complex nature of time perception and the importance of its relationship with stress. In particular, this research highlights the potential importance of perceived rate of time passage in the study of stress. For research of time perception, this research approach is quite novel compared to the historical focus on theories of biological clocks, attentional resources, and contextual change models of the perception of time (e.g., Block, 1990; Frankenhauser, 1959; Hancock, 1993; Ornstein, 1969; Thomas & Weaver, 1975; Zakay, 1989, 1993b).

Several important limitations of this research, however, were present including lack of causal determination, limited sample characteristics, uncertain reliability and validity of self-report, and limits in the scope and clarity of survey items. A key limitation of this research is inherent in all studies of correlation. Without manipulation of independent variables, it is not possible to determine the direction of causation. The participants in this research were mostly college undergraduates in their early twenties, so measures of these participants may not reflect the variation and distribution of results that would be found in the general population or a clinical population. Also, while the sample reflects the ethnic demographic distribution of Pennsylvania (Salisbury, 2000) where the studies were conducted, sample size may have been insufficient to capture cultural differences that may exist. Another concern in self-report studies is the question of how reliable individuals are in reporting. Ideally, research should include multiple measurement modes to insure validity of measurement.

Although the survey attempted to tap a broad area of time perception and stress, there were areas that were missing or weak. For example, results could be more clearly interpreted if baseline trait-like elements (i.e., predominant or long-standing domain focus and perceived rate) and stress-dependent state-like elements (i.e., domain focus or perceived rate in the past week or current day), were differentiated for each factor. Stress may be more validly assessed using a combination of physiological, biochemical, behavioral, and self-report measures. Additionally, the behavioral measure of time estimation is known to be subject to rounding bias and may not optimally measure perceived duration.

Future Directions

Future endeavors related to the stress-time perception link include experimental laboratory studies, quasi-experimental prospective field studies, extension of the PTSS survey to a broader population, and the eventual development of techniques that act on the stress-time perception relationship to prevent and manage stress and reduce negative stress consequences. Experimental research should use stressors of different kinds as an independent variable and measure the effect on dependent variables of time perception. Additional experimental research should manipulate time perception as an independent variable and measure stress as a dependent variable. Field research in stressful environments that occur naturally is needed to examine effects of stress on time perception in situations that have greater practical significance to health and performance. Extension of the PTSS survey to a broader age group with greater variety of cultural and educational backgrounds will better enable understanding of individual differences in perception. Also, extension of the survey to clinical populations in general and individuals with traumatic stress disorders in particular should enable the determination of those factors that best distinguish individuals who are healthy from individuals who have different physical and mental health disorders. As an ultimate goal of future research, techniques can be developed that utilize means to alter perceptual styles or perception in specific situations to prevent stress responses or minimize negative consequences of stress.

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APPENDIX A

MEASURES

Time and Sense Survey Pilot Draft

Perception of Time and the Senses Survey I

Perception of Time and the Senses Survey II

Validation Battery

Description of Additional Measures

Subject #_____

Time and Sense Survey

This survey has questions about your experience of time and the five senses. Do not write your name on this survey. No attempt will be made to identify you. Answer all questions as best you can. Thank you for assisting with our research.

Background Information:

1. Age_____

2. Gender
   - ❑ Female
   - ❑ Male

3. Race/ Ethnic Identification
   - ❑ Caucasian
   - ❑ African American
   - ❑ Hispanic
   - ❑ Asian/ Pacific Islander
   - ❑ Native American
   - ❑ Other

Time Orientation and Awareness

4. Which do you usually think about? (Check one)
   - ❑ Past
   - ❑ Present
   - ❑ Future

5. Please indicate the percentage of time that you usually think about the:
   Past_____
   Present_____
   Future_____
   (total should = 100%)

6. **During stress**, what percentage of time do you think about the:
   Past_____
   Present_____
   Future_____
   (total should = 100%)

7. When you think about time, do you think it is: (Please check one for each time)

	Very bad	Bad	Neutral	Good	Very Good
a. Past	☐	☐	☐	☐	☐
b. Present	☐	☐	☐	☐	☐
c. Future	☐	☐	☐	☐	☐

8. How fast does time usually seem to pass? (Check one)

Very Slowly	Slowly	Not slow or fast	Quickly	Very Quickly
☐	☐	☐	☐	☐

9. If you are looking forward to something, then time passes:

Very Slowly	Slowly	Not slow or fast	Quickly	Very Quickly
☐	☐	☐	☐	☐

10. If you are afraid of something that is going to happen, then time passes:

Very Slowly	Slowly	Not slow or fast	Quickly	Very Quickly
☐	☐	☐	☐	☐

11. When you are happy, what time do you think about most?
    - ☐ Past
    - ☐ Present
    - ☐ Future

12. When you are sad, what time do you think about most?
    - ☐ Past
    - ☐ Present
    - ☐ Future

13. When you are anxious, what time do you think about most?
    - ☐ Past
    - ☐ Present
    - ☐ Future

14. When remembering a wonderful past event does it seem:
    - ☐ Longer ago than it really was
    - ☐ As long ago as it was
    - ☐ More recent than it really was

15. When remembering a terrible past event does it seem:
    - ☐ Longer ago than it really was
    - ☐ As long ago as it was
    - ☐ More recent than it really was

16. How often do you think about time?
    - ❑ Frequently
    - ❑ Sometimes
    - ❑ Rarely
    - ❑ Never

17. Which of the following best describes how you think about time?
    - ❑ Line
    - ❑ Arrow
    - ❑ Circle
    - ❑ Point
    - ❑ Blur
    - ❑ Other

For questions 18-24 check one:

	Never	Rarely	Sometimes	Often	Always
18. I know what time it is.	☐	☐	☐	☐	☐
19. I lose track of the time.	☐	☐	☐	☐	☐
20. I look at a clock or watch to find out the time.	☐	☐	☐	☐	☐
21. I feel like I have enough time each day.	☐	☐	☐	☐	☐
22. Time drags for me.	☐	☐	☐	☐	☐
23. Time goes too fast.	☐	☐	☐	☐	☐
24. I tell time by the events around me.	☐	☐	☐	☐	☐

25. These questions are taking too much time. (Check one)

Strongly disagree	disagree	neutral	agree	strongly agree
☐	☐	☐	☐	☐

Sensory Orientation / Awareness

26. Which sense do you use the most?
    - ❑ Hearing
    - ❑ Sight
    - ❑ Smell
    - ❑ Taste
    - ❑ Touch

27. What is your favorite sense?
    - ❑ Hearing
    - ❑ Sight
    - ❑ Smell
    - ❑ Taste
    - ❑ Touch

28. Which kind of sensation is most likely to trigger pleasant memories for you?
    - ❑ Hearing
    - ❑ Sight
    - ❑ Smell
    - ❑ Taste
    - ❑ Touch

29. Which kind of sensation is most likely to trigger unpleasant memories for you?
    - ❑ Hearing
    - ❑ Sight
    - ❑ Smell
    - ❑ Taste
    - ❑ Touch

30. In periods of stress which sensations are you **more** aware of than normal? (Check all that apply)
    - ❑ Hearing
    - ❑ Sight
    - ❑ Smell
    - ❑ Taste
    - ❑ Touch
    - ❑ None

31. In periods of stress which sensations are you **less** aware of than normal? (Check all that apply.)
    - ☐ Hearing
    - ☐ Sight
    - ☐ Smell
    - ☐ Taste
    - ☐ Touch
    - ☐ None

32. Which sensation would most likely relax you? (Check one)
    - ☐ Hearing
    - ☐ Sight
    - ☐ Smell
    - ☐ Taste
    - ☐ Touch
    - ☐ None

33. Which sensation would most likely irritate you? (Check one)
    - ☐ Hearing
    - ☐ Sight
    - ☐ Smell
    - ☐ Taste
    - ☐ Touch
    - ☐ None

Experiences

34. Have you ever felt as if an experience or moment in time happened before (Déjà vu)?
    - ☐ Frequently
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never

35. If you want to wake up in the middle of your normal sleep at a specific time other than when you would normally awaken, can you wake yourself up on your own (without an alarm) within 10 minutes of the chosen time?
    - ☐ Frequently
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never

36. Which of the following senses can you use in your imagination (for example "seeing" a mental image)? (Check all that apply)
    - ☐ Hearing
    - ☐ Sight
    - ☐ Smell
    - ☐ Taste
    - ☐ Touch

37. Which of the following senses do you use in your dreams? (Check all that apply)
    - ☐ Hearing
    - ☐ Sight
    - ☐ Smell
    - ☐ Taste
    - ☐ Touch

38. Do you dream in color?
    - ☐ Always
    - ☐ Sometimes
    - ☐ Never

39. Are the settings of your dreams usually the:
    - ☐ Past
    - ☐ Present
    - ☐ Future

40. Do the events that you dream about occur in the:
    - ☐ Past
    - ☐ Present
    - ☐ Future

Please provide comments to explain more about any of the questions in this survey or to give examples of your experiences with time or the senses.

Time and Sense Survey

This survey asks questions about your experience and perception of time and the five senses. Do not write your name on this survey. Please answer all questions. Thank you for assisting with our research.

Background Information:

3. Age_____

4. Gender
   - ☐ Female ☐ Male

9. Race/ Ethnic Identification
   - ☐ Caucasian
   - ☐ African American
   - ☐ Latino/ Hispanic
   - ☐ Asian/ Pacific Islander
   - ☐ Native American
   - ☐ Other

Time Orientation and Awareness

10. Which do you usually think about? (Check one)
    ☐ Past ☐ Present ☐ Future

11. Please indicate the percentage of time that you usually think about the:
    Past_____
    Present_____
    Future_____
    (total should = 100%)

12. During stress, what percentage of time do you think about the:
    Past_____
    Present_____
    Future_____
    (total should = 100%)

13. Please rate how you feel about your: (Please check one for each time)

	Very bad	Bad	Neutral	Good	Very Good
a. Past	☐	☐	☐	☐	☐
b. Present	☐	☐	☐	☐	☐
c. Future	☐	☐	☐	☐	☐

8. How quickly does time seem to pass: (Please check one for each)

	Very Slowly	Slowly	Not slow or Fast	Quickly	Very Quickly
a. Usually?	☐	☐	☐	☐	☐
b. When looking forward to something?	☐	☐	☐	☐	☐
c. When afraid of something that is going to happen?	☐	☐	☐	☐	☐

9. What do you think about most when you are: (Please check one for each)

	Past	Present	Future
a. Happy	☐	☐	☐
b. Sad	☐	☐	☐
c. Anxious	☐	☐	☐

10. When remembering a wonderful past event does it seem:
    - ☐ Longer ago than it really was
    - ☐ As long ago as it was
    - ☐ More recent than it really was

11. When remembering a terrible past event does it seem:
    - ☐ Longer ago than it really was
    - ☐ As long ago as it was
    - ☐ More recent than it really was

12. Which of the following best describes how you think about time?
    - ☐ Line
    - ☐ Arrow
    - ☐ Circle
    - ☐ Point
    - ☐ Blur
    - ☐ Other

13. Have you ever felt as if an experience or moment in time happened before (Déjà vu)?
    - ☐ Frequently
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never

14. If you want to wake up in the middle of your normal sleep at a specific time other than when you would normally awaken, can you wake yourself up on your own (without an alarm) within 10 minutes of the chosen time?
    - ☐ Frequently
    - ☐ Sometimes
    - ☐ Rarely
    - ☐ Never

For questions 15-22 check one:

	Never	Rarely	Sometimes	Often	Always
15. I know what time it is.	☐	☐	☐	☐	☐
16. I lose track of the time.	☐	☐	☐	☐	☐
17. I look at a clock or watch to find out the time.	☐	☐	☐	☐	☐
18. I feel like I have enough time each day.	☐	☐	☐	☐	☐
19. Time drags for me.	☐	☐	☐	☐	☐
20. Time goes too fast.	☐	☐	☐	☐	☐
21. I tell time by the events around me.	☐	☐	☐	☐	☐
22. I think about time.	☐	☐	☐	☐	☐

23. These questions are taking too much time. (Check one)

Strongly disagree	disagree	neutral	agree	strongly agree
☐	☐	☐	☐	☐

Sensory Orientation / Awareness

For questions 24-29 check one sense for each question

	Hearing	Sight	Smell	Taste	Touch
24. Which sense do you use the most?	☐	☐	☐	☐	☐
25. Which sense is your favorite?	☐	☐	☐	☐	☐
26. Which is most likely to trigger pleasant memories for you?	☐	☐	☐	☐	☐
27. Which is most likely to trigger unpleasant memories for you?	☐	☐	☐	☐	☐
28. Which is most likely to irritate you?	☐	☐	☐	☐	☐
29. Which is most likely to relax you?	☐	☐	☐	☐	☐

30. In periods of stress which sensations are you more aware of than normal? (Check all that apply)
    - ☐ Hearing
    - ☐ Sight
    - ☐ Smell
    - ☐ Taste
    - ☐ Touch
    - ☐ None

31. In periods of stress which sensations are you less aware of than normal? (Check all that apply.)
- ☐ Hearing
- ☐ Sight
- ☐ Smell
- ☐ Taste
- ☐ Touch
- ☐ None

32. Which of the following senses can you use in your imagination (for example "seeing" a mental image)? (Check all that apply)
- ☐ Hearing
- ☐ Sight
- ☐ Smell
- ☐ Taste
- ☐ Touch

33. Which of the following senses do you use in your dreams? (Check all that apply)
- ☐ Hearing
- ☐ Sight
- ☐ Smell
- ☐ Taste
- ☐ Touch

35. How long would you think about a minor physical stressor (e.g., a stubbed toe, paper cut, or minor scrape) after it had happened and assuming no permanent consequences?
☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

36. How long would you think about a major physical stressor (e.g., broken bone, pneumonia) after it had happened assuming there were no permanent consequences?
☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

37. How long would you think about a minor psychological stressor (e.g., minor disagreement with a friend) after it had happened and assuming no permanent consequences?
☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

38. How long would you think about a major psychological stressor (e.g., major argument with a significant other) after it had happened and assuming no permanent consequences?
☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Please provide comments to explain more about any of the questions in this survey or to give examples of your experiences with time or the senses.

IDNUM #: _____
DATE:_____

Perception of Time and the Senses Survey

This survey asks questions about your experience and perception of time and the five senses.
Please give the best answer for each of the following questions. Thank you for assisting with our research.

Background Information:

5. Age_____

6. Gender
   □ Female □ Male

14. Race/ Ethnic Identification
   □ Caucasian
   □ African American
   □ Latino/ Hispanic
   □ Asian/ Pacific Islander
   □ Native American
   □ Other

15. How would you describe your current living situation? (mark one)
□ Alone
□ With roommate(s)/another adult (s)
□ With significant other
□ With another adult(s) and child(ren)
□ With child(ren)

16. What is your major (if student) or occupation? _____

Time Orientation and Awareness

17. Which do you usually think about? (Check one)
   □ Past □ Present □ Future

7a. When you think about the past, how far back are you most often thinking? (Check one)
□ minutes □ hours □ days □ weeks □ months □ years □ decades

7b. When you think about the present, what time frame do you think about? (Check one)
□ within seconds □ within minutes □ this hour □ this day □ this week

7.c. When you think about the future, how far into the future are you most often thinking? (Check one)
□ minutes □ hours □ days □ weeks □ months □ years □ decades

8. Please indicate the percentage of time that you usually think about the:
   Past_____
   Present_____
   Future_____
   (total should = 100%)

9. During stress, what percentage of time do you think about the:
   Past_____
   Present_____
   Future_____
   (total should = 100%)

10. Please rate how you feel about your: (Please check one for each time)

	Very bad	Bad	Neutral	Good	Very Good
a. Past	☐	☐	☐	☐	☐
b. Present	☐	☐	☐	☐	☐
c. Future	☐	☐	☐	☐	☐

11. How quickly does time seem to pass usually?: (Please check one for each)
☐ Very Slowly ☐ Slowly ☐ Not slow or fast ☐ Quickly ☐ Very Quickly

12. How quickly does time seem to pass: (Please check one for each)

	Very Slowly	Slowly	Not slow or Fast	Quickly	Very Quickly
a. When looking forward to something?	☐	☐	☐	☐	☐
b. When afraid of something that is going to happen?	☐	☐	☐	☐	☐

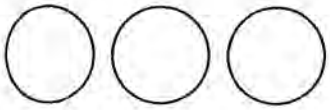
13. What do you think about most when you are: (Please check one for each)

	Past	Present	Future
d. Happy	☐	☐	☐
e. Sad	☐	☐	☐
f. Anxious	☐	☐	☐
g. Angry	☐	☐	☐

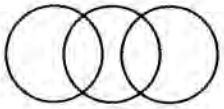
14. When remembering a wonderful past event does it seem:
   ☐ Longer ago than it really was –"like an eternity ago"
   ☐ As long ago as it was
   ☐ More recent than it really was –"like just yesterday"

15. When remembering a terrible past event does it seem:
   ☐ Longer ago than it really was –"like an eternity ago"
   ☐ As long ago as it was
   ☐ More recent than it really was –"like just yesterday"

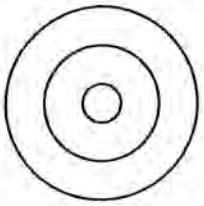
16. Which drawing best represents your idea of past, present and future? (check one)



☐ a.



☐ b.



☐ c.

17. Which drawing best represents your idea of the rate at which time is passing? (check one)

(constant)

☐ a.

(increasing)

☐ b.

(sometimes fast, sometime slow)

☐ c.

(decreasing)

☐ d.

18. If you want to wake up at a specific time other than when you normally would, can you wake yourself up on your own (without an alarm) within 10 minutes of the chosen time?

☐ Never ☐ Rarely ☐ Sometimes ☐ Frequently

19. Which feels closer:

☐ Yesterday ☐ Tomorrow

For questions 20-27 check one:

	Never	Rarely	Sometimes	Often	Always
20. I know what time it is.	☐	☐	☐	☐	☐
21. I lose track of the time.	☐	☐	☐	☐	☐
22. I look at a clock or watch to find out the time.	☐	☐	☐	☐	☐
23. I feel like I have enough time each day.	☐	☐	☐	☐	☐
24. Time drags for me.	☐	☐	☐	☐	☐
25. Time goes too fast.	☐	☐	☐	☐	☐
26. I tell time by the events around me.	☐	☐	☐	☐	☐
27. I think about time.	☐	☐	☐	☐	☐

28. How long would you think about a minor physical stressor (e.g., a stubbed toe, paper cut, or minor scrape) after it had happened and assuming no permanent consequences?
□ Seconds □ Minutes □ Hours □ Days □ Weeks □ Months □ Years

29. How long would you think about a major physical stressor (e.g., broken bone, pneumonia) after it had happened assuming there were no permanent consequences?
□ Seconds □ Minutes □ Hours □ Days □ Weeks □ Months □ Years

30. How long would you think about a minor psychological stressor (e.g., minor disagreement with a friend) after it had happened and assuming no permanent consequences?
□ Seconds □ Minutes □ Hours □ Days □ Weeks □ Months □ Years

31. How long would you think about a major psychological stressor (e.g., major argument with a significant other) after it had happened and assuming no permanent consequences?
□ Seconds □ Minutes □ Hours □ Days □ Weeks □ Months □ Years

	Morning	Afternoon	Evening	Night
32. a. When do you function best?	□	□	□	□
b. When do you feel most productive?	□	□	□	□
c. When do feel the most stressed?	□	□	□	□
d. When are you most distracted?	□	□	□	□

Sensory Orientation / Awareness

33. Do you have any disability or physical limitation which might impair the use of any of your senses (i.e. hearing loss/impairment, profound colorblindness)? If so, what?

For questions 34-39 check one sense for each question

	Hearing	Sight	Smell	Taste	Touch
34. Which sense do you use the most?	☐	☐	☐	☐	☐
35. Which sense is your favorite?	☐	☐	☐	☐	☐
36. Which is most likely to trigger pleasant memories for you?	☐	☐	☐	☐	☐
37. Which is most likely to trigger unpleasant memories for you?	☐	☐	☐	☐	☐
38. Which is most likely to irritate you?	☐	☐	☐	☐	☐
39. Which is most likely to relax you?	☐	☐	☐	☐	☐

40. In periods of stress which sensations are you more aware of than normal? (Check all that apply)

- ☐ Hearing
- ☐ Sight
- ☐ Smell
- ☐ Taste
- ☐ Touch
- ☐ None

41. In periods of stress which sensations are you less aware of than normal? (Check all that apply.)

- ☐ Hearing
- ☐ Sight
- ☐ Smell
- ☐ Taste
- ☐ Touch
- ☐ None

42. Which of the following senses can you use in your imagination (for example "seeing" a mental image)? (Check all that apply)

- ☐ Hearing
- ☐ Sight
- ☐ Smell
- ☐ Taste
- ☐ Touch
- ☐ None

43. Which of the following senses do you use in your dreams? (Check all that apply)

- ☐ Hearing
- ☐ Sight
- ☐ Smell
- ☐ Taste
- ☐ Touch
- ☐ None

44. Check all of the following that apply to how you sense color:

- ☐ Imagine color
- ☐ Dream color
- ☐ Become more aware of color under stress
- ☐ Become less aware of color under stress
- ☐ None

45. From the list below, rank your senses in the order that you use them most. Start with the sense you think you use the most (1) and end with the one you use the least (5).

_____Hearing
_____Sight
_____Smell
_____Taste
_____Touch

46. When you feel you are under a lot of stress, do you dream about those things that are causing you stress in your daily life?

☐ Never ☐ Rarely ☐ Sometimes ☐ Frequently

47.When you dream about those things that cause you stress, how rested do you feel when you wake up?

- ☐ As well rested as I normally feel
- ☐ Rested, but less so than usual
- ☐ Much more tired than usual
- ☐ Exhausted

48. If asked to tell when a given period of time has passed (without looking at a clock or watch), how accurate do you think you would be compared to most people?

☐ very poor ☐ poor ☐ average ☐ good ☐ very good

49. If asked to estimate how much time had gone by since a specific event (without using a watch or clock), how accurate do you think you would be compared to most people?

