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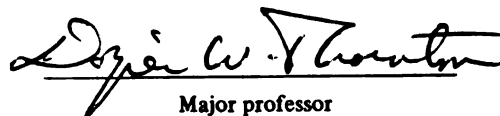
COGNITION AND EMOTION IN NORMAL FUNCTIONING

presented by

James L. Pretzer

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COGNITION AND EMOTION IN NORMAL FUNCTIONING

By

James L. Pretzer

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ABSTRACT

COGNITION AND EMOTION IN NORMAL FUNCTIONING

By

James L. Pretzer

A wide range of psychological and physiological theories of emotion have been proposed and many, varied psychotherapeutic approaches designed to modify emotional responses have been developed, yet no comprehensive explanation of the process through which complex stimulus situations elicit specific emotional responses has been developed. In this study an integration of aspects of the current literature on cognition and emotion has been proposed, and hypotheses based on three components of this analysis have been tested.

One hundred seventy-four undergraduate volunteers were asked to complete a number of paper-and-pencil measures in a group setting and then were scheduled for individual experimental sessions. During individual sessions, subjects were asked to imagine three complex stimulus-situations. The intensity of subjects' emotional responses was assessed by a self-report measure of the intensity of 10 emotions before and after the second of these imagined scenes, and the content of this imagined scene and the subjects' cognitive and emotional responses to the scene were assessed through a detailed structured interview.

The prediction that subjects would selectively attend to goal-related stimulus-elements was supported by one of four correlations computed between the degree to which specific stimulus-elements were related to the subjects' current goals and the inclusion of the stimulus-element in the subjects' description of the imagined scene. The prediction that subjects would selectively think about goal-related stimulus elements was supported by two of the four computed correlations between the degree to which specific stimulus-elements were related to subjects' current goals and the number of thoughts concerning the stimulus-element. The prediction that specific appraisals would elicit specific emotions was supported by four of the five computed correlations between the number of specific appraisals and self-report measures of the intensity of specific emotions. However, 3 of 20 correlations between the number of specific appraisals and the intensity of emotions hypothesized to be unrelated to those appraisals were significantly different from zero.

It was concluded that the results of this study, in conjunction with previous research, provide qualified support for the proposed theoretical analysis. Suggestions for future research and theoretical development were presented.

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TABLE OF CONTENTS

	Page
LIST OF TABLES	v
LIST OF FIGURES	vii
LIST OF APPENDICES	viii
STATEMENT OF THE PROBLEM	1
RELATED LITERATURE	3
Defining "Cognition" and "Emotion"	3
Perception	4
Attention	9
Appraisal	12
The Influence of Goals and Incentives on Cognitive Processes	14
Emotion	18
Cognition and Emotion	25
Specific Cognition-Emotion Relationships	31
Integration	31
HYPOTHESES	45
METHOD	47
Overview of the Procedure	47
Subjects	47
Experimenters	48
Measures	49
Differential Emotion Scale	49
Personal Data Sheet	49
Thought Survey	50
Structured Interview	52
Participant's Evaluation Form	52
Procedure	52
RESULTS	57
Assessment of the Effects of Attrition, of Sex Differences, and of the Reliability of Measures	57
The Effects of Attrition	57
The Effects of Sex Differences	57

	Page
The Reliability of the Thought Survey	58
The Reliability of the Differential Emotion Scale	61
The Reliability of the Content Analysis of the Structured Interview	65
A Priori Tests of Hypotheses	67
Hypothesis One	67
Hypothesis Two	67
Hypothesis Three	67
Post-Hoc Analyses	70
Hypotheses One and Two	70
Hypothesis Three	70
DISCUSSION	76
REFERENCE NOTE	85
REFERENCES	87
APPENDICES	92

LIST OF TABLES

Table	Page
1. Proposed Primary Emotions	19
2. Item-Factor Correlations for the Differential Emotion Scale	23
3. Hypothesized Cognition-Emotion Relationships	32
4. Correlations Between Empirically Derived Clusters and Thought Survey Subscales	60
5. Items Composing the "Intimacy/Boundaries" Cluster	61
6. The Reliability of Relevant DES Subscales	62
7. DES Subscale Intercorrelations	62
8. DES Subscale Intercorrelations Corrected for Attenuation .	63
9. Results of a Factor Analysis of DES Form B	64
10. Reliability of Experimenter Ratings of Subjects' Verbal Responses	66
11. Correlations Between Thought Survey Subscales and Inclusion of Corresponding Stimulus-Elements in the Description of the Scene	68
12. Correlations Between Thought Survey Subscales and the Number of Thoughts Concerning Corresponding Stimulus-Elements	68
13. Correlations Between Categories of Appraisals and DES Subscales	69
14. Correlations Between Thought Survey Cluster Scores and the Inclusion of Corresponding Stimulus-Elements in the Description of the Scene	71
15. Correlations Between Thought Survey Cluster Scores and the Number of Thoughts Concerning Corresponding Stimulus Elements	72

	Page
16. Correlations Between Categories of Appraisals and DES Subscales With the Depression Adjective Checklist Replacing the DES Distress Scale	73
17. Partial Correlations Between Appraisals and Emotions Controlling for the Effects of Intercorrelations Among Appraisals	74
18. Sex Differences in Partial Correlations Between Appraisals and Emotions	75

LIST OF FIGURES

Figure	Page
1. Schematic Representation of Sample Scenes from Biederman (1972)	8
2. DES Profiles Before In-Class Examination	24
3. Cognitive Processes Involved in the Elicitation of Emotion	28
4. Proposed Theoretical Analysis of the Process Through Which Specific Emotional Responses Are Elicited by Complex Stimulus-Situations	34

LIST OF APPENDICES

Appendix	Page
A. DIFFERENTIAL EMOTION SCALE--Form A	93
B. DIFFERENTIAL EMOTION SCALE--Form B	96
C. PERSONAL DATA SHEET	99
D. THOUGHT SURVEY	103
E. GUIDE TO SCORING APPRAISALS	108
F. GUIDE FOR SCORING THOUGHTS	116
G. INSTRUCTIONS FOR SESSION 1	121
H. DEPARTMENTAL RESEARCH CONSENT FORM	125
I. INSTRUCTIONS FOR SESSION 2	127
J. AUDIO-TAPE RELEASE FORM	136
K. PARTICIPANT'S EVALUATION FORM	138
L. BRIEF EXPLANATION OF STUDY	142

STATEMENT OF THE PROBLEM

Throughout life, individuals face complex, constantly changing stimulus situations which elicit varied, constantly changing emotional responses. A wide range of psychological and physiological theories of emotion have been proposed and many, varied psychotherapeutic approaches designed to modify emotional responses have been developed, yet no comprehensive, empirically verifiable explanation of the process through which complex stimulus situations elicit specific emotional responses has been developed.

Over the past two decades a variety of theoretical approaches to personality and psychopathology which emphasize the role of cognitive processes have gained increasing prominence. These Cognitive, Cognitive-Behavioral, and Rational-Emotive theories focus on attentional processes, beliefs, attributions, and expectancies as being crucial in understanding both everyday functioning and abnormal behavior. One of the central assumptions of many of these cognitively oriented theories is the hypothesis that specific cognitions lead to specific emotional responses. This view that the cognitive appraisal of a situation provides the causal link between the situation and the individual's emotional response to that situation has been elaborated by experimental psychologists such as Magda Arnold (1960) and Richard Lazarus (Lazarus, Averill, & Opton, 1970) and by clinicians such as Albert Ellis (1962) and Aaron Beck (1976). However, these theoretical

discussions have focused on specific aspects of the process through which cognitive responses to a complex stimulus situation elicit specific emotional and behavioral responses and have failed to provide a comprehensive theoretical model of the process.

While much research remains to be done before a truly comprehensive theoretical model can be developed, an integration of the currently available empirical findings and theoretical analyses can serve as a step toward developing a comprehensive model by revealing the common threads among separate lines of research and by highlighting areas in which further research is needed. In this study one possible integration of aspects of the current literature on cognition and emotion has been proposed, and hypotheses based on three components of this analysis have been tested.

RELATED LITERATURE

Defining "Cognition" and "Emotion"

Broadly speaking, the term "cognition" can be used to refer to those processes which organize and regulate both experience and behavior (Blumenthal, 1977). Of the many cognitive processes which have been hypothesized, perception, attention, and appraisal are of particular importance in the following discussion. The term "perception" will be used to refer to those processes which organize incoming sensory stimuli into meaningful patterns. The term "attention" will be used to refer to those processes through which some perceived stimuli are selected for additional cognitive processing and through which selected information is retrieved from memory. The term "appraisal" will be used to refer to those processes through which specific judgments are made concerning the implications of environmental events for the individual.

The task of defining the term "emotion" is somewhat more complex. When contemporary authors attempt to list phenomena which should be encompassed by a definition of emotion they typically include subjective experience, changes in physiological functioning, and nonverbal expressive behavior. Individual authors add additional phenomena such as neurological processes (Izard, 1977), perception and interpretation of physiological changes (Lewis & Rosenblum, 1978), or specific types of cognition (Zajonc, 1980). There is no consensus on a definition of emotion and, indeed, the various definitions of emotion

in use frequently conflict with each other (Plutchik, 1980, pp. 80-84). Since no accurate method for differentiating between discrete emotions on the basis of physiological changes has been developed and procedures for reliably differentiating emotions on the basis of nonverbal expressive behavior (facial expression) are still undergoing validation, the one commonly agreed upon definitional characteristic of emotion which can be quantified reliably is the individual's subjective experience. Therefore, in this study, the subjects' subjective experience, as assessed through self-report, will be treated as the defining characteristic of the emotions being studied and no a priori assumptions will be made concerning the relationship of situational factors, neurological processes, perception of physiological changes, or expressive behavior to emotion.

Perception

Individuals are continuously engaged in organizing and interpreting a multitude of stimuli in all sensory modalities. In daily life a person is faced by a constantly changing, complex set of ambiguous stimuli and must continuously separate meaningful stimuli from competing irrelevant stimuli, then choose between alternative interpretations of the stimuli on the basis of subtle cues. Psychological research into the processes involved in sensation and perception has revealed that other cognitive processes exercise important influences on perception, particularly on perception of complex, ambiguous stimuli. Within the literature on perception, the term "set" is most frequently used to refer to the cognitive influences on perception;

however, in order to maintain greater consistency in terminology, the alternative term "expectancy" will be used in this discussion.

Research has made it abundantly clear that perception is not a process through which the individual passively and mechanically produces a mental picture of the world. Rather, the individual, in each situation, is actively prepared to perceive specific sensory inputs and analyzes the input which is received in terms of that preparation. While the individual's expectancies do not necessarily override sensory input, the process of perception is strongly influenced by these expectancies (Dember & Warm, 1979, p. 335).

A large number of studies have demonstrated that experimentally established expectancies improve performance on perceptual tasks when the expectancies are accurate (Dember & Warm, 1979, p. 336). However, there has been disagreement over whether this improvement in performance is due to perceptual selectivity or to nonperceptual processes. Lawrence and Coles (1954) attempted to evaluate the contributions of three possible selectivity mechanisms: perceptual selectivity, selective remembering, and modification of response availability. Previous research had used a Before versus After methodology where a stimulus display was presented tachistoscopically and the aspect of the display to be identified was indicated either before or after the presentation of the stimulus display. While the improved performance observed on trials where the stimulus aspect to be identified was indicated before the presentation of the stimulus had been interpreted as evidence of selective perception, Lawrence and Coles (1954) argued that the phenomenon could be explained by any of the three possible selectivity

mechanisms. They attempted to differentiate between the three alternative explanations by modifying the traditional experimental design to include the presentation of four alternative verbal labels of varying degrees of similarity and having subjects respond by choosing the label which was appropriate to the indicated aspect of the stimulus display. They argued that perceptual selectivity, if present, should produce an interaction between the similarity of the alternatives and the time of presentation of the alternatives (i.e., before or after the presentation of the stimulus display). Their finding that there was no significant main effect for the time of presentation of the alternatives and no significant interaction between time of presentation and similarity of alternatives was seen as indicating that "selective perception" phenomena were actually due to nonperceptual cognitive processes.

Egeth and Smith (1967) noted that, while the logical analysis presented by Lawrence and Coles (1954) was convincing, their design confounded the effects of time of presentation with the necessity of memorizing the alternatives in the "before" condition (in order to choose one of the alternatives as a response after the stimulus display had been presented) and the additional processing required to apply verbal labels to pictorial stimuli. By replacing the "before" condition with a condition in which the alternatives were presented both before and after the stimulus display and by presenting the alternatives pictorially, these authors were able to eliminate the methodological flaws present in the earlier study and consequently found the interaction predicted on the basis of the selectivity hypothesis. By

varying the arrangement of the alternatives between the two presentations in the "before and after" condition, the authors were able to rule out a competing interpretation based on the properties of short-term memory and provided a clear demonstration of selective visual perception.

This study, in conjunction with the body of previous and subsequent research (for example, Harris & Haber, 1963; Adelman & Smith, 1971), suggests that individuals are able to selectively encode and analyze those elements of a stimulus complex which they expect to be relevant for subsequent cognitive processing and behavior. In naturalistic situations the individual's expectancies are based upon previous experience rather than upon experimental instructions. The effect of such expectancies is seen in a study of the perception of real-world scenes conducted by Biederman (1972). In this experiment, photographs of commonplace scenes were presented tachistoscopically and subjects were required to identify familiar objects occupying a specific location in the photograph. Two versions of the scenes were used, one in which the scene was coherent and one in which the scene was jumbled so as to destroy the normal spatial relationships between the objects in the scene, as shown in Figure 1. On half of the trials the location of the object to be identified was specified before presentation of the scene, and on half of the trials it was specified after presentation of the scene. The subjects were asked to respond by selecting one of four alternatives from a photo album; on half of the trials the alternatives were presented before the scene, and on half the trials they were presented after the scene. The results of this study

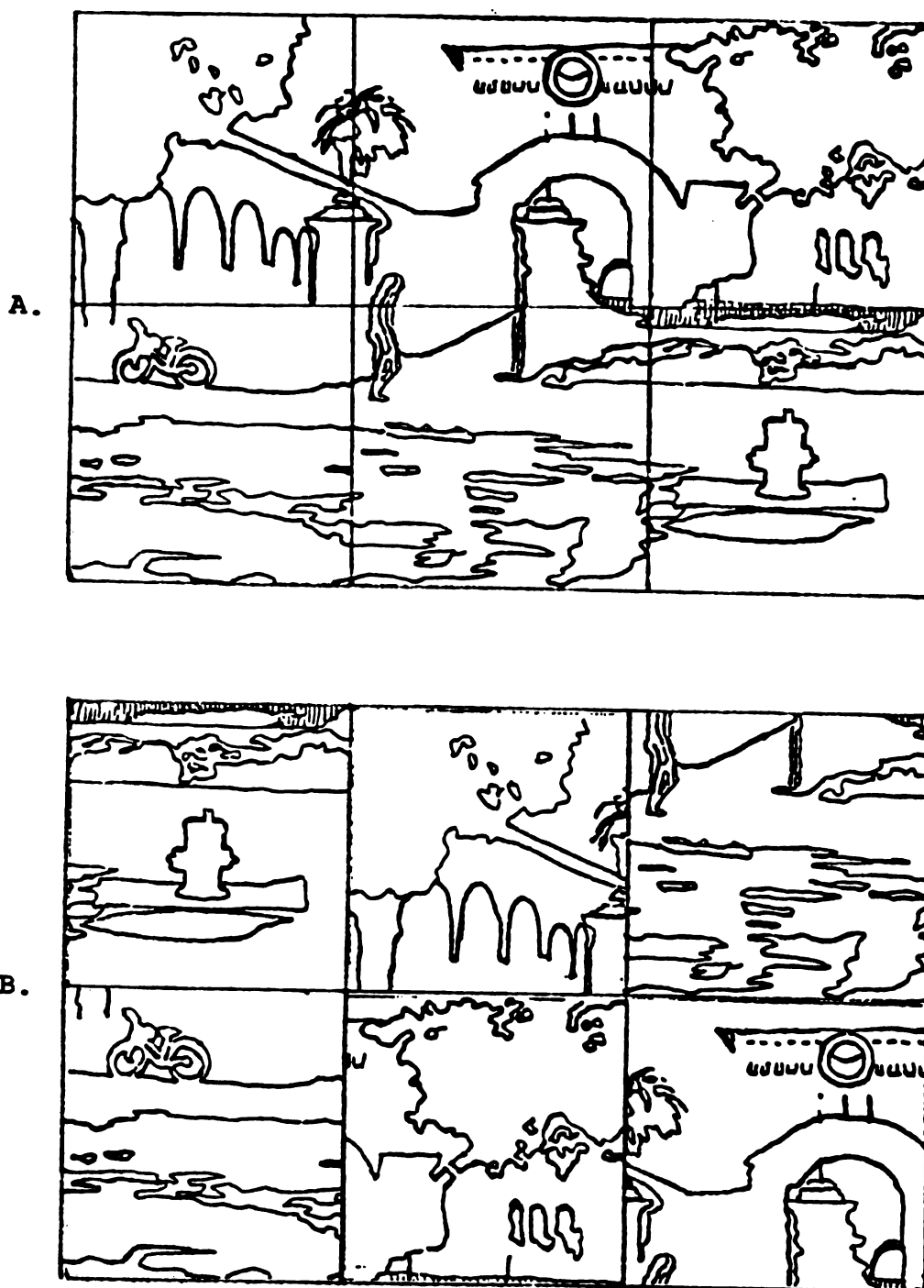


Figure 1: Schematic representation of sample scenes from Biederman (1972). (A) coherent; (B) jumbled. Note that the lower-left section in both scenes is the same. The bicycle would have been the cued object.

essentially replicated the results found in studies using sets of unrelated objects as stimuli except that subjects' responses to the jumbled scenes were significantly less accurate than their responses to coherent scenes. The location, orientation, and appearance of the target object was unchanged by the reorganization of the scene and the possible effects of order of presentation, location of target object, and familiarity with target object were well controlled. Therefore, it is possible to argue that the disruption of contextual cues resulting from the reorganization of the scene was responsible for the decrement in performance. This well-controlled study supports the hypothesis that expectancies based on previous experience (in this case, previous experience with the typical spatial relationships among commonly encountered objects) play an important role in perception.

For more detailed discussions of cognitive processes involved in perception, see Blumenthal (1977) or Dember and Warm (1979).

Attention

The cognitive processes which determine which of the many competing perceptions are selected for further cognitive processing clearly play an important role in cognitive, emotional, and behavioral responses to everyday situations. As Blumenthal (1977) writes:

At any moment in the course of a day, you or I could find ourselves in a situation like this: engaging a friend in conversation and, at the same time, dodging traffic on a street corner, struggling to remember items on a shopping list, being distracted by nude figures on a magazine cover, and scratching an itch. If we should pause to reflect, we might wonder how we remain so well coordinated, indeed how we survive, given all the events pushing, pulling, and invading our lives. (p. 3)

The two major functions of attention are information selection from the environment and information retrieval from memory (Underwood, 1976, p. 208). According to this view, attention is inherently selective. The adaptive value of processing "important" environmental information while excluding "unimportant" information from processing and of retrieving "relevant" information from memory while not retrieving "irrelevant" information is obvious. The processes involved in selective attention have been studied in detail; however, relatively little attention has been paid to the process through which some information is deemed important or relevant while other information is treated as unimportant or irrelevant.

Early research on the phenomenon of selective attention found that a selection between two competing streams of information could be made on the basis of a variety of physical cues such as spatial localization (Broadbent, 1954; Moray, Bates, & Barnett, 1965), intensity (Egan, Carterette, & Thwing, 1954), and sex of speaker (Triesman, 1964). Triesman (1964) also demonstrated that it was possible for subjects to attend selectively to a message which differed from the competing message only in terms of semantic content; however, the efficiency of subjects' performance increased as the degree of difference between the two messages increased.

After Cherry's (1953) demonstration that the semantic content of the message which is not attended to is not retained in memory, it was hypothesized that, due to the limited capacity of word-analyzing mechanisms, one and only one message could be analyzed at a time (Broadbent, 1958). It was soon found, however, that subjects

occasionally responded to the content of the unattended message. Moray (1959) found that subjects sometimes responded to their own names when they were presented as part of the unattended passage. Triesman (1960) found that the meaning of the unattended passage could affect performance in a dichotic listening task, and Bloomfield (1972) found that unattended words with a high degree of association to attended words were frequently shadowed by mistake. Corteen and Wood (1972), using physiological measures, demonstrated semantic generalization from city names previously associated with shock to other, non-shocked city names presented in the unattended channel. These findings both challenge the assumption that "unattended" stimuli receive no cognitive processing and suggest some factors which may be involved in the allocation of attention in naturalistic settings.

All of these studies implicitly demonstrate the ability of subjects to volitionally control the deployment of attention since, in all of these studies, subjects were able to attend selectively to whichever stimulus the experimenter instructed them to attend to. However, these studies suggest that while stimuli which can be discriminated on the basis of stimulus characteristics or meaning can be attended to selectively, this volitional control of attention can be overridden when the unattended stimuli have been previously associated with important events (i.e., electric shock, Corteen & Wood, 1972), when the unattended stimuli are more meaningful than the attended stimuli (Triesman, 1960), when the unattended stimuli are more probable than the attended stimuli (Bloomfield, 1972), or when the unattended stimuli are prefaced by the subject's name. It appears, then, that the

attentional processes select percepts which are relevant to the individual's current goals (i.e., conforming to the experimenter's instructions), perceptions which have been associated with important events (such as electric shock or the wide range of events which the individual's name has been associated with), and perceptions which are expected on the basis of previous experience.

Appraisal

A number of authors (including Arnold, 1960; Lazarus, 1975; Beck, 1976; Plutchik, 1980) have focused on the appraisal process as a crucial cognitive link between the stimulus situation and the organism's response to it. These investigators argue that any response to a stimulus situation (other than purely reflexive responses) implies an evaluation of the perceived situation as a precursor to the processes involved in response selection. For example, Arnold (1960) writes: "Sensation must be completed by some form of appraisal before it can lead to action. . . . What is sensed must be appraised in its context in the light of experience" (vol. II, p. 33). The appraisal process is described as being similar to the perceptual recognition process in that it is a direct, nonreflective response to perceived stimuli. It is seen as involving retrieval of memories of similar situations, evaluation of the relevance of these memories for the current situation, and formation of expectancies concerning the outcomes of alternative responses to the situation and as being automatic and involuntary. Arnold (1970) writes:

In interpreting a situation . . . we remember what has happened to us in the past, how this thing has affected us and what we

did about it. Then we imagine how it will affect us this time and estimate whether it will be harmful. This estimate or evaluation may be reflective but need not be. In emotional reactions, it rarely is. Even when there is reflective appraisal, there is also an immediate intuitive estimate. (p. 174)

Since appraisal is seen as occurring immediately upon perception of a stimulus, it is argued that perception of additional aspects of a situation will lead to additional appraisals which may reinforce or modify the expectancies generated by the initial appraisal of the situation (Arnold, 1967, p. 126). In addition, it is argued that reflective thought or "reappraisal" can also result in revised expectancies (Lazarus, 1975). Thus, the continuous functioning of the appraisal process produces a continuously changing set of expectancies which then determine the individual's response to the situation.

While the appraisal process has been the subject of extensive theoretical discussion, it has not yet received extensive empirical investigation. Arnold (1960, vol. II) has conducted an extensive analysis of the neurological processes underlying the appraisal process and a number of investigators have explored the effects of different types of appraisals on emotional and physiological responses to situations (for example, Cohen & Lazarus, 1973; Koriat, Melkman, Averill, & Lazarus, 1972). However, no detailed analysis of the sub-processes involved in appraisal or of the effects of other cognitive processes on appraisal has yet been reported. Given the apparent similarity between appraisal processes and perceptual recognition processes discussed by Arnold (1960, vol. 1, p. 172 ff), it would not be surprising if expectancies and individual goals influenced appraisal

in some of the same ways as they influence perception. However, this area remains largely unexplored.

The Influence of Goals and Incentives
on Cognitive Processes

Klinger (1977) argues that goals and incentives have widespread effects on cognitive processes in addition to their more obvious effects on overt behavior. He hypothesizes that commitment to a goal selectively influences perception, attention, and memory in such a way that individuals are more likely to perceive goal-related stimuli, are more likely to attend to them, and are more likely to remember them.

The hypothetical construct "current concern" plays a central role in Klinger's theorizing. This construct is defined as the "state" of the organism between commitment to a goal and either attainment of the goal or disengagement from the goal. He makes it very clear that "current concern" does not refer to any thoughts, actions, or neurological processes but "refers simply to the fact of having become committed to a particular incentive that has not yet been attained or abandoned" (p. 37). Since, by this definition, the construct is essentially abstract with no observable (or unobservable) referent, the construct "current concern" will not be used in this discussion. The distinction which Klinger makes by using his construct will be maintained by restricting the use of the term "goal" to refer to objects, activities, etc., which the individual is pursuing through either thought or action and which the individual has not yet attained.

The effect of an individual's goals upon cognitive processes is clearly illustrated by a study conducted by Klinger and his colleagues

(Klinger, Barta, Mahoney et al., 1976). This study tested the hypotheses that individuals attend selectively to stimuli related to their goals, that they select these stimuli for additional processing, and that they retain these stimuli in memory. The subjects' current goals were assessed through a series of detailed structured interviews, a Goals Checklist, and a Daily Personal Log. Subjects then participated in a "thought sampling" task during which they listened dichotically through headphones to two recordings of different 15-minute excerpts of fictional or descriptive prose and continuously reported which channel they were listening to by means of a toggle switch. Without the subjects' knowledge, 25 pairs of passages were embedded at synchronized sites in the two readings at variable intervals. Each pair of passages consisted of a passage related to one of the subject's goals and a passage related to a nongoal. Passages were roughly equated in terms of familiarity by neutral judges and were written to blend smoothly into the readings. The recordings were interrupted at ostensibly random intervals 10 seconds after each pair of embedded passages, and subjects were asked to complete a Thought Sampling Questionnaire which assessed the contents of their stream of thought while listening to the tapes. The researchers found that their 16 paid undergraduate subjects attended to the goal-related passages significantly more often than to the non-goal-related passages, that subjects recalled approximately twice as many goal-related passages as non-goal-related passages, and that thought content immediately following the embedded passages was related to the goal-related passages approximately twice as often as to the non-goal-related passages.

These results are consistent with the studies cited in the discussion of attention and are consistent with the commonplace observation that people tend to notice, pay attention to, and think about cues which are "important" to them. Klinger argues that the "important" cues are the cues which are related to the individual's goals. An example of the effect of goals on cognition in a naturalistic situation is provided by a case study in which a client who experienced severe, apparently stimulus-independent, anxiety attacks was provided with a random-interval generator and was instructed to record the content of his thoughts each time it emitted a signal (Hurlburt & Sippelle, 1978). Of 53 thoughts recorded by the client during 48 hours of monitoring, 30% involved annoyance with his children, 15% involved the monitoring procedure, and 20% were job related. Clinical interviewing following the thought monitoring revealed that the thoughts involving annoyance with children concerned two important goals: (a) maintaining a well-ordered life and (b) avoiding sinful thoughts (i.e., thoughts expressing anger toward his children). Psychotherapeutic interventions oriented toward decreasing the importance of a well-ordered life as a goal and toward removing thoughts expressing annoyance with the children from the category "sinful thoughts" are reported to have resulted in a decrease in the frequency of thoughts concerning the children's annoying behavior in addition to an elimination of the anxiety attacks.

It seems obvious that not all goals exercise an equal influence on cognitive processes. Klinger (1977, p. 56) suggests that the strength of the influence of goals on cognitive processes is moderated

by the individual's expectancy of attaining the goal, the expected immediacy of attaining the goal (if it is attained), and the importance of attaining the goal. In an exploratory study of these factors, Klinger et al. (1976) had 45 undergraduate subjects list the seven topics they remembered thinking the most about during the previous 36 hours and list seven important topics which they didn't remember thinking about. Subjects were then asked to rate these topics on 12 scales designed to assess the value of the goal involved (eight scales), the expectancy of attainment (two scales), and expected immediacy of attainment (two scales). A stepwise multiple regression analysis found small but significant simple correlations for incentive-value scores, incentive-value scores times expectancy-of-attainment scores, and incentive-value scores times immediacy scores with the self-rated amount of time spent thinking about the topic. The most efficient multiple regression prediction equation which they found yielded a multiple correlation coefficient of .49 ($p < .001$).

While these results are consistent with Klinger's theory, this study was poorly controlled and is open to a wide range of possible biases, including the possibility that subjects are inclined to assume that the topics they remember thinking about must be important to them. At this point, neither Klinger's theory nor his research provides a clear understanding of the way in which these proposed moderator variables combine or interact to moderate the strength of the influence of goals on cognitive processes. Klinger himself is not fully consistent, arguing at one point that the subjective value of the goal is an important moderator (1977, p. 56) and later arguing that, once

the individual is committed to a goal, the value of the goal is relatively unimportant in most situations and the expected difficulty of attaining the goal is an important moderator (1977, p. 329).

Emotion

The theoretical literature on emotion contains a large number of competing perspectives which rarely agree on a definition of emotion, let alone agree on procedures for measuring emotion or on the variable which should be included in a study of emotion (Plutchik, 1980, p. 79 ff). Fortunately, the empirical literature on emotion shows less disarray. Evidence is accumulating to support the view that a limited number of operationally defined emotions can be reliably differentiated and can be used productively in theory and research.

The hypothesis that a limited number of "primary" emotions can be used to explain the entire range of emotional experience has a long history. A summary of proposed primary emotions is presented in Table 1. It can be seen that there is considerable consensus, particularly among the three most recent theorists (Tomkins, Izard, & Plutchik) over which emotions are considered primary. Most theorists have seen these emotions as biologically programmed, species-wide responses which, when elicited in combination, produce the wide range of emotional responses which are reported in much the same way as a few primary colors, in the proper combinations, can produce the entire range of colors which are reported (Plutchik, 1980, p. 160 ff).

Some empirical support for these hypotheses has been provided by research investigating the expression of emotion in facial expression.

Table 1: Proposed Primary Emotions

Descartes	Spinoza	Darwin (inferred)	McDougal	Jorgensen	Cattell	Tompkins	Izard	Plutchik	Number of Supporters	Empirical Support
Sadness	Sorrow	Low spirits		Sorrow	Despair	Anguish	Distress- Anguish	Sadness	8	yes
Hatred		Hatred & Anger	Anger	Anger	Anger	Anger	Anger-Rage	Anger	8	yes
Joy	Joy	Joy		Happiness		Joy	Enjoyment- Joy	Joy	7	yes
		Surprise, Fear	Fear	Fear	Fear	Fear	Fear-Terror	Fear	7	yes
		Disdain	Disgust			Disgust	Disgust- Revulsion	Disgust	5	yes
			Wonder		Curiosity	Interest	Interest- Excitement	Expectation	5	yes
		Shame	Subjection	Shyness		Shame	Shame- Humiliation		4	yes
Love	Love	Love	"Tender"		Pity, Succor				4	yes
						Surprise	Surprise- Startle	Surprise	3	yes
Desire	Desire				Lust				3	yes
			Elation		Pride				2	yes
								Acceptance	1	yes
							Guilt		1	yes
							Contempt- Scorn		1	yes
					Loneliness				1	yes
					Sensuous Comfort				1	yes
					Sleepiness				1	yes
Admiration									1	no
				Want					1	no

These studies have found that there is considerable agreement among individuals concerning the emotions expressed in photographs of posed facial expressions. Eckman, Friesen, and Ellsworth (1972) found that photographs selected as clearly depicting one of seven primary emotions (happiness, surprise, fear, anger, disgust/contempt, sadness, and interest) were judged as expressing the intended emotion by respondents from a number of cultures including one pre-literate, non-westernized culture. The finding that the perception of emotion in facial expression is consistent across cultures as well as individuals suggests that these seven emotions, at least, are expressed in much the same way throughout our species and suggests that this consistency has a biological basis.

A recent study of facial-muscle activity during emotion provides additional evidence of intra-individual consistency in the expression of emotion and demonstrates that this consistency applies to spontaneous facial expressions. Schwartz, Fair, Salt, Mandel, and Klerman (1976) recorded the activity of four groups of facial muscles when subjects were instructed to think about happy or sad situations while attempting or not attempting to re-experience the emotions. The EMG recordings differentiated reliably between responses to happy and sad situations, between the two types of instructions, and between the responses of depressed and nondepressed subjects to the happy situation.

Despite the support that these studies of the expression of emotion in facial expression have provided for the concept of primary emotions, this line of research has not yet provided a practical method

for measuring emotion. Objective systems for scoring emotions from observations of facial expression have been under development (for example, Ekman, Friesen, & Tompkins, 1971), but no validated system which provides a means for rating the intensity of various emotions has been published. The research of Schwartz et al. (1976) seems to have potential for providing an objective measure of the intensity of emotions. However, this method has been used only with a restricted range of emotions and needs further development. Fortunately, other researchers have had some success in developing reliable self-report measures of primary emotions.

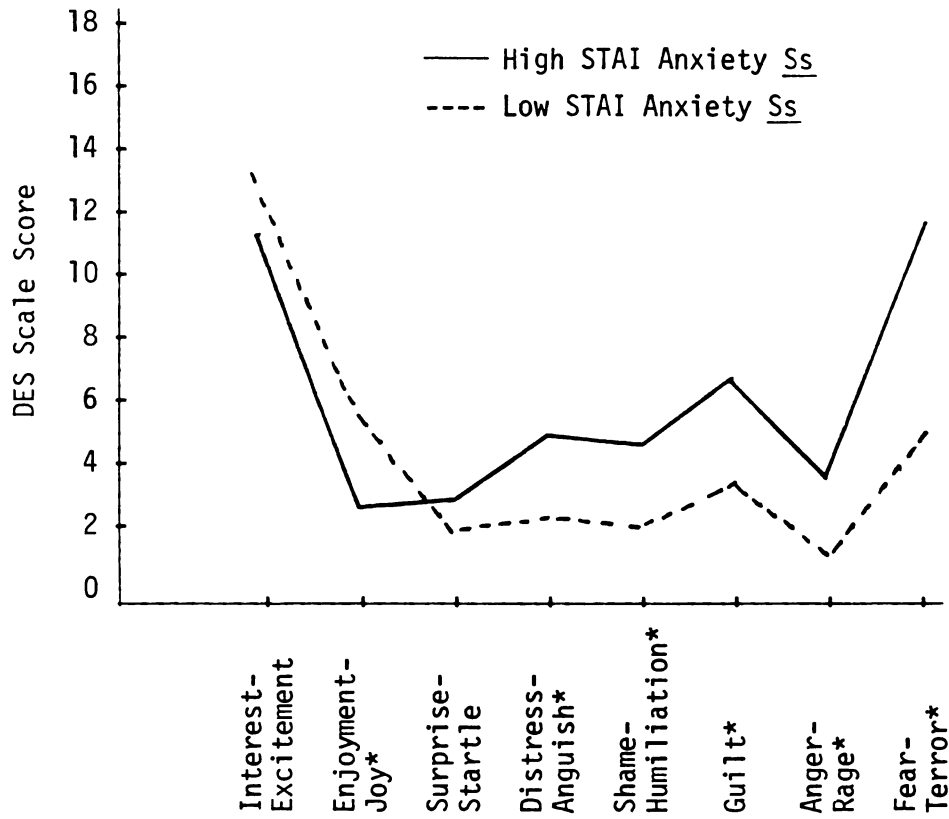
Since unstructured self-reports of emotion are difficult to quantify, many researchers have relied on adjective checklists or scales of various sorts. Many of these measures were developed without a solid theoretical base and are of unproven reliability and validity (Plutchik, 1980). Izard (1972, 1977), however, has shown that it is possible to develop a self-report measure of primary emotions which can be shown to have some degree of internal consistency and validity. Izard's measure, the Differential Emotion Scale (DES), consists of a variable number of adjectives (several different forms have been used) with at least three adjectives selected on an a priori basis to represent each of Izard's hypothesized basic emotions (see Table 1). Subjects are instructed to rate the extent to which each adjective describes their emotional experience on a Likert scale, and total scores for the intensity of each emotion are computed. In a series of studies (summarized in Izard, 1972, 1977), Izard and his colleagues have administered various forms of the DES to large samples of

undergraduate volunteers and have performed factor analyses on the item ratings. The results of these factor analyses have been largely consistent with the patterns predicted by Izard on the basis of his hypothesized set of primary emotions. The results of one of these factor analyses as reported by Izard (1977, p. 126) are presented in Table 2.