☐ very poor ☐ poor ☐ average ☐ good ☐ very good

50. Did or do your parents smoke cigarettes, cigars, or a pipe or chew tobacco? (Check one)

□ Yes, which one(s)? □ Mother □ Father
□ No

51. Have you ever smoked cigarette, cigars, or a pipe or chewed tobacco? (Check one)

□ Yes, which one(s)? □ Cigarettes □ Cigars □ Chewed tobacco
□ No (Go to question 56)

52. How old were you when you first started to smoke/chew?_____ years of age

53. How many cigarettes (cigars/ pipes) a week do or did you typically smoke?

_____cigarettes/week

54. How often do/did you smoke your first cigarette of the day within 30 minutes of waking? (Circle one)

1	2	3	4	5	6	7
Never			About half the time			Always

55. How difficult is/was it for you to give up your first cigarette of the day? (Circle one)

1	2	3	4	5	6	7
Never			About half the time			Always

56. Please provide comments to explain more about any of the questions in this survey or to give examples of your experiences with time or the senses.

PTSS Validation Battery

The following battery of questionnaires will gather information about your health, mood and perceptions. Carefully read the instructions for each section of questions. Read each question and give your best answer. Please print neatly using CAPITAL LETTERS or place an "**X**" in the box as appropriate.

ID Number

Enter today's date (month/day/year)

		/			/				

Race / Ethnic Identification:

- ☐ Caucasian
- ☐ African American
- ☐ Latino/ Hispanic
- ☐ Asian/ Pacific Islander
- ☐ Native American
- ☐ Other

Enter your birth date (month/day/year)

		/			/				

Gender: ☐ Female ☐ Male

What is your major (if student) or occupation? _____

How would you describe your current living situation? (mark one)

- ☐ Alone
- ☐ With roommate(s) / another adult(s)
- ☐ With significant other
- ☐ With another adult(s) and child(ren)
- ☐ With child(ren)

Check all of the words below that you would use to describe yourself. 98

- ☐ 1 active
- ☐ 2 adventurous
- ☐ 3 affectionate
- ☐ 4 afraid
- ☐ 5 agitated
- ☐ 6 agreeable
- ☐ 7 aggressive
- ☐ 8 alive
- ☐ 9 alone
- ☐ 10 amiable
- ☐ 11 amused
- ☐ 12 angry
- ☐ 13 annoyed
- ☐ 14 awful
- ☐ 15 bashful
- ☐ 16 bitter
- ☐ 17 blue
- ☐ 18 bored
- ☐ 19 calm
- ☐ 20 cautious
- ☐ 21 cheerful
- ☐ 22 clean
- ☐ 23 complaining
- ☐ 24 contented
- ☐ 25 contrary
- ☐ 26 cool
- ☐ 27 cooperative
- ☐ 28 critical
- ☐ 29 cross
- ☐ 30 cruel
- ☐ 31 daring
- ☐ 32 desperate
- ☐ 33 destroyed
- ☐ 34 devoted
- ☐ 35 disagreeable
- ☐ 36 discontented
- ☐ 37 discouraged
- ☐ 38 disgusted
- ☐ 39 displeased
- ☐ 40 energetic
- ☐ 41 enraged
- ☐ 42 enthusiastic
- ☐ 43 fearful
- ☐ 44 fine
- ☐ 45 fit
- ☐ 46 forlorn
- ☐ 47 frank
- ☐ 48 free
- ☐ 49 friendly
- ☐ 50 frightened
- ☐ 51 furious
- ☐ 52 gay
- ☐ 53 gentle
- ☐ 54 glad
- ☐ 55 gloomy
- ☐ 56 good
- ☐ 57 good-natured
- ☐ 58 grim
- ☐ 59 happy
- ☐ 60 healthy
- ☐ 61 hopeless
- ☐ 62 hostile
- ☐ 63 impatient
- ☐ 64 incensed
- ☐ 65 indignant
- ☐ 66 inspired
- ☐ 67 interested
- ☐ 68 irritated
- ☐ 69 jealous
- ☐ 70 joyful
- ☐ 71 kindly
- ☐ 72 lonely
- ☐ 73 lost
- ☐ 74 loving
- ☐ 75 low
- ☐ 76 lucky
- ☐ 77 mad
- ☐ 78 mean
- ☐ 79 meek
- ☐ 80 merry
- ☐ 81 mild
- ☐ 82 miserable
- ☐ 83 nervous
- ☐ 84 obliging
- ☐ 85 offended
- ☐ 86 outraged
- ☐ 87 panicky
- ☐ 88 patient
- ☐ 89 peaceful
- ☐ 90 pleased
- ☐ 91 pleasant
- ☐ 92 polite
- ☐ 93 powerful
- ☐ 94 quiet
- ☐ 95 reckless
- ☐ 96 rejected
- ☐ 97 rough
- ☐ 98 sad
- ☐ 99 safe
- ☐ 100 satisfied
- ☐ 101 secure
- ☐ 102 shaky
- ☐ 103 shy
- ☐ 104 soothed
- ☐ 105 steady
- ☐ 106 stubborn
- ☐ 107 stormy
- ☐ 108 strong
- ☐ 109 suffering
- ☐ 110 sullen
- ☐ 111 sunk
- ☐ 112 sympathetic
- ☐ 113 tame
- ☐ 114 tender
- ☐ 115 tense
- ☐ 116 terrible
- ☐ 117 terrified
- ☐ 118 thoughtful
- ☐ 119 timid
- ☐ 120 tormented
- ☐ 121 understanding
- ☐ 122 unhappy
- ☐ 123 unsociable
- ☐ 124 upset
- ☐ 125 vexed
- ☐ 126 warm
- ☐ 127 whole
- ☐ 128 wild
- ☐ 129 willful
- ☐ 130 wilted
- ☐ 131 worrying
- ☐ 132 young

The questions in this scale ask you about your feelings and thoughts during the last month. In each case, please indicate with a check how often you felt or thought a certain way.

1. In the last month, how often have you been upset because of something that happened unexpectedly?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

2. In the last month, how often have you felt that you were unable to control the important things in your life?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

3. In the last month, how often have you felt nervous and "stressed"?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

4. In the last month, how often have you felt confident about your ability to handle your personal problems?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

5. In the last month, how often have you felt that things were going your way?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

6. In the last month, how often have you found that you could not cope with all the things that you had to do?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

7. In the last month, how often have you been able to control the irritations in your life?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

In the last month, how often have you felt that you were on top of things?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

9. In the last month, how often have you been angered because of things that were outside of your control?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

10. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?

☐ never ☐ almost never ☐ sometimes ☐ fairly often ☐ very often

Please read each statement and decide whether it is mostly true as applied to you or mostly false. Please check appropriate column. Answer "True" to positively stated questions if they are true as often or more often than stated. For example, answer "True" to "Occassionally I play poker" if you play occassionally or more often.

True ☐ False ☐ 1. I find it hard to keep my mind on a task or job.
True ☐ False ☐ 2. I am sometimes irritated by people who ask favors of me.
True ☐ False ☐ 3. I am happy most of the time.
True ☐ False ☐ 4. Before voting I thoroughly investigate the qualifications of all the candidates.
True ☐ False ☐ 5. I believe I am no more nervous than most other people.
True ☐ False ☐ 6. I sometimes think when people have a misfortune they only got what they deserve.
True ☐ False ☐ 7. I am more sensitive than most other people.
True ☐ False ☐ 8. I like to gossip at times.
True ☐ False ☐ 9. On occasion I have had doubts about my ability to succeed in life.
True ☐ False ☐ 10. There have been occasions when I took advantage of someone.
True ☐ False ☐ 11. I am a high-strung person.
True ☐ False ☐ 12. I have never intensely disliked someone.
True ☐ False ☐ 13. I cannot keep my mind on one thing.
True ☐ False ☐ 14. I never make a long car trip without checking the safety of my car.
True ☐ False ☐ 15. I have periods of such great reslessness that I cannot sit long in a chair.
True ☐ False ☐ 16. I am always courteous, even to people who are disagreeable.
True ☐ False ☐ 17. On a few occasions, I have given up doing something because I thought too little of my abili
True ☐ False ☐ 18. I am always careful about my manner of dress.
True ☐ False ☐ 19. At times I think I am no good at all.
True ☐ False ☐ 20. I have never felt that I was punished without cause.
True ☐ False ☐ 21. When I don't know something I don't mind at all admitting it.
True ☐ False ☐ 22. I am usually calm and not easily upset.
True ☐ False ☐ 23. I never resent being asked to return a favor.
True ☐ False ☐ 24. I am not usually self-conscious.
True ☐ False ☐ 25. I sometimes try to get even rather than forgive and forget.
True ☐ False ☐ 26. If I could get into a movie without paying and be sure I was not seen, I would probably do it.
True ☐ False ☐ 27. I work under a great deal of tension.
True ☐ False ☐ 28. I have never deliberately said something to hurt someone's feelings.
True ☐ False ☐ 29. I can remember "playing sick" to get out of something.
True ☐ False ☐ 30. I am inclined to take things hard.

(Continue onto next page.)

True ☐ False ☐ 31. I sometimes feel resentful when I don't get my way.

True ☐ False ☐ 32. Life is a strain for me much of the time.

True ☐ False ☐ 33. No matter who I'm talking to, I'm always a good listener.

True ☐ False ☐ 34. I certainly feel useless at times.

True ☐ False ☐ 35. I always try to practice what I preach.

True ☐ False ☐ 36. There have been times when I was quite jealous of the good fortune of others.

True ☐ False ☐ 37. I sometimes feel that I am about to go to pieces.

True ☐ False ☐ 38. I have never been irked when people expressed ideas very different from by own.

True ☐ False ☐ 39. My table manners at home are as good as when I eat out in a restaurant.

True ☐ False ☐ 40. There have been occasions when I have felt like smashing things.

True ☐ False ☐ 41. I have sometimes felt that difficulties were piling up so high that I could not overcome them.

True ☐ False ☐ 42. I never hesitate to go out of my way to help someone in trouble.

True ☐ False ☐ 43. It is sometimes hard for me to go on with my work if I am not encouraged.

True ☐ False ☐ 44. At times I have really insisted on having things my own way.

True ☐ False ☐ 45. I feel anxiety about something or someone almost all the time.

True ☐ False ☐ 46. I am always willing to admit it when I make a mistake.

True ☐ False ☐ 47. There have been times when I felt like rebelling against people in authority even though I knew they were right.

True ☐ False ☐ 48. I frequently find myself worrying about something.

True ☐ False ☐ 49. I have almost never felt the urge to tell somebody off.

True ☐ False ☐ 50. I shrink from facing a crisis or difficulty.

True ☐ False ☐ 51. I don't find it particularly difficult to get along with loud-mouthed, obnoxious people.

True ☐ False ☐ 52. I am certainly lacking in self-confidence.

True ☐ False ☐ 53. I would never think of letting someone else be punished for my wrong-doing.

PLEASE STOP and wait for instructions from the investigator.

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Think of the past, present, and future as being in the shape of circles. Now arrange these circles in any way you want that best shows how you feel about the relationship of the past, present, and future. You may use different size circles. Please draw your arrangement in the space below.
[Label the circles "PAST", "PRESENT" and "FUTURE".]

Think of the line below as being time. Please place four marks on the line as follows:

Place a mark on the line to indicate birth (label it "B").

Place a mark on the line to indicate death (label it "D").

Place two marks to indicate the boundaries of the present – where the past stops and the present starts label the mark "PS". Where the present ends and the future begins, label the mark "PE".

Please give the answer you feel best describes how you feel for each of the following questions.

Time Orientation and Awareness

1. Which do you usually think about? (Mark one)

☐ Past ☐ Present ☐ Future

2. When you think about the past, how far back are you most often thinking? (Mark one)

☐ minutes ☐ hours ☐ days ☐ weeks ☐ months ☐ years ☐ decades

3. When you think about the present, what time frame do you think about? (Mark one)

☐ within seconds ☐ within minutes ☐ this hour ☐ this day ☐ this week

4. When you think about the future, how far into the future are you most often thinking? (Mark one)

☐ minutes ☐ hours ☐ days ☐ weeks ☐ months ☐ years ☐ decades

5. Please indicate the percentage of time that you usually think about the:

Past ____ % Present ____ % Future ____ % (total should = 100%)

6. During stress, what percentage of time do you think about the:

Past ____ % Present ____ % Future ____ % (total should = 100%)

7. Please rate how you feel about your: (Mark one box for each time)

a. Past	☐ Very bad	☐ Bad	☐ Neutral	☐ Good	☐ Very Good
b. Present	☐ Very bad	☐ Bad	☐ Neutral	☐ Good	☐ Very Good
c. Future	☐ Very bad	☐ Bad	☐ Neutral	☐ Good	☐ Very Good

8. How quickly does time seem to pass **usually**? (Mark one)

☐ Very slowly ☐ Slowly ☐ Not slow or fast ☐ Quickly ☐ Very Quickly

9. Compared with how time usually passes, how quickly does time seem to pass when looking forward to something? (Mark one)

☐ Very slowly ☐ Slowly ☐ Not slow or fast ☐ Quickly ☐ Very Quickly

10. Compared with how time usually passes, how quickly does time seem to pass when afraid of something that is going to happen? (Mark one)

☐ Very slowly ☐ Slowly ☐ Not slow or fast ☐ Quickly ☐ Very Quickly

11. What do you think about most when you are: (Mark one for each)

a. Happy	☐ Past	☐ Present	☐ Future
b. Sad	☐ Past	☐ Present	☐ Future
c. Anxious	☐ Past	☐ Present	☐ Future
d. Angry	☐ Past	☐ Present	☐ Future

12. When remembering a wonderful past event does it seem:

☐ Longer ago than it really was - "like an eternity ago"

☐ As long ago as it was

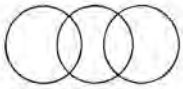
☐ More recent than it really was - "like just yesterday"

13. When remembering a terrible past event does it seem:

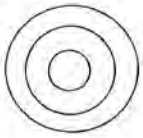
☐ Longer ago than it really was - "like an eternity ago"
☐ As long ago as it was
☐ More recent than it really was - "like just yesterday"

14. Which drawing best represents your idea of past, present and future? (Mark one)

a. ☐

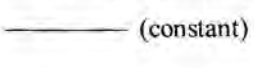


b. ☐



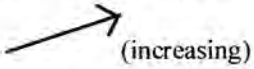
c. ☐

15. Which drawing best represents your idea of the rate at which time is passing? (Mark one)



(constant)

a. ☐

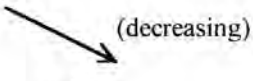


(increasing)

b. ☐

(sometimes fast, sometimes slow)

c. ☐



(decreasing)

d. ☐

16. If you want to wake up at a specific time other than when you normally would, can you wake yourself up on your own (without an alarm) within 10 minutes of the chosen time?

☐ Never ☐ Rarely ☐ Sometimes ☐ Frequently

17. Which feels closer: ☐ Yesterday
☐ Tomorrow

For questions 18-25 mark one.

18. I know what time it is.....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
19. I lose track of time.....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
20. I look at a clock or watch to find out the time....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
21. I feel like I have enough time each day.....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
22. Time drags for me.....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
23. Time goes too fast.....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
24. I tell time by the events around me.....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
25. I think about time.....	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

26. How long would you think about a minor physical stressor (e.g., a stubbed toe, paper cut, or minor scrape) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

27. How long would you think about a major physical stressor (e.g., broken bones, pneumonia) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

28. How long would you think about a minor psychological stressor (e.g., minor disagreement with a friend) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

29. How long would you think about a major psychological stressor (e.g.,major argument with a significant other) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

30. When do you function best?..... ☐ Morning ☐ Afternoon ☐ Evening ☐ Night
31. When do you feel most productive?..... ☐ Morning ☐ Afternoon ☐ Evening ☐ Night
32. When do you feel the most stressed?..... ☐ Morning ☐ Afternoon ☐ Evening ☐ Night
33. When are you most distracted?..... ☐ Morning ☐ Afternoon ☐ Evening ☐ Night

Sensory Awareness / Orientation

34. Do you have any disability or physical limitation which might impair the use of any of your senses (i.e. hearing loss/impairment, profound colorblindness)? If so, what?

35. Which sense do you use the most? ☐ Hearing ☐ Sight ☐ Smell ☐ Taste ☐ Touch
36. Which sense is your favorite? ☐ Hearing ☐ Sight ☐ Smell ☐ Taste ☐ Touch
37. Which sense is most likely to trigger pleasant memories for you? ☐ Hearing ☐ Sight ☐ Smell ☐ Taste ☐ Touch
38. Which sense is most likely to trigger unpleasant memories for you? ☐ Hearing ☐ Sight ☐ Smell ☐ Taste ☐ Touch
39. Which is most likely to irritate you? ☐ Hearing ☐ Sight ☐ Smell ☐ Taste ☐ Touch
40. Which is most likely to relax you? ☐ Hearing ☐ Sight ☐ Smell ☐ Taste ☐ Touch

41. In periods of stress which sensations are you more aware of than normal? (Mark all that apply)
☐ Hearing ☐ Taste ☐ None
☐ Sight ☐ Touch
☐ Smell

42. In periods of stress which sensations are you less aware of than normal? (Mark all that apply)
☐ Hearing ☐ Taste ☐ None
☐ Sight ☐ Touch
☐ Smell

43. Which of the following senses can you use in your imagination (for example "seeing" a mental image)? (Mark all that apply)
☐ Hearing ☐ Taste ☐ None
☐ Sight ☐ Touch
☐ Smell

44. Which of the following senses do you use in your dreams? (Mark all that apply)
☐ Hearing ☐ Taste ☐ None
☐ Sight ☐ Touch
☐ Smell

45. Mark all of the following that apply to how you sense color:
☐ Imagine color
☐ Dream color
☐ Become more aware of color under stress
☐ Become less aware of color under stress

☐ None

16. From the list below, rank order your senses in the order that you use them most. Start with the sense you think you use the most (1) and end with the one you use the least (5).

☐ Hearing ☐ Sight ☐ Smell ☐ Taste ☐ Touch

17. When you feel you are under a lot of stress, do you dream about those things that are causing you stress in your daily life?

☐ Never ☐ Rarely ☐ Sometimes ☐ Frequently

18. When you dream about those things that cause you stress, how rested do you feel when you wake up?

☐ As well rested as I normally feel ☐ I don't dream about the things that cause me stress
☐ Rested, but less so than usual
☐ Much more tired than usual
☐ Exhausted

19. If asked to tell when a given period of time had passed (without looking at a clock or watch), how accurate do you think you would be compared to most people?

☐ very poor ☐ poor ☐ average ☐ good ☐ very good

10. If asked to estimate how much time had gone by since a specific event (without looking at a clock or watch), how accurate do you think you would be compared to most people?

☐ very poor ☐ poor ☐ average ☐ good ☐ very good

11. Did or do your parents smoke cigarettes, cigars, or a pipe or chew tobacco?

☐ Yes, which one(s)? ☐ Mother ☐ Father
☐ No

12. Have you ever smoked cigatters, cigars, or a pipe or chewed tobacco?

☐ Yes, which one(s)? ☐ Cigarettes ☐ Cigars ☐ Pipe ☐ Chewed tobacco
☐ No (Go to next page)

13. How old were you when you first started to smoke/chew? ☐☐ years of age

14. How many cigarettes (cigars/ pipes) a week do or did you typically smoke?

☐☐☐ cigarettes/week

15. Do you currently smoke cigarettes, cigars, pipes, or chew tobacco?

☐ Yes ☐ No 56. If no, how long ago did you quit? ____ months

17. How often do/did you smoke your first cigarette of the day within 30 minutes of waking? (mark one)

☐1 Never ☐2 ☐3 ☐4 About half of the time ☐5 ☐6 ☐7 Always

18. How difficult is/was it for you to give up your first cigarette of the day? (mark one)

☐1 Not difficult ☐2 ☐3 ☐4 Moderately difficult ☐5 ☐6 ☐7 Very difficult

This inventory consists of numbered statements. Read each statement and decide whether it is true as applied to you or false as applied to you. Please mark the appropriate box to the right of each statement. If a statement is TRUE or MOSTLY TRUE as applied to you, mark "true." If a statement is FALSE or NOT USUALLY TRUE as applied to you, mark "false." Remember to give your own opinion of yourself. Do not leave any blank spaces if you can avoid it. 108

1. When I take a new job, I like to be tipped off on who should be gotten next to..... ☐ true ☐ false
2. When someone does me a wrong, I feel I should pay him back if I can just for the principle of the thing..... ☐ true ☐ false
3. I prefer to pass by school friends, or people I know but have not seen for a long time unless they speak to me first..... ☐ true ☐ false
4. I think a great many people exaggerate their misfortunes in order to gain sympathy and help from others..... ☐ true ☐ false
5. It takes a lot of argument to convince most people of the truth..... ☐ true ☐ false

6. I think most people would lie to get ahead..... ☐ true ☐ false
7. Someone has it in for me..... ☐ true ☐ false
8. Most people are honest chiefly through fear of being caught..... ☐ true ☐ false
9. Most people will use somewhat unfair means to gain profit for an advantage rather than lose it..... ☐ true ☐ false
10. I commonly wonder what hidden reasons another person may have for doing something nice for me..... ☐ true ☐ false

11. It makes me impatient to have people ask my advice or otherwise interrupt me when I am working on something important..... ☐ true ☐ false
12. I feel that I have often been punished without cause..... ☐ true ☐ false
13. I am against giving money to beggars..... ☐ true ☐ false
14. Some of my family have habits that bother and annoy me very much..... ☐ true ☐ false
15. My relatives are nearly all in sympathy with me..... ☐ true ☐ false

16. My way of doing things is apt to be misunderstood by others..... ☐ true ☐ false
17. I don't blame anyone for trying to grab everything he can get in this world..... ☐ true ☐ false
18. No one cares much what happens to you..... ☐ true ☐ false
19. I can be friendly with people who do things I consider wrong..... ☐ true ☐ false
20. It is safer to trust nobody..... ☐ true ☐ false

21. I do not blame a person for taking advantage of someone who lays himself open to it..... ☐ true ☐ false
22. I have often felt that strangers were looking at me critically..... ☐ true ☐ false
23. Most people make friends because friends are likely to be useful to them..... ☐ true ☐ false
24. I am sure I am being talked about..... ☐ true ☐ false
25. I am likely not to speak to people until they speak to me..... ☐ true ☐ false

26. Most people inwardly dislike putting themselves out to help other people..... ☐ true ☐ false
27. I tend to be on my guard with people who are somewhat more friendly than I had expected..... ☐ true ☐ false
28. I have sometimes stayed away from another person because I feared doing something that I might regret afterwards..... ☐ true ☐ false
29. People often disappoint me..... ☐ true ☐ false
30. I like to keep people guessing what I'm going to do next..... ☐ true ☐ false

31. I frequently ask for advice..... ☐ true ☐ false
32. I am not easily angered..... ☐ true ☐ false
33. I have often met people who were supposed to be experts who were no better than I..... ☐ true ☐ false
34. I would certainly enjoy beating a crook at his own game..... ☐ true ☐ false
35. It makes me feel like a failure when I hear of the success of someone I know well..... ☐ true ☐ false

Please read each statement, and as honestly as you can, answer the question, "How true is this statement for me?" Mark the box next to the number that corresponds with your answer. There are no right or wrong answers. We are only interested in your attitudes about these several statements. Use the scale that has been provided below.