While no analysis of the internal consistency or reliability of the DES "state" subscale scores has been presented, Izard's success with studies designed to demonstrate the validity of DES subscale scores suggests that the scores are adequately reliable. For example, in a study using the DES, Bartlett and Izard (1972) investigated the subjective experience of anxiety, in part, by administering the state form of the State-Trait Anxiety Inventory (STAI, Spielberger et al., 1970), the DES, and one other measure to a large class of general psychology students immediately before an in-class examination. A sample of 80 low-anxiety subjects and 80 high-anxiety subjects were selected on the basis of their STAI state scores and the DES profiles of these two groups were compared (Figure 2). It can be seen that subjects in the high-anxiety group reported high levels of both Fear-Terror and Interest-Excitement (in Izard's terminology) and also reported elevated levels of Distress-Anguish, Shame-Humiliation (which Izard then called Shyness), and Guilt. In contrast, subjects in the low-anxiety group reported high levels of Interest-Excitement but reported significantly lower levels of Fear-Terror, Distress-Anguish, Shame-Humiliation, and Guilt and reported significantly higher levels of Enjoyment-Joy. This pattern of results supports Izard's hypothesis

Table 2: Item-Factor Correlations for the Differential Emotion Scale (N = 259)

Factor	Item	Corre- lation	Factor	Item	Corre- lation
Interest	Attentive Concentrating Alert	.88 .79 .87	Disgust	Feeling of distaste	.86
				Disgusted	.85
				Feeling of revulsion	.78
Enjoyment	Delighted Happy Joyful	.81 .87 .86	Contempt	Contemptuous	.89
				Scornful	.90
				Disdainful	.84
Surprise	Surprise Amazed Astonished	.83 .85 .87	Fear	Scared	.88
				Fearful	.90
				Afraid	.89
Distress	Downhearted Sad Discouraged	.86 .79 .82	Shame/ shyness	Sheepish	.73
				Bashful	.87
				Shy	.88
Anger	Enraged Angry Mad	.74 .84 .86	Guilt	Repentant	.78
				Guilty	.83
				Blameworthy	.80



*Difference between group means significant, Duncan Range Test, $\alpha = .05$.

Figure 2: DES profiles before in-class examination.

that the subjective experience of anxiety is produced by the co-occurrence of Fear-Terror and Interest-Excitement and supports the more general hypothesis that the entire range of emotional experience can be understood in terms of combinations of a limited number of primary emotions. The finding that DES subscale scores were able to differentiate between two distinct emotional responses to a specific situation suggests that the subscales probably are adequately reliable.

Cognition and Emotion

While many theories of emotion do not explicitly discuss the role of cognitive processes in mediating emotional responses to stimuli, few theorists would argue with the assumption that a stimulus must be perceived and interpreted to some extent before an emotional response is possible (Plutchik, 1980, p. 42). Those theorists who have explored the role of cognitive responses to stimuli in the elicitation of emotional responses have concluded that cognition plays a crucial role.

In her extensive analysis of the nature of emotions and of the neurological processes involved in emotion, Magda Arnold (1960) argues that the process of appraisal is essential for the elicitation of emotion. She hypothesizes that appraisal of the situation initiates an "action tendency" which is subjectively experienced as emotion, and she argues that the perception-appraisal-emotion process occurs so quickly that the subjective experience is one of simply perceiving the stimulus and immediately responding emotionally without awareness of the appraisal involved.

Richard Lazarus extends Arnold's position by hypothesizing that appraisal of the perceived situation includes evaluation of the

alternative responses available to the individual and their probable outcomes and by arguing that the subjective features of emotion derive from the appraisal of the situation, the action impulses generated, feedback from bodily reactions, and the expected consequences of the action (Lazarus et al., 1970). He argues that each emotion involves its own particular kind of appraisal, its own particular action tendencies, and its own particular set of physiological changes.

Lazarus and his colleagues have conducted a number of studies in which they have attempted to study the role of appraisals in the elicitation of emotion experimentally. In these studies they have attempted to modify the appraisals made by subjects responding to a stressful film by adding sound tracks to the film which emphasized the stressful nature of the film, the innocuousness of the actual situation, or the interesting anthropological perspective of the film or by suggesting these types of appraisals to subjects before they viewed the film. These manipulations have produced both significant between-group differences in the subjective experience of emotion and in physiological measures of autonomic arousal (Spiesman et al., 1964; Lazarus & Alfert, 1964; Lazarus, Opton, Nomikos, & Rankin, 1965). On the basis of these and other studies, Lazarus (1975) argues that individuals can exercise control over their emotional responses by intentionally alerting their appraisal of the situation, a process which he refers to as "reappraisal."

Plutchik (1980) agrees with Arnold and Lazarus in arguing that the existence of any emotional response presupposes the prior occurrence of an appraisal. Taking a "psychoevolutionary" perspective,

Plutchik argues that the primary adaptive value of the development of capacities for sensory perception at a distance, for reliable memories, and for communication was the resultant ability to make more reliable appraisals of situations. In other words that, from an evolutionary perspective, cognition developed in order to predict the future (Plutchik, 1980, p. 291 ff).

Plutchik provides an analysis of the cognitive processes which elicit emotional responses. This model is presented graphically in Figure 3. In Plutchik's conceptual scheme, Scanning refers to a random sensory exploration of the environment which consists of both motoric and perceptual components. This hypothetically self-motivated activity is seen as continuing until a novel or unexpected stimulus is encountered. When such a stimulus is encountered, the Orienting process aligns sensory systems in such a way as to maximize the intake of information into the cognitive system. The cognitive process of Attending then amplifies the sensory input, and this sensory input is retained in short-term memory. The Comparing process then classifies the sensory input by comparing it with memory codes.

When a preliminary classification has been made, the Orienting process is terminated because the stimulus is no longer novel and the Scanning process resumes as other cognitive processes continue. If the preliminary classification indicates that the stimulus is unimportant, processing may cease at this point; however, if the stimulus is classified as important, the Comparing process will continue, additional information will be retrieved from long-term memory, and the new sensory information will be stored in long-term memory. The

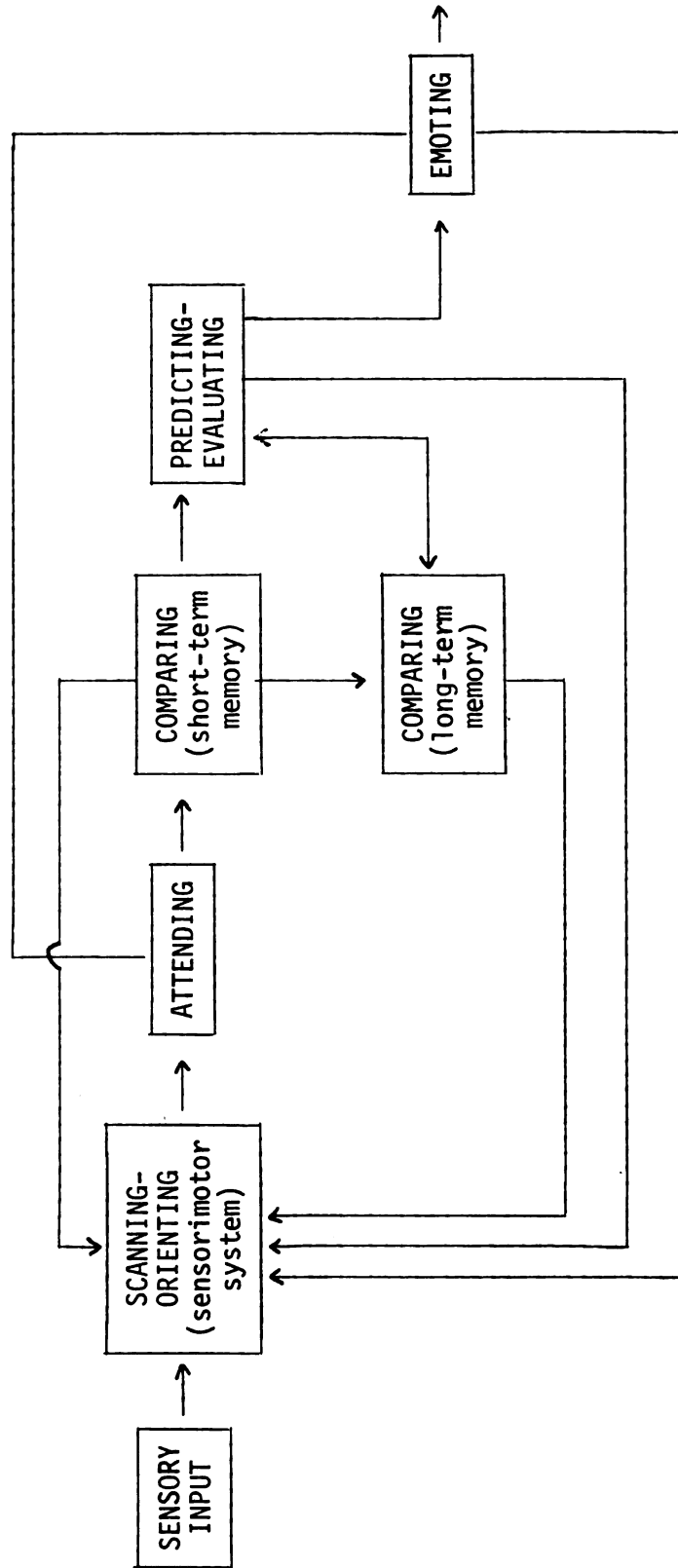


Figure 3: Cognitive processes involved in the elicitation of emotion (adapted from Plutchik, 1980).

Predicting-Evaluating process then uses the sensory information and memory information to predict the outcome of alternative responses to the situation. Plutchik argues that these predictions lead to "complex responses having multiple components of feeling, behavior, and purpose" which he terms emotions and which he sees as being produced by the Emoting process. Plutchik includes behavioral and teleological components in his definition of emotion which are not included in the definition of emotion being used in this study, and he does not state clearly whether all behavior, including the motor components of Scanning and Orienting, is emotional or not.

A number of clinically oriented authors including Ellis (1977), Beck (1976), and Shaw (1979) have focused on the role of appraisal processes in abnormal or problematic emotional responses. These authors present viewpoints which are essentially in agreement with Arnold, Lazarus, and Plutchik insofar as the role of appraisals in eliciting emotional responses is concerned. However, they have expanded the scope of this theoretical perspective by focusing on the ways in which inaccurate appraisals can elicit maladaptive emotional and behavioral responses, on the processes which can produce inaccurate appraisals, and on techniques for correcting these problems. Of these authors, Beck (1976) has presented the most detailed analysis of the role of appraisals in specific clinical syndromes and of the relationship between specific appraisals and specific emotional responses.

Beck reports discovering that, when asked to, his clients were able to report thoughts which provided an understandable connection between environmental events and seemingly "crazy" emotional responses.

He describes these thoughts in much the same way as Arnold (1960, vol. 1, p. 172 ff) described the appraisal process:

These . . . thoughts reported by numerous patients had a number of characteristics in common. They were not vague and unformulated, but were specific and discrete. They occurred in a kind of shorthand; that is, only the essential words in a sentence seemed to occur--as in a telegraphic style. Moreover, these thoughts did not arise as a result of deliberation, reasoning, or reflection about an event or topic. There was no logical sequence of steps such as in goal-oriented thinking or problem solving. The thoughts "just happened," as if by reflex. (Beck, 1976, p. 36)

He hypothesizes that these appraisals are made on the basis of sets of interrelated beliefs concerning the meaning, implications, and probable future effects of events which he refers to variously as "ideational systems," "schemas," or "rules" (Beck, 1970, 1976, p. 95 ff). He theorizes that these belief systems are based on previous experience and thus typically are accurate representations of reality which lead to appropriate emotional and behavioral responses to events. He argues, however, that unrealistic belief systems can develop through experience or socialization and that these unrealistic belief systems lead to abnormal appraisals which then lead to maladaptive emotional and behavioral responses (Beck, 1976, pp. 41-44).

Beck (1976) provides a detailed discussion of the patterns of cognitions which are involved in clinical syndromes such as depression, hysteria, and paranoia, and he proposes therapeutic techniques for modifying these cognitive processes. While his theoretical framework is based almost solely on clinical observation, it is quite compatible with the experimentally based theories of Arnold and Lazarus. Beck's greatest theoretical contribution lies in his application of the

cognitive view of emotion to emotional phenomena which are more complex than those which have been studied experimentally.

Specific Cognition-Emotion Relationships

While many of the authors who emphasize the role of appraisal in eliciting emotion share the assumption that specific cognitions lead to specific emotional responses, only Beck (1976) and Plutchik (1980) discuss specific cognition-emotion relationships. Plutchik (1980, pp. 288-291) bases his hypothesized cognition-emotion relationships, shown in Table 3, on a theoretical analysis of the environmental pressures believed to have shaped the evolution of Homo sapiens. While Plutchik's theoretical analysis is quite plausible, he cites no empirical support for these hypotheses, and he provides no criteria for determining which cognitions correspond to one of his eight categories. Beck bases his hypothesized relationships, also shown in Table 3, on clinical observation. Like Plutchik, he cites no empirical support. However, he does provide detailed discussions of the types of cognitions which he sees as eliciting sadness, anger, joy, and fear (Beck, 1976, pp. 54-75) and provides an example of the cognitions which he sees as eliciting guilt (Beck, 1976, pp. 30-31). Of the two sets of hypothesized cognition-emotion relationships, only Beck's hypotheses are stated clearly enough to be directly testable.

Integration

While research into cognitive processes, research into hypothetically primary emotions, the development of cognitive theories of emotion, and the development of cognitively oriented approaches to

Table 3: Hypothesized Cognition-Emotion Relationships

Primary Emotion	Label Used by Author	Hypothesized Eliciting Appraisal	Author
SADNESS	Sadness Sadness, Grief	Loss of something valued "Abandonment"	Beck Plutchik
ANGER	Anger Anger, Rage	Restriction of personal domain "Enemy"	Beck Plutchik
JOY	Euphoria Joy, Ecstasy	Gain of something valued "Possess"	Beck Plutchik
FEAR	Anxiety Fear, Terror	Threat "Danger"	Beck Plutchik
GUILT	Guilt	Violation of standards, Anticipation of criticism	Beck (inferred)
INTEREST	Anticipation	"What's out there?"	Plutchik
DISGUST	Disgust, Loathing	"Poison"	Plutchik
?	Acceptance, Trust	"Friend"	Plutchik
?	Surprise	"What is it?"	Plutchik

psychotherapy have proceeded fairly independently, the empirical findings and theoretical analyses produced by researchers and clinicians in these areas are quite compatible. An overview of these fields has provided a foundation for an integrated analysis of the process through which cognitive responses to complex stimulus-situations elicit specific emotional responses. The proposed integration of aspects of the theoretical and empirical literature on cognition and emotion is presented graphically in Figure 4. This integration reflects an attempt to clarify the interrelationships among the cognitive processes involved in the elicitation of specific emotional responses. While the proposed pattern of interrelationships is complex, the currently available evidence suggests that these cognitive processes are, indeed, complexly interrelated.

In this theoretical analysis it is assumed that, at any moment, an individual is faced by a complex stimulus-situation. This stimulus-complex is assumed to consist of sensory stimulation from objective stimuli and of internally generated stimuli such as proprioceptive and vestibular feedback, the individual's current emotional responses, the individual's current verbally mediated thoughts, and the individual's current mental images. Both clinical observation and empirical research have demonstrated that internally generated stimuli such as mental images and self-statements can function effectively to elicit the same responses as are elicited by objective stimuli (for example: Beck, 1970; May, 1977).

The complexity of the stimulus-complex is seen as greatly exceeding the individual's perceptual processing capacity, and it is

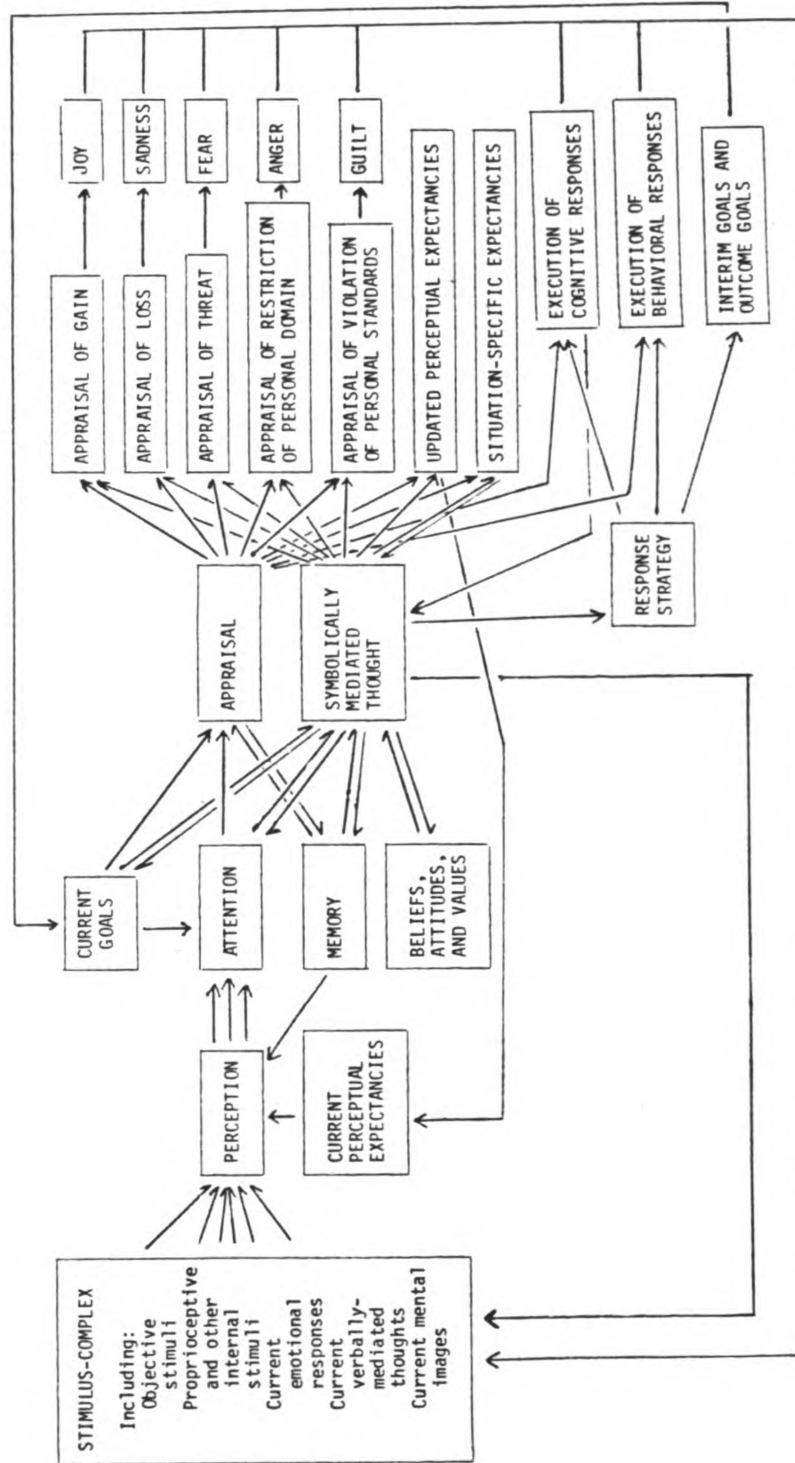


Figure 4: Proposed theoretical analysis of the process through which specific emotional responses are elicited by complex stimulus-situations.

assumed that many components of the stimulus-complex are not perceived. In keeping with the research indicating that the individual's expectancies strongly influence perception (discussed previously under the heading "Perception"), it is asserted that perception is biased in favor of perception of stimuli corresponding to the individual's current perceptual expectancies. The current perceptual expectancies are hypothesized to consist of a large set of possible stimuli which have been selected from memory by the cognitive processes of appraisal and symbolically mediated thought as being probable and/or meaningful on the basis of the current cognitive interpretation of the situation.

Up to this point the proposed theoretical integration leads to the assertion that an individual seated on a bench on a spring morning encounters a stimulus-complex consisting of objective stimuli (trees, sky, buildings, people, individual blades of grass in the lawn, individual leaves on the trees, etc.) and internally generated stimuli (possibly thoughts and memory images of other mornings; emotional responses elicited by the morning, thoughts, and memory images; and a constant flow of proprioceptive and vestibular feedback) which includes many more individual stimuli than the individual can perceive at once. According to the proposed analysis, the individual is prepared to selectively perceive stimuli which correspond to his/her current perceptual expectancies. Thus, one individual might perceive bird calls in the distance while another might perceive tiny flowers mixed in with the grass. Since perceptual expectancies are seen as being based on the current interpretation of the situation which is, in turn, based on previous experience, individual differences in

perception of the stimulus-complex should correspond to individual differences in previous experience.

In the proposed integration it is assumed that, due to the limited capacity of cognitive processes, many of the stimuli which are perceived receive no additional cognitive processing and thus are not retained in long-term memory and elicit no responses other than the cortical evoked potential which indicates physiologically that the stimulus has been perceived (Hillyard & Picton, 1979; Underwood, 1976). The selection of perceived stimuli for attention and subsequent cognitive processing is hypothesized to be strongly influenced by the individual's current goals so that goal-related stimuli are preferentially selected for attention. It is assumed that all attended stimuli receive appraisal and that goal-related stimuli may receive additional processing by symbolically mediated thought processes if these processes are not occupied with other, more strongly goal-related stimuli.

Appraisal is seen as a direct, nonreflective response to perceived stimuli which involves retrieval of memories of related situations, evaluation of the relevance of the memories for the current situation, generation of an interpretation of the current situation, expectancies concerning the outcome of the situation, and updated perceptual expectancies, in keeping with the views of Arnold (1960), Lazarus (1975), and Plutchik (1980) which were discussed previously in the section headed "Appraisal." The appraisal process is seen as a developmentally simple process which does not rely on symbolic thought and which is therefore quick but concrete and unsophisticated.

Symbolically mediated thought includes verbally mediated reflective thought, self-statements, and similar cognitive processes. These thought processes are seen as permitting a more detailed analysis of the situation than is provided by appraisal, but they are hypothesized to process information more slowly than appraisal. Consequently, it is assumed that these symbolically mediated processes are able to analyze only a fraction of the ongoing stream of perceived stimuli which receive appraisal except under conditions where a relatively limited number of new stimuli are encountered.

Both appraisal and symbolically mediated thought processes are assumed to rely on information stored in long-term memory, and it is assumed that perceived stimuli which receive appraisal may then be retained in long-term memory. Symbolically mediated thought is seen as having access to symbolically coded information which is retained in the form of beliefs, attitudes, and values. This would include generalized expectancies concerning categories of situations such as "I'm not very good at tennis," and generalized expectancies concerning categories of responses to situations such as "Being assertive usually works," as well as the clusters of beliefs and attitudes which are referred to as self-efficacy, self-esteem, locus of control, etc. Symbolically mediated thought is assumed to have the capacity to modify this symbolically coded information as well as the capacity to register additional information in memory and the capacity to modify current goals.

The appraisal process is hypothesized to elicit emotional responses and to have the potential for eliciting simple cognitive

and behavioral responses. The symbolically mediated thought processes are seen as modifying the responses elicited by appraisal as well as independently eliciting emotional responses and more complex cognitive and behavioral responses. While it is assumed that specific evaluations of the situation elicit specific emotional responses (gain-joy, loss-sadness, threat-fear, restriction of personal domain-anger, and violation of personal standards-guilt), it seems likely that additional appraisal-emotion relationships will be needed to account for the entire range of emotional experience since the current analysis includes only five of the many proposed primary emotions. It is believed that these emotional responses are not automatically represented in conscious awareness but that they become a component of the stimulus-complex which may or may not be perceived. It is also believed that the individual's subjective experience of emotion will depend on the mixture of emotional responses which are perceived and which receive attention.

Thus, this analysis suggests that the individual seated on a bench on a spring morning will attend selectively to perceived stimuli which are relevant to current goals, such as the dual goals of initiating a heterosexual relationship while avoiding rejection, and that therefore, if a member of the opposite sex is nearby, the individual will attend to that person while excluding non-goal-related stimuli from attention. Our individual will then subject the relevant perceived stimuli to appraisal and to symbolically mediated thought. The appraisal process will promptly generate a set of interpretations and expectancies based on previous experience with similar situations which will elicit initial emotional responses, perhaps mild joy and

mild fear, which will modify the current perceptual expectancies to increase perception of relevant cues, and which might elicit a smile, a blush, or a shift in posture. Meanwhile, the individual's symbolically mediated thought processes will be involved in producing a more detailed evaluation of the situation using symbolically coded information concerning beliefs about members of the opposite sex, personal values, knowledge of alternative strategies for initiating relationships and for avoiding rejection, and beliefs concerning the individual's own capacities as well as memories of similar situations. This process could modify the responses elicited by appraisal as well as eliciting additional emotional responses or eliciting more complex cognitive or behavioral responses. In the situation the individual might be preoccupied with the member of the opposite sex and fail to attend to his/her own emotional responses or he/she might attend to some or all of the emotional responses depending, of course, on whether the emotional responses were represented in the current perceptual expectancies and the extent to which they were seen as being related to current goals. Thus, our individual's subjective experience of emotion might be one of ambivalence or mild joy or mild fear when both mild joy and mild fear are elicited by the situation.

The proposed theoretical analysis assumes that both appraisal and symbolically mediated thought contribute to the generation of a set of situation-specific expectancies concerning the outcome of alternative responses to the perceived situation and that these expectancies contribute to the selection of a response strategy on the basis of an implicit cost-benefit analysis. The response strategy is seen as

including a set of interim goals as well as one or more outcome goals and as guiding cognitive and/or behavioral responses to the situation. The interim and outcome goals are assumed to immediately become components of the individual's current goals and thus to produce a change in the influences on attention. Execution of cognitive and behavioral responses is seen as producing changes in the stimulus-complex both through the production of internally generated stimuli and through the effect of the individual's behavior on the environment, and this changed stimulus-complex is subsequently perceived, interpreted, and responded to through the same ongoing cognitive processes.

Thus, this analysis predicts that the individual seated on a bench on a spring morning will develop a set of expectancies concerning the probable outcomes of alternative responses to the situation and will select the response strategy which he/she expects, on the basis of previous experience, beliefs, self-efficacy, etc., to maximize the probability of successfully initiating an opposite-sex relationship while minimizing the probability of rejection. Whatever the strategy is, it implicitly includes interim goals as well as outcome goals and leads to execution of cognitive and behavioral responses directed toward attaining the interim goals. For example, if the response strategy which is selected is to calmly and coolly walk over and start a conversation about the beauty of the weather, the interim goals would be to attain and maintain a subjective state of calmness and coolness as well as a calm, cool appearance, to walk over to the other person, and to say "Beautiful morning, isn't it" in an appropriate tone of voice. The cognitive and behavioral responses directed toward

attaining these interim goals might include intentionally focusing attention and symbolically mediated thought on cues indicating the possibility of success in order to increase calmness and confidence as well as standing up, walking over to the person, and saying appropriate words. Throughout this process, internally generated stimuli will be available to allow the individual to monitor the adequacy of his/her performance ("I'm not calm enough yet, I'll wait another minute before going over") and incoming sensory stimuli will allow continued evaluation of the appropriateness of the responses ("She/he looks a bit tense now, I'd better be careful not to come on too strong."). Since attaining calmness and approaching the opposite-sex person are now current goals, attention will be directed toward perceived stimuli related to these goals which may well not have received attention previously.

In the proposed theoretical integration, the elicitation of specific emotional responses by complex stimulus-situations is seen as a continuous, ongoing process. The individual's current analysis of the situation is believed to shape the perception and interpretation of incoming stimuli through the influence of perceptual expectancies and current goals on perception and attention. The analysis of the situation is assumed to be continuously revised through the analysis of perceived stimuli by appraisal and symbolically mediated thought processes. The stimulus-complex is seen as being continuously modified both by internally generated stimuli and by the individual's behavioral responses (as well as by other events).

In addition to incorporating the major principles developed by Klinger (1977), Arnold (1960), Lazarus (1975), Plutchik (1980), and Beck (1976), this analysis includes a number of interrelationships not included by other analyses. Despite the evidence that internally generated stimuli can elicit the same cognitive and emotional responses (Beck, 1970) and physiological responses (May, 1977) as are elicited by actual situations, previous treatments have not considered internally generated stimuli as a component of the stimulus-complex. This has consequently made it difficult for these theoretical treatments to deal with situations such as that presented by Hurlburt and Sipprelle's (1978) case study where the client's feelings of guilt and anxiety were apparently a response to his anger over his children's behavior. The influence of appraisal and symbolically mediated thought on perception through the constant updating of perceptual expectancies has not been considered explicitly by these theorists, and Klinger (1977), the theorist who has emphasized the influence of goals on cognitive processes, has not discussed the modification of current goals which is inherent in selection of a response strategy. Furthermore, it is argued that through attempting a detailed, comprehensive overview this analysis has been able to eliminate unnecessary confusion and ambiguity while keeping the analysis no more complex than is required by the complexity of the phenomena being analyzed.

A number of experimental and clinical studies have provided evidence that imagined situations can elicit the same cognitive, emotional, and physiological responses as are elicited by actual situations and that imagined behavioral responses to an imagined

situation are the same as behavioral responses elicited by the actual situation (Wade, Malloy, & Proctor, 1977). The theoretical analysis which has been presented asserts, in part, that individuals imagining a situation will attend selectively to aspects of the imagined situation which are related to their current goals, appraise these aspects of the situation, and therefore retain these aspects of the situation in long-term memory. Thus, this analysis predicts that if the individuals are asked to describe the scene they imagined, there will be a positive correlation between the degree to which an element of the imagined scene is related to the individual's current goals and the inclusion of the stimulus-element in the description of the scene. This analysis also states that goal-related stimulus-elements will be preferentially selected for cognitive processing; thus it predicts that if the individuals are asked to report the number of thoughts concerning specific stimulus-elements which occurred while they imagined the scene there will be a positive correlation between the degree to which the stimulus-element is related to the individual's current goals and the number of thoughts which are reported. Finally, the analysis asserts that, for the five emotions which have been examined in detail, each emotion occurs when the corresponding type of appraisal occurs (as shown in Figure 3). Since it is assumed that each appraisal which occurs increases the intensity of the corresponding emotion, this analysis predicts that if the individuals are asked to report their evaluation of the imagined situation and to report their emotional response to the imagined situation there will be a positive correlation between the intensity of specific emotions and the number of

corresponding appraisals which are reported. This analysis also predicts that there will be no significant correlation between the intensity of specific emotional responses and the number of appraisals in categories other than the corresponding category.

HYPOTHESES

It is hypothesized that, when the degree to which specific types of activities are related to subjects' current goals is assessed by a self-report measure of the frequency of thoughts concerning those activities and subjects are subsequently instructed to imagine a complex stimulus situation, to describe the scene which they imagined, to complete a self-report measure of the intensity of specific emotional responses, to report the number of thoughts concerning specific elements of the imagined scene, and to narrate the thoughts which they experienced while imagining the scene:

1. There will be a significant positive correlation between the degree to which activities related to a stimulus element are related to the subject's current goals and the inclusion of that stimulus-element in the description of the scene.
2. There will be a significant positive correlation between the degree to which activities related to a stimulus-element are related to the subject's current goals and the reported number of thoughts concerning that stimulus-element.
3. The intensity of specific emotional responses while imagining the stimulus situation will be positively correlated with the number of corresponding appraisals included in the subject's narration of the thoughts which were experienced while imagining the stimulus-situation and will not be significantly correlated with the number of appraisals in other categories.
 - a. The number of appraisals indicating gain of an incentive or expectation of gain of an incentive will be correlated with the intensity of joy.
 - b. The number of appraisals indicating loss of an incentive or expectation of loss of an incentive will be correlated with the intensity of sadness.

- c. The number of appraisals indicating restriction of the individual's domain or expectancy of restriction will be correlated with the intensity of anger.
- d. The number of appraisals indicating threat or expectancy of threat will be correlated with the intensity of fear.
- e. The number of appraisals indicating violation of personal standards or expectancy of violation of personal standards will be correlated with the intensity of guilt.

METHOD

Overview of the Procedure

The hypotheses predict both a pattern of cognitive responses to a complex stimulus situation and a set of relationships between specific types of cognitions and specific emotions. In order to test these hypotheses, volunteer subjects were asked to complete a number of paper-and-pencil measures which were used in another study (Fleming, Note 1) and then they were scheduled for individual experimental sessions. During the experimental session, subjects were instructed to imagine three complex stimulus situations. Subjects completed a paper-and-pencil measure of the intensity of ten emotions before and after the second of these images. Then the content of this image and the subjects' cognitive and emotional responses to it were assessed through a detailed structured interview.

Subjects

All subjects participating in the study were volunteers enrolled in introductory psychology courses at Michigan State University. They received class credit for their participation in the study. One hundred seventy-four subjects completed the initial session; 15 of these subjects were unable to participate in the experimental session because of schedule conflicts, and 124 subjects completed the experimental session. Thus, 25.2% of the subjects who attended the initial session and were scheduled to participate in the experimental session failed

to complete the study. An analysis of the effects of subject attrition is reported in the results section.

Experimenters

Both the initial sessions and the experimental sessions were conducted by advanced undergraduate experimenters who participated in this study in partial fulfillment of the requirements of an independent study course in psychology. The nine experimenters, four males and five females, were trained to conduct the sessions by the principal investigator and a colleague conducting a related study (Fleming, Note 1) and were blind to the theoretical background of the study and to the hypotheses being tested.

The experimenters participated in 16 hours of training plus eight hours of practice in conducting the experiment with pilot subjects before they began conducting the experiment with actual subjects. Training sessions consisted of didactic presentations, demonstrations, role playing, and discussion of readings on interviewing (Survey Research Center, 1976, pp. 11-18; Richardson, Dohrenwend, & Klein, 1965, pp. 33-55, 173-206) and on general methodological issues (Orne, 1962).

After the experimenters had completed their training, the principal investigator monitored the tape recordings of each experimental session until each experimenter had demonstrated the ability to conform to the outline for the structured interview. Subjects who completed the experimental session before the experimenter demonstrated the ability to conform to the interview format were considered pilot

subjects and were excluded from the data analysis. The experimenters were supervised weekly throughout the course of the study.

Measures

During the initial session a battery of paper-and-pencil measures were administered for use in another study. These measures included: the Story Completion Test, the Cognitive Response Test, the Life Events Inventory, and the Dysfunctional Attitude Scale. During the experimental session the Beck Depression Inventory (BDI) and two forms of the Depression Adjective Check List (DACL) were also administered for use in the same study. For a description of these measures, see Fleming (Note 1).

Differential Emotion Scale

The Differential Emotion Scale (DES, Appendix A) is a scale consisting of 30 words or phrases which describe different emotions and which can be scored in terms of ten hypothetically primary emotions (adapted from Izard, 1972, 1977). The reliability and validity of this measure have been discussed previously in the section of the literature review headed "Emotion." The standard instructions ask subjects to rate the extent to which the words describe their feelings at the present time, and Form B (Appendix B) instructs subjects to rate the extent to which the words describe their feelings immediately prior to the termination of the imaged scene.

Personal Data Sheet

The Personal Data Sheet (PDS) is a 15-item questionnaire, developed for this study, which asks for specific demographic information

and information about childhood which may be related to some of the variables being studied (Appendix C).

Thought Survey

The Thought Survey (TS, Appendix D) is a 68-item questionnaire, developed for use in this study as a measure of the degree to which activities relevant to selected stimulus elements are related to subjects' goals. It is based on the assumption that subjects exert more "cognitive work" on topics which are more strongly related to goals and that, therefore, the frequency of thoughts about a given topic reflects the degree of relationship to goals. The TS is composed of six ten-item subscales which assess the frequency of thoughts concerning same-sex peer relationships, opposite-sex peer relationships, academic achievement, and intrusion as well as the frequency of specific thoughts related to pursuing possible gain and avoiding possible loss. It is composed of two sections; items 1 through 46 ask subjects to rate the frequency of their thoughts about specific topics during the preceding 24 hours, and items 47 through 68 ask subjects to rate the frequency of specific thoughts during the preceding 24 hours.

A preliminary version of the TS was distributed to a class of approximately 600 introductory psychology students along with a number of other measures being used by other experimenters, and the students were instructed to complete the TS and return it at the next class meeting. Properly completed answer sheets were returned by 274 students, 105 males and 169 females, a return rate of approximately 45%.

This sample was divided arbitrarily into two samples. An item analysis was conducted using data from sample A ($n = 128$) and subscales were shortened to 10 items for same-sex, opposite-sex, academic, and intrusion subscales and to 16 items for gain and loss subscales on the basis of item-total correlations and coefficient alpha for the subscale with the item deleted. The results of this procedure were then cross-validated using the data from sample B ($n = 146$).

The internal consistency of the shortened subscales, as measured by coefficient alpha, was satisfactory, ranging from .891 to .948. However, the gain and loss subscales with alphas of .896 and .891, respectively, correlated with each other almost perfectly ($r = .88$).

The items of the gain and loss subscales were subsequently rewritten to more clearly ask subjects to rate the frequency of specific thoughts and the TS items were reordered so that the items from the same-sex, opposite-sex, academic achievement, and intrusion subscales were randomly sequenced among items 1 through 46 and the items of the revised gain and loss scales were randomly sequenced among items 47 through 68. A preliminary item analysis was conducted on an availability sample of 45 subjects (undergraduate experimenters, experimenters' friends, and session 2 pilot subjects). All subscales had adequate internal consistency (alphas ranging from .763 to .903), and the scores on the revised gain and loss subscales were moderately correlated but were partially independent of each other ($r = .52$, $r^2 = .27$). The results of an item analysis of the TS conducted using the data from this study are summarized in the results section.