Not true			Somewhat true			Very true
1	2	3	4	5	6	7

1. I think about the past a lot.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

2. When I want to get something done, I make a step by step plan and think about how to complete each step.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

3. Generally, I am more focused on what is going on now than on what will happen in the future.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

4. I think a lot about what life was like when I was younger.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

5. I often think of all the things I wish I had done differently in my past.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

6. I take care of what needs to be done before having fun.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

7. The joy in life comes from what I am doing now, not from what I will be doing later.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

8. I often wish I could return to things as they used to be.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

9. I am able to resist temptations when there is work to be done.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

10. I try to live one day at a time
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

11. I keep working at a difficult, boring task if it will help me get ahead.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

12. Thinking about the past makes me very emotional.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

13. I like to enjoy what I am doing now rather than think about what I need to do so I could have fun tomorrow.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

14. I get things done by working at a steady pace.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

15. If I take care of the present, the future will take care of itself.
☐1 ☐2 ☐3 ☐4 ☐5 ☐6 ☐7

Rate each item according to how true it is for you on a scale of 1 to 5 with 1="not true at all" to 5 = "very true."

	not true at all				very true
1. I take risks that bring excitement into my life	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
2. I often think about how things were earlier in my life	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
3. I am usually certain about what I am going to do next	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
4. I put off small gratifications I can get now in order to try for bigger gratifications later	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
5. I like to be spontaneous and make decisions on the spur of the moment	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
6. I try to be realistic about what the future holds for me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
7. I try to live one day at a time	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
8. Sometimes I wish I could go back to relive or change my past experience(s)	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
9. It's more important for me to enjoy what I am doing than it is to get things done "on time"	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
10. I prefer the old, familiar, and known ways of doing things to new and changing ways	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
11. Planning activities takes all the fun out of them	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
12. My plans about the future are pretty well laid out	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
13. My behavior seems to be more influenced by past experiences than by future goals	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
14. Most of my thoughts are about things that have already happened	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
15. I don't think much about what did or will happen, only about what is happening now.	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
16. What I do today is focused on making tomorrow better	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
17. I live to experience what is, rather than worrying about what will be	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
18. When someone hurts or angers me, it is hard for me to forgive and forget	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
19. The best way to do things well is to take them as they come	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
20. When I want to accomplish something, I set goals and consider means for achieving them	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
21. How I behave today is a direct reflection of my past experience	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
22. I am able to resist temptations when I know there is work to be done	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
23. I believe it is important to save for a rainy day	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
24. I often feel as though I were reliving experiences from my past	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
25. If I can't see the immediate benefits of doing something, I won't do it	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
26. I think about the future consequences of my actions	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
27. I often talk about my past experiences	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
28. It is best to live day-to-day and let tomorrow take care of itself	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

1. In the last 24 hours, how often did you feel as though you were in slow motion?

☐ never ☐ rarely ☐ sometimes ☐ often ☐ always

2. In the last 24 hours, how often did you feel as though time had stopped?

☐ never ☐ rarely ☐ sometimes ☐ often ☐ always

3. In the last 24 hours, how often did you feel as though you had no future?

☐ never ☐ rarely ☐ sometimes ☐ often ☐ always

4. In the last 24 hours, how often did you find yourself forgetting what just happened or feeling unclear about the order of events you just experienced?

☐ never ☐ rarely ☐ sometimes ☐ often ☐ always

5. In the last 24 hours, how often have you felt "caught up" in the present moment?

☐ never ☐ rarely ☐ sometimes ☐ often ☐ always

6. In the last 24 hours, how often were you unsure about the time of day it was?

☐ never ☐ rarely ☐ sometimes ☐ often ☐ always

7. In the last 24 hours, how often did you feel that nothing was real?

☐ never ☐ rarely ☐ sometimes ☐ often ☐ always

nstructions: Below is a series of statements a person might use to describe his/her attitudes, opinions, interests, and other haracteristics. Each statement is followed by two choices, True and False. Read the statement and decide which choice best escribes you. Please answer every statement, even if you are not completely sure of the answer. Read each statement arefully, but don't spend too much time deciding on the answer.

1. Sometimes I feel and experience things as I did when I was a child..... True ☐ False ☐

2. I can be greatly moved by eloquent or poetic language..... True ☐ False ☐

3. While watching a movie, a T.V. show, or a play, I may become so involved that I forget about myself and my surroundings and experience the story as if it were real and as if I were taking part in it..... True ☐ False ☐

4. If I stare at a picture and then look away from it, I can sometimes "see" an image of the picture, almost as if I were still looking at it..... True ☐ False ☐

5. Sometimes, I feel as if my mind could envelop the whole world..... True ☐ False ☐

6. I like to watch cloud shapes change in the sky..... True ☐ False ☐

7. If I wish, I can imagine (or daydream) some things so vividly that they hold my attention as a good movie or story does..... True ☐ False ☐

8. I think I really know what some people mean when they talk about mystical experiences ..... True ☐ False ☐

9. I sometimes "step outside" my usual self and experience an entirely different state..... True ☐ False ☐

10. Textures - such as wool, sand, wood - sometimes remind me of colors or music..... True ☐ False ☐

11. Sometimes I experience things as if they were doubly real..... True ☐ False ☐

12. When I listen to music, I can get so caught up in it that I don't notice anything else..... True ☐ False ☐

13. If I wish, I can imagine that my body is so heavy that I could not move it if I wanted to..... True ☐ False ☐

14. I can often somehow sense the presence of another person before I actually see or hear him/her..... True ☐ False ☐

15. The crackle and flames of a wood fire stimulate my imagination..... True ☐ False ☐

16. It is sometimes possible for me to be completely immersed in nature or in art and to feel as if my whole state of consciousness has somehow been temporarily altered..... True ☐ False ☐

17. Different colors have distinctive and special meanings for me..... True ☐ False ☐

18. I am able to wander off in to my own thoughts while doing a routine task and actually forget that I am doing the task, and then find a few minutes later that I have completed it..... True ☐ False ☐

19. I can sometimes recollect certain past experiences in my life with such clarity and vividness that it is like living them again or almost so..... True ☐ False ☐

20. Things that might seem meaningless to others often make sense to me..... True ☐ False ☐

21. While acting in a play, I think I could really feel the emotions of the character and "become" him/her for the time being, forgetting both myself and the audience..... True ☐ False ☐

22. My thoughts often don't occur as words but as visual images..... True ☐ False ☐

23. I often take delight in small things (like the five-pointed star shape that appears when you cut an apple across the core or the colors in soap bubbles)..... True ☐ False ☐
24. When listening to organ music or other powerful music, I sometimes feel as if I am being lifted into the air. True ☐ False ☐
25.. Sometimes I can change noise into music by the way I listen to it..... True ☐ False ☐
26. Some of my most vivid memories are called up by scents and smells..... True ☐ False ☐
27. Some music reminds me of pictures or changing color patterns..... True ☐ False ☐
28. I often know what someone is going to say before he or she says True ☐ False ☐
29. I often have "physical memories;" for example, after I've been swimming I may still feel as if I'm in the water..... True ☐ False ☐
30. The sound of a voice can be so fascinating to me that I can just go on listening to it..... True ☐ False ☐
31. At times, I somehow feel the presence of someone who is not physically there..... True ☐ False ☐
32. Sometimes thoughts and images come to me without the slightest effort on my part..... True ☐ False ☐
33. I find that different odors have different colors..... True ☐ False ☐
34. I can be deeply moved by a sunset..... True ☐ False ☐

Directions: People differ in the ways they act and think in different situations. This is a test to measure some of the ways in which you act and think. Read each statement and mark the appropriate box on the right side of the page. Do not spend too much time on any statement. Answer quickly and honestly.

1. I plan tasks carefully	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
2. I do things without thinking	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
3. I am happy-go-lucky	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
4. I have "racing thoughts"	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
5. I plan trips well ahead of time	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
6. I am self-controlled	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
7. I concentrate easily	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
8. I save regularly	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
9. I find it hard to sit still for long periods of time	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
10. I am a careful thinker	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
11. I plan for job security	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
12. I say things without thinking	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
13. I like to think about complex problems	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
14. I change jobs	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
15. I act "on impulse"	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
16. I get easily bored when solving thought problems..	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
17. I have regular medical/ dental checkups	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
18. I act on the spur of the moment	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
19. I am a steady thinker	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
20. I change where I live	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
21. I buy things on impulse	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
22. I finish what I start	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
23. I walk and move fast	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
24. I solve problems by trial and error	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
25. I spend or charge more than I earn	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
26. I talk fast	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
27. I have outside thoughts when thinking	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
28. I am more interested in the present than the future	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
29. I am resless at lectures or talks	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always
30. I plan for the future	☐ rarely/never	☐ occassionally	☐ often	☐ almost always/always

This questionnaire consists of questions about experiences that you may have in your daily life. We are interested in how often you have these experiences. It is important, however, that your answers show how often these experiences happen to you when you are not under the influence of alcohol or drugs. To answer the questions, please determine to what degree the experiences described in the question applies to you and mark the line with a vertical slash at the appropriate place as shown in the example below.

0% ——/—— 100%

1. Some people have the experience of driving a car and suddenly realizing that they don't remember what has happened during all or part of the trip. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

2. Some people find that sometimes they are listening to someone talk and they suddenly realize that they did not hear part of all of what was just said. Mark the line to show what percentage of time this happens to you.

0% —— 100%

3. Some people sometimes have the experience of feeling as though they are standing next to themselves or watching themselves as if they were looking at another person. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

4. Some people find that they have no memory for some important events in their lives (for example, a wedding or graduation). Mark the line to show the percentage of important events in your life you have no memory for.

0% —— 100%

5. Some people have the experience of looking in a mirror and not recognizing themselves. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

6. Some people sometimes have the experience of feeling that their body does not seem to belong to them. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

7. Some people sometimes have the experience of not being sure whether things they remember happened really did happen or whether they just dreamed them. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

8. Some people sometimes have the experience of being in a familiar place but finding it strange and unfamiliar. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

9. Some people find that they are watching television or a movie they become so absorbed in the story that they are unaware of other events happening around them. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

10. Some people find that they sometimes sit staring off into space, thinking of nothing, and are not aware of the passage of time. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

11. Some people find that they sometimes find that they become so involved in a fantasy or daydream that it feels as though it were really happening to them. Mark the line to show what percentage of the time this happens to you..

0% —— 100%

12. Some people find that they sometimes are able to ignore pain. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

13. Some people sometimes find that they cannot remember whether they have done something or have just thought about doing that thing (for example, not knowing whether they have just mailed a letter or have just thought about mailing it). Mark the line to show what percentage of the time this happens to you.

0% —— 100%

14. Some people sometimes feel as if they are looking at the world through a fog so people and objects appear far away or unclear. Mark the line to show what percentage of the time this happens to you.

0% —— 100%

Section 1: Caffeine and Tobacco Use

1. Did your mother drink caffeine while she was pregnant with you?

☐ Yes ☐ No ☐ Don't Know

2. Do you drink caffeinated beverages?

☐ Yes ☐ No (If no, skip to Question 5)

3. About how many beverages containing caffeine do you consume a day?

☐ 1-2 ☐ 3-4 ☐ 5-6 ☐ 7-8 ☐ 9 or more

4. Are the majority of these beverages:

☐ Cola/diet cola ☐ Brewed coffee ☐ Instant coffee ☐ Tea/Iced tea

☐ High caffeine sodas (Mt. Dew, Jolt, Josta, Surge)

☐ Water/Juice/Other beverages with added caffeine

5. Did your mother smoke cigarettes, cigars, pipes, chew tobacco or use snuff while she was pregnant with you?

☐ Yes ☐ No ☐ Don't know

6. Did anyone living in your home while you were a child (i.e., parents, grandparents, older siblings) smoke cigarettes or cigars? ☐ Yes ☐ No

7. Have you ever smoked cigarettes, cigars, pipes, chewed tobacco or used snuff? ☐ Yes ☐ No **(If no, skip to Section 2)**

8. Do you now smoke cigarettes, cigars, pipes, chewed tobacco or used snuff? ☐ Yes ☐ No **(If no, skip to question 10)**

9. Rank the following responses in order of importance beginning with 1 for the most important reason you smoke. Use 0 for answers that do not apply to you (for example: If you do not smoke because it relaxes you, place a 0 in that space.)

I smoke to:

☐ Relax me/ calm me down ☐ Be social

☐ Help me think/concentrate ☐ Lose/maintain weight

☐ Feel alert/energized ☐ Create/maintain an image of myself

☐ Avoid negative physical consequences (i.e., headache, nausea, fatigue)

10. How many cigarettes/cigars/pipes do you smoke in an average day, or how many did you smoke in an average day while you were smoking? ☐☐

11. How old were you when you began smoking (using tobacco)? ☐☐ years

12. How long have you used or did you use tobacco? ☐☐ years

13. How often do/did you smoke your first cigarette of the day within 30 minutes of waking? (mark one)

☐ 1 Never ☐ 2 ☐ 3 ☐ 4 About half of the time ☐ 5 ☐ 6 ☐ 7 Always

14. How many times have you attempted to quit smoking?

☐ Once
☐ 2-3 times
☐ 4-5 times
☐ I have not ever tried to quit. **(Skip next 2 questions)**

15. Did you use any of the following methods to quit smoking (check all that apply)?

☐ Just quit/"Cold turkey" ☐ Nicotine replacement (gum, patch, inhaler) ☐ Other
☐ Zyban ☐ Behavioral therapy (cessation classes, support groups, etc.)

16. How difficult is/was it for you to give up your first cigarette of the day? (mark one)

☐ 1 Not difficult ☐ 2 ☐ 3 ☐ 4 Moderately difficult ☐ 5 ☐ 6 ☐ 7 Very difficult

Section 2: Daily Mood and Life Events

A number of statements people have used to describe themselves are listed below. Read each statement and then circle the number that best indicates how you generally feel. There are no right or wrong answers. Do not spend too much time on any one question but choose the answer which discribes how you generally feel.

1. I feel pleasant	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
2. I feel nervous and restless	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
3. I feel satisfied with my life	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
4. I wish I were as happy as others seem to be	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
5. I feel like a failure	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
6. I feel rested	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
7. I am "cool, calm, and collected."	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
8. I feel that difficulties are piling up so high that I cannot overcome them	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
9. I worry too much over something that doesn't really matter	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
10. I am happy	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
11. I have disturbing thoughts	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
12. I lack self-confidence	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
13. I feel secure	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
14. I make decisions easily	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
15. I feel inadequate	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
16. I am content	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
17. Some unimportant thought runs through my mind and bothers me	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
18. I take disappointments so keenly that I can't put them out of my mind	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always
19. I am a steady person	☐ Almost_never	☐ Sometimes	☐ Often	☐ Almost_always

20. I get a state of tension or turmoil as I think over my recent concerns and interests..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

21. I feel quite cheerful..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

22. I look at the sunny side of life..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

23. My friends seem to feel I'm unhappy..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

24. I consider myself to be a happy person..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

25. Compared to my friends, I think less positively about life in general..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

26. I laugh joyfully..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

27. I am quick tempered..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

28. I have a fiery temper..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

29. I am a hotheaded person..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

30. I get angry when I'm slowed down by other's mistakes..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

31. I feel annoyed when I am not given recognition for doing good work..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

32. I fly off the handle..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

33. When I get mad I say nasty things..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

34. It makes me furious when I am criticized in front of others..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

35. When I get frustrated, I feel like hitting someone..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

36. I feel infuriated when I do a good job and get a poor evaluation.. ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

37. I fear being criticized..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

38. I'm afraid of not being a success..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

39. Spiders scare me..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

40. I feel uneasy when I'm with someone I find physically attractive.. ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

41. I'm afraid of snakes..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

42. I'm uneasy speaking before a group..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

43. Being teased/made self-conscious makes me anxious..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

44. I feel anxious that I might make mistakes..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

45. I feel uneasy around people in authority..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

46. Tough looking people scare me..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

47. When I'm in enclosed places, I feel scared. ..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

48. I'm fearful/anxious in hospitals..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

49. I try to answer surveys honestly..... ☐ Almost_never ☐ Sometimes ☐ Often ☐ Almost_always

For each statement, indicate the extent that the description is true of you by marking the mox next to the number on the scale.

	Not true at all.						Extremely true.
50. I rarely get pissed off at my friends	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
51. I am often mad at someone or something	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
52. I often find myself feeling angry	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
53. I am rarely frustrated by other people	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
54. I often blame others before blaming myself	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
55. A lot of people annoy me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
56. I get mad easily	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
57. It's rare for me to get enraged	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
58. Other drivers on the road infuriate me	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
59. I'd like to tell other people how much they piss me off	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

Below is a list of statements that college graduates have made about events in their lives. Compared to the average PSU student of the same gender, please estimate as accurately as you can the chances that a similar event will happen to you at least once in your life. Using the scale below, mark a number ranging from -4(very much less chance) to +4(very much more chance) to indicate the likelihood that each event could happen to you.

	Very much less likely than average	Much less likely than average	Somewhat less likely than average	Slightly less likely than average	Slightly more likely than average	Somewhat more likely than average	Much more likely than average	Very much more likely than average
63. I had a heart attack before age 50	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
64. I contracted a sexually transmitted disease	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
65. I had a decayed tooth extracted	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
66. My weight stayed constant for 10 years	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
67. I was not ill all winter	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
68. I developed cancer	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
69. I had an intellectually gifted child	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
70. I tripped and broke a bone	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4
71. I developed gum problems	☐ -4	☐ -3	☐ -2	☐ -1	☐ 1	☐ 2	☐ 3	☐ 4

For each statement, indicate the extent that the description is true for you by marking the box next to the number on the scale.

	Not true at all.						Extremely true.
72. It would be harmful to my health if I smoked a cigarette right now	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
73. It would be harmful to my health if I smoked a pack of cigarettes right now	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
74. It would be harmful to my health if I smoked a cigar right now	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7
75. It would be harmful to my health if I chewed tobacco or snuff right now	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

A. ☐☐☐ B. ☐☐☐ C. ☐☐☐ D. ☐☐☐

Please provide comments to explain more about any of the questions in this battery of surveys or give examples of your experiences with time or the senses in the space below. Thank you for your participation.

Description of Additional Measures In Study 3

Barratt Impulsiveness Scale. (Patton, Stanford, & Barratt, 1995) The BIS is a 30-item scale measuring impulsiveness. The scale consists of subscales of attention, motor impulsiveness, and non-planning. Patton et al. (1995) report α =.82 for an undergraduate sample with a mean of 63.82 and a standard deviation of 10.17. This scale was included to investigate the relationship between domain attention and impulsiveness and to relate impulsiveness to health habits and risk taking behaviors part of another study.

Caffeine and Tobacco Use Questionnaire. This measure is a 12 question survey developed for this study that asks about caffeine and tobacco use. The questions were based on previous research (Klein, Lerner, & Stine, 2000) and was included as part of another study.

Cook-Medley Hostility Scale. (Cook & Medley, 1954) This is a 50 question true or false scale derived from the Minnesota Multiphasic Personality Inventory and measures hostility. The internal consistency reported by Cook and Medley was $\alpha = 0.86$ and for the study 3 sample was $\alpha = 0.73$. The mean score from the standardization sample (the same sample used to standardize the MMPI) was 19 for men and 18 for women. Hostility was assessed as part of another study.

Tellegen Absorption Scale. (TAS: Tellegen & Atkinson, 1974) This is a 34 item true / false questionnaire measuring a disposition for having episodes of total attention that fully engage one's perceptual resources. The trait property of absorption may relate to time or sense items.

APPENDIX B

CODING AND SCORING PROCEDURES

Code Book Perception of Time and the Senses Survey I

Code Book Perception of Time and the Senses Survey II

Scoring Syntax

Time and Sense Survey Code Book

The Time and Sense Survey was developed to gather information regarding the areas of time and sensory perception. We are interested in how the experience of stress may influence the perception of time passing and the awareness of different sensory information. The first phase of the survey administration will be used to evaluate the survey for reliability and internal validity and to begin to establish normative information in the areas of time and sensory perception.

Entering Data

The survey responses are to be entered into an SPSS spreadsheet (data file) for later statistical analysis. The master file is called "Time and Sense DATA."

In SPSS 9.0 for Windows open the master file called "Time and Sense DATA" in the G drive (CD writer). Across the top of the columns you will find the names of the data variables. If you put the cursor on the column label, then it will show a full explanation of the variable.

The following pages explain what to enter for each column. You can also double click on the column heading and go to "labels" to see the codes for each response. For convenience, the columns are referenced by variable number, but only the name of the variable appears on the spreadsheet. **The coding directions appear in blue ink.**

Saving the Data

Once the information from a survey has been entered, **save the file** by clicking on "save" under the file menu. This action helps to avoid the work of reentering much data in the case of power failure or computer glitch. Once you have finished a set of surveys, please save the file again and save a backup copy by clicking on "save as" under the file menu and naming the backup file "TS DATA backup *and the date*" (e.g. TS DATA backup 2DEC99). After you save the backup file, email a copy of the backup file to lxk18@psu.edu and byatko@mxb.usuhs.mil.

Questions

If you have any questions then please call Bonnie Yatko at 301-295-9671 during the day or 301-585-5480 in the evening or email byatko@mxb.usuhs.mil or Dr. Neil E. Grunberg at 301-295-9673 or Ngrunberg@usuhs.mil.

Time and Sense Survey Code Book

Variable 1= CODER	Enter Initials of Person Entering Data
Variable 2= SUBNUM	Enter Subject Number (first 3 digits course number then running number)
Variable 3= DATE	Enter the date the survey was administered
Variable 4= SMOKE	Enter a **1** if the subject marked an * or **0** if no * is marked
Variable 5= TIME_EST	Enter time estimate in seconds

Background Information:

7. Age_____

Variable 6= AGE Enter age in years.

8. Gender

□ Female □ Male

Variable 7= GENDER Enter **1** for Male or **2** for Female

44. Race/ Ethnic Identification

□ Caucasian
□ African American
□ Latino/ Hispanic
□ Asian/ Pacific Islander
□ Native American
□ Other

Variable 8= RACE

Enter **1** for Caucasian
Enter **2** for African American
Enter **3** for Latino/ Hispanic
Enter **4** for Asian/ Pacific Islander
Enter **5** for Native American
Enter **6** for Other
Enter **99** for Multiple Category Answer (and list the categories in COM1 [See Variable 70])

Time Orientation and Awareness

45. Which do you <u>usually</u> think about? (Check one)

□ Past □ Present □ Future

Variable 9= Q4

Enter **1** for Past
Enter **2** for Present
Enter **3** for Future

46. Please indicate the percentage of time that you usually think about the:

Past_____
Present_____
Future_____
(total should = 100%)

Variable 10= Q5A Enter Past Percent
Variable 11= Q5B Enter Present Percent
Variable 12= Q5C Enter Future Percent

47. During stress, what percentage of time do you think about the:

Past_____
Present_____
Future_____
(total should = 100%)

Variable 13= Q6A Enter Past Percent
Variable 14= Q6B Enter Present Percent
Variable 15= Q6C Enter Future Percent

48. Please rate how you feel about your: (Please check one for each time)

	Very bad	Bad	Neutral	Good	Very Good
	0	**1**	**2**	**3**	**4**
a. Past	☐	☐	☐	☐	☐
b. Present	☐	☐	☐	☐	☐
c. Future	☐	☐	☐	☐	☐

Variable 16=Q7A Enter number that corresponds to column for Past
Variable 17=Q7B Enter number that corresponds to column for Present
Variable 18= Q7C Enter number that corresponds to column for Future

8. How quickly does time seem to pass: (Please check one for each)

	Very Slowly	Slowly	Not slow or Fast	Quickly	Very Quickly
	0	**1**	**2**	**3**	**4**
a. Usually?	☐	☐	☐	☐	☐
b. When looking forward to something?	☐	☐	☐	☐	☐
d. When afraid of something that is going to happen?	☐	☐	☐	☐	☐

Variable 19=Q8A Enter number that corresponds to column for Usually
Variable 20=Q8B Enter number that corresponds to column for Looking for..
Variable 21= Q8C Enter number that corresponds to column for Afraid

9. What do you think about most when you are: (Please check one for each)

	Past	Present	Future
	1	**2**	**3**
h. Happy	☐	☐	☐
i. Sad	☐	☐	☐
j. Anxious	☐	☐	☐

Variable 22=Q9A Enter number that corresponds to column for Happy
Variable 23=Q9B Enter number that corresponds to column for Sad.
Variable 24= Q9C Enter number that corresponds to column for Anxious.

10. When remembering a wonderful past event does it seem:
    - ☐ Longer ago than it really was
    - ☐ As long ago as it was
    - ☐ More recent than it really was

Variable 25= Q10 Enter **1** for longer
Enter **2** for as long
Enter **3** for more recent

11. When remembering a terrible past event does it seem:
    - ☐ Longer ago than it really was
    - ☐ As long ago as it was
    - ☐ More recent than it really was

Variable 26= Q11 Enter **1** for longer
Enter **2** for as long
Enter **3** for more recent

13. Which of the following best describes how you think about time?
    - ☐ Line
    - ☐ Arrow
    - ☐ Circle
    - ☐ Point
    - ☐ Blur
    - ☐ Other

Variable 27= Q12 Enter **1** for Line
Enter **2** for Arrow
Enter **3** for Circle
Enter **4** for Point
Enter **5** for Blur
Enter **6** for Other

13. Have you ever felt as if an experience or moment in time happened before (Déjà vu)?

- ☐ Frequently
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

Variable 28= Q13

Enter **3** for Frequently
Enter **2** for Sometimes
Enter **1** for Rarely
Enter **0** for Never

15. If you want to wake up in the middle of your normal sleep at a specific time other than when you would normally awaken, can you wake yourself up on your own (without an alarm) within 10 minutes of the chosen time?

- ☐ Frequently
- ☐ Sometimes
- ☐ Rarely
- ☐ Never

Variable 29= Q14

Enter **3** for Frequently
Enter **2** for Sometimes
Enter **1** for Rarely
Enter **0** for Never

For questions 15-22 check one:

	Never **0**	Rarely **1**	Sometimes **2**	Often **3**	Always **4**
15. I know what time it is.	☐	☐	☐	☐	☐
16. I lose track of the time.	☐	☐	☐	☐	☐
17. I look at a clock or watch to find out the time.	☐	☐	☐	☐	☐
18. I feel like I have enough time each day.	☐	☐	☐	☐	☐
19. Time drags for me.	☐	☐	☐	☐	☐
20. Time goes too fast.	☐	☐	☐	☐	☐
21. I tell time by the events around me.	☐	☐	☐	☐	☐
22. I think about time.	☐	☐	☐	☐	☐

Variable 30=Q15 Enter number that corresponds to column for 15.
Variable 31=Q16 Enter number that corresponds to column for 16.
Variable 32= Q17 Enter number that corresponds to column for 17.
Variable 33=Q18 Enter number that corresponds to column for 18.
Variable 34=Q19 Enter number that corresponds to column for 19.
Variable 35=Q20 Enter number that corresponds to column for 20.
Variable 36=Q21 Enter number that corresponds to column for 21.
Variable 37=Q22 Enter number that corresponds to column for 22.

24. These questions are taking too much time. (Check one)

Strongly disagree	disagree	neutral	agree	strongly agree
☐	☐	☐	☐	☐

Variable 38=Q23 Enter **0** for strongly disagree
Enter **1** for disagree
Enter **2** for neutral
Enter **3** for agree
Enter **4** strongly agree

Sensory Orientation / Awareness

For questions 24-29 check one sense for each question

	Hearing **1**	Sight **2**	Smell **3**	Taste **4**	Touch **5**
24. Which sense do you use the most?	☐	☐	☐	☐	☐
25. Which sense is your favorite?	☐	☐	☐	☐	☐
26. Which is most likely to trigger pleasant memories for you?	☐	☐	☐	☐	☐
27. Which is most likely to trigger unpleasant memories for you?	☐	☐	☐	☐	☐
28. Which is most likely to irritate you?	☐	☐	☐	☐	☐
29. Which is most likely to relax you?	☐	☐	☐	☐	☐

Variable 39=Q24 Enter number that corresponds to column for Most.
Variable 40=Q25 Enter number that corresponds to column for Favorite.
Variable 41= Q26 Enter number that corresponds to column for Pleasant.
Variable 42=Q27 Enter number that corresponds to column for Unpleasant.
Variable 43=Q28 Enter number that corresponds to column for Irritate.
Variable 44=Q29 Enter number that corresponds to column for Relax.

31. In periods of stress which sensations are you more aware of than normal? (Check all that apply) If no response is checked code all -999

☐ Hearing	Variable 45= Q30HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 46= Q30SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 47= Q30SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 48= Q30TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 49= Q30TOUCH	Enter **1** if checked or **0** if not checked.
☐ None	Variable 50= Q30NONE	Enter **1** if checked or **0** if not checked.

31. In periods of stress which sensations are you less aware of than normal? (Check all that apply.) If no response is checked code all -999

☐ Hearing	Variable 51= Q31HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 52= Q31SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 53= Q31SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 54= Q31TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 55= Q31TOUCH	Enter **1** if checked or **0** if not checked.
☐ None	Variable 56= Q31NONE	Enter **1** if checked or **0** if not checked.

34. Which of the following senses can you use in your imagination (for example "seeing" a mental image)? (Check all that apply) If no response is checked code all -999

☐ Hearing	Variable 57= Q32HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 58= Q32SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 59= Q32SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 60= Q32TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 61= Q32TOUCH	Enter **1** if checked or **0** if not checked.

35. Which of the following senses do you use in your dreams? (Check all that apply) If no response is checked code all -999

☐ Hearing	Variable 62= Q33HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 63= Q33SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 64= Q33SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 65= Q33TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 66= Q33TOUCH	Enter **1** if checked or **0** if not checked.

36. How long would you think about a minor physical stressor (e.g., a stubbed toe, paper cut, or minor scrape) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 67= Q34

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours
Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

37. How long would you think about a major physical stressor (e.g., broken bone, pneumonia) after it had happened assuming there were no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 68= Q35

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours
Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

38. How long would you think about a minor psychological stressor (e.g., minor disagreement with a friend) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 69= Q36

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours
Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

39. How long would you think about a major psychological stressor (e.g., major argument with a significant other) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 70= Q37

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours
Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

Please provide comments to explain more about any of the questions in this survey or to give examples of your experiences with time or the senses.

If any question is not answered, then code the answer as **-999**.

If multiple choices are given to a question that asks for one choice, then Code it as **99** and explain in variable COM1.

Variable 71= COM1 Use this comment variable to explain any 99 entries or other anomalies (skipped pages, etc.). Please list the Variable number that you are addressing.

Variable 72= COM2 Use this comment variable to enter subject comments in response to the last question (i.e., the question after Q37) and any other comments written by each subject on the survey.

Please rate the items listed below using the following 1-5 scale:

HEDONIC RATING SCALE

1	2	3	4	5
Very Unpleasant	Somewhat Unpleasant	Neutral	Somewhat Pleasant	Very Pleasant

Stimulus	**Rating**	**Stimulus**	**Rating**
Sound of a bird singing	H1	Sound of a small fan	H21
Sight of a seashell	H2	Smell of ammonia	H22
Taste of soy sauce	H3	Sight of a dead animal	H23
Sight of a rusty nail	H4	Feel of a pencil	H24
Sound of a chime	H5	Sight of a sunset	H25
Smell of cardboard	H6	Feel of cotton	H26
Feel of satin	H7	Sight of a brick	H27
Smell of a rose	H8	Feel of a rotten vegetable	H28
Taste of a rice cake	H9	Sound of wood hitting wood	H29
Smell of sulfur (rotten eggs)	H10	Smell of vanilla	H30
Taste of honey	H11	Feel of aluminum foil	H31
Smell of plastic	H12	Taste of olive oil	H32
Sound of nails on blackboard	H13	Sound of a siren	H33
Taste of chocolate	H14	Taste of an orange	H34
Feel of cotton candy	H15	Sight of a crystalline rock	H35
Feel of a piece of metal	H16	Taste of fish oil	H36
Taste of lemon rind	H17	Sound of ocean waves	H37
Feel of rabbit fur	H18	Smell of pine trees	H38
Sight of a wrecked car	H19	Smell of a telephone	H39
Sound of a hammer striking metal	H20	Sight of a plastic cup	H40

For Variables 73-113 (H1-H40) enter the numerical rating given (may include 1 decimal place if subject does so in the rating).

Enter any written comments from this page in Variable 114= COM3.

Time and Sense Survey Code Book

Variable 1= CODER	Enter Initials of Person Entering Data
Variable 2= SUBNUM	Enter Subject Number
Variable 3= DATE	Enter the date the survey was administered
Variable 5=TIME_EST	Enter number of seconds estimated

Background Information:

9. Age_____

Variable 6= AGE Enter age in years.

10. Gender

☐ Female ☐ Male

Variable 7= GENDER Enter **1** for Male or **2** for Female

49. Race/ Ethnic Identification

- ☐ Caucasian
- ☐ African American
- ☐ Latino/ Hispanic
- ☐ Asian/ Pacific Islander
- ☐ Native American
- ☐ Other

Variable 8= RACE

Enter **1** for Caucasian
Enter **2** for African American
Enter **3** for Latino/ Hispanic
Enter **4** for Asian/ Pacific Islander
Enter **5** for Native American
Enter **6** for Other
Enter **99** for Multiple Category Answer (and list the categories in COM1 [See Variable 70])

50. How would you describe your current living situation? (mark one)

- ☐ Alone
- ☐ With roommate(s)/another adult (s)
- ☐ With significant other
- ☐ With another adult(s) and child(ren)
- ☐ With child(ren)

Variable 9= LIVING

Enter **1** for alone
Enter **2** for with roommate(s)/another adult (s)
Enter **3** for with significant other
Enter **4** for another adult(s) and child(ren)
Enter **5** for with child(ren)

51. What is your major (if student) or occupation? _____

Variable 10= MAJOR

Enter major.

Time Orientation and Awareness

52. Which do you usually think about? (Check one)

☐ Past ☐ Present ☐ Future

Variable 11= Q6

Enter **1** for Past
Enter **2** for Present
Enter **3** for Future

7a. When you think about the past, how far back are you most often thinking? (Check one)

☐ minutes ☐ hours ☐ days ☐ weeks ☐ months ☐ years ☐ decades

Variable 12= Q7A

Enter **1** for Minutes
Enter **2** for Hours
Enter **3** for Days
Enter **4** for Weeks
Enter **5** for Months
Enter **6** for Years
Enter **7** for Decades

7b. When you think about the present, what time frame do you think about? (Check one)
□ within seconds □ within minutes □ this hour □ this day □ this week

Variable 13= Q7B
Enter **1** for within seconds
Enter **2** for within minutes
Enter **3** for this hour
Enter **4** for this day
Enter **5** for this week

7.c. When you think about the future, how far into the future are you most often thinking? (Check one)
□ minutes □ hours □ days □ weeks □ months □ years □ decades

Variable 14= Q7C
Enter **1** for Minutes
Enter **2** for Hours
Enter **3** for Days
Enter **4** for Weeks
Enter **5** for Months
Enter **6** for Years
Enter **7** for Decades

8. Please indicate the percentage of time that you usually think about the:
Past_____
Present_____
Future_____
(total should = 100%)

Variable 15= Q8A Enter Past Percent
Variable 16= Q8B Enter Present Percent
Variable 17= Q8C Enter Future Percent

9. <u>During stress</u>, what percentage of time do you think about the:
Past_____
Present_____
Future_____
(total should = 100%)

Variable 18= Q9A Enter Past Percent
Variable 19= Q9B Enter Present Percent
Variable 20= Q9C Enter Future Percent

53. Please rate how you feel about your: (Please check one for each time)

	Very bad	Bad	Neutral	Good	Very Good
	1	**2**	**3**	**4**	**5**
a. Past	☐	☐	☐	☐	☐
b. Present	☐	☐	☐	☐	☐
c. Future	☐	☐	☐	☐	☐

Variable 21= Q10A Enter number that corresponds to column for Past
Variable 22= Q10B Enter number that corresponds to column for Present
Variable 23= Q10C Enter number that corresponds to column for Future

11. How quickly does time seem to pass usually?: (Please check one for each)
☐ Very Slowly ☐ Slowly ☐ Not slow or fast ☐ Quickly ☐ Very Quickly

Variable 24= Q11 Enter **1** for Very Slowly
Enter **2** for Slowly
Enter **3** for Not slow or fast
Enter **4** for Quickly
Enter **5** for Very Quickly

12. How quickly does time seem to pass: (Please check one for each)

	Very Slowly	Slowly	Not slow or Fast	Quickly	Very Quickly
	1	**2**	**3**	**4**	**5**
a. When looking forward to something?	☐	☐	☐	☐	☐
c. When afraid of something that is going to happen?	☐	☐	☐	☐	☐

Variable 25= Q12A Enter number that corresponds to column for looking for.
Variable 26= Q12B Enter number that corresponds to column for afraid

13. What do you think about most when you are: (Please check one for each)

	Past	Present	Future
	1	**2**	**3**
k. Happy	☐	☐	☐
l. Sad	☐	☐	☐
m. Anxious	☐	☐	☐
n. Angry	☐	☐	☐

Variable 27= Q13A Enter number that corresponds to column for Happy
Variable 28= Q13B Enter number that corresponds to column for Sad.
Variable 29= Q13C Enter number that corresponds to column for Anxious.
Variable 30= Q13D Enter number that corresponds to column for Angry.

14. When remembering a wonderful past event does it seem:

- ☐ Longer ago than it really was –"like an eternity ago"
- ☐ As long ago as it was
- ☐ More recent than it really was –"like just yesterday"

Variable 31= Q14 Enter **1** for longer
Enter **2** for as long
Enter **3** for more recent

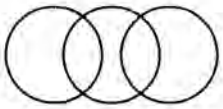
15. When remembering a terrible past event does it seem:

- ☐ Longer ago than it really was –"like an eternity ago"
- ☐ As long ago as it was
- ☐ More recent than it really was –"like just yesterday"

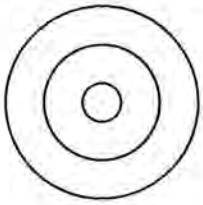
Variable 32= Q15 Enter **1** for longer
Enter **2** for as long
Enter **3** for more recent

16. Which drawing best represents your idea of past, present and future? (check one)

☐ a.



☐ b.



☐ c.

Variable 33= Q16 Enter **1** for a
Enter **2** for b
Enter **3** for c

17. Which drawing best represents your idea of the rate at which time is passing? (check one)

(constant)

☐ a.

(increasing)

☐ b.

(sometimes fast, sometime slow)

☐ c.

(decreasing)

☐ d.

Variable 34= Q17 Enter **1** for a
Enter **2** for b
Enter **3** for c

Enter **4** for d

18. If you want to wake up at a specific time other than when you normally would, can you wake yourself up on your own (without an alarm) within 10 minutes of the chosen time?

☐ Never ☐ Rarely ☐ Sometimes ☐ Frequently

Variable 35= Q18

Enter **1** for Never
Enter **2** for Rarely
Enter **3** for Sometimes
Enter **4** for Frequently

19. Which feels closer:

☐ Yesterday ☐ Tomorrow

Variable 36= Q19

Enter **1** for Yesterday
Enter **2** for Tomorrow

For questions 20-27 check one:

	Never **1**	Rarely **2**	Sometimes **3**	Often **4**	Always **5**
20. I know what time it is.	☐	☐	☐	☐	☐
21. I lose track of the time.	☐	☐	☐	☐	☐
22. I look at a clock or watch to find out the time.	☐	☐	☐	☐	☐
23. I feel like I have enough time each day.	☐	☐	☐	☐	☐
24. Time drags for me.	☐	☐	☐	☐	☐
25. Time goes too fast.	☐	☐	☐	☐	☐
26. I tell time by the events around me.	☐	☐	☐	☐	☐
27. I think about time.	☐	☐	☐	☐	☐

Variable 37= Q20 Enter number that corresponds to column for 20.
Variable 38= Q21 Enter number that corresponds to column for 21.
Variable 39= Q22 Enter number that corresponds to column for 22.
Variable 40= Q23 Enter number that corresponds to column for 23.
Variable 41= Q24 Enter number that corresponds to column for 24.
Variable 42= Q25 Enter number that corresponds to column for 25.
Variable 43= Q26 Enter number that corresponds to column for 26.
Variable 44= Q27 Enter number that corresponds to column for 27.

54. How long would you think about a minor physical stressor (e.g., a stubbed toe, paper cut, or minor scrape) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 45= Q28

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours
Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

55. How long would you think about a major physical stressor (e.g., broken bone, pneumonia) after it had happened assuming there were no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 46= Q29

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours
Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

56. How long would you think about a minor psychological stressor (e.g., minor disagreement with a friend) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 47= Q30

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours
Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

57. How long would you think about a major psychological stressor (e.g., major argument with a significant other) after it had happened and assuming no permanent consequences?

☐ Seconds ☐ Minutes ☐ Hours ☐ Days ☐ Weeks ☐ Months ☐ Years

Variable 48= Q31

Enter **1** for Seconds
Enter **2** for Minutes
Enter **3** for Hours

Enter **4** for Days
Enter **5** for Weeks
Enter **6** for Months
Enter **7** for Years

	Morning	Afternoon	Evening	Night
	1	**2**	**3**	**4**
32. a. When do you function best?	☐	☐	☐	☐
b. When do you feel most productive?	☐	☐	☐	☐
c. When do feel the most stressed?	☐	☐	☐	☐
d. When are you most distracted?	☐	☐	☐	☐

Variable 49= Q32A Enter number that corresponds to column for best.
Variable 50= Q32B Enter number that corresponds to column for most productive.
Variable 51= Q32C Enter number that corresponds to column for most stressed.
Variable 52= Q32D Enter number that corresponds to column for most distracted.

Sensory Orientation / Awareness

33. Do you have any disability or physical limitation which might impair the use of any of your senses (i.e. hearing loss/impairment, profound colorblindness)? If so, what?

Variable 53= Q33 Enter disability or physical limitation.

For questions 34-39 check one sense for each question

	Hearing	Sight	Smell	Taste	Touch
	1	**2**	**3**	**4**	**5**
34. Which sense do you use the most?	☐	☐	☐	☐	☐
35. Which sense is your favorite?	☐	☐	☐	☐	☐
36. Which is most likely to trigger pleasant memories for you?	☐	☐	☐	☐	☐
37. Which is most likely to trigger unpleasant memories for you?	☐	☐	☐	☐	☐
38. Which is most likely to irritate you?	☐	☐	☐	☐	☐
39. Which is most likely to relax you?	☐	☐	☐	☐	☐

Variable 54= Q34	Enter number that corresponds to column for Most.
Variable 55= Q35	Enter number that corresponds to column for Favorite.
Variable 56= Q36	Enter number that corresponds to column for Pleasant.
Variable 57= Q37	Enter number that corresponds to column for Unpleasant.
Variable 58= Q38	Enter number that corresponds to column for Irritate.
Variable 59= Q39	Enter number that corresponds to column for Relax.