Structured Interview

The structured interview (in Appendix I) consists of a detailed set of instructions to provide a systematic method for interviewing subjects concerning the content of the imagined scene, subjects' emotional responses to the imagined scene, and subjects' cognitive responses to the imagined scene. Subjects' responses to the structured interview were tape-recorded and were scored by the experimenter who conducted the interview using an objective scoring system (Appendices E and F). A sample of 31 tapes selected randomly from the first 75 interviews which were scored was scored by all experimenters. An analysis of the reliability of the scoring of the structured interview is reported in the results section.

Participant's Evaluation Form

The Participant's Evaluation Form (PEF) is a 19-item questionnaire, developed for this study, which asks for information concerning subjects' perceptions of the study (Appendix K).

Procedure

The initial sessions were conducted by two experimenters who gave standard instructions to a group of subjects in a large classroom (Appendix G). The experiment was explained as a study of imagination, thought, and feelings, and subjects were told that they would be asked to participate in a subsequent individual session during which they would imagine everyday scenes and then discuss their reactions with an interviewer. Subjects were told that they were free to discontinue participation at any point, and written consent was obtained

(Appendix H). Subjects were then asked to complete the battery of paper-and-pencil measures (including the PDS) being used in Fleming's study (Note 1) and individual times were scheduled for the experimental session.

The individual experimental session was conducted following a standardized procedure in a private room with the subject seated in a recliner (Appendix I). It began with a restatement of the purpose of the study, a brief overview of the procedure, and a reminder of the option to discontinue participation at any point. Subjects were asked to sign a written consent form (Appendix J) permitting the interview later in the session to be audiotaped, and to complete the TS and the BDI. After the subject had completed these measures, the following tape-recorded imagery practice instructions were presented:

I'm going to ask you to imagine being in a situation that could well happen and I'd like you to imagine as realistically as possible that you are there in that situation. As you imagine the scene, try to see, hear, and feel just as you would if you were actually there and continue imagining until I ask you to stop.

Now get in a comfortable position and relax. Close your eyes to shut out any distractions and get ready to imagine being in the situation I describe. Imagine all the sensations that go along with the situation, the feel, smell, taste, and sound of the situation as well as how it looks, even if they are not all mentioned specifically. Start imagining being in the situation as I describe it and continue imagining until I ask you to stop.

Imagine that you're standing outside, in the snow, in the late afternoon. Snowflakes are slowly falling and as you watch them you feel the cold breeze against your face and the warmth of your jacket. Feel the cold air as you inhale and feel the soft touch of a snowflake on your cheek. Hear the sound of traffic in the distance and look at the scene around you. Notice that your feet are starting to feel the cold and that it's growing dark. As you turn to walk home, listen to the soft sound of your footsteps in the snow. Continue imagining until I ask you to stop. [Pause until 60 seconds elapsed from the beginning of the image description.] Stop imagining now and open your eyes.

At this point, the experimenter stopped the recording and asked if there were any questions. Once all questions had been answered, subjects were asked to complete the DACL and the DES Form A. Then the following tape-recorded imagery instructions were presented:

In a second I'll ask you to imagine being in another situation that could well happen. As I describe the situation, imagine it as realistically and vividly as you can. Try to mentally see, feel, and hear all the parts of the scene just as though you were there and continue imagining being there until I ask you to stop.

After you finish imagining that situation, you'll be asked some questions about what you imagined and about your thoughts and feelings while you imagined it. You'll find it easiest to answer these questions if you simply pay attention to your imagination, your thoughts and your feelings without trying to focus your attention on all the details.

Now get in a comfortable position and relax. Close your eyes to shut out distractions and get ready to imagine being in the situation I describe. Imagine all the sensations that go with the situation, the feel, smell, taste, and sound of the situation as well as how it looks even if they are not mentioned specifically. Start imagining being in the situation as I describe it and continue imagining until I ask you to stop.

In order to control for primacy and recency effects on recall, subjects were randomly assigned to hear one of the two following sequences of image description. Subjects with even student numbers heard description 1, and subjects with odd student numbers heard description 2.

1. Imagine that you're sitting on a bench outside a campus building on a spring morning. The sun is shining warmly and you can feel a gentle breeze. As you wait for a 10-point quiz you'll be taking in half an hour, people are walking past you on the sidewalk. You notice a girl [or guy, person of opposite sex] on a bench across from you and she [or he] seems to be looking your way. A guy [girl, same sex] you know from last term walks by without saying anything and a guy [or girl, same sex] you don't know sits down right next to you on the bench. Continue imagining until I ask you to stop. [Pause until 60 seconds had elapsed from the beginning of the description.] Stop imagining now, and open your eyes.

or

2. Imagine that you're sitting on a bench outside a campus building on a spring morning. A guy [or girl, same sex] you know from last term walks by without saying anything. You notice a girl [or guy, opposite sex] on a bench across from you and she [or he] seems to be looking your way. A guy [or girl, same sex] you don't know sits down right next to you on the bench. As you wait for a 10-point quiz you'll be taking in half an hour, you can feel a gentle breeze and the sun is shining warmly. Continue imagining until I ask you to stop. [Pause until 60 seconds had elapsed from the beginning of the description.] Stop imagining now, and open your eyes.

Immediately following the image, subjects were asked to complete the DACL and the DES--Form B. They were then asked to respond to the structured interview, and their responses were tape-recorded. Following the interview, subjects were again asked to recline and close their eyes, and the following tape-recorded instructions for a neutral, relaxing image were given:

Now get in a comfortable position and relax. Close your eyes to shut out distractions and get ready to imagine being in the situation I describe. Start imagining being in the situation as I describe it and continue imagining until I ask you to stop.

Imagine that you are lying on a beach in the warm sunshine. Feel the soft breeze and the warm sand. Listen to the sound of the surf and the cry of the sea birds. There is nothing for you to do but lie back and enjoy relaxing on the beach. Focus all your attention on the sensations of the beach, the smell of the salt air, the warmth of the sun, and relax. Just continue to relax. Continue imagining until I ask you to stop. [Pause until 60 seconds elapsed from the beginning of the description.] Stop imagining now, and open your eyes.

Following this image, subjects were asked to fill out the PEF. They were then provided with a written explanation of the study (Appendix L) and were provided with an opportunity to ask any questions they wished to ask. They were told how to contact the principal investigator if they wanted information which the experimenters (who were blind to the hypotheses) were unable to provide. Subjects were informed of the opportunity to receive information about the results

of the study when the study had been completed, if they were interested, and were advised to consult the faculty member supervising this study if they were concerned about their emotional responses to the study.

RESULTS

Assessment of the Effects of Attrition, of Sex Differences, and of the Reliability of Measures

The Effects of Attrition

In order to determine whether the failure of some subjects to complete the experimental session resulted in a biased sample, t-tests were conducted to test for differences between subjects who completed both sessions and subjects who were scheduled to participate in the experimental session but failed to do so. No significant differences were found between the two groups on any of the demographic variables assessed through the PDS or on any of the measures administered during the initial session for use in Fleming's study (Note 1). It was concluded that subject attrition did not systematically bias the sample.

The Effects of Sex Differences

In order to determine whether male and female subjects differed systematically on the variables being analyzed in this study, t-tests were conducted to test for sex differences on demographic variables, TS subscale scores, the intensity of emotions reported immediately before the experimental scene, the inclusion of stimulus-elements in the description of the imagined scene, the reported number of thoughts concerning each stimulus-element, the number of each type of appraisal, the intensity of emotions reported immediately following the experimental scene, and the vividness and realism of the imagined scene.

Five of 50 contrasts revealed significant differences: men scored significantly higher on the academic achievement subscale of the TS (means = 24.6, 28.2, $SD = 7.78$), women reported significantly more thoughts concerning the 10-point quiz (means = 3.2, 2.3, $SD = 2.3$), women reported significantly more appraisals of threat (means = .38, .18, $SD = .55$), women reported significantly more appraisals of violation of personal standards (means = .19, .04, $SD = .41$), and men whose parents had separated were significantly older when the separation occurred than women whose parents had separated. Despite the cultural stereotype that women are "more emotional" than men, women did not report consistently higher levels of emotion on the DES or DACL. It was concluded that since no consistent sex differences were found on TS subscales, DES subscales, or responses to the structured interview, the observed sex differences did not invalidate the combining of data from male and female subjects for data analysis.

The Reliability of the Thought Survey

The reliability of TS subscale scores was estimated by computing coefficient alpha for each of the subscales using the data collected during the experimental session. For the subscales used in this study the coefficients were: Intrusion, $\alpha = .866$; Academic Achievement, $\alpha = .907$; Same-Sex Relationships, $\alpha = .914$; Opposite-Sex Relationships, $\alpha = .881$ ($n = 116$).

A cluster analysis of TS items revealed eight coherent clusters which only partially replicated the a priori subscales. The Intrusion subscale was represented by a cluster of items concerning personal

space and a fairly independent cluster of items concerning being liked by others and being intruded upon by others. The Academic Achievement Subscale was represented by two similar clusters of items concerning academic success and a third cluster concerning academic failure, the Same-Sex Relationships subscale was represented by a single cluster of items, and the Opposite-Sex Relationships subscale was represented by a cluster of items concerning success in opposite-sex relationships and a cluster of items concerning unsuccessful opposite-sex relationships. An item analysis of these empirically derived clusters revealed that all of the clusters were internally consistent (coefficient alphas ranged from .85 to .93) and that each of the items contributed to the cluster with which it was associated.

The pattern of correlations between the a priori TS subscales and the empirically defined clusters is shown in Table 4. The one cluster which does not clearly correspond to one of the a priori subscales is the cluster provisionally labeled Intimacy/Boundaries. Despite the high correlation between this cluster and the Same-Sex Relationships subscale, this cluster, which consists of the items shown in Table 5, consists of items which are generally concerned with issues other than same-sex relationships.

While the results of the cluster analysis suggest that the TS could be improved through further refinement of the scoring system, the high internal consistencies of the a priori subscales and the high correlations between these subscales and the corresponding clusters indicate that they are both reliable and interpretable.

Table 4: Correlations Between Empirically Derived Clusters and Thought Survey Subscales

Thought Survey Subscale	Cluster							
	Opposite-Sex Acceptance	Opposite-Sex Rejection	Same-Sex Relationships	Academic Success 1	Academic Success 2	Academic Failure	Personal Space	Intimacy/ Boundaries
Opposite-Sex Relationships	<u>.81**</u>	<u>.90**</u>	.62**	.25**	.26**	.45**	.31**	.53**
Same-Sex Relationships	.57**	.64**	<u>.89**</u>	.21**	.12	.44**	.40**	.83**
Academic Achievement	.38**	.37**	.41**	<u>.93**</u>	<u>.62**</u>	<u>.88**</u>	.56**	.20*
Intrusion	.41**	.47**	.57**	.37**	.36**	.56**	<u>.91**</u>	.64**

Note. Underscored coefficients indicate correlations between TS subscales and corresponding clusters.

* $p < .05$.

** $p < .01$.

Table 5: Items Composing the "Intimacy/Boundaries" Cluster

Subcluster 1	Having men be interested in knowing you. Fitting in with the men you know.
Subcluster 2	Having others not respect your privacy. Not having other people intrude on you. Being crowded. Not being able to have time to yourself when you want to.
Subcluster 3	Having women be interested in knowing you. "Some of the men I know might stop liking me." Being left out of activities female friends are involved in. Being rejected by the women you know. Fitting in with other women.

Note. The items shown are taken from the women's form of the Thought Survey. For male subjects the gender of the person(s) referred to in the item was reversed.

The Reliability of the Differential Emotion Scale

The reliability of the DES subscale scores was estimated by computing coefficient alpha for each of the DES Form A and DES Form B subscales being used in this study. The results of this analysis are shown in Table 6. While two of the subscales showed inadequate levels of internal consistency (Anger Form A, Guilt Form B), the other subscales showed adequate to excellent levels of internal consistency.

When the intercorrelations among the DES subscales being used in this study (Table 7) were examined, moderately strong correlations were found between the Distress subscale and the Anger and Guilt subscales. Correction of these intercorrelations for the attenuation due to the less-than-perfect reliability of the scales showed that

the intercorrelations among the Distress, Anger, and Guilt subscales were quite strong, especially for Form B (Table 8).

Table 6: The Reliability of Relevant DES Subscales

Subscale	Form A	Form B
Enjoyment	.926	.933
Distress	.823	.829
Anger	.620	.843
Fear	.908	.781
Guilt	.728	.297

Note. Coefficient alpha, $n = 97$.

Table 7: DES Subscale Intercorrelations

	Enjoyment	Distress	Fear	Anger	Guilt
DES Form A					
Enjoyment		-.38**	-.19*	-.14	-.12
Distress			.44**	.45**	.47**
Fear				.24**	.46**
Anger					.39**
Guilt					
DES Form B					
Enjoyment		-.28**	-.14	-.25**	-.08
Distress			.30**	.69**	.57**
Fear				.22**	.32**
Anger					.45**
Guilt					

* $p < .05$.

** $p < .01$.

Table 8: DES Subscale Intercorrelations Corrected for Attenuation

	Enjoyment	Distress	Fear	Anger	Guilt
DES Form A					
Enjoyment		-.43	-.21	-.19	-.15
Distress			.50	.63	.61
Fear				.27	.57
Anger					.58
Guilt					
DES Form B					
Enjoyment		-.32	-.17	-.28	-.15
Distress			.37	.83	1.16 ^a
Fear				.27	.66
Anger					.89
Guilt					

^aCorrections for attenuation based on small samples ($n < 300$) sometimes produce estimated correlations greater than 1.00.

Factor analyses of the DES Form A and the DES Form B failed to completely replicate Izard's (1972, 1977) finding that the DES subscales are factorially independent. It can be seen from Table 9 that while many of the subscales did appear as separate factors, the Guilt subscale items loaded on several different factors and the Distress subscale items loaded most strongly on the same factor as Anger, Disgust, and Contempt items. This finding, in conjunction with the high intercorrelations found among Distress, Anger, and Guilt subscales, challenges the assertion that these three DES subscales provide measures of unitary primary emotions which are mutually independent. While this finding could be seen as challenging the assumption that these three emotions are independent primary emotions,

Table 9: Results of a Factor Analysis of DES Form B

Subscale	Item	Factor							
		1	2	3	4	5	6	7	8
Interest	Attentive		.30			.68			
	Alert		.38			.63			
	Concentrating					.64			
Enjoyment ^a	Happy		.89						
	Joyful		.84						
	Delighted		.82						
Surprise	Astonished	.33		.66					
	Amazed	.39		.72					
	Surprise			.71					
Distress ^a	Discouraged	.53							
	Downhearted	.55		.31					
	Sad	.58		.33	.32	-.32			
Anger ^a	Angry	.77							
	Mad	.81							
	Enraged	.65							
Disgust	F of Distaste ^b	.47						.41	-.31
	F of Revulsion ^b	.52							
	Disgusted	.59							
Contempt	Scornful	.49		.31					
	Disdainful	.48						.49	
	Contemptuous							.47	
Fear ^a	Afraid				.69				
	Fearful				.60			.36	
	Scared				.79				
Shame	Bashful						.68		
	Shy						.85		
	Sheepish						.32	.48	
Guilt ^a	Repentant	.32							-.33
	Blameworthy	.36							.65
	Guilty					-.36			

Note: Principal Factors Analysis with Varimax Rotation, only factor loadings greater than .30 are shown.

^aSubscales used in data analysis.

^bThe item reads: Feelings of

it seems to be due to the inadequacy of the short (three-item) DES subscales.

The Reliability of the Content Analysis of the Structured Interview

A random sample of 31 of the first 100 experimental sessions was selected, and the tape-recorded interviews from these sessions were scored by all nine experimenters. Both the average correlation between raters and the average percentage of agreement between raters on each rating were computed for the variables used in this study. The results of this analysis are shown in Table 10. While there was considerable variation in the magnitude of pairwise correlations and percentage agreements, no rater was consistently less reliable than other raters.

In interpreting these results it must be noted that the ratings of the inclusion of stimulus-elements in the description of the imagined scene and the ratings of the number of appraisals of Threat, Restriction of Personal Domain, and Violation of Personal Standards were essentially dichotomous variables with skewed distributions. Thus, the assumptions on which correlation is based are not met by these variables, and percentage agreement is a more appropriate measure of reliability.

All of the ratings showed levels of reliability which are acceptable for exploratory research. However, the reliabilities of the ratings of the number of the various types of appraisals are low enough to noticeably attenuate the correlations of these variables with other variables.

Table 10: Reliability of Experimenter Ratings of Subjects' Verbal Responses

Variable	Average Interrater Correlation	Range	Average % Agreement	Range
Inclusion of <u> </u> in the description of the scene.				
a. Member of the opposite sex	.93	.84-1.00	97	93-100
b. Same-sex acquaintance	.82	.66-1.00	95	87-100
c. Same-sex stranger	.93	.75-1.00	97	87-100
d. 10-point quiz	.76	.46- .93	89	73- 97
Reported number of thoughts concerning:				
a. Member of the opposite sex	.92	.77-1.00	96	90-100
b. Same-sex acquaintance	.92	.66-1.00	98	93-100
c. Same-sex stranger	.94	.84-1.00	93	90-100
d. 10-point quiz	.96	.91-1.00	95	86-100
Number of appraisals of:				
a. Gain	.79	.67- .91	72	53- 86
b. Loss	.62	.33- .88	62	47- 79
c. Threat	.55	.23- .77	70	57- 87
d. Restriction of domain	.26 ^a	-.10- .80	87	75- 97
e. Violation of personal standards	.46 ^a	.15- .75	84	73- 96

^aBased on correlations among eight experimenters; correlations with the ninth experimenter were uncomputable because of zero variance.

A Priori Tests of Hypotheses

Hypothesis One

The hypothesis that there is a significant positive correlation between the degree to which a given stimulus-element is related to the subject's goals and the inclusion of that stimulus-element in the description of the scene was tested by computing the Pearson product-moment correlation coefficients shown in Table 11. One of the four correlations, the correlation between the TS Same-Sex Relationship subscale and the inclusion of the same-sexed acquaintance in the image description, supports this hypothesis.