40. In periods of stress which sensations are you more aware of than normal? (Check all that apply)

☐ Hearing	Variable 60= Q40HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 61= Q40SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 62= Q40SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 63= Q40TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 64= Q40TOUCH	Enter **1** if checked or **0** if not checked.
☐ None	Variable 65= Q40NONE	Enter **1** if checked or **0** if not checked.

41. In periods of stress which sensations are you less aware of than normal? (Check all that apply.)

☐ Hearing	Variable 66= Q41HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 67= Q41SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 68= Q41SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 69= Q41TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 70= Q41TOUCH	Enter **1** if checked or **0** if not checked.
☐ None	Variable 71= Q41NONE	Enter **1** if checked or **0** if not checked.

58. Which of the following senses can you use in your imagination (for example "seeing" a mental image)? (Check all that apply)

☐ Hearing	Variable 72= Q42HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 73= Q42SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 74= Q42SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 75= Q42TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 76= Q42TOUCH	Enter **1** if checked or **0** if not checked.
☐ None	Variable 77= Q42NONE	Enter **1** if checked or **0** if not checked.

59. Which of the following senses do you use in your dreams? (Check all that apply)

☐ Hearing	Variable 78= Q43HEAR	Enter **1** if checked or **0** if not checked.
☐ Sight	Variable 79= Q43SIGHT	Enter **1** if checked or **0** if not checked.
☐ Smell	Variable 80= Q43SMELL	Enter **1** if checked or **0** if not checked.
☐ Taste	Variable 81= Q43TASTE	Enter **1** if checked or **0** if not checked.
☐ Touch	Variable 82= Q43TOUCH	Enter **1** if checked or **0** if not checked.
☐ None	Variable 83=Q44NONE	Enter **1** if checked or **0** if not checked.

44. Check all of the following that apply to how you sense color:

☐ Imagine color	Variable 84= Q44IMAGINE
☐ Dream color	Variable 85= Q44DREAM
☐ Become more aware of color under stress	Variable 86= Q44LESS
☐ Become less aware of color under stress	Variable 87= Q44MORE
☐ None	Variable 88= Q44NONE

Enter **1** if checked or **0** if not checked for all of above.

45. From the list below, rank your senses in the order that you use them most. Start with the sense you think you use the most (1) and end with the one you use the least (5).

_____Hearing	Variable 89= Q45 HEAR
_____Sight	Variable 90= Q45 SIGHT
_____Smell	Variable 91= Q45 SMELL
_____Taste	Variable 92= Q45 TASTE
_____Touch	Variable 93= Q45 TOUCH

Enter corresponding number for each question.

46. When you feel you are under a lot of stress, do you dream about those things that are causing you stress in your daily life?

☐ Never ☐ Rarely ☐ Sometimes ☐ Frequently

Variable 94=Q46

Enter **1** for Never
Enter **2** for Rarely
Enter **3** for Sometimes
Enter **4** for Frequently

47.When you dream about those things that cause you stress, how rested do you feel when you wake up?

☐ As well rested as I normally feel
☐ Rested, but less so than usual
☐ Much more tired than usual
☐ Exhausted

Variable 95=Q47

Enter **1** for As well rested as I normally feel
Enter **2** for Rested, but less so than usual
Enter **3** for Much more tired usual
Enter **4** for Exhausted

48. If asked to tell when a given period of time has passed (without looking at a clock or watch), how accurate do you think you would be compared to most people?

☐ very poor ☐ poor ☐ average ☐ good ☐ very good

Variable 96=Q48

Enter **1** for Very poor
Enter **2** for Poor
Enter **3** for Average
Enter **4** for Good
Enter **5** for Very good

49. If asked to estimate how much time had gone by since a specific event (without using a watch or clock), how accurate do you think you would be compared to most people?

☐ very poor ☐ poor ☐ average ☐ good ☐ very good

Variable 97=Q49

Enter **1** for Very poor
Enter **2** for Poor
Enter **3** for Average
Enter **4** for Good
Enter **5** for Very good

50. Did or do your parents smoke cigarettes, cigars, or a pipe or chew tobacco? (Check one)

Yes, which one(s)? Mother Father
No

Variable 98=Q50MOM Enter **1** for Yes
Enter **2** for No

Variable 99=Q50DAD Enter **1** for Yes
Enter **2** for No

51. Have you ever smoked cigarette, cigars, or a pipe or chewed tobacco? (Check one)

Yes, which one(s)? Cigarettes Cigars Chewed tobacco
No (Go to question 56)

Variable 100=Q51CIGS Enter **1** for Yes
Enter **2** for No

Variable 101=Q51CIGARS Enter **1** for Yes
Enter **2** for No

Variable 102=Q51CHEW Enter **1** for Yes
Enter **2** for No

52. How old were you when you first started to smoke/chew?_____ years of age

Variable 103=Q52 Enter age in years.

53. How many cigarettes (cigars/ pipes) a week do or did you typically smoke?

_____cigarettes/week

Variable 104=Q53 Enter number of cigarettes/week.

54. How often do/did you smoke your first cigarette of the day within 30 minutes of waking? (Circle one)

1	2	3	4	5	6	7
Never			About half the time			Always

Variable 105=Q54 Enter number corresponding to the one circled.

55. How difficult is/was it for you to give up your first cigarette of the day? (Circle one)

1	2	3	4	5	6	7
Never			About half the time			Always

Variable 106=Q55 Enter number corresponding to the one circled.

56. Please provide comments to explain more about any of the questions in this survey or to give examples of your experiences with time or the senses.

If any question is not answered, then leave the variable blank.

If multiple choices are given to a question that asks for one choice, then Code it as **99** and explain in variable COM1.

Variable 107= COM1 Use this comment variable to explain any 99 entries or other anomalies (skipped pages, etc.). Please list the Variable number that you are addressing.

Variable 108= COM2 Use this comment variable to enter subject comments in response to the last question (i.e., the question after Q37) and any other comments written by each subject on the survey.

STUDY 3 SCORING SYNTAX

```
COMPUTE MACDEP = -MAACL1-MAACL8-MAACL9+MAACL14+MAACL17-
MAACL22+MAACL33+MAACL37-MAACL42-MAACL44-MAACL45+MAACL46-MAACL48-
MAACL52-MAACL54-MAACL56-MAACL60+MAACL61-MAACL66-
MAACL67+MAACL72+MAACL73+MAACL75-MAACL76-MAACL80+MAACL82-
MAACL89+MAACL96+MAACL98-
MAACL99+MAACL108+MAACL109+MAACL111+MAACL116+MAACL120+MAACL122+MAACL
130-MAACL132 .

COMPUTE MACHOS = -MAACL6-MAACL10+MAACL12+MAACL16-
MAACL27+MAACL30+MAACL35+MAACL36+MAACL38+MAACL41-MAACL49+MAACL51-
MAACL57+MAACL68-MAACL71+MAACL77+MAACL78+MAACL85+MAACL86-
MAACL92+MAACL107-MAACL112-MAACL113-MAACL114-
MAACL121+MAACL123+MAACL125-MAACL129 .

COMPUTE MACANX = MAACL14-MAACL19-MAACL21-
MAACL24+MAACL32+MAACL43+MAACL50-MAACL59-MAACL70-
MAACL74+MAACL83+MAACL87-MAACL91-MAACL101+MAACL102-
MAACL105+MAACL115+MAACL117-MAACL118+MAACL124+MAACL131 .

COMPUTE BDI =
BDI1+BDI2+BDI3+BDI4+BDI5+BDI6+BDI7+BDI8+BDI9+BDI10+BDI11+BDI12+BDI13+BDI14+B
DI15+BDI16+BDI17+BDI18+BDI19+BDI20+BDI21 .

COMPUTE PSS = PSS1+PSS2+PSS3+(4-PSS4)+(4-PSS5)+PSS6+(4-PSS7)+(4-
PSS8)+PSS9+PSS10 .

COMPUTE TOSPAST = TOS1+TOS4+TOS5+TOS8+TOS12 .

COMPUTE TOSPRES = TOS3+TOS7+TOS10+TOS13+TOS15 .

COMPUTE TOSFUT = TOS2+TOS6+TOS9+TOS11+TOS14 .

COMPUTE TOIPAST = TOI2+TOI8+TOI10+TOI13+TOI14+TOI18+TOI21+TOI24+TOI27 .

COMPUTE TOIPRES = TOI1+TOI5+TOI7+TOI9+TOI11+TOI15+TOI18+TOI19+TOI25+TOI28 .

COMPUTE TOIFUT = TOI3+TOI4+TOI6+TOI12+TOI16+TOI20+TOI22+TOI23+TOI26 .

COMPUTE TDS = TDS1+TDS2+TDS3+TDS4+TDS5+TDS6+TDS7 .

COMPUTE TAS=
TAS1+TAS2+TAS3+TAS4+TAS5+TAS6+TAS7+TAS8+TAS9+TAS10+TAS11+TAS12+TAS13+T
AS14+TAS15+TAS16+TAS17+TAS18+TAS19+TAS20+TAS21+TAS22+TAS23+TAS24+TAS25+
TAS26+TAS27+TAS28+TAS29+TAS30+TAS31+TAS32+TAS33+TAS34 .

COMPUTE DES =
4*(DES1+DES2+DES3+DES4+DES5+DES6+DES7+DES8+DES9+DES10+DES11+DES12+DE
S13+DES14)/14 .

COMPUTE TANX = TCM1+(2-TCM3-TCM5)+TCM11+TCM13+TCM15+TCM19+(1-TCM22)+(1-
TCM24)+TCM27+TCM30+TCM32+TCM34+TCM37+TCM41+TCM45+TCM48+TCM50+TCM52 .

COMPUTE SOCDES = 15-
(TCM2+TCM6+TCM8+TCM9+TCM10+TCM17+TCM25+TCM26+TCM29+TCM31+TCM36+TCM
```

```
40+TCM43+TCM44+TCM47)+TCM4+TCM12+TCM14+TCM16+TCM18+TCM20+TCM21+TCM2
8+TCM33+TCM38+TCM39+TCM42+TCM46+TCM49+TCM51+TCM53 .

COMPUTE DMLANX =
(DML2+DML4+DML5+DML8+DML9+DML11+DML12+DML15+DML17+DML18+DML20) + 45-
(DML1+DML3+DML6+DML7+DML10+DML13+DML14+DML16+DML19) .

COMPUTE DMLHAP = (DML21+DML22+DML24+DML26)+10-(DML23+DML25) .

COMPUTE DMLANG =
DML27+DML28+DML29+DML30+DML31+DML32+DML33+DML34+DML35+DML36 .

COMPUTE DMLFEAR =
DML37+DML38+DML39+DML40+DML41+DML42+DML43+DML44+DML45+DML46+DML47+D
ML48+DML49 .

COMPUTE LKANG = (DML51+DML52+DML54+DML55+DML56+DML58+DML59)+24-
(DML50+DML53+DML57) .

COMPUTE LE = (DML66+DML67+DML69)-(DML63+DML64+DML65+DML68+DML70+DML71) .

COMPUTE TOBRIS = (DML72+DML73+DML74+DML75) .

RECODE
 CAT4
 (1=40)  (2=120)  (3=90)  (4=60) (5=40) (6=90) INTO  CAF .
VARIABLE LABELS CAF 'CAFFEINE'.

COMPUTE DAYCAF=CAF* ((2*CAT3)-0.5) .

EXECUTE .

COMPUTE CMAGG = (CM2+CM17+CM21+CM34)*9/4 .

COMPUTE CMSA = (CM3+CM25+CM28)*4/3 .

COMPUTE CMCYN = (CM4+CM5+CM6+CM8+CM9+CM18+CM20+CM23+CM26+CM33)*13/10
.

COMPUTE CMHOSAT = (CM7+CM10+CM12+CM15+CM22+CM24+CM27)
*12/7 .

COMPUTE CMHOSAF = (CM11+CM14+CM29)*5/3 .

COMPUTE CMOTH = (CM1+CM13+CM30+CM31+CM35)*7/5 .

COMPUTE CMTOT = CMAGG+CMSA+CMCYN+CMHOSAT+CMHOSAF+CMOTH .

COMPUTE BISATT = (BIS4+BIS16+BIS24+BIS27)+20-(BIS7+BIS10+BIS13+BIS19) .

COMPUTE BISMOT = (BIS2+BIS9+BIS12+BIS15+BIS18+BIS21+BIS23+BIS26+BIS29)+5-
(BIS6) .

COMPUTE BISNP = (BIS3+BIS14+BIS20+BIS25+BIS28)+35-
(BIS1+BIS5+BIS8+BIS17+BIS11+BIS22+BIS30) .
```

```
COMPUTE BISTOT =
(BIS2+BIS3+BIS4+BIS9+BIS12+BIS14+BIS15+BIS16+BIS18+BIS20+BIS21+BIS23+BIS24+BIS
25+BIS26+BIS27+BIS28+BIS29)+60-
(BIS1+BIS5+BIS6+BIS7+BIS8+BIS10+BIS11+BIS13+BIS17+BIS19+BIS22+BIS30) .

COMPUTE DELPAST = TS6aQ9a-TS5aQ8a .
COMPUTE DELPRES = TS6bQ9b-TS5bQ8b .
COMPUTE DELFUT = TS6cQ9c-TS5cQ8c .

COMPUTE THETAP1 = PEST1/78 .
COMPUTE THETAP2 = PEST2/47 .
COMPUTE THETAR1 = REST1 / CTIME .
COMPUTE THETAR2 = REST2 / DTIME .

COMPUTE TSPACE = TS8Q11+TS21Q23+TS22Q24+TS23Q25 .
COMPUTE TSEXT= TS2Q7A+TS3Q7B+TS4Q7C .
COMPUTE TSSTRX = TS26Q28+TS27Q29+TS28Q30+TS29Q31 .
COMPUTE TSAWARE = TS16Q18+TS18Q20+TS24Q26+TS25Q27+TS49Q48+TS50Q49 .


EXECUTE .

COMPUTE BDI = bdi1 + bdi2 + bdi3 + bdi4 + bdi5 + bdi6 + bdi7 + bdi8 + bdi9 +
  bdi10 + bdi11 + bdi12 + bdi13 + bdi14 + bdi15 + bdi16 + bdi17 + bdi18 +
  bdi19 + bdi20 + bdi21 .
EXECUTE .
COMPUTE LIFEV = (dml66 + dml67 + dml69)-(dml63 + dml64 + dml65 + dml68 +
  dml70 + dml71) .
EXECUTE .
```

COTTLE SCORING

```
COMPUTE CCINT = cepapr + ceprfu + cefupas .
EXECUTE .
COMPUTE CLHPAST=linesb/253 .
EXECUTE .
COMPUTE CLPPAST = linebps/253 .
EXECUTE .
COMPUTE CLPRES = linepspe/253 .
EXECUTE .
COMPUTE CLPFUT = lineped/253 .
EXECUTE .
COMPUTE CLHFUT = linedf/253 .
EXECUTE .
COMPUTE CLLIFE = (linebps+linepspe+lineped)/253 .
EXECUTE .
COMPUTE ACLPPAST = (CLPPAST+SCLPPAST)/2 .

COMPUTE ACLPFUT=(CLPFUT+SCLPFUT)/2 .
COMPUTE ACLHFUT=(CLHFUT+SCLHFUT)/2 .
COMPUTE ACLHPAST=(CLHPAST+SCLHPAS)/2 .
COMPUTE ACCINT=(CCINT+SCCINT)/2 .
COMPUTE ACSPAST=(SCSPAST+CSPAST)/2 .
COMPUTE ACSPRES=(SCSPRES+CSPRES)/2 .

EXECUTE .
COMPUTE ACSFUT = (csfut + scsfut)/2 .
EXECUTE .
COMPUTE ACLPRES = (clpres + sclpres)/2 .
EXECUTE .

COMPUTE ACLLLIFE = (cllife + sclife)/2 .
EXECUTE .
```

APPENDIX C

ADVERTISEMENTS FOR STUDY RECRUITMENT

Posted Advertisement

Newspaper Advertisement

Research Volunteers Needed!

Receive $$ for merchandise at the Student Book Store, a certificate for $$ off a hair cut at the Hair Construction Co., or PSU travel mug for participating in a 2-hr study of time perception and dreaming.

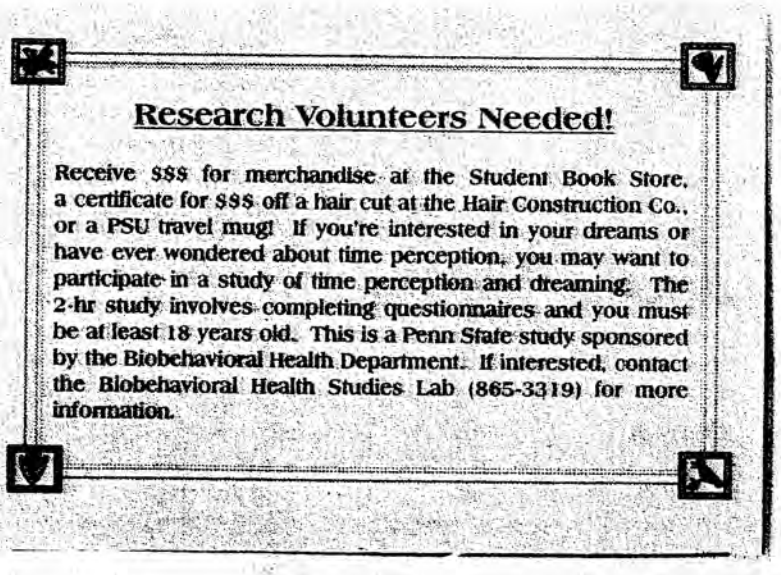
You must be at least 18 years old to participate.

This is a Penn State study sponsored by the Biobehavioral Health Department. If interested, contact the Biobehavioral Health Studies Lab (865-3319) to participate.

Hurry!

This Study Ends Friday, July 28th!

Investigator: Laura C. Klein, Ph.D. (865-8813)



Research Volunteers Needed!

Receive $$$ for merchandise at the Student Book Store, a certificate for $$$ off a hair cut at the Hair Construction Co., or a PSU travel mug! If you're interested in your dreams or have ever wondered about time perception, you may want to participate in a study of time perception and dreaming. The 2-hr study involves completing questionnaires and you must be at least 18 years old. This is a Penn State study sponsored by the Biobehavioral Health Department. If interested, contact the Biobehavioral Health Studies Lab (865-3319) for more information.

APPENDIX D

CONSENT FORMS

Consent Form Studies 1 and 2

Consent Form Study 3

INFORMED CONSENT FOR BEHAVIORAL RESEARCH STUDY
The Pennsylvania State University

Title of project: Perception of Time and the Senses

Person in charge: Laura Cousino Klein, Ph.D
Department of Biobehavioral Health
315 East Health and Human Development
Phone: 814/865-8813

1. **This section provides an explanation of the study in which you will be participating:**

The study in which you will be participating is part of research intended to assess individual's perception of time and the five senses and what may change how people perceive time and sensations. If you agree to take part in this research, you will be asked to complete the attached survey. Your participation in this research will take about fifteen minutes. You will not receive any form of credit or payment for your participation in this research.

2. **This section describes your rights as a research participant.**

Your may ask questions about the research procedures, and these questions will be answered. Further questions should be directed to Laura Cousino Klein, Ph.D., Assistant Professor of Biobehavioral Health.

Your participation in this research is anonymous. Therefore, your responses never will be connected to your name and there is no way to identify you based on your responses to this survey. To make sure your participation is anonymous, only a code number appears on the first page of the survey. Your name cannot be matched with this code. To maintain your anonymity, please place your survey in the box provided. Your participation in completing this survey is completely voluntary. You are free to stop answering questions at any time, or to decline to answer any specific questions without penalty.

3. **This section indicates that you are giving your informed consent to participate in the research.**

Participant:
I agree to participate in the scientific investigation of *The Perception of Time and the Senses*, as an authorized part of the education and research program of The Pennsylvania State University.

I understand the information given to me, and I have received answers to any questions I may have had about the survey procedure. I understand and agree to the conditions of this study as described.

To the best of my knowledge and belief, I have no physical or mental illness or difficulties that would increase the risk to me of participation in this study. I am 18 years of age or older, and/or a full-time student of The Pennsylvania State University.

I understand that I will receive no compensation for participating in this survey. I understand that my participation in this research is voluntary, and that I may withdraw from this study at any time by not returning the survey.

I understand that this page is my copy of the consent form and that I can take it with me.

I understand that completion and return of this survey is considered implied consent.

Researcher:

I certify that the informed consent procedure has been followed, and that I have answered any questions from the participant as fully as possible.

_____ _____

Signature **Date**

PENNSTATE

Department of Biobehavioral Health
College of Health and Human Development
The Pennsylvania State University
315 East Health and Human Development
University Park, PA 16802-6509
(814) 863-7256
Fax: (814) 863-7525

INFORMED CONSENT FOR BEHAVIORAL RESEARCH STUDY
The Pennsylvania State University

Title of project: Validity of the Perception of Time and the Senses Survey

Person in charge: Laura Cousino Klein, Ph.D
Biobehavioral Health
315 East Health and Human Development
Voicemail: (814) 865-8813
Email: lxk18@psu.edu

1. This section provides an explanation of the study in which I will be participating:
   A. The study in which I will be participating is part of research intended to assess my perception of time and the five senses along with other factors that may affect how I perceive time and sensations.
   B. If I agree to take part in this research, I understand that I will be asked to complete a battery of questionnaires designed to gather information about my health, mood, and perceptions. I will also be asked to make estimates of the duration of different lengths of time. My answers, together with those of approximately 100 other students, will be used to draw conclusions about time and sensory perception.
   C. My participation in this research will take about two hours in a single session and will take place on Penn State's University Park Campus.
   D. In return for my participation, I will receive my choice of a Penn State travel mug, a $10 gift certificate to the Student Book Store (College Avenue), or a $10 gift certificate to the Hair Construction Company.
2. This section describes my rights as a research participant.
   A. I understand that I may ask questions about the research procedures, and these questions will be answered. Further questions should be directed to Laura Cousino Klein, Ph.D.
   B. My participation in this research is confidential. Only the person in charge will have access to my identity and to information that can be associated with my identity. In the event of publication of this research, no personally identifying information will be disclosed. To make sure my participation is confidential, each questionnaire will be coded so that my name is not personally identified and my answers are not linked to my name. Only the researchers can match names with code numbers and that list which relates my name and code will be kept in a locked file. All questionnaires and forms will be kept in a locked cabinet.
   C. I understand that participation is completely voluntary. I am free to stop participating in the research at any time, or to decline to answer any specific questions without penalty. My relations with the faculty, staff, and administration at Penn State will not be changed in any way if I decide to end my participation in the study. I understand that I should let the study leader know if I decide to stop taking part in the study. The investigators also reserve the right to remove me from the study at any time at their discretion if circumstances (such as failure to follow instructions) require such actions.

D. This study involves minimal risk; that is, no risks to my physical or mental health beyond those encountered in the normal course of everyday life.

I understand that this study does not entail any physical or mental risk beyond those described above. The investigators do not expect any complications to occur, but if, for any reason, I feel that continuing this study would constitute a hardship for me, they will immediately end my participation in the study. In this case, I will receive a Penn State mug as compensation for my time.

I understand that medical care is available in the event of an injury resulting from research but that neither financial compensation nor free medical treatment is provided. I also understand that I am not waiving any rights that I might have against the University for injury resulting from negligence of the University or investigators. I understand that I can contact the Office for Regulatory Compliance, 212 Kern Graduate Building, University Park, PA 16802 (814-865-1775) if I have additional questions concerning my rights as a participant.

In the event that I experience adverse psychological reaction, I understand that I can call one of the following phone numbers for counseling: Penn State Center for Counseling & Psychological Services (221 Ritenour Building, University Park, PA 16802; 814-863-0395) or Penn State Psychological Clinic (314 Moore Building, University Park, PA 16802; 814-865-2191).

3. This section describes how I am giving my informed consent to participate in the research.

I agree to participate in a scientific investigation of time and sensory perception, as an authorized part of the education research program of the Pennsylvania State University.

I understand the information given to me, and I have received answers to any questions I may have had about the research procedure. I understand and agree to the conditions of this study as described.

To the best of my knowledge and belief, I have no physical or mental illness or difficulties that would increase the risk to me of participation in this study.

I understand that I will receive a Penn State mug for participating, and that I am entitled to no other compensation.

I understand that my participation in this research is voluntary, and that I may withdraw from this study without penalty at any time by notifying the person in charge.

I am 18 years of age or older.

I understand that I will receive a signed copy of this consent form.

_____ _____

Signature Date

Researcher:

I certify that the information consent procedure has been followed, and that I have answered any questions from the participant above as fully as possible.

_____ _____

Signature Date

APPENDIX E

LABORATORY PROCEDURE SCRIPTS AND SEATING CHART

Study 3 Telephone Screening Script

Study 3 Procedure Script

Study 3 BDI Screening Script

Seating Chart

July 5, 2000

TELEPHONE SCRIPT FOR TV STUDY

"Hello, this is _____ calling from Penn State University. I am calling regarding your interest in an ongoing research project of factors that affect perception. Do you have a few minutes for me to tell you about the study?"

Yes- continue
No. "OK. Is there a better time that I may call you to tell you more about the study?"
Yes. → Write down Time and Date on Telephone Log Sheet
No. "Thank you for your time."

"The purpose of this study is to assess individual's perception of time and the five senses along with other factors that may affect how people perceive time and sensations. The study involves one laboratory session that will take about 2 hours. If you agree to participate you will be asked to come to the Biobehavioral Health Laboratory in Benedict House on Penn State's campus, where you will be asked to fill out some questionnaires that will ask you about your health, mood, and perceptions."

"Do you have any questions?"

"You will receive a small gift for your time in the research."

"Do you think that you would like to participate in this study?"

No. "OK. Thank you for your time."

YES- "OK, I have 2 questions I need to ask you to determine your eligibility to participate in this study."

1. What is your birth date? _____(18 = Must be before July 1982)

If birthday AFTER July 1982 – "You must be at least 18 years of age to participate in this study. Thank you for your time."

If birthday BEFORE July 1982 → continue.

2. Is English your primary language?
Yes → continue.

No –"Do you anticipate any difficulties reading survey questions in English?"
No. "Because these surveys are written in English, you need to be able to read and comprehend
English in order to participate in this study. Thank you for your time."
Yes. Continue.

"OK, now I need to schedule a time for you to come to the lab. We have morning, afternoon, and evening sessions available. Is there a particular time of day that works

well for you? The study will be running every day from July 18 to July 28 including the weekend."

"The lab is located in Benedict House on Penn State's Campus. <GIVE DIRECTIONS> If you prefer, we can send you a copy of directions by email or mail – which do you prefer? <Make a note on log sheet>

"Because of our research schedule, it is important that you arrive at the lab on time. Please call us at 865-3319 if you anticipate any problems with keeping your appointment. Thank you and we look forward to seeing you on _____ (date) at _____ (time)."

July 5, 2000

TELEPHONE SCRIPT FOR TV STUDY

"Hello, this is _____ calling from Penn State University. I am calling regarding your interest in an ongoing research project of factors that affect perception. Do you have a few minutes for me to tell you about the study?"

Yes- continue
No. "OK. Is there a better time that I may call you to tell you more about the study?"
Yes. → Write down Time and Date on Telephone Log Sheet
No. "Thank you for your time."

"The purpose of this study is to assess individual's perception of time and the five senses along with other factors that may affect how people perceive time and sensations. The study involves one laboratory session that will take about 2 hours. If you agree to participate you will be asked to come to the Biobehavioral Health Laboratory in Benedict House on Penn State's campus, where you will be asked to fill out some questionnaires that will ask you about your health, mood, and perceptions."

"Do you have any questions?"

"You will receive a small gift for your time in the research."

"Do you think that you would like to participate in this study?"

No. "OK. Thank you for your time."

YES- "OK, I have 2 questions I need to ask you to determine your eligibility to participate in this study."

1. What is your birth date? _____(18 = Must be before July 1982)

If birthday AFTER July 1982 – "You must be at least 18 years of age to participate in this study. Thank you for your time."

If birthday BEFORE July 1982 → continue.

2. Is English your primary language?
Yes → continue.

No –"Do you anticipate any difficulties reading survey questions in English?"
No. "Because these surveys are written in English, you need to be able to read and comprehend
English in order to participate in this study. Thank you for your time."
Yes. Continue.

"OK, now I need to schedule a time for you to come to the lab. We have morning, afternoon, and evening sessions available. Is there a particular time of day that works

well for you? The study will be running every day from July 18 to July 28 including the weekend."

"The lab is located in Benedict House on Penn State's Campus. <GIVE DIRECTIONS> If you prefer, we can send you a copy of directions by email or mail – which do you prefer? <Make a note on log sheet>

"Because of our research schedule, it is important that you arrive at the lab on time. Please call us at 865-3319 if you anticipate any problems with keeping your appointment. Thank you and we look forward to seeing you on _____ (date) at _____ (time)."

July 16, 2000

BDI Procedure

If subject answers, "I would like to kill myself" or "I would kill myself if I had the chance" on question 9 of the BDI (battery page 3) then:

Go to the person and say,

"I have a few questions I need to ask you. Will you please come with me?"

When in the separate private room, say,

"We routinely screen a few of the questions to evaluate your health and safety. I noticed that you indicated a number of symptoms of depression. You also indicated that you would like to kill yourself.

1. Many people sometimes think about dying when they are depressed. How long have you felt that you wanted to die?

2. How often do you think about dying?

3. Have these been passing thoughts or something you have thought about seriously?

4. Have you ever tried to kill yourself?

5. Do you have a plan?

If **yes** then get details of plan and ask

6. Do you have the means to carry out your plan?

It's very common for people who are depressed to believe that nothing can help them , but there are a lot of things available to help you get through this and feel better. On the consent form are numbers you may call to talk to someone who can help you. Would you like to use the phone and call right now or have me call for you?

If **yes** then provide the phone or make the call

If **no** then ask

8.Can you promise me that you will call these numbers or 911 if you feel like you might kill yourself?

If **no** then **<u>do not leave the person</u>**, call _____

If the person does not answer "I would like to kill myself" on question 9, but their BDI score is 30 or over or they answer "I have thoughts..." on question 9, then go to the person and say,

If person marks no suicidal intent on the BDI but scores 19 or over on the BDI, during debrief say:

I have a few more questions I need to ask you. Will you please come with me?

When in the separate private room, say,

We routinely screen a few of the questions to evaluate your health. Like many college students you endorsed a number of symptoms of depression.

A. Many people sometimes think about dying when they are depressed. Have you felt that you wanted to die?

   If **yes** then go to 2.
   If **no** then

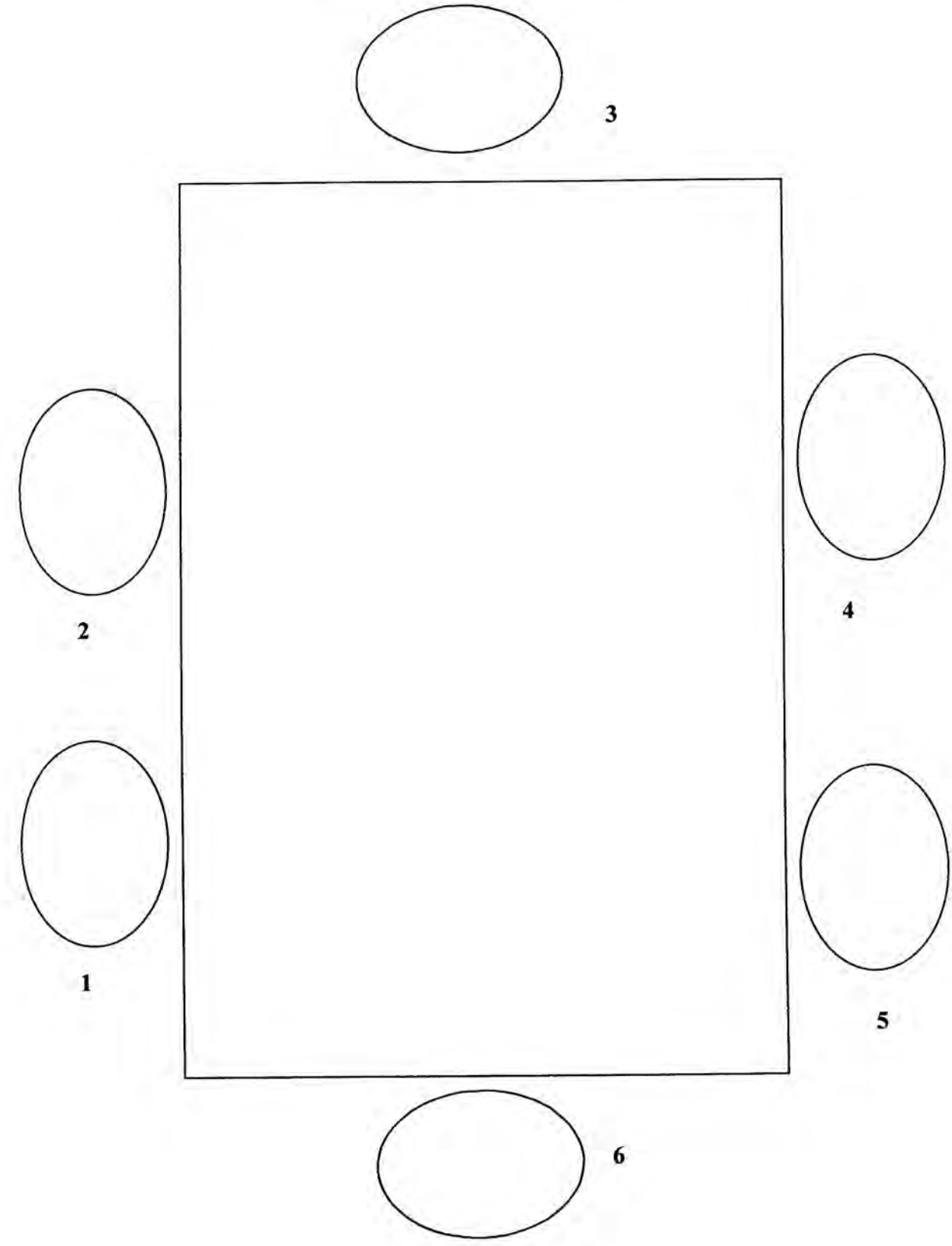
B. There are a lot of things available to help you get through this and feel better. On the consent form are numbers you may call for counseling. Would you like to use the phone and call right now or have me call for you?

   If **yes** then provide the phone or call.
   If **no** then

C. Put this form in a safe place so you will have these numbers if you decide you want to call later.

Compensate participant for their time in the study and encourage them to make the telephone call.

TV Seating Diagram



APPENDIX F

STATISTICAL TABLES

Correlations

		2. When you think about the past, how far back are you most often thinking? (Mark one)	TS1Q6	Past percent	a. Past	Cottle Circle Dominance Past	Cottle Line Historic Past	Cottle Line Personal Past
2. When you think about the past, how far back are you most often thinking? (Mark one)	Pearson Correlation	1.000	-.003	.067	-.181	-.043	-.307*	.103
	Sig. (2-tailed)	.	.982	.597	.153	.737	.015	.427
	N	64	63	64	64	63	62	62
TS1Q6	Pearson Correlation	-.003	1.000	-.365**	-.244	.142	.009	-.186
	Sig. (2-tailed)	.982	.	.003	.054	.272	.947	.152
	N	63	63	63	63	62	61	61
Past percent	Pearson Correlation	.067	-.365**	1.000	-.009	.103	.064	.028
	Sig. (2-tailed)	.597	.003	.	.944	.423	.620	.827
	N	64	63	64	64	63	62	62
a. Past	Pearson Correlation	-.181	-.244	-.009	1.000	-.144	.030	-.263*
	Sig. (2-tailed)	.153	.054	.944	.	.262	.814	.039
	N	64	63	64	64	63	62	62
Cottle Circle Dominance Past	Pearson Correlation	-.043	.142	.103	-.144	1.000	.217	.015
	Sig. (2-tailed)	.737	.272	.423	.262	.	.093	.906
	N	63	62	63	63	63	61	61
Cottle Line Historic Past	Pearson Correlation	-.307*	.009	.064	.030	.217	1.000	-.337**
	Sig. (2-tailed)	.015	.947	.620	.814	.093	.	.007
	N	62	61	62	62	61	62	62
Cottle Line Personal Past	Pearson Correlation	.103	-.186	.028	-.263*	.015	-.337**	1.000
	Sig. (2-tailed)	.427	.152	.827	.039	.906	.007	.
	N	62	61	62	62	61	62	62
Temporal Orientation Inventory Past	Pearson Correlation	.276*	-.116	.478**	-.102	.152	-.020	.308*
	Sig. (2-tailed)	.027	.363	.000	.424	.236	.880	.015
	N	64	63	64	64	63	62	62

Correlations

		2. When you think about the past, how far back are you most often thinking? (Mark one)	TS1Q6	Past percent	a. Past	Cottle Circle Dominance Past	Cottle Line Historic Past	Cottle Line Personal Past
Temporal Orientation Scale Past	Pearson Correlation	.297*	-.110	.393**	-.171	.004	-.003	.201
	Sig. (2-tailed)	.018	.395	.001	.181	.974	.983	.117
	N	63	62	63	63	62	62	62
3. When you think about the present, what time frame do you think about? (Mark one)	Pearson Correlation	.103	-.019	-.130	-.035	-.247	-.244	.015
	Sig. (2-tailed)	.419	.881	.308	.787	.051	.056	.910
	N	64	63	64	64	63	62	62
Present percent	Pearson Correlation	-.049	-.251*	-.478**	.068	.024	.034	.137
	Sig. (2-tailed)	.703	.047	.000	.594	.854	.795	.288
	N	64	63	64	64	63	62	62
b. Present	Pearson Correlation	.163	-.084	.070	.434**	-.005	-.008	.065
	Sig. (2-tailed)	.199	.511	.581	.000	.969	.948	.616
	N	64	63	64	64	63	62	62
Cottle Circle Dominance Present	Pearson Correlation	.142	-.073	-.116	-.137	-.350**	.059	.004
	Sig. (2-tailed)	.267	.571	.365	.285	.005	.653	.976
	N	63	62	63	63	63	61	61
Cottle Line Present	Pearson Correlation	.237	-.021	-.049	.120	-.110	-.175	.088
	Sig. (2-tailed)	.064	.874	.708	.355	.401	.174	.498
	N	62	61	62	62	61	62	62
Temporal Orientation Inventory Present	Pearson Correlation	.272*	-.209	.268*	.146	-.054	.064	.175
	Sig. (2-tailed)	.031	.103	.034	.254	.674	.622	.176
	N	63	62	63	63	62	61	61
Temporal Orientation Scale Present	Pearson Correlation	.399**	-.321*	.051	.039	-.175	-.180	.121
	Sig. (2-tailed)	.001	.011	.691	.759	.173	.165	.352
	N	63	62	63	63	62	61	61
4. When you think about the future, how far into the future are you most often thinking? (Mark one)	Pearson Correlation	.166	.024	.083	-.087	-.077	-.160	-.054
	Sig. (2-tailed)	.190	.853	.516	.495	.548	.214	.678
	N	64	63	64	64	63	62	62

Correlations

		2. When you think about the past, how far back are you most often thinking? (Mark one)	TS1Q6	Past percent	a. Past	Cottle Circle Dominance Past	Cottle Line Historic Past	Cottle Line Personal Past
Future percent	Pearson Correlation	.016	.540**	-.273*	-.032	-.084	-.096	-.186
	Sig. (2-tailed)	.899	.000	.029	.800	.512	.456	.147
	N	64	63	64	64	63	62	62
c. Future	Pearson Correlation	.238	.053	.062	.069	-.158	.028	-.063
	Sig. (2-tailed)	.058	.682	.629	.586	.216	.827	.625
	N	64	63	64	64	63	62	62
Cottle Circle Dominance Future	Pearson Correlation	.139	-.023	.006	.021	-.035	-.134	-.075
	Sig. (2-tailed)	.276	.858	.965	.872	.786	.305	.563
	N	63	62	63	63	63	61	61
Cottel Line historic future	Pearson Correlation	-.050	-.121	.052	-.027	.294*	.092	-.238
	Sig. (2-tailed)	.699	.354	.691	.837	.021	.478	.062
	N	62	61	62	62	61	62	62
Cottle Line Personal Future	Pearson Correlation	.043	.184	-.061	.078	-.253*	-.474**	-.305*
	Sig. (2-tailed)	.737	.156	.636	.544	.049	.000	.016
	N	62	61	62	62	61	62	62
Temporal Orientation Inventory Future	Pearson Correlation	.197	.090	-.139	-.110	-.301*	-.278*	-.043
	Sig. (2-tailed)	.121	.485	.276	.391	.017	.030	.744
	N	63	62	63	63	62	61	61
Temporal Orientation Scale Future	Pearson Correlation	.100	-.015	-.094	.092	-.142	-.177	-.039
	Sig. (2-tailed)	.435	.905	.463	.474	.272	.173	.763
	N	63	62	63	63	62	61	61

Correlations

		Temporal Orientation Inventory Past	Temporal Orientation Scale Past	3. When you think about the present, what time frame do you think about? (Mark one)	Present percent	b. Present	Cottle Circle Dominance Present	Cottle Line Present
2. When you think about the past, how far back are you most often thinking? (Mark one)	Pearson Correlation	.276*	.297*	.103	-.049	.163	.142	.237
	Sig. (2-tailed)	.027	.018	.419	.703	.199	.267	.064
	N	64	63	64	64	64	63	62
TS1Q6	Pearson Correlation	-.116	-.110	-.019	-.251*	-.084	-.073	-.021
	Sig. (2-tailed)	.363	.395	.881	.047	.511	.571	.874
	N	63	62	63	63	63	62	61
Past percent	Pearson Correlation	.478**	.393**	-.130	-.478**	.070	-.116	-.049
	Sig. (2-tailed)	.000	.001	.308	.000	.581	.365	.708
	N	64	63	64	64	64	63	62
a. Past	Pearson Correlation	-.102	-.171	-.035	.068	.434**	-.137	.120
	Sig. (2-tailed)	.424	.181	.787	.594	.000	.285	.355
	N	64	63	64	64	64	63	62
Cottle Circle Dominance Past	Pearson Correlation	.152	.004	-.247	.024	-.005	-.350**	-.110
	Sig. (2-tailed)	.236	.974	.051	.854	.969	.005	.401
	N	63	62	63	63	63	63	61
Cottle Line Historic Past	Pearson Correlation	-.020	-.003	-.244	.034	-.008	.059	-.175
	Sig. (2-tailed)	.880	.983	.056	.795	.948	.653	.174
	N	62	62	62	62	62	61	62
Cottle Line Personal Past	Pearson Correlation	.308*	.201	.015	.137	.065	.004	.088
	Sig. (2-tailed)	.015	.117	.910	.288	.616	.976	.498
	N	62	62	62	62	62	61	62
Temporal Orientation Inventory Past	Pearson Correlation	1.000	.715**	-.135	-.148	.179	.062	.125
	Sig. (2-tailed)	.	.000	.289	.244	.158	.630	.332
	N	64	63	64	64	64	63	62