Hypothesis Two

The hypothesis that there is a significant positive correlation between the degree to which a given stimulus-element is related to the subject's goals and the frequency of thoughts concerning that stimulus-element was tested by computing the Pearson product-moment correlation coefficients shown in Table 12. Two of these four correlations, the correlation between the TS Opposite-Sex Relationship subscale and the number of thoughts concerning the member of the opposite sex and the correlation between the TS Same-Sex Relationship subscale and the number of thoughts concerning the same-sexed acquaintance, support the hypothesis and the other two fail to support the hypothesis.

Hypothesis Three

The hypothesis that specific appraisals lead to specific emotional responses was tested by computing the Pearson product-moment

Table 11: Correlations Between Thought Survey Subscales and Inclusion of Corresponding Stimulus-Elements in the Description of the Scene

Thought Survey Subscale	Related Stimulus Element	Correlation of Subscale With Inclusion of Element in Description of Scene
Opposite-Sex Relationships	Member of opposite sex	-.01
Same-Sex Relationships	Same-sex acquaintance	.16*
Academic Achievement	10-point quiz	-.12
Intrusion	Same-sex stranger	.03

* $p < .05$.

Table 12: Correlations Between Thought Survey Subscales and the Number of Thoughts Concerning Corresponding Stimulus-Elements

Thought Survey Subscale	Related Stimulus Element	Correlation of Subscale With Number of Thoughts Concerning Stimulus-Element
Opposite-Sex Relationships	Member of opposite sex	.18*
Same-Sex Relationships	Same-sex acquaintance	.24*
Academic Achievement	10-point quiz	.14
Intrusion	Same-sex stranger	.06

* $p < .05$.

correlation coefficients shown in Table 13. Three of the five hypothesized correlations, the correlations between the number of appraisals of gain and the DES Enjoyment subscale, between the number of appraisals of threat and the DES Fear subscale, and between the number of appraisals of violation of personal standards and the DES Guilt subscale, were significant. However, three nonhypothesized correlations (the correlation between the DES Distress subscale and the number of appraisals of violation of standards, the correlation between the DES Anger subscale and the number of appraisals of loss, and the correlation between the DES Enjoyment subscale and the number of appraisals of threat) were also significant.

Table 13: Correlations Between Categories of Appraisals and DES Subscales

DES Subscale	Number of Appraisals of:				
	Gain	Loss	Threat	Restriction of Domain	Violation of Standards
Enjoyment	<u>.26**</u>	-.06	-.16*	-.03	-.02
Distress	-.06	<u>.12</u>	.03	.00	<u>.27**</u>
Fear	.03	.15	<u>.17*</u>	-.09	.07
Anger	-.02	.19*	.07	<u>.08</u>	.14
Guilt	.05	.01	-.03	-.00	<u>.16*</u>

Note. Underscored coefficients were hypothesized to be significantly positive; all other coefficients were hypothesized to be non-significant.

* $p < .05$.

** $p < .01$.

Post-Hoc Analyses

Hypotheses One and Two

An additional test of Hypotheses 1 and 2 was computed by substituting scores on the empirically defined TS item clusters for the a priori TS subscale scores. The results of these analyses are presented in Tables 14 and 15. These analyses failed to provide support for Hypothesis 1 and provided partial support for Hypothesis 2.

Hypotheses 1 and 2 were tested separately for males and females. No significant differences or nonsignificant trends ($p \leq .10$) were found between the correlations found for male subjects and the correlations found for female subjects.

Hypothesis Three

The results of the analysis of the reliability of the DES challenged the assumption that the Distress subscale was independent of the Anger and Guilt subscales. Consequently, the analysis used to test Hypothesis 3 was repeated replacing the Distress subscale with the DACL Form C, a measure of depressed mood which was administered at the same time as the DES Form B for use in Fleming's study (Note 1). The DES Distress subscale and the DACL are designed to measure similar emotional responses, but their equivalence has not been examined. The results of this analysis are presented in Table 16.

In this analysis the DACL correlated significantly with the number of appraisals of loss; thus four of the five hypothesized correlations were significant. However, four nonhypothesized correlations were significant--the correlations between appraisals of

Table 14: Correlations Between Thought Survey Cluster Scores and the Inclusion of Corresponding Stimulus-Elements in the Description of the Scene

Thought Survey Cluster	Related Stimulus-Element	Correlation of Cluster Scores With Inclusion of Element in Description of Scene
Opposite-Sex Acceptance Opposite-Sex Rejection	Member of opposite sex	.00 .03
Same-Sex Relationships	Same-sex acquaintance	.10
Academic Success 1 Academic Success 2 Academic Failure	10-point quiz	-.09 -.18* -.08
Personal Space	Same-sex stranger	.08

*p < .05.

Table 15: Correlations Between Thought Survey Cluster Scores and the Number of Thoughts Concerning Corresponding Stimulus Elements

Thought Survey Cluster	Related Stimulus-Element	Correlation of Cluster Score With Number of Thoughts Concerned With Stimulus-Element
Opposite-Sex Acceptance	Member of opposite sex	.30**
Opposite-Sex Rejection		.14
Same-Sex Relationships	Same-sex acquaintance	.17*
Academic Success 1	10-point quiz	.13
Academic Success 2		.09
Academic Failure		.06
Personal Space	Same-sex stranger	.12

* $p < .05$.

** $p < .01$.

Table 16: Correlations Between Categories of Appraisals and DES Subscales With the Depression Adjective Checklist Replacing the DES Distress Scale

Scale	Number of Appraisals of:				
	Gain	Loss	Threat	Restriction of Domain	Violation of Standards
DES Enjoyment	<u>.26**</u>	-.06	-.16*	-.03	-.02
DACL Form C	-.20*	<u>.25**</u>	.17*	.10	.11
DES Fear	.03	.15	<u>.17*</u>	-.09	.07
DES Anger	-.02	.19*	.07	<u>.08</u>	.14
DES Guilt	.05	.01	-.03	-.00	<u>.16*</u>

Note. Underscored coefficients were hypothesized to be significantly positive; all other coefficients were hypothesized to be non-significant.

* $p < .05$.

** $p < .01$.

threat and enjoyment, between appraisals of gain and the DACL, between appraisals of threat and the DACL, and between appraisals of loss and anger. In order to determine whether the nonhypothesized correlations were an artifact of correlations among the ratings of the number of the various appraisals, partial correlations were computed between the number of each type of appraisal and the intensity of each of the emotions with the effects of the number of the other appraisals partialled out. The results of this analysis are presented in Table 17. It can be seen that partialling out the effects of the other appraisals did not eliminate all of the nonhypothesized appraisals. The apparent negative correlation between number of appraisals of threat and the DES Enjoyment subscale was eliminated as was the apparent positive

correlation between number of appraisals of threat and the DACL Form C. However, the remaining nonhypothesized correlations were not eliminated, and the positive correlation between number of appraisals of loss and the DES Anger subscale increased in both magnitude and significance. This analysis suggests that these remaining correlations are not artifacts of the interrelationships among appraisals.

Table 17: Partial Correlations Between Appraisals and Emotions Controlling for the Effects of Intercorrelations Among Appraisals

Scale	Number of Appraisals of:				
	Gain	Loss	Threat	Restriction of Domain	Violation of Standards
DES Enjoyment	<u>.26**</u>	-.05	-.13	-.00	-.02
DACL Form C	-.19*	<u>.24**</u>	.15	.10	.11
DES Fear	.04	.16	<u>.17</u>	<u>-.07</u>	.06
DES Anger	.05	<u>.24**</u>	.07	<u>.09</u>	.16
DES Guilt	.05	.04	-.06	-.00	<u>.17*</u>

Note. Underscored coefficients were hypothesized to be significantly positive; all other coefficients were expected to be nonsignificant.

* $p < .05$.

** $p < .01$.

This partial correlation analysis was conducted separately for male and female subjects, and the results of this analysis are presented in Table 18. One significant difference was between the partial correlation obtained for female subjects and the partial correlation obtained for male subjects. This does not provide clear evidence for

sex differences in the relationship between appraisal and emotion. However, it is interesting that the significant difference and three of the four nonsignificant trends show a stronger positive relationship between number of appraisals and emotion for female subjects.

Table 18: Sex Differences in Partial Correlations Between Appraisals and Emotions

Scale	Number of Appraisals of:				
	Gain	Loss	Threat	Restric- tion of Domain	Violation of Standards
DES Enjoyment	<u>.26**</u> (m=.35*) (f=.22*) ^a				
DACL Form C	-.19* (m=-.35*) (f=-.16) ^a	<u>.24**</u> (m=-.09) (f=.32**) ^b	.15 (m=-.03) (f=.16) ^a		
DES Fear		.16 (m=-.10) (f=.24*)	<u>.17*</u> (m=.30*) (f=.14) ^a		
DES Anger		<u>.24**</u> (m=-.04) (f=.34**) ^c			.16 (m=-.15) (f=.20) ^b
DES Guilt			-.06 (m=.21) (f=-.17) ^b		<u>.17</u> (m=.04) (f=.22*) ^a

Note. Only cells containing at least one significant correlation or nonsignificant trend are shown. Underscored coefficients were hypothesized to be significantly positive.

^aNo sex difference.

^bTrend for sex difference ($p \leq .10$).

^cSignificant sex difference ($p < .05$).

* $p < .05$.

** $p < .01$.

DISCUSSION

A wide variety of psychological and physiological theories of emotion have been proposed and many, varied psychotherapeutic approaches have been utilized with the goal of modifying maladaptive emotional responses, yet no comprehensive model of the process through which complex stimulus situations elicit specific emotional responses has been developed. As an initial step toward developing such a model, a theoretical analysis based on an integration of aspects of the theoretical and empirical literature on cognition and emotion has been described and partially tested. In this proposed theoretical integration, the elicitation of specific emotional responses by complex stimulus-situations is seen as a continuous, ongoing process. The individual's current analysis of the situation is believed to shape the perception and interpretation of incoming stimuli through the influence of perceptual expectancies and current goals on perception and attention. The analysis of the situation is assumed to be continuously revised through the analysis of perceived stimuli by appraisal and symbolically mediated thought processes. The stimulus-complex is seen as being continuously modified both by internally generated stimuli and by the individual's behavioral responses (as well as by other events).

The portions of this analysis which were tested predicted that individuals who were asked to imagine a complex stimulus-situation

would selectively attend to aspects of the situation which were related to their current goals and that therefore goal-related aspects of the situation would receive appraisal, would be retained in long-term memory, and would be included in a description of the imagined scene. The tested portions of the theoretical analysis also predicted that goal-related aspects of the imagined situation would be preferentially selected for further cognitive processing as measured by subjects' self-reports of the number of thoughts they experienced concerning specific stimulus-elements and that specific appraisals would elicit specific emotional responses. These predictions were stated in the form of three hypotheses and were tested using data collected from a sample of 124 undergraduate volunteers.

The hypothesis (1) that there would be a positive correlation between the inclusion of stimulus elements in the description of the imagined scene and the corresponding Thought Survey subscale score was supported by one of four correlations. This finding is clearly not consistent with the results reported by Klinger et al. (1976) in which they found that in a dichotic listening task subjects attended to goal-related prose passages significantly more often than to competing non-goal-related passages.

Klinger et al. (1976) used a series of detailed clinical interviews and two self-report measures to assess subjects' current goals, while in the current study the degree to which selected classes of activities were related to the subject's current goals was assessed by the TS. While these two different measurement approaches are theoretically compatible, it is possible they do not provide equivalent

measures of goal-relatedness and that this difference is responsible for the failure to replicate the findings of the previous study. In the previous study, however, different sets of stimuli were used for each subject with one phrase from each pair of stimuli being selected as being particularly relevant to the subject's current goals and the other phrase being selected as not being related to any of the subject's current goals. In the current study a standard stimulus situation was used for all subjects and, consequently, the stimulus-elements which were studied were related to the subject's current goals to varying degrees rather than being either strongly related or unrelated. In retrospect, it is clear that Klinger et al.'s use of stimuli which were individually tailored to be either strongly goal-related or not goal-related at all would be expected to provide a more powerful test of the hypothesis that goals exercise an influence on attention than the design used in the current study. In addition, it should be noted that Klinger et al. found support for this hypothesis in a dichotic listening task where subjects were forced by the limited capacity of the auditory processing system to select one of the two competing streams of stimuli for attention at each point in the procedure. In the present study the stimuli were presented in the form of a largely visual mental image, and many subjects found it possible to attend to all or most of the four stimulus-elements which were studied.

It would appear that the capacity of the visual processing system for concurrent representation of multiple stimuli and the high salience of the stimulus-elements which were examined significantly reduced

the power of the present study to test the hypothesis that an individual's current goals influence attention in naturalistic situations.

A more powerful test of this hypothesis could be provided by an experimental design in which the stimulus situation more closely approximated the complexity of a novel, real-life situation, where a larger number of stimulus-elements were included in the analysis, and where stimulus-elements which were not significantly related to the subjects' current goals were included.

The hypothesis (2) that the reported number of thoughts concerning a stimulus-element would be positively correlated with the corresponding TS subscale score was supported by two of the four predicted correlations. This finding, in conjunction with the previously cited research of Klinger and his colleagues (Klinger et al., 1976), provides support for the assertion that individual goals exercise an important influence over the content of thoughts. The obtained correlations are not large (the largest was .2433, $p < .01$), but it must be remembered that this design considered only four of the subjects' many goals. If it is assumed that the individual has many goals which are related to many different perceived stimuli and that a given stimulus may be related to many current goals, it follows that the observed correlation between a single goal and the cognitive processing of a related stimulus may be small due to the effects of other goals and stimuli competing for the individual's finite cognitive processing capacity. This does not imply that the true strength of the relationship between goal-relatedness and cognitive processing of perceived stimuli is low but that in order for this theoretical model to have much predictive

power, broader samples of goals and stimuli must be taken into account. In addition, it must be remembered that this analysis relied on self-report ratings of the number of thoughts concerning each of the stimulus elements and the unknown (but undoubtedly limited) reliability of these self-reports may have seriously attenuated the observed correlations.

The hypothesis (3) that the intensities of five emotions would be positively correlated with the number of appraisals in corresponding categories was supported for four of the five emotions which were examined. This finding provides some empirical support for one of the basic assumptions of cognitive theories of psychopathology and provides support for a crucial component of the theoretical analysis being tested. While the observed correlations are not large, a number of factors such as the importance of the expected outcome and the immediacy of the expected outcome are believed to act to determine the intensity of emotional responses in some, as yet unspecified, way. If this is the case, the simple correlation between the number of appraisals in a given category and the intensity of the corresponding emotion, ignoring these moderating factors, would be expected to be low.

The failure of this analysis to find the hypothesized correlation between the number of appraisals of restriction of personal domain and the intensity of anger may be due to the apparently common belief that it is "wrong" to be angry when that act or situation which elicited the anger is seen as being justified. This belief could function to obscure the relationship between appraisals of restriction

of domain and anger by leading to a reappraisal of the individual's perception of their anger in response to the situation through symbolically mediated thought ("I'm not really angry, there was a good reason for what he did") or, if we assume that trying to see oneself as a "good" person is a common goal, the belief that it is "bad" to be angry in response to a justified situation could lead to selection of selective inattention to one's anger as a response strategy with the goal of maintaining the view of oneself as "good." While the comments of some subjects were consistent with these explanations, it was not possible to determine whether either of these processes occurred often.

It also seems possible that the DES Anger subscale does not differentiate between anger at oneself and anger at others. The scoring criteria used in scoring appraisals of restriction of personal domain were oriented toward restrictions imposed by others. If the DES Anger subscale measures both anger toward others and anger toward oneself while the scoring for appraisals of restriction of personal domain detected only appraisals which would elicit anger toward others, the correlation could be seriously attenuated.

The analysis conducted to test the hypothesis that the intensities of emotions would not be correlated with the number of appraisals in categories other than the corresponding category revealed several significant nonhypothesized correlations between categories of appraisals and emotional responses. The possibility that these correlations were artifacts of intercorrelations among categories of appraisals was ruled out by a partial correlation analysis. This

finding is not consistent with the assumption that there is a one-to-one correspondence between categories of appraisals and primary emotions.

Upon reflection, it is not completely surprising that a significant negative correlation was found between the number of appraisals of threat and the intensity of joy. Personal experience and clinical observation suggest that evaluation of a situation as being dangerous is frequently incompatible with fully enjoying the situation. However, it is possible to argue either that the appraisals of threat elicit fear and that the fear inhibits joy or that the appraisal of threat directly inhibits joy. These unexpected correlations suggest that the relationship between appraisal and emotion is not as simple as hypothesized and merits further investigation.

A variety of theoretical perspectives suggest that there may be some sort of interaction between emotional responses. The theoretical rationale behind Systematic Desensitization, for example, is based on the assumption that a number of responses such as relaxation, sexual arousal, and feeding can inhibit fear. Izard (1977, pp. 104, 255 ff) has begun to explore both possible interactions among emotional responses and the possible effects of emotional responses on perception, attention, and other cognitive processes. This is clearly an area which merits further exploration.

The overall results of this study, in conjunction with the empirical research and theoretical analyses discussed previously, provide qualified support for the theoretical analysis which has been presented. This analysis is consistent with the body of existing research

on cognitive processes and emotion and has potential for providing a foundation for the development of a comprehensive model of the process through which cognitive responses to complex stimulus-situations elicit specific emotional responses. However, a more powerful experimental test is needed to determine if the portions based on Klinger's research (especially Hypothesis 1) are valid in naturalistic situations and a more sophisticated analysis of the relationship between appraisal and emotion is needed to account for the nonhypothesized appraisal-emotion relationships which were found.

Many other aspects of this analysis are also in need of further development: the effects of stimulus novelty and stimulus unexpectedness on attention have not been considered; the way in which factors such as goal importance, expected immediacy of goal attainment, and expected difficulty of goal attainment moderate the influence of goal-relatedness on attention has not been analyzed; the factors determining the outcome of the appraisal process have not been discussed, the possibility that emotional responses subsequently influence perception and cognition has not been explored; the effects of the individual's attempts to control and modify emotional responses have not been considered; and the applicability of this view to additional emotions remains untested.

The theoretical analysis which has been proposed does provide a more comprehensive treatment of the process through which cognitive responses to a complex stimulus-situation elicit specific emotional responses than was provided by previous analyses. This analysis seems to have considerable potential for developing into a conceptual

system which will permit a detailed understanding of complex emotional responses. However, much additional development will be needed to reach the point where this can be developed into a model which will have predictive power as well as post hoc explanatory power.

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REFERENCE NOTE

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APPENDICES

APPENDIX A

DIFFERENTIAL EMOTION SCALE--Form A

APPENDIX A

DIFFERENTIAL EMOTION SCALE--Form A

This scale consists of a number of words that describe different emotions or feelings. Please fill in your student number at the top of the page, then indicate the extent to which each word describes the way you feel at the present time. It isn't necessary to think a lot about your responses. The first answer you decide on is probably the most valid.