Correlations

		Temporal Orientation Inventory Past	Temporal Orientation Scale Past	3. When you think about the present, what time frame do you think about? (Mark one)	Present percent	b. Present	Cottle Circle Dominance Present	Cottle Line Present
Temporal Orientation Scale Past	Pearson Correlation	.715**	1.000	.011	-.246	.116	-.042	.215
	Sig. (2-tailed)	.000	.	.930	.052	.366	.744	.093
	N	63	63	63	63	63	62	62
3. When you think about the present, what time frame do you think about? (Mark one)	Pearson Correlation	-.135	.011	1.000	.054	.058	.150	.114
	Sig. (2-tailed)	.289	.930	.	.674	.648	.242	.378
	N	64	63	64	64	64	63	62
Present percent	Pearson Correlation	-.148	-.246	.054	1.000	.038	.012	.238
	Sig. (2-tailed)	.244	.052	.674	.	.765	.927	.063
	N	64	63	64	64	64	63	62
b. Present	Pearson Correlation	.179	.116	.058	.038	1.000	-.041	.189
	Sig. (2-tailed)	.158	.366	.648	.765	.	.749	.141
	N	64	63	64	64	64	63	62
Cottle Circle Dominance Present	Pearson Correlation	.062	-.042	.150	.012	-.041	1.000	.032
	Sig. (2-tailed)	.630	.744	.242	.927	.749	.	.807
	N	63	62	63	63	63	63	61
Cottle Line Present	Pearson Correlation	.125	.215	.114	.238	.189	.032	1.000
	Sig. (2-tailed)	.332	.093	.378	.063	.141	.807	.
	N	62	62	62	62	62	61	62
Temporal Orientation Inventory Present	Pearson Correlation	.478**	.474**	-.061	-.026	.111	.150	.028
	Sig. (2-tailed)	.000	.000	.632	.840	.386	.246	.831
	N	63	62	63	63	63	62	61
Temporal Orientation Scale Present	Pearson Correlation	.214	.254*	-.028	.303*	.373**	.163	.202
	Sig. (2-tailed)	.093	.046	.828	.016	.003	.206	.119
	N	63	62	63	63	63	62	61
4. When you think about the future, how far into the future are you most often thinking? (Mark one)	Pearson Correlation	.063	.108	.567**	-.052	-.004	.046	.170
	Sig. (2-tailed)	.621	.401	.000	.681	.977	.722	.188
	N	64	63	64	64	64	63	62

Correlations

		Temporal Orientation Inventory Past	Temporal Orientation Scale Past	3. When you think about the present, what time frame do you think about? (Mark one)	Present percent	b. Present	Cottle Circle Dominance Present	Cottle Line Present
Future percent	Pearson Correlation	-.218	-.016	.036	-.693**	-.098	.058	-.101
	Sig. (2-tailed)	.084	.900	.779	.000	.443	.651	.436
	N	64	63	64	64	64	63	62
c. Future	Pearson Correlation	.061	.204	.170	-.138	.350**	.116	.121
	Sig. (2-tailed)	.634	.109	.179	.278	.005	.363	.350
	N	64	63	64	64	64	63	62
Cottle Circle Dominance Future	Pearson Correlation	-.034	.007	-.038	.015	-.090	-.107	.095
	Sig. (2-tailed)	.794	.957	.765	.906	.481	.404	.465
	N	63	62	63	63	63	63	61
Cottel Line historic future	Pearson Correlation	-.086	-.211	-.207	-.035	-.072	-.140	-.166
	Sig. (2-tailed)	.507	.100	.107	.789	.580	.283	.196
	N	62	62	62	62	62	61	62
Cottle Line Personal Future	Pearson Correlation	-.207	-.148	.202	-.243	-.120	.004	-.468**
	Sig. (2-tailed)	.107	.252	.116	.057	.353	.973	.000
	N	62	62	62	62	62	61	62
Temporal Orientation Inventory Future	Pearson Correlation	-.049	-.027	.043	.074	.097	.211	.054
	Sig. (2-tailed)	.700	.837	.739	.562	.448	.100	.679
	N	63	62	63	63	63	62	61
Temporal Orientation Scale Future	Pearson Correlation	-.074	-.120	.051	.165	.197	.114	.159
	Sig. (2-tailed)	.562	.355	.690	.197	.122	.379	.221
	N	63	62	63	63	63	62	61

Correlations

		Temporal Orientation Inventory Present	Temporal Orientation Scale Present	4. When you think about the future, how far into the future are you most often thinking? (Mark one)	Future percent	c. Future	Cottle Circle Dominance Future	Cottel Line historic future
2. When you think about the past, how far back are you most often thinking? (Mark one)	Pearson Correlation	.272*	.399**	.166	.016	.238	.139	-.050
	Sig. (2-tailed)	.031	.001	.190	.899	.058	.276	.699
	N	63	63	64	64	64	63	62
TS1Q6	Pearson Correlation	-.209	-.321*	.024	.540**	.053	-.023	-.121
	Sig. (2-tailed)	.103	.011	.853	.000	.682	.858	.354
	N	62	62	63	63	63	62	61
Past percent	Pearson Correlation	.268*	.051	.083	-.273*	.062	.006	.052
	Sig. (2-tailed)	.034	.691	.516	.029	.629	.965	.691
	N	63	63	64	64	64	63	62
a. Past	Pearson Correlation	.146	.039	-.087	-.032	.069	.021	-.027
	Sig. (2-tailed)	.254	.759	.495	.800	.586	.872	.837
	N	63	63	64	64	64	63	62
Cottle Circle Dominance Past	Pearson Correlation	-.054	-.175	-.077	-.084	-.158	-.035	.294*
	Sig. (2-tailed)	.674	.173	.548	.512	.216	.786	.021
	N	62	62	63	63	63	63	61
Cottle Line Historic Past	Pearson Correlation	.064	-.180	-.160	-.096	.028	-.134	.092
	Sig. (2-tailed)	.622	.165	.214	.456	.827	.305	.478
	N	61	61	62	62	62	61	62
Cottle Line Personal Past	Pearson Correlation	.175	.121	-.054	-.186	-.063	-.075	-.238
	Sig. (2-tailed)	.176	.352	.678	.147	.625	.563	.062
	N	61	61	62	62	62	61	62
Temporal Orientation Inventory Past	Pearson Correlation	.478**	.214	.063	-.218	.061	-.034	-.086
	Sig. (2-tailed)	.000	.093	.621	.084	.634	.794	.507
	N	63	63	64	64	64	63	62

Correlations

		Temporal Orientation Inventory Present	Temporal Orientation Scale Present	4. When you think about the future, how far into the future are you most often thinking? (Mark one)	Future percent	c. Future	Cottle Circle Dominance Future	Cottel Line historic future
Temporal Orientation Scale Past	Pearson Correlation	.474**	.254*	.108	-.016	.204	.007	-.211
	Sig. (2-tailed)	.000	.046	.401	.900	.109	.957	.100
	N	62	62	63	63	63	62	62
3. When you think about the present, what time frame do you think about? (Mark one)	Pearson Correlation	-.061	-.028	.567**	.036	.170	-.038	-.207
	Sig. (2-tailed)	.632	.828	.000	.779	.179	.765	.107
	N	63	63	64	64	64	63	62
Present percent	Pearson Correlation	-.026	.303*	-.052	-.693**	-.138	.015	-.035
	Sig. (2-tailed)	.840	.016	.681	.000	.278	.906	.789
	N	63	63	64	64	64	63	62
b. Present	Pearson Correlation	.111	.373**	-.004	-.098	.350**	-.090	-.072
	Sig. (2-tailed)	.386	.003	.977	.443	.005	.481	.580
	N	63	63	64	64	64	63	62
Cottle Circle Dominance Present	Pearson Correlation	.150	.163	.046	.058	.116	-.107	-.140
	Sig. (2-tailed)	.246	.206	.722	.651	.363	.404	.283
	N	62	62	63	63	63	63	61
Cottle Line Present	Pearson Correlation	.028	.202	.170	-.101	.121	.095	-.166
	Sig. (2-tailed)	.831	.119	.188	.436	.350	.465	.196
	N	61	61	62	62	62	61	62
Temporal Orientation Inventory Present	Pearson Correlation	1.000	.422**	-.101	-.196	.110	.189	-.227
	Sig. (2-tailed)	.	.001	.432	.124	.392	.142	.079
	N	63	62	63	63	63	62	61
Temporal Orientation Scale Present	Pearson Correlation	.422**	1.000	-.082	-.382**	.230	-.026	.042
	Sig. (2-tailed)	.001	.	.524	.002	.070	.839	.749
	N	62	63	63	63	63	62	61
4. When you think about the future, how far into the future are you most often thinking? (Mark one)	Pearson Correlation	-.101	-.082	1.000	.002	.165	.086	-.011
	Sig. (2-tailed)	.432	.524	.	.985	.192	.505	.932
	N	63	63	64	64	64	63	62

		Temporal Orientation Inventory Present	Temporal Orientation Scale Present	4. When you think about the future, how far into the future are you most often thinking? (Mark one)	Future percent	c. Future	Cottle Circle Dominance Future	Cottel Line historic future
Future percent	Pearson Correlation	-.196	-.382**	.002	1.000	.137	-.012	.008
	Sig. (2-tailed)	.124	.002	.985	.	.281	.928	.953
	N	63	63	64	64	64	63	62
c. Future	Pearson Correlation	.110	.230	.165	.137	1.000	-.091	-.008
	Sig. (2-tailed)	.392	.070	.192	.281	.	.480	.953
	N	63	63	64	64	64	63	62
Cottle Circle Dominance Future	Pearson Correlation	.189	-.026	.086	-.012	-.091	1.000	-.050
	Sig. (2-tailed)	.142	.839	.505	.928	.480	.	.701
	N	62	62	63	63	63	63	61
Cottel Line historic future	Pearson Correlation	-.227	.042	-.011	.008	-.008	-.050	1.000
	Sig. (2-tailed)	.079	.749	.932	.953	.953	.701	.
	N	61	61	62	62	62	61	62
Cottle Line Personal Future	Pearson Correlation	-.057	-.082	.050	.248	-.054	.115	-.320*
	Sig. (2-tailed)	.660	.527	.697	.052	.677	.377	.011
	N	61	61	62	62	62	61	62
Temporal Orientation Inventory Future	Pearson Correlation	-.112	.321*	.149	.024	.310*	.014	-.003
	Sig. (2-tailed)	.386	.011	.244	.852	.013	.917	.981
	N	62	62	63	63	63	62	61
Temporal Orientation Scale Future	Pearson Correlation	-.112	.401**	.187	-.101	.066	.016	.031
	Sig. (2-tailed)	.385	.001	.141	.429	.605	.904	.814
	N	62	63	63	63	63	62	61

		Cottle Line Personal Future	Temporal Orientation Inventory Future	Temporal Orientation Scale Future
2. When you think about the past, how far back are you most often thinking? (Mark one)	Pearson Correlation	.043	.197	.100
	Sig. (2-tailed)	.737	.121	.435
	N	62	63	63
TS1Q6	Pearson Correlation	.184	.090	-.015
	Sig. (2-tailed)	.156	.485	.905
	N	61	62	62
Past percent	Pearson Correlation	-.061	-.139	-.094
	Sig. (2-tailed)	.636	.276	.463
	N	62	63	63
a. Past	Pearson Correlation	.078	-.110	.092
	Sig. (2-tailed)	.544	.391	.474
	N	62	63	63
Cottle Circle Dominance Past	Pearson Correlation	-.253*	-.301*	-.142
	Sig. (2-tailed)	.049	.017	.272
	N	61	62	62
Cottle Line Historic Past	Pearson Correlation	-.474**	-.278*	-.177
	Sig. (2-tailed)	.000	.030	.173
	N	62	61	61
Cottle Line Personal Past	Pearson Correlation	-.305*	-.043	-.039
	Sig. (2-tailed)	.016	.744	.763
	N	62	61	61
Temporal Orientation Inventory Past	Pearson Correlation	-.207	-.049	-.074
	Sig. (2-tailed)	.107	.700	.562
	N	62	63	63

Correlations

		Cottle Line Personal Future	Temporal Orientation Inventory Future	Temporal Orientation Scale Future
Temporal Orientation Scale Past	Pearson Correlation	-.148	-.027	-.120
	Sig. (2-tailed)	.252	.837	.355
	N	62	62	62
3. When you think about the present, what time frame do you think about? (Mark one)	Pearson Correlation	.202	.043	.051
	Sig. (2-tailed)	.116	.739	.690
	N	62	63	63
Present percent	Pearson Correlation	-.243	.074	.165
	Sig. (2-tailed)	.057	.562	.197
	N	62	63	63
b. Present	Pearson Correlation	-.120	.097	.197
	Sig. (2-tailed)	.353	.448	.122
	N	62	63	63
Cottle Circle Dominance Present	Pearson Correlation	.004	.211	.114
	Sig. (2-tailed)	.973	.100	.379
	N	61	62	62
Cottle Line Present	Pearson Correlation	-.468**	.054	.159
	Sig. (2-tailed)	.000	.679	.221
	N	62	61	61
Temporal Orientation Inventory Present	Pearson Correlation	-.057	-.112	-.112
	Sig. (2-tailed)	.660	.386	.385
	N	61	62	62
Temporal Orientation Scale Present	Pearson Correlation	-.082	.321*	.401**
	Sig. (2-tailed)	.527	.011	.001
	N	61	62	63
4. When you think about the future, how far into the future are you most often thinking? (Mark one)	Pearson Correlation	.050	.149	.187
	Sig. (2-tailed)	.697	.244	.141
	N	62	63	63

Correlations

		Cottle Line Personal Future	Temporal Orientation Inventory Future	Temporal Orientation Scale Future
Future percent	Pearson Correlation	.248	.024	-.101
	Sig. (2-tailed)	.052	.852	.429
	N	62	63	63
c. Future	Pearson Correlation	-.054	.310*	.066
	Sig. (2-tailed)	.677	.013	.605
	N	62	63	63
Cottle Circle Dominance Future	Pearson Correlation	.115	.014	.016
	Sig. (2-tailed)	.377	.917	.904
	N	61	62	62
Cottel Line historic future	Pearson Correlation	-.320*	-.003	.031
	Sig. (2-tailed)	.011	.981	.814
	N	62	61	61
Cottle Line Personal Future	Pearson Correlation	1.000	.198	.046
	Sig. (2-tailed)	.	.125	.725
	N	62	61	61
Temporal Orientation Inventory Future	Pearson Correlation	.198	1.000	.730**
	Sig. (2-tailed)	.125	.	.000
	N	61	63	62
Temporal Orientation Scale Future	Pearson Correlation	.046	.730**	1.000
	Sig. (2-tailed)	.725	.000	.
	N	61	62	63

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Correlations

		Past percent	Present percent	Future percent	Crowne Marlowe Social Desirability Scale	Taylor Anxiety Scale	Dissociative Experiences Scale (abbreviated)	Tellegen Absorption Scale
Past percent	Pearson Correlation	1.000	-.478**	-.273*	.199	-.017	-.116	-.072
	Sig. (2-tailed)	.	.000	.029	.131	.898	.489	.576
	N	64	64	64	59	62	38	62
Present percent	Pearson Correlation	-.478**	1.000	-.693**	-.144	-.147	.075	.102
	Sig. (2-tailed)	.000	.	.000	.278	.256	.655	.428
	N	64	64	64	59	62	38	62
Future percent	Pearson Correlation	-.273*	-.693**	1.000	-.009	.156	.003	-.032
	Sig. (2-tailed)	.029	.000	.	.943	.225	.988	.806
	N	64	64	64	59	62	38	62
Crowne Marlowe Social Desirability Scale	Pearson Correlation	.199	-.144	-.009	1.000	-.360**	-.059	-.094
	Sig. (2-tailed)	.131	.278	.943	.	.005	.739	.485
	N	59	59	59	59	58	34	57
Taylor Anxiety Scale	Pearson Correlation	-.017	-.147	.156	-.360**	1.000	.238	.143
	Sig. (2-tailed)	.898	.256	.225	.005	.	.161	.277
	N	62	62	62	58	62	36	60
Dissociative Experiences Scale (abbreviated)	Pearson Correlation	-.116	.075	.003	-.059	.238	1.000	.534**
	Sig. (2-tailed)	.489	.655	.988	.739	.161	.	.001
	N	38	38	38	34	36	38	36
Tellegen Absorption Scale	Pearson Correlation	-.072	.102	-.032	-.094	.143	.534**	1.000
	Sig. (2-tailed)	.576	.428	.806	.485	.277	.001	.
	N	62	62	62	57	60	36	62
Temporal Disintegration Scale	Pearson Correlation	.062	.034	-.065	-.120	.265*	.446**	.258*
	Sig. (2-tailed)	.629	.789	.611	.370	.039	.006	.043
	N	63	63	63	58	61	37	62
Perceived Stress Scale (10 item)	Pearson Correlation	-.023	-.153	.225	-.093	.653**	.173	-.011
	Sig. (2-tailed)	.859	.231	.076	.488	.000	.307	.936
	N	63	63	63	58	61	37	61
MAACL Depression Score	Pearson Correlation	.037	.099	-.156	-.270*	.397**	.048	-.028
	Sig. (2-tailed)	.773	.436	.217	.039	.001	.774	.830
	N	64	64	64	59	62	38	62

Correlations

		Past percent	Present percent	Future percent	Crowne Marlowe Social Desirability Scale	Taylor Anxiety Scale	Dissociative Experiences Scale (abbreviated)	Tellegen Absorption Scale
MAACL hostility score	Pearson Correlation	-.077	.119	-.057	-.396**	.206	-.090	-.021
	Sig. (2-tailed)	.547	.349	.656	.002	.108	.589	.871
	N	64	64	64	59	62	38	62
MAACL anxiety score	Pearson Correlation	-.047	.010	.034	-.423**	.602**	-.012	.057
	Sig. (2-tailed)	.714	.940	.791	.001	.000	.945	.662
	N	64	64	64	59	62	38	62
Age at end of July 2000	Pearson Correlation	.288*	-.050	-.177	.226	-.106	.023	-.102
	Sig. (2-tailed)	.022	.699	.164	.087	.416	.889	.434
	N	63	63	63	58	61	38	61
Barrett Impulsivity Scale Non Planning	Pearson Correlation	-.083	.161	-.092	-.126	.217	.107	.195
	Sig. (2-tailed)	.522	.216	.482	.355	.099	.534	.135
	N	61	61	61	56	59	36	60
Barret Impulsivity Scale - Attention	Pearson Correlation	-.136	-.102	.219	-.157	.396**	.513**	.140
	Sig. (2-tailed)	.304	.443	.096	.253	.002	.002	.294
	N	59	59	59	55	57	34	58
Cook Medley - total (estimated)	Pearson Correlation	-.146	-.011	.096	-.494**	.384**	.205	.107
	Sig. (2-tailed)	.259	.930	.459	.000	.002	.231	.415
	N	62	62	62	59	60	36	60
Beck depression Inventory	Pearson Correlation	-.076	.083	-.030	-.300*	.689**	.379*	.136
	Sig. (2-tailed)	.565	.532	.821	.025	.000	.023	.314
	N	59	59	59	56	57	36	57
Thetar1 with outliers removed	Pearson Correlation	.003	-.154	.157	.204	-.018	.236	.049
	Sig. (2-tailed)	.984	.232	.222	.128	.893	.159	.711
	N	62	62	62	57	60	37	60
theta retrospective 2 with outliers removed	Pearson Correlation	-.005	-.183	.211	.148	.010	.065	.132
	Sig. (2-tailed)	.970	.155	.100	.273	.940	.704	.314
	N	62	62	62	57	60	37	60
theta prospective 1 with outliers removed	Pearson Correlation	-.039	.101	-.069	-.144	.013	-.010	-.026
	Sig. (2-tailed)	.761	.429	.588	.276	.921	.952	.843
	N	64	64	64	59	62	38	62

Correlations

		Past percent	Present percent	Future percent	Crowne Marlowe Social Desirability Scale	Taylor Anxiety Scale	Dissociative Experiences Scale (abbreviated)	Tellegen Absorption Scale
theta prospective 2 with outliers removed	Pearson Correlation	-.175	.157	-.028	-.151	.074	.131	.166
	Sig. (2-tailed)	.169	.220	.827	.254	.570	.438	.200
	N	63	63	63	59	61	37	61
Time and Sense Pace	Pearson Correlation	-.003	-.091	.111	.072	.030	.135	-.037
	Sig. (2-tailed)	.983	.474	.381	.588	.818	.419	.774
	N	64	64	64	59	62	38	62
Time and Sense Temporal Awareness	Pearson Correlation	.186	-.069	-.075	.162	-.213	-.317	-.016
	Sig. (2-tailed)	.141	.589	.557	.220	.096	.052	.899
	N	64	64	64	59	62	38	62
Time and sense temporal extension	Pearson Correlation	.019	-.027	.024	.220	-.055	.364*	.185
	Sig. (2-tailed)	.881	.832	.850	.095	.671	.025	.151
	N	64	64	64	59	62	38	62
Time and sense temporal extension with stress	Pearson Correlation	-.028	-.005	.033	-.018	.087	.228	.156
	Sig. (2-tailed)	.828	.970	.794	.894	.502	.170	.227
	N	64	64	64	59	62	38	62

Correlations

		Temporal Disintegration Scale	Perceived Stress Scale (10 item)	MAACL Depression Score	MAACL hostility score	MAACL anxiety score	Age at end of July 2000	Barrett Impulsivity Scale Non Planning
Past percent	Pearson Correlation	.062	-.023	.037	-.077	-.047	.288*	-.083
	Sig. (2-tailed)	.629	.859	.773	.547	.714	.022	.522
	N	63	63	64	64	64	63	61
Present percent	Pearson Correlation	.034	-.153	.099	.119	.010	-.050	.161
	Sig. (2-tailed)	.789	.231	.436	.349	.940	.699	.216
	N	63	63	64	64	64	63	61
Future percent	Pearson Correlation	-.065	.225	-.156	-.057	.034	-.177	-.092
	Sig. (2-tailed)	.611	.076	.217	.656	.791	.164	.482
	N	63	63	64	64	64	63	61
Crowne Marlowe Social Desirability Scale	Pearson Correlation	-.120	-.093	-.270*	-.396**	-.423**	.226	-.126
	Sig. (2-tailed)	.370	.488	.039	.002	.001	.087	.355
	N	58	58	59	59	59	58	56
Taylor Anxiety Scale	Pearson Correlation	.265*	.653**	.397**	.206	.602**	-.106	.217
	Sig. (2-tailed)	.039	.000	.001	.108	.000	.416	.099
	N	61	61	62	62	62	61	59
Dissociative Experiences Scale (abbreviated)	Pearson Correlation	.446**	.173	.048	-.090	-.012	.023	.107
	Sig. (2-tailed)	.006	.307	.774	.589	.945	.889	.534
	N	37	37	38	38	38	38	36
Tellegen Absorption Scale	Pearson Correlation	.258*	-.011	-.028	-.021	.057	-.102	.195
	Sig. (2-tailed)	.043	.936	.830	.871	.662	.434	.135
	N	62	61	62	62	62	61	60
Temporal Disintegration Scale	Pearson Correlation	1.000	.345**	.330**	.010	.278*	.112	.323*
	Sig. (2-tailed)	.	.006	.008	.937	.027	.385	.011
	N	63	62	63	63	63	62	61
Perceived Stress Scale (10 item)	Pearson Correlation	.345**	1.000	.454**	.107	.418**	.202	.168
	Sig. (2-tailed)	.006	.	.000	.403	.001	.116	.200
	N	62	63	63	63	63	62	60
MAACL Depression Score	Pearson Correlation	.330**	.454**	1.000	.554**	.646**	.060	.206
	Sig. (2-tailed)	.008	.000	.	.000	.000	.639	.112
	N	63	63	64	64	64	63	61

Correlations

		Temporal Disintegration Scale	Perceived Stress Scale (10 item)	MAACL Depression Score	MAACL hostility score	MAACL anxiety score	Age at end of July 2000	Barrett Impulsivity Scale Non Planning
MAACL hostility score	Pearson Correlation	.010	.107	.554**	1.000	.695**	-.073	-.064
	Sig. (2-tailed)	.937	.403	.000	.	.000	.571	.624
	N	63	63	64	64	64	63	61
MAACL anxiety score	Pearson Correlation	.278*	.418**	.646**	.695**	1.000	-.190	.197
	Sig. (2-tailed)	.027	.001	.000	.000	.	.136	.128
	N	63	63	64	64	64	63	61
Age at end of July 2000	Pearson Correlation	.112	.202	.060	-.073	-.190	1.000	-.228
	Sig. (2-tailed)	.385	.116	.639	.571	.136	.	.080
	N	62	62	63	63	63	63	60
Barrett Impulsivity Scale Non Planning	Pearson Correlation	.323*	.168	.206	-.064	.197	-.228	1.000
	Sig. (2-tailed)	.011	.200	.112	.624	.128	.080	.
	N	61	60	61	61	61	60	61
Barret Impulsivity Scale - Attention	Pearson Correlation	.164	.308*	.185	-.069	.076	-.151	.233
	Sig. (2-tailed)	.214	.019	.161	.606	.569	.259	.079
	N	59	58	59	59	59	58	58
Cook Medley - total (estimated)	Pearson Correlation	.266*	.108	.175	.310*	.437**	-.230	.071
	Sig. (2-tailed)	.039	.405	.175	.014	.000	.074	.594
	N	61	61	62	62	62	61	59
Beck depression Inventory	Pearson Correlation	.393**	.678**	.553**	.285*	.574**	.061	.240
	Sig. (2-tailed)	.002	.000	.000	.029	.000	.650	.074
	N	58	58	59	59	59	58	56
Thetar1 with outliers removed	Pearson Correlation	.129	.183	-.020	-.272*	-.268*	.065	.048
	Sig. (2-tailed)	.320	.159	.877	.033	.035	.618	.719
	N	61	61	62	62	62	61	59
theta retrospective 2 with outliers removed	Pearson Correlation	.025	.113	-.168	-.443**	-.278*	-.003	.022
	Sig. (2-tailed)	.851	.387	.193	.000	.029	.983	.870
	N	61	61	62	62	62	61	59
theta prospective 1 with outliers removed	Pearson Correlation	.287*	.022	.416**	.235	.232	-.080	.234
	Sig. (2-tailed)	.023	.867	.001	.061	.065	.532	.069
	N	63	63	64	64	64	63	61

Correlations

		Temporal Disintegration Scale	Perceived Stress Scale (10 item)	MAACL Depression Score	MAACL hostility score	MAACL anxiety score	Age at end of July 2000	Barrett Impulsivity Scale Non Planning
theta prospective 2 with outliers removed	Pearson Correlation	.403**	.047	.294*	.102	.143	-.175	.302*
	Sig. (2-tailed)	.001	.718	.019	.424	.262	.173	.019
	N	62	62	63	63	63	62	60
Time and Sense Pace	Pearson Correlation	.154	.237	.105	-.053	.058	.176	.038
	Sig. (2-tailed)	.227	.062	.411	.680	.647	.169	.773
	N	63	63	64	64	64	63	61
Time and Sense Temporal Awareness	Pearson Correlation	-.196	-.267*	-.207	-.040	-.182	-.019	-.257*
	Sig. (2-tailed)	.124	.034	.100	.756	.151	.881	.046
	N	63	63	64	64	64	63	61
Time and sense temporal extension	Pearson Correlation	.113	.068	-.073	-.351**	-.295*	.229	-.096
	Sig. (2-tailed)	.378	.595	.564	.004	.018	.071	.462
	N	63	63	64	64	64	63	61
Time and sense temporal extension with stress	Pearson Correlation	.018	.196	.079	-.164	-.077	.176	-.060
	Sig. (2-tailed)	.886	.123	.536	.194	.544	.167	.648
	N	63	63	64	64	64	63	61

Correlations

		Barret Impulsivity Scale - Attention	Cook Medley - total (estimated)	Beck depression Inventory	Thetar1 with outliers removed	theta retrospective 2 with outliers removed	theta prospective 1 with outliers removed	theta prospective 2 with outliers removed
Past percent	Pearson Correlation	-.136	-.146	-.076	.003	-.005	-.039	-.175
	Sig. (2-tailed)	.304	.259	.565	.984	.970	.761	.169
	N	59	62	59	62	62	64	63
Present percent	Pearson Correlation	-.102	-.011	.083	-.154	-.183	.101	.157
	Sig. (2-tailed)	.443	.930	.532	.232	.155	.429	.220
	N	59	62	59	62	62	64	63
Future percent	Pearson Correlation	.219	.096	-.030	.157	.211	-.069	-.028
	Sig. (2-tailed)	.096	.459	.821	.222	.100	.588	.827
	N	59	62	59	62	62	64	63
Crowne Marlowe Social Desirability Scale	Pearson Correlation	-.157	-.494**	-.300*	.204	.148	-.144	-.151
	Sig. (2-tailed)	.253	.000	.025	.128	.273	.276	.254
	N	55	59	56	57	57	59	59
Taylor Anxiety Scale	Pearson Correlation	.396**	.384**	.689**	-.018	.010	.013	.074
	Sig. (2-tailed)	.002	.002	.000	.893	.940	.921	.570
	N	57	60	57	60	60	62	61
Dissociative Experiences Scale (abbreviated)	Pearson Correlation	.513**	.205	.379*	.236	.065	-.010	.131
	Sig. (2-tailed)	.002	.231	.023	.159	.704	.952	.438
	N	34	36	36	37	37	38	37
Tellegen Absorption Scale	Pearson Correlation	.140	.107	.136	.049	.132	-.026	.166
	Sig. (2-tailed)	.294	.415	.314	.711	.314	.843	.200
	N	58	60	57	60	60	62	61
Temporal Disintegration Scale	Pearson Correlation	.164	.266*	.393**	.129	.025	.287*	.403**
	Sig. (2-tailed)	.214	.039	.002	.320	.851	.023	.001
	N	59	61	58	61	61	63	62
Perceived Stress Scale (10 item)	Pearson Correlation	.308*	.108	.678**	.183	.113	.022	.047
	Sig. (2-tailed)	.019	.405	.000	.159	.387	.867	.718
	N	58	61	58	61	61	63	62
MAACL Depression Score	Pearson Correlation	.185	.175	.553**	-.020	-.168	.416**	.294*
	Sig. (2-tailed)	.161	.175	.000	.877	.193	.001	.019
	N	59	62	59	62	62	64	63

Correlations

		Barret Impulsivity Scale - Attention	Cook Medley - total (estimated)	Beck depression Inventory	Thetar1 with outliers removed	theta retrospective 2 with outliers removed	theta prospective 1 with outliers removed	theta prospective 2 with outliers removed
MAACL hostility score	Pearson Correlation	-.069	.310*	.285*	-.272*	-.443**	.235	.102
	Sig. (2-tailed)	.606	.014	.029	.033	.000	.061	.424
	N	59	62	59	62	62	64	63
MAACL anxiety score	Pearson Correlation	.076	.437**	.574**	-.268*	-.278*	.232	.143
	Sig. (2-tailed)	.569	.000	.000	.035	.029	.065	.262
	N	59	62	59	62	62	64	63
Age at end of July 2000	Pearson Correlation	-.151	-.230	.061	.065	-.003	-.080	-.175
	Sig. (2-tailed)	.259	.074	.650	.618	.983	.532	.173
	N	58	61	58	61	61	63	62
Barrett Impulsivity Scale Non Planning	Pearson Correlation	.233	.071	.240	.048	.022	.234	.302*
	Sig. (2-tailed)	.079	.594	.074	.719	.870	.069	.019
	N	58	59	56	59	59	61	60
Barret Impulsivity Scale - Attention	Pearson Correlation	1.000	.255	.202	.113	.059	.127	.164
	Sig. (2-tailed)	.	.053	.142	.404	.665	.337	.219
	N	59	58	54	57	57	59	58
Cook Medley - total (estimated)	Pearson Correlation	.255	1.000	.334*	-.149	-.268*	.142	.223
	Sig. (2-tailed)	.053	.	.010	.256	.038	.270	.084
	N	58	62	58	60	60	62	61
Beck depression Inventory	Pearson Correlation	.202	.334*	1.000	-.052	-.181	.163	.156
	Sig. (2-tailed)	.142	.010	.	.703	.178	.216	.241
	N	54	58	59	57	57	59	58
Thetar1 with outliers removed	Pearson Correlation	.113	-.149	-.052	1.000	.617**	.070	.028
	Sig. (2-tailed)	.404	.256	.703	.	.000	.591	.831
	N	57	60	57	62	62	62	61
theta retrospective 2 with outliers removed	Pearson Correlation	.059	-.268*	-.181	.617**	1.000	-.162	-.090
	Sig. (2-tailed)	.665	.038	.178	.000	.	.209	.491
	N	57	60	57	62	62	62	61
theta prospective 1 with outliers removed	Pearson Correlation	.127	.142	.163	.070	-.162	1.000	.729**
	Sig. (2-tailed)	.337	.270	.216	.591	.209	.	.000
	N	59	62	59	62	62	64	63

Correlations

		Barret Impulsivity Scale - Attention	Cook Medley - total (estimated)	Beck depression Inventory	Thetar1 with outliers removed	theta retrospective 2 with outliers removed	theta prospective 1 with outliers removed	theta prospective 2 with outliers removed
theta prospective 2 with outliers removed	Pearson Correlation	.164	.223	.156	.028	-.090	.729**	1.000
	Sig. (2-tailed)	.219	.084	.241	.831	.491	.000	.
	N	58	61	58	61	61	63	63
Time and Sense Pace	Pearson Correlation	.116	-.207	.141	.172	.158	-.268*	-.130
	Sig. (2-tailed)	.380	.107	.287	.182	.219	.032	.312
	N	59	62	59	62	62	64	63
Time and Sense Temporal Awareness	Pearson Correlation	-.191	-.071	-.121	.031	-.226	.115	.008
	Sig. (2-tailed)	.147	.585	.359	.811	.078	.366	.948
	N	59	62	59	62	62	64	63
Time and sense temporal extension	Pearson Correlation	.309*	-.073	-.021	.057	.087	.079	.266*
	Sig. (2-tailed)	.017	.573	.872	.662	.503	.532	.035
	N	59	62	59	62	62	64	63
Time and sense temporal extension with stress	Pearson Correlation	.140	.028	.161	.283*	.333**	-.067	.000
	Sig. (2-tailed)	.290	.829	.224	.026	.008	.601	.998
	N	59	62	59	62	62	64	63

Correlations

		Time and Sense Pace	Time and Sense Temporal Awareness	Time and sense temporal extension	Time and sense temporal extension with stress
Past percent	Pearson Correlation	-.003	.186	.019	-.028
	Sig. (2-tailed)	.983	.141	.881	.828
	N	64	64	64	64
Present percent	Pearson Correlation	-.091	-.069	-.027	-.005
	Sig. (2-tailed)	.474	.589	.832	.970
	N	64	64	64	64
Future percent	Pearson Correlation	.111	-.075	.024	.033
	Sig. (2-tailed)	.381	.557	.850	.794
	N	64	64	64	64
Crowne Marlowe Social Desirability Scale	Pearson Correlation	.072	.162	.220	-.018
	Sig. (2-tailed)	.588	.220	.095	.894
	N	59	59	59	59
Taylor Anxiety Scale	Pearson Correlation	.030	-.213	-.055	.087
	Sig. (2-tailed)	.818	.096	.671	.502
	N	62	62	62	62
Dissociative Experiences Scale (abbreviated)	Pearson Correlation	.135	-.317	.364*	.228
	Sig. (2-tailed)	.419	.052	.025	.170
	N	38	38	38	38
Tellegen Absorption Scale	Pearson Correlation	-.037	-.016	.185	.156
	Sig. (2-tailed)	.774	.899	.151	.227
	N	62	62	62	62
Temporal Disintegration Scale	Pearson Correlation	.154	-.196	.113	.018
	Sig. (2-tailed)	.227	.124	.378	.886
	N	63	63	63	63
Perceived Stress Scale (10 item)	Pearson Correlation	.237	-.267*	.068	.196
	Sig. (2-tailed)	.062	.034	.595	.123
	N	63	63	63	63
MAACL Depression Score	Pearson Correlation	.105	-.207	-.073	.079
	Sig. (2-tailed)	.411	.100	.564	.536
	N	64	64	64	64

Correlations

		Time and Sense Pace	Time and Sense Temporal Awareness	Time and sense temporal extension	Time and sense temporal extension with stress
MAACL hostility score	Pearson Correlation	-.053	-.040	-.351**	-.164
	Sig. (2-tailed)	.680	.756	.004	.194
	N	64	64	64	64
MAACL anxiety score	Pearson Correlation	.058	-.182	-.295*	-.077
	Sig. (2-tailed)	.647	.151	.018	.544
	N	64	64	64	64
Age at end of July 2000	Pearson Correlation	.176	-.019	.229	.176
	Sig. (2-tailed)	.169	.881	.071	.167
	N	63	63	63	63
Barrett Impulsivity Scale Non Planning	Pearson Correlation	.038	-.257*	-.096	-.060
	Sig. (2-tailed)	.773	.046	.462	.648
	N	61	61	61	61
Barret Impulsivity Scale - Attention	Pearson Correlation	.116	-.191	.309*	.140
	Sig. (2-tailed)	.380	.147	.017	.290
	N	59	59	59	59
Cook Medley - total (estimated)	Pearson Correlation	-.207	-.071	-.073	.028
	Sig. (2-tailed)	.107	.585	.573	.829
	N	62	62	62	62
Beck depression Inventory	Pearson Correlation	.141	-.121	-.021	.161
	Sig. (2-tailed)	.287	.359	.872	.224
	N	59	59	59	59
Thetar1 with outliers removed	Pearson Correlation	.172	.031	.057	.283*
	Sig. (2-tailed)	.182	.811	.662	.026
	N	62	62	62	62
theta retrospective 2 with outliers removed	Pearson Correlation	.158	-.226	.087	.333**
	Sig. (2-tailed)	.219	.078	.503	.008
	N	62	62	62	62
theta prospective 1 with outliers removed	Pearson Correlation	-.268*	.115	.079	-.067
	Sig. (2-tailed)	.032	.366	.532	.601
	N	64	64	64	64

Correlations

		Time and Sense Pace	Time and Sense Temporal Awareness	Time and sense temporal extension	Time and sense temporal extension with stress
theta prospective 2 with outliers removed	Pearson Correlation	-.130	.008	.266*	.000
	Sig. (2-tailed)	.312	.948	.035	.998
	N	63	63	63	63
Time and Sense Pace	Pearson Correlation	1.000	-.219	.111	.135
	Sig. (2-tailed)	.	.083	.382	.288
	N	64	64	64	64
Time and Sense Temporal Awareness	Pearson Correlation	-.219	1.000	-.038	-.138
	Sig. (2-tailed)	.083	.	.768	.277
	N	64	64	64	64
Time and sense temporal extension	Pearson Correlation	.111	-.038	1.000	.264*
	Sig. (2-tailed)	.382	.768	.	.035
	N	64	64	64	64
Time and sense temporal extension with stress	Pearson Correlation	.135	-.138	.264*	1.000
	Sig. (2-tailed)	.288	.277	.035	.
	N	64	64	64	64

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

APPENDIX G

APPROVAL FOR USE OF HUMAN SUBJECTS

USUHS IRB Approval Study 1

Pennsylvania State University IRB Approval Study 1

USUHS IRB Approval Study 2

Pennsylvania State University IRB Approval Study 2

USUHS IRB Approval Study 3

Pennsylvania State University IRB Approval Study 3

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799

November 5, 1999

MEMORANDUM FOR BONNIE R. YATKO, DEPARTMENT OF MEDICAL AND CLINICAL PSYCHOLOGY

SUBJECT: IRB Approval of Protocol **T072DO-01** for Human Subject Use

Your research protocol entitled *"**Perception of Time and the Senses,**"* was reviewed and approved for execution on 11/5/1999 as an **exempt** human subject use study under the provisions of 32 CFR 219.101 (b)(2). This approval will be reported to the full IRB scheduled to meet on 18 November 1999.

The purpose of this study is to refine a survey instrument which assesses self-reported time and sense perceptions; evaluate the instrument for reliability and internal validity; and to begin to establish normative information regarding the areas of time and sensory perception. The IRB understands that subjects in undergraduate psychology courses will complete anonymous surveys designed to examine time awareness, time pace, and temporal orientation.

Please note that this protocol may require review and approval by the undergraduate institutions you select to participate in this study. If such approval is required, please provide this office with copies of all institutional approval letters as you receive them to complete your file.

Please notify this office of any amendments you wish to propose and of any untoward incidents which may occur in the conduct of this project. If you have any questions regarding human volunteers, please call me at 301-295-3303.

Richard R. Levine, Ph.D.
LTC, MS, USA
Director, Research Programs and
Executive Secretary, IRB

Cc: Director, Grants Administration

PENNSTATE

Vice President for Research
Office for Regulatory Compliance

The Pennsylvania State University
212 Kern Graduate Building
University Park, PA 16802-3301

(814) 865-1775
Fax: (814) 863-8699
Website: www.research.psu.edu/orc/

Date: November 19, 1999

From: Karen J. English, Compliance Coordinator

To: Laura Klein

Subject: Proposal for Use of Human Subjects in Research - Exemption **(ORC #991099-00)**

Approval Expiration Date: November 19, 2000

"Perception of Time and the Senses Survey"

Your proposal for use of human subjects in your research has been reviewed and **approved for a one-year period**. Subjects in your research are at minimal risk.

By accepting this decision you agree to notify this office of (1) any additions or changes in procedures for your study that modify the subjects' risks in any way and (2) any events that affect the safety or well-being of subjects.

The University appreciates your efforts to conduct research in compliance with the federal regulations that have been established to ensure the protection of human subjects.

KJE/slk

cc: L. Kozlowski
J. Itinger
L. Vernon-Feagans

PENNSTATE

Vice President for Research
Office for Regulatory Compliance

The Pennsylvania State University
212 Kern Graduate Building
University Park, PA 16802-3301

(814) 865-1775
Fax: (814) 863-8699
www.research.psu.edu/orc/

Date: March 9, 2000

From: Karen J. English, Compliance Coordinator

To: Laura Klein

Subject: Research Proposal - Modification **(ORC #991099-01)**
Approval Expiration Date: November 19, 2000
(Note: This date reflects the anniversary date of the actual submission approval date.)

"Perception of Time and the Senses Survey"

The revisions to your study, outlined in your March 3, 2000 memorandum, do not increase risks to human subjects. You may proceed with your study.

Please continue to notify this office of any further modifications.

KJE/bad

cc: L. Kozlowski
J. Itinger
L. Vernon-Feagans

UNIFORMED SERVICES UNIVERSITY OF THE HEALTH SCIENCES
F. EDWARD HEBERT SCHOOL OF MEDICINE
4301 JONES BRIDGE ROAD
BETHESDA, MARYLAND 20814-4799

July 10, 2000

MEMORANDUM FOR LT BONNIE R. YATKO, MSC, USNR, DEPARTMENT OF MEDICAL AND CLINICAL PSYCHOLOGY

SUBJECT: IRB Approval of Protocol **T072DO-01** for Human Subject Use

USUHS accepts the review and approval by the Penn State University (PSU) Committee for the Protection of Human Subjects (CHPS) for the research protocol entitled ***"Validation of the Perception of Time and the Senses Survey"*** under your direction. It is requested that PSU provide this office with human subject use review updates at least annually if this study continues beyond one year.

The purpose of this study is to evaluate the validity of the "Perception of Time and the Senses Survey" and understand the relationship between stress and perception. This study involves the administration of the survey to 100 volunteers at Penn State University during a single 2-hour session. The survey will also be administered along with several other measures designed to assess convergent, divergent, and predictive validity. The IRB understands that subject responses will be coded and that subject responses will not be linked to their names.

You are required to submit amendments to this protocol, changes to the consent form, adverse event reports, and other pertinent information relative to human subject use for this project to this office for review. It is your responsibility to maintain an accurate and accessible file of all consent forms of participating human subjects.

If you have any questions regarding human subject use, please call me at 301-295-3303.

Richard R. Levine, Ph.D.
LTC, MS, USA
Director, Research Programs and
Executive Secretary, IRB

cc: Director, Research Administration

PENNSTATE

Vice President for Research
Office for Regulatory Compliance

The Pennsylvania State University
212 Kern Graduate Building
University Park, PA 16802-3301

(814) 865-1775
Fax: (814) 863-8699
www.research.psu.edu/orc/

Date: July 14, 2000

From: Candice A. Yekel, Director of Regulatory Affairs

To: Laura Cousino Klein

Subject: Research Proposal - Modification **(ORC #00B0647-02)**
Approval Expiration Date: June 27, 2001
(Note: This date reflects the anniversary date of the actual submission approval date.)

"Validity of the Perception of Time and the Senses Survey"

The revisions to your study, outlined in your July 13, 2000 memorandum, do not increase risks to human subjects. You may proceed with your study.

Please continue to notify this office of any further modifications.

CAY/bad

cc: K. English
L. Kozlowski
J. Itinger
L. Vernon-Feagans