Rating scale: 0 = Very slightly or not at all
 1 = Slightly
 2 = Moderately
 3 = Considerably
 4 = Very strongly

1. Alert	0	1	2	3	4
2. Angry	0	1	2	3	4
3. Repentant	0	1	2	3	4
4. Guilty	0	1	2	3	4
5. Delighted	0	1	2	3	4
6. Downhearted	0	1	2	3	4
7. Happy	0	1	2	3	4
8. Astonished	0	1	2	3	4
9. Joyful	0	1	2	3	4
10. Surprised	0	1	2	3	4
11. Sheepish	0	1	2	3	4
12. Scornful	0	1	2	3	4
13. Disgusted	0	1	2	3	4
14. Sad	0	1	2	3	4
15. Bashful	0	1	2	3	4
16. Attentive	0	1	2	3	4
17. Feeling of Revulsion	0	1	2	3	4
18. Afraid	0	1	2	3	4

19.	Shy	0	1	2	3	4
20.	Feeling of distaste	0	1	2	3	4
21.	Scared	0	1	2	3	4
22.	Blameworthy	0	1	2	3	4
23.	Discouraged	0	1	2	3	4
24.	Contemptuous	0	1	2	3	4
25.	Fearful	0	1	2	3	4
26.	Concentrating	0	1	2	3	4
27.	Mad	0	1	2	3	4
28.	Disdainful	0	1	2	3	4
29.	Amazed	0	1	2	3	4
30.	Enraged	0	1	2	3	4

APPENDIX B

DIFFERENTIAL EMOTION SCALE--Form B

APPENDIX B

DIFFERENTIAL EMOTION SCALE--Form B

This scale consists of a number of words that describe different emotions or feelings. Please fill in your student number at the top of the page, then indicate the extent to which each word describes the way you felt while imagining the last scene. It isn't necessary to think a lot about your responses. The first answer you decide on is probably the most valid.

Rating scale: 0 = Very slightly or not at all
 1 = Slightly
 2 = Moderately
 3 = Considerably
 4 = Very strongly

1. Angry	0	1	2	3	4
2. Feeling of distaste	0	1	2	3	4
3. Bashful	0	1	2	3	4
4. Feeling of revulsion	0	1	2	3	4
5. Mad	0	1	2	3	4
6. Shy	0	1	2	3	4
7. Afraid	0	1	2	3	4
8. Astonished	0	1	2	3	4
9. Happy	0	1	2	3	4
10. Fearful	0	1	2	3	4
11. Joyful	0	1	2	3	4
12. Discouraged	0	1	2	3	4
13. Scornful	0	1	2	3	4
14. Sheepish	0	1	2	3	4
15. Attentive	0	1	2	3	4
16. Repentant	0	1	2	3	4
17. Delighted	0	1	2	3	4
18. Blameworthy	0	1	2	3	4
19. Disdainful	0	1	2	3	4
20. Amazed	0	1	2	3	4

21. Scared	0	1	2	3	4
22. Contemptuous	0	1	2	3	4
23. Alert	0	1	2	3	4
24. Surprised	0	1	2	3	4
25. Downhearted	0	1	2	3	4
26. Disgusted	0	1	2	3	4
27. Concentrating	0	1	2	3	4
28. Enraged	0	1	2	3	4
29. Guilty	0	1	2	3	4
30. Sad	0	1	2	3	4

APPENDIX C

PERSONAL DATA SHEET

APPENDIX C

PERSONAL DATA SHEET

24. How old are you?
- A. Less than 18
 - B. 18 to 21
 - C. 22 to 30
 - D. 31 to 50
 - E. Over 50
25. What is your sex?
- A. Female
 - B. Male
26. What is your marital status?
- A. Single
 - B. Married
 - C. Separated
 - D. Divorced
 - E. Living with someone
 - F. Widowed
 - G. Remarried
27. How many times did your family move before you completed high school?
- A. They didn't move
 - B. One time
 - C. Two to three times
 - D. Four to six times
 - E. More than six times
28. How old were you at the first family move that you can remember clearly?
- A. We didn't move
 - B. Three or younger
 - C. Four to six
 - D. Seven to eleven
 - E. Twelve or older

29. Who were you raised by?
- A. Both biological parents
 - B. Mother, or mother and stepfather
 - C. Father, or father and stepmother
 - D. Adoptive parents or foster parents
 - E. Other relatives
30. If your parents were divorced or separated, how old were you when this first happened?
- A. They didn't divorce or separate
 - B. Three or younger
 - C. Four to six
 - D. Seven to eleven
 - E. Twelve or older
31. If your parents were divorced or separated, who did you live with following the divorce or separation?
- A. They didn't divorce or separate
 - B. Lived with mother
 - C. Lived with father
 - D. Lived with mother some of the time and father some of the time
 - E. Lived with relatives, foster parents, or others
32. If your mother has died, how old were you when it happened?
- A. She hasn't died
 - B. Three or younger
 - C. Four to six
 - D. Seven to eleven
 - E. Twelve or older
33. If your father has died, how old were you when it happened?
- A. He hasn't died
 - B. Three or younger
 - C. Four to six
 - D. Seven to eleven
 - E. Twelve or older
34. How happy was your childhood?
- A. Overall, quite happy
 - B. Fairly happy
 - C. Neither happy nor unhappy
 - D. Fairly unhappy
 - E. Overall, quite unhappy

35. Have you ever sought psychotherapy or counseling for help with personal problems?
- A. No, I have never sought therapy
 - B. Yes, I have tried to get into therapy, but never actually started therapy
 - C. Yes, I was in therapy for 1-3 sessions
 - D. Yes, I was in therapy for more than three sessions
 - E. Yes, and I am currently in therapy
36. Do you feel that you have experienced many losses in your life?
- A. No, not particularly
 - B. Some, but not a great number
 - C. Yes, many
 - D. Yes, very many
37. How stressful do you feel that the past six months has been for you?
- A. Not very stressful at all
 - B. Slightly stressful
 - C. Some stress, but not a great deal
 - D. Quite stressful
 - E. Very stressful

APPENDIX D

THOUGHT SURVEY

APPENDIX D

THOUGHT SURVEY¹

(Men's)

Instructions:

During the past 24 hours, how often have you thought, dreamed, daydreamed, worried, or wondered about the following topics?

Please mark the rating that represents your best estimate. Don't try to count the thoughts, daydreams, etc., one by one. The estimate that seems the most reasonable to you is probably accurate. Remember, we want to know how often you have thought, dreamed, daydreamed, worried, or wondered about these topics, not how often the event they refer to has happened.

Each of the topics refers to an event that could happen. For example, "Having my parents agree with a decision I've made." In rating how often you've thought about this, count only thoughts which refer to the event, not thoughts which refer to its opposite. For example, you would count thoughts such as "I hope they agree with my decision," or "I'm glad they agree with my decision." You would not count thoughts such as "I hope they don't disagree with me" or "I bet they won't agree with me." If a thought refers to both the event and its opposite (such as "I wonder if they will agree with me or disagree with me"), count it as referring to the event. Then, if there's a later question which asks about the opposite event, count it then too. If you're not sure whether to count a thought or not, do whatever seems most reasonable to you.

Note: In this questionnaire, assume that all the people referred to are about your own age.

Use the following rating scale:

1. Not at all.
2. One to three times in the past 24 hours.
3. Four to nine times (about once every 3-6 hours on the average).
4. Ten to 17 times (about once every 1-2 hours on the average).
5. More than 17 times (about once an hour or more often).

¹This is the men's form of the Thought Survey. For female subjects, the gender of the people referred to was reversed for each item.

During the past 24 hours, how often have you thought, dreamed, day-dreamed, worried, or wondered about the following topics?

1. Not at all.
 2. One to three times.
 3. Four to nine times (about every 3-6 hours on the average).
 4. Ten to 17 times (about once every 1-2 hours on the average).
 5. More than 17 times (about once an hour or more often).
-
1. Being liked by women you know.
 2. Understanding your classwork.
 3. Being popular with women.
 4. Not having enough space to yourself.
 5. Being rejected by women.
 6. Being popular with men.
 7. Doing well on tests.
 8. Having women be interested in knowing you.
 9. Having others not respect your privacy.
 10. Getting good grades.
 11. Being invited to join male friends in an activity.
 12. Not having enough room.
 13. Getting bad grades.
 14. Being unpopular with the men you know.
 15. Doing well in college.
 16. Not fitting in with the women you know.
 17. Having people intrude on you.
 18. Not getting along with the women you know.
 19. Not doing as well as you want to in class.
 20. Being accepted by women.
 21. Not understanding lectures.
 22. Being disliked by the women you know.
 23. Doing as well as you want to in class.
 24. Not having other people intrude on you.
 25. Not understanding classwork.
 26. Being crowded.
 27. Understanding lectures.
 28. Not being able to have time to yourself when you want to.

During the past 24 hours, how often have you thought, dreamed, day-dreamed, worried, or wondered about the following topics?

1. Not at all.
 2. One to three times.
 3. Four to nine times (about every 3-6 hours on the average).
 4. Ten to 17 times (about once every 1-2 hours on the average).
 5. More than 17 times (about once an hour or more often).
-
29. Being successful in school.
 30. Creating a bad impression with the women you know.
 31. Not fitting in with male friends.
 32. Being left alone when you want to be left alone.
 33. Getting along with male friends.
 34. Fitting in with the women you know.
 35. Having people not interrupt what you're doing.
 36. Being accepted by the men you know.
 37. Being liked by the men you know.
 38. Being able to have time to yourself when you want to.
 39. Not having women be interested in knowing you.
 40. Doing poorly on tests.
 41. Having men be interested in knowing you.
 42. Being rejected by the men you know.
 43. Being left out of activities male friends are involved in.
 44. Having other people respect your privacy.
 45. Fitting in with other men.
 46. Not getting along with the men you know.

During the past 24 hours, how often have you thought the following thoughts (or something very similar)?

1. Not at all.
 2. One to three times.
 3. Four to nine times (about every 3-6 hours on the average).
 4. Ten to 17 times (about once every 1-2 hours on the average).
 5. More than 17 times (about once an hour or more often).
-
47. "I could make some new male friends."
 48. "I could do badly in class."
 49. "My relationships with people might work out well."
 50. "Some of the women I know may stop liking me."
 51. "My friendships with men might improve."
 52. "College might work out well for me."
 53. "I could make some new female friends."
 54. "My friendships with men might not last."
 55. "I might be unsuccessful in school."
 56. "Some new women might start liking me."
 57. "I could lose some male friends."
 58. "College might not work out for me."
 59. "My friendships with women might improve."
 60. "Some of the men I know may stop liking me."
 61. "I could do well in class."
 62. "My friendships with women might not last."
 63. "My grades may be poor."
 64. "Some new men may start liking me."
 65. "I might be successful in school."
 66. "My relationships with people might not work out."
 67. "My grades may be good."
 68. "I could lose female friends."

APPENDIX E

GUIDE TO SCORING APPRAISALS

APPENDIX E

GUIDE TO SCORING APPRAISALS

The term "appraisal" will be used to refer to a specific category of thoughts, thoughts which express an evaluation of the situation as good or bad for the individual. These thoughts go beyond the observed situation to focus on the meaning of the situation for the individual. The following would be considered appraisals:

1. Evaluations of events as good or bad, pleasant or unpleasant, enjoyable or aversive, etc.
"I hate rainy weather," or "It sure was nice to see Bob again."
2. Evaluations of the behavior of others as good or bad, pleasant or unpleasant, enjoyable or aversive, etc.
"I like to see you smile," "It's so annoying when he snores," or "It is wrong to drink alcohol."
3. Evaluations of one's own behavior as good or bad, pleasant or unpleasant, enjoyable or aversive, etc.
"I hate getting so upset," or "I really like being helpful."
4. Evaluations based on beliefs, expectations, hopes, fears, guesses, etc., about unobservable events (thoughts, feelings, or motivations of others, etc.).
"I bet she did that because she's mad about last week, that's dumb," or "I think he likes me, that's great."
5. Evaluations based on beliefs, expectations, hopes, fears, guesses, etc., about future events.
"I hope I don't flunk, that would be terrible," or "Maybe I can go to the Rockies this summer, that would be fun."

If it seems like an enormous number of thoughts would qualify as appraisals, you're right. Making appraisals is one of our major mental activities. Fortunately, in this study we're only interested in a few of the many possible appraisals. We'll be looking at appraisals expressed during the structured interview, but we'll only be looking at appraisals concerning four components of the imagined situation. Appraisals will be scored only if they're related to:

1. an opposite-sex stranger (regardless of what he or she is doing).
2. an acquaintance who does not notice S (regardless of his/her sex).
3. a same-sex stranger who sits down next to S.
4. a quiz or exam.

Only five specific types of appraisals are being studied; all other appraisals can be ignored (once you're sure they aren't one of the types we're studying). The five types of appraisals being investigated are:

1. Appraisal of Loss

This category includes appraisals that something of value has been lost, will be lost, or may be lost:

- A. Loss (or anticipated loss) of a tangible object that is a source of gratification or is valued for some other reason.
- B. Loss (or anticipated loss) of something intangible which is valued, such as respect, status, or self-respect.
- C. Loss (or anticipated loss) of an opportunity to perform a valued activity or pursue a valued goal.
- D. Devaluation (or anticipated devaluation) of a previously valued object, activity, goal, or characteristic (for example, a person who has been very proud of his/her skill with the frisbee decides that that's kid stuff and that it doesn't matter much).
- E. A negative discrepancy between what was expected and what occurred (i.e., a disappointment).

The following could be appraisals of loss:

"I bet she doesn't like me any more." (if he/she wants to be liked)

"If I flunk this quiz it will ruin my GPA." (if GPA is valued)

"We're going to Taco Bell? I thought we were going to go to Beggars." (if he/she prefers Beggars)

2. Appraisals of Gain

This category includes appraisals that something of value has been gained, will be gained, or may be gained and appraisals that a valued event has happened, will happen, or may happen:

- A. gain (or anticipated gain) of a tangible object which is a source of gratification or which is valued for another reason.
- B. gain (or anticipated gain) of something intangible which is valued, such as being liked, status, self-respect.
- C. gain (or anticipated gain) of an opportunity to perform a valued activity or pursue a valued goal.

- D. increased valuation (or an anticipated increase in valuation) of an object, activity, goal, or characteristic (for example, a smart but plain person thinks, "Now I realize that it's better to be smart than cute.").
- E. a positive discrepancy between what was expected and what occurred (a pleasant surprise).

The following could be appraisals of gain:

"Wow, I got a raise, that's great."

"I think I'll do well on the quiz." (if he/she wants to do well)

"I think I'll have time to try out for the team." (if he/she wants to)

3. Appraisals of Restriction of Domain

This category includes appraisals that the individual is (or will be) prevented from doing what he/she wants to do or is (or will be) impeded in doing what he/she wants to do, appraisals that a noxious situation is (or will be) imposed on the individual, and appraisals that other persons are violating (or will violate) the individual's standards for behavior (norms, religious beliefs, ethical standards, etc.).

- A. Active interference (or anticipated active interference) with performance of a valued activity or pursuit of a valued goal.
- B. Passive interference (or anticipated passive interference) with performance of a valued activity or pursuit of a valued goal (noncooperation, not being available, not being interested, bad weather, broken equipment, etc.).
- C. Other persons doing something they shouldn't do (or the anticipation that they will), i.e., appraisal of their activities as wrong, immoral, rude, improper, sinful, etc.
- D. Other persons or impersonal factors (weather, society, etc.) doing something noxious to S, placing S in a noxious situation, or making S do something he/she doesn't want to do (or the anticipation that this will happen).

The following could be appraisals of restriction of domain:

"They should be quiet while I'm studying."

"The guys don't want to play football." (if he/she wants to play)

"I can't watch the Superbowl because my TV broke." (if he/she wants to)

4. Appraisals of Threat

This category includes appraisals that the situation presents (or may present) a threat to one's safety, that it presents a risk of physical or emotional injury, or that one may be unable to cope with the situation:

- A. Present or future risk of physical harm, injury, or death.
- B. Present or future risk of a situation with which the individual would not be able to cope effectively.
- C. Present or future risk of emotions which the individual would not be able to cope with effectively.
- D. Present or future risk of personal inadequacy.

The following could be appraisals of threat:

"I couldn't say 'hi' to her, I wouldn't know what to say."

"If I were fired I wouldn't know what to do."

"I'd die if I had to give a speech in class."

5. Appraisal of Violation of Personal Standards

This category includes appraisals that one's own behavior violates (or will violate) one's personal standards:

- A. S's behavior, thoughts, or feelings are (or may be) immoral, unpure, or sinful, are unethical, or violate laws S believes in.
- B. S's behavior, thoughts, or feelings are (or may be) wrong, rude, improper, impolite, or unacceptable.
- C. S shouldn't do, think, or feel what she/he did, does, or will do.
- D. S has failed to meet (or may fail to meet) his/her standards for behavior.

The following could be appraisals of violation of personal standards:

"I should do better in class."

"I shouldn't get angry." (if S is or has been angry)

"I can't tell him off because that would be rude." (if S wants to)

It is possible for the same statement to express two different appraisals. If that happens, we'll score it both ways as explained in the Scoring Manual. For example, "My girlfriend left me and I just can't cope" expresses both an appraisal of loss and an appraisal of threat (inability to cope).

How to Spot Appraisals

When subjects describe the thoughts which went through their heads as they imagined the scene, they generally won't hand appraisals to you on a silver platter. During the entire interview you should write down all the thoughts that they mention (on the back of the release form). When you get to the part of the interview where you get detailed information on appraisals, you'll have a list of thoughts they mentioned while describing the scene and trying to remember all their thoughts. Pause and look over this list. You can cross off all the thoughts which clearly have nothing to do with the opposite-sex person, the acquaintance who didn't notice them, the same-sex stranger who sat down next to them, or the quiz. If you're not sure if a thought is related to these or not, use the questions recommended in the interview outline to get more information. If a thought contains more than description, there's a good chance that it's an appraisal. Use the questions recommended in the interview outline to get enough information so that you can tell if each thought expresses one of the five types of appraisals we're looking for. If you're not sure if a thought is one of these appraisals or not, ask for all the information and ratings you'd need to score it and then you can make up your mind later.

General Principles

Something <u>valued</u> has been lost	-- Appraisal of Loss
Something <u>valued</u> has been gained	-- Appraisal of Gain
Something interferes with S	
Something noxious happens to S	-- Appraisal of Restriction
Someone else violates S's standards	of Domain
The situation is dangerous	
S can't cope effectively	-- Appraisal of Threat
S has done something wrong	-- Appraisal of Violation
	of Personal Standards

(When in doubt, see the more detailed criteria presented earlier.)

Helpful Hints

If the word "should" or "ought" is used, it suggests personal standards are being applied.

If subject talks about being unable to do what he/she wants to, either something is interfering (restriction of domain), subject is unable to cope effectively with that situation (threat), or

subject's personal standards prohibit that course of action (violation of personal standards).

If there is nothing subject wants to accomplish or avoid, it is less likely that an appraisal is involved.

If possible future actions, events, or feelings are mentioned, it is likely that an appraisal is involved.

If something subject considers good or desirable happens, it's probably an appraisal of gain.

If something subject considers bad happens, it could be any appraisal other than gain.

If something subject considers bad or undesirable stops happening it is not an appraisal of gain; it's a type of appraisal we aren't concerned with.

Cautions

Don't assume you know what subject values; find out from them.
Don't make any assumptions.

Don't forget that a thought or statement can express more than one appraisal.

CLASSIFYING APPRAISALS

Appraisal of Gain	Something valued: has happened may happen will happen has been obtained may be obtained is now available etc.*
Appraisal of Loss	Something valued: has been lost may be lost will be lost has become unavailable can no longer be pursued etc.
Appraisal of Threat	The situation is or may be dangerous A dangerous situation may arise The individual may be unable to cope The individual may be inadequate There is a risk of physical injury, "emotional injury," or injury to self-esteem
Appraisal of Restriction	The person is being impeded or blocked (or may be) A noxious situation is being imposed on the person Someone else is violating the person's personal standards
Appraisal of Violation of Personal Standards	The person has violated his/her <u>own</u> standards or has failed to live up to them

*Not avoiding loss, threat, or something noxious.

APPENDIX F

GUIDE FOR SCORING THOUGHTS

APPENDIX F

GUIDE FOR SCORING THOUGHTS

As you conduct the Structured Interview, you will jot down thoughts as they are mentioned. There are two types of thoughts which you do not need to write down: purely descriptive thoughts and thoughts solely describing emotions.

Purely descriptive thoughts include thoughts describing the physical situation as well as statements about the actions and behaviors which can be observed. Thus, thoughts like "The sun is shining," "There's a girl on that bench looking my way," or "He walked by and didn't say anything" are descriptive and would not need to be written down. Even thoughts that express opinions about purely physical characteristics need not be written down (such as "She looks kind of cute," "He was fat and ugly," "It was a beautiful day"). Any thoughts which go beyond pure physical description and express beliefs, expectancies, hopes, fears, opinions, etc. should all be written down. Examples of these are "The girl looks as though she likes me," "He purposely ignored me because he's a snob," "He looks nice and friendly," or "He's sitting there to try and annoy me." If you're not sure whether a thought is purely descriptive or not, write it down anyway. It is better to write down too many thoughts than to miss one.

Statements which describe only emotions would also not be written down or scored. These would include any simple statement of feeling (such as "I felt silly, happy, sad, lonely, disgusted, etc." or "The sun felt warm on my shoulders"). See the Differential Emotion Scale or the DACL forms for more examples of feeling words. However, just because a person starts a sentence with "I feel" does not mean that it is necessarily a statement of emotion. People often start with "I feel" and then go on to express thoughts (for example, "I feel that he should leave me alone" or "I feel that he probably thinks I'm pretty"). Any statement that goes beyond a simple statement of emotion and expresses any type of belief, expectancy, guess, hope, fear, opinion, etc. should be written down. Examples of these would be "He upsets me, so he should get out of here," "I like him because he seems to be interested in me," or "It's disgusting how he's trying to pick me up." If you're not sure whether the thought only describes an emotion or not, write it down anyway.

Although you write down thoughts throughout the first three sections of the interview, you will actually score only the Cognition and the Appraisals sections of the interview for thoughts. The thoughts you jotted down from the earlier parts of the interview (Image Description and Emotion sections) are important because if the subject doesn't mention each of these thoughts when you ask them about their thoughts,

you will have to remind them that "Earlier you mentioned thinking . Please tell me more about that." Thus, each thought you jotted down should be mentioned during the Cognition section of the interview, either spontaneously by the subject or when you remind them of it.

The actual scoring of thoughts involves counting the number of Irrational-Depressed and Irrational-Other thoughts which are mentioned during the Cognition and the Appraisal sections of the interview. As you listen to this section of the tape, keep a tally on the back of the release form of how many Irrational-Depressed and Irrational-Other thoughts are mentioned. Feel free to stop the tape at any point to give yourself time to decide which category the thought fits into. You will determine which thoughts fit into these categories by using the same Scoring Rules as used in scoring the Cognitive Response Test, referring back to these rules and their examples as necessary. Rather than scoring each thought as you did when scoring the CRT, however, here you will count only the number of Irrational-Depressed and Irrational-Other thoughts. It is still important to keep in mind the criteria for Rational and Non-scorable thoughts, however, even though you won't actually be counting them so that you don't accidentally include any Rational or Non-scorable thoughts in your tally of Irrational-Depressed or Irrational-Other thoughts. The relevant scoring rules will be summarized here. For more details and examples, see the Scoring Rules for the Cognitive Response Test.

Thoughts which show any one or a combination of the following violations of rational thinking are to be counted as Irrational.

1. Exaggeration refers to the process where any of the following occur:
 - a. A conclusion is drawn when evidence is lacking or actually contrary to the conclusion. For example, "The guy looks at me and smiles. He must think I'm stupid" or "He's smiling. He must be trying to pick me up."
 - b. An unjustified generalization is made on the basis of a single incident. For example, "I'll flunk this quiz because I flunked one last week" or "My friend walked right by. No one ever notices me."
 - c. Attention is focused on one aspect of a person or event. For example, "I'm stupid because I didn't study sooner" (focusing on just one aspect of themselves--not having studied--and concluding that they are stupid).
 - d. The interpretation is distorted, arbitrary, not easily verified, or unjustifiable. For example, "He sees me and thinks I'm great" or "He walked right by--What did I do wrong?" (The subject arbitrarily infers they did something wrong.)

- e. Magnification of the significance of one aspect produces an erroneous conclusion about the status of a person or the state of an event. For example, "When I think about how well I'll do on the quiz, I know I'm a fantastic person" or "He didn't even notice me--I'm a social failure."
2. Demand Statements--Any thoughts using words like "must," "should," "ought," "got to," "have to," "need to," thus precluding any other alternatives or possibilities. For example, "I have to do well on this exam," "I really should be more friendly," or "I need to find a girlfriend."
3. Absolutism--thoughts using words like "always," "never," "all," "forever," "none," etc. which don't allow for exceptions or alternatives. For example, "I always do well on tests," "I'll never be popular," "Nothing works out for me."
4. Belief in Luck--thoughts that show a belief in luck, fate, fortune, or chance. For example, "I'm lucky to be so smart," "It's my fate to be alone," or "It's unfortunate that I'm unpopular."

Thoughts which are Irrational would be scored as Irrational-Depressed if they show a negative view of the self, expectation of negative consequences to the self, or self-blame. For example, "She's looking at me, thinking how ugly I am," "With my luck, I'll flunk again," "She didn't notice me because I'm not worth noticing," "I'll do badly because I never study enough." In addition, irrational thoughts which show a negative view of the past, present, or future characterized by pessimism, helplessness, or hopelessness would be scored as Irrational-Depressed. For example, "Things never have worked out for me," "My life is just rotten," "Things won't get any better," "There's nothing I can do about it."

Thoughts which are Irrational would be counted as Irrational-Other if they do not meet the criteria listed above for Irrational-Depressed. This would include irrational thoughts indicating a negative view of other people as well as irrational thoughts indicating a positive view of the self or the past, present, or future. For example, "He didn't say hello. He's a rude person," "I'll do well because I always do well on tests," "She likes me because I'm such a wonderful person," "Things will always work out well for me."

Remember, to count a thought as Irrational, it should not fit the criteria for Rational or Non-scorable thoughts. Thus, Rational thoughts such as wishes ("I hope," "want," "would like"), qualified responses ("I guess," "probably," "maybe," "possibly," "might be," "could be," "had better") and most questions that follow from the stem would not be counted as Irrational. Also, Non-scorable thoughts, such as one-word thoughts, repetition of one-word thoughts, thoughts that don't follow

from the beginning of the thought and thoughts which are purely descriptive or emotional would not be counted as Irrational.

The scoring of thoughts in the structured interview differs in one way from the scoring of the Cognitive Response Test. In scoring the Structured Interview, do not use the special scoring rules listed for compound responses or multiple responses. Instead, count each complete clause (having a subject and verb and which could stand alone as a complete sentence) which is irrational even if it is part of a longer sentence or a string of thoughts. When two complete thoughts are connected by an "and," "but," or "or," treat them as separate thoughts and decide whether or not each thought is irrational. Thus, "I should do well, but I probably will flunk" counts as one irrational thought since the first clause has a demand word ("should") and is therefore irrational, but the second clause has a qualifier ("probably") and is therefore not irrational. "I have never been popular and I never will be" counts as two irrational thoughts because it is two separate irrational sentences connected by an "and." The thought "I have never been popular and never will be" would count as only one irrational-depressed thought because it is only one sentence ("never will be" cannot stand alone as a complete sentence).

If the subject mentions the same irrational thought more than once during the Cognition and Appraisals sections of the interview, it is counted as a separate irrational thought each time it is mentioned. Thus, if a subject mentions one irrational thought five times, it would be counted as five irrational thoughts. Also, if the subject mentions that they thought an irrational thought more than once, it would be counted as that many irrational thoughts. Thus, if a subject mentions that they thought "no one ever likes me" three times, that would be counted as three irrational-depressed thoughts. When you restate a thought mentioned earlier in the interview because the subject neglected to mention it during the Cognition section of the interview, it should be counted as a thought unless they deny having had the thought. Say, for example, that the subject said "She'll never be interested in me" when describing Image Description but forgot to mention it when asked for his thoughts during the Cognition section of the interview. During the Cognition section, you would have said "Earlier you mentioned thinking 'She'll never be interested in me.' Tell me more about that." If the subject then said, "Yes, I thought that too," you would count that as one irrational thought even though they didn't actually repeat the words in that section of the interview. If, however, they said, "No, I didn't think that," it would not be counted as an irrational thought.

APPENDIX G

INSTRUCTIONS FOR SESSION 1

APPENDIX G

INSTRUCTIONS FOR SESSION 1

Hello. I'm _____ and I'm _____. We're here today to help conduct a study of imagination, thoughts, and feelings being run by Barbara Fleming and Jim Pretzer under the supervision of Dr. Dozier Thornton. As you know, this is a two-part study consisting of this session today plus an individual session. At the end of the session today, each of you will be scheduled for an individual session at a time which is convenient for you. We do ask that you participate in today's session only if you are willing to participate in the second session as well. Please, only sign up for the second session if you plan to attend. Each of the two sessions will take about 1-1/2 hours; therefore, you will receive 3 credits for each of the sessions. You are, of course, free to discontinue participation at any point without penalty.

Today's session will consist of filling out some questionnaires about your thoughts and feelings and about some general background information. In the second session, you will be asked to imagine several everyday situations and to share your reactions with us, as well as being asked to fill out a few more questionnaires. We can't describe exactly what we are looking at right now, because that might influence your responses. However, after the second session we will explain what we're studying in more detail and answer any questions you might have. If you're interested in finding out about the results of the study, a summary of the results will be available when the study is completed. We won't be able to tell you about your individual responses because we won't be looking at people separately. Instead, we will be looking at everyone's responses together.

All the information you give us will be completely confidential. Throughout the study, we would like you to be as open and honest as possible. If there is a question which you prefer not to answer, simply skip it and go on to the next question. The questions you will be asked are designed to gather information. There are no right or wrong answers, so please don't try to figure out what you "should" answer. Just put down the answer which more accurately describes your thoughts or feelings. There's no need to spend a lot of time on any one question--the first response which seems to fit for you is probably the most valid.

Are there any questions?

We will now pass out the questionnaires. Please read and sign the consent form before filling out any other questionnaires. Then be sure to fill in your student number on the answer sheet. There

are a number of different questionnaires using the same answer sheet and one which does not use the answer sheet. When the questionnaire asks you to use the answer sheet, please do not make any marks on the test instruction booklet itself. Please read the instructions for each questionnaire and raise your hand if you have any questions. When you're done with all the questionnaires, please bring them up to the front.

(Note: There is no #86. They need to leave that space on the answer sheet blank. Announce this at the beginning, and then when it seems like they're getting to that question, write it on the board.

Both 490 students will answer questions until students start to complete their forms and bring them up to the front. Then, one student will continue answering questions as they arise, check to see that student numbers are filled in where appropriate [on the answer sheet and on each page of the CRT], and fill out students' credit slips. The other 490 student will schedule individual appointments and give subjects a reminder slip to remind them of the appointment.)

Possible Questions and Suggested Responses

What effect will these credits have on my grade?

Ans.--That depends on the instructor. You will have to ask your instructor for that information.

What will we be asked to imagine? Will it be scary or upsetting?

Ans.--You will be asked to imagine several everyday scenes that might well happen. We are studying ordinary people in day-to-day life, so the scenes will be taken from situations common in daily life.

Give us more details about what you're studying or hope to find.

Ans.--We can't go into more detail because it might influence your responses, but we will be glad to discuss it after the second session.

How can it be confidential if I put my student number down?

Ans.--We have no way of finding out what names go with what student numbers. We use the student number because we need some way to identify what information from both sessions goes together. The student number is a number which is different for each student and which is easy to remember from session to session, so it is the easiest number to use.

What do I do if I don't know my student number?

Ans.--Pick a 6-digit number that you will be sure to remember for the second session (such as the first 6 digits of your phone number). It is important to use the exact same number for both sessions, since we can only use the information if we have information listed under the same number for both sessions.

What happens if I don't participate in the second session?

Ans.--That would mean that we couldn't use any of the information from the first session. You would earn the points from the first session, but would not have a chance to earn the extra points for the second session.

What are the questionnaires about?

Ans.--In general, they will be about your usual thoughts and feelings as well as some general background information. We can't be more specific because that might influence your answers.

APPENDIX H

DEPARTMENTAL RESEARCH CONSENT FORM

APPENDIX H

DEPARTMENTAL RESEARCH CONSENT FORM

Michigan State University
Department of Psychology

1. I have freely consented to take part in a scientific study being conducted by: Barbara Fleming and James Pretzer
under the supervision of: Dozier W. Thornton, Ph.D.
Academic Title: _____
2. The study has been explained to me and I understand the explanation that has been given and what my participation will involve.
3. I understand that I am free to discontinue my participation in the study at any time without penalty.
4. I understand that the results of the study will be treated in strict confidence and that I will remain anonymous. Within these restrictions, results of the study will be made available to me at my request.
5. I understand that my participation in the study does not guarantee any beneficial results to me.
6. I understand that, at my request, I can receive additional explanation of the study after my participation is completed.

Signed _____

Date _____

APPENDIX I

INSTRUCTIONS FOR SESSION 2

APPENDIX I

INSTRUCTIONS FOR SESSION 2

(Before subject arrives, organize the forms, check the tape recorder, see if the pencils are sharp.)

Hi, I'm _____, and I'll be conducting this part of the study.

(As you go in, put out Do Not Disturb sign, indicate where subject should sit, have them hang up their coat and put their stuff down, wait until they are settled. If the subject seems drunk or stoned or ill, ask them if they are or how they're feeling. If they are drunk, stoned or sick, ask them to see Jim in 39 Snyder to reschedule their appointment.)

As you may remember, this is a study of imagination, thoughts, and feelings, and we're going to be doing the imagination part of it today. I'm going to ask you to fill out some more questionnaires and then to imagine several everyday scenes. After that, we will talk about some of your reactions to the scenes. As in the first session, if there's any question you would rather not answer, just let me know and we'll go on to the next question. If you decide you don't want to complete the study, we can stop at any point.

I am going to want to tape-record our conversation when we discuss the scenes you imagine instead of taking the time to write it all down. I need to get your written permission to do that, so I'd like you to read and then sign this consent form. Do you have any questions?

(Give them the release form. After they've signed, you sign as witness.)

Here are a few questionnaires I'd like you to fill out. Fill your student number in on the answer sheet and then go ahead and complete the forms. If you have any questions, just let me know. By the way, what is your student number?

(Give them the Thought Survey for the appropriate sex and the Beck Inventory, in that order. Label an unused side of a tape with their student number, a slash, then your student number. While they fill out the forms, find the appropriate instruction tape and make sure it is rewound. Choose the male or female tape, depending on the sex of the subject. Choose "Tape for odd-numbered students" if their student number ends in an odd number. Choose "Tape for even-numbered students" if their student number ends in

an even number or zero. Once the instruction tape is rewound, make sure that their blank, labelled tape is also rewound. While they fill out their questionnaires, you can score Cognitive Response Test or do other available work in the room. When they have completed the forms, check to be sure they filled in their student numbers, then continue with these instructions.)

Now you'll be asked to imagine a scene. The instructions are tape-recorded, so I'll play them now. Just relax and follow the instructions.

(Play the appropriate tape. When the tape says "Open your eyes," stop the tape.)

Do you have any questions?

Here are a few more questionnaires.

(Give them the DACL-Form A and the Differential Emotion Scale-Form A, in that order. As they complete the questionnaires, fill their student number in on the DACL-Form C and the Differential Emotion Scale-Form B. When they've finished the forms, continue on.)

Now we'll imagine another scene.

(Continue playing the same instruction tape. When the tape says "Open your eyes," stop the tape.)

Now I'd like you to fill out a few more forms.

(Give them the DACL-Form C and the Differential Emotion Scale-Form B, in that order. As they fill in the forms, put the unused, labelled tape in the tape recorder.)

I'm now going to tape record our discussion of the last scene you imagined.

(Turn tape recorder on to record.)

I'm going to ask you some questions about the scene you just imagined. I'd like you to answer as completely and honestly as you can. Answer the questions in terms of the scene as you actually experienced it, without adding anything that occurs to you now. If you can't quite remember something, just say so--Don't try to figure out what you probably thought. If you'd rather not answer a question, just let me know and I'll go on to the next one.

(Jot down thoughts and appraisals as they are mentioned on the back of the release form, for later reference.)

Structured InterviewImage Description

Describe exactly the situation you were imagining. Only describe the situation--we'll talk about your thoughts and feelings in a minute.

Anything else?

Rate the vividness of the image on this scale (#1).

(If, on any rating, the person lists more than one rating such as "It was a 2 or a 3," ask "If you had to choose one rating, which would it be?")

Rate how realistic the image was on this scale (#2).

Were some parts of the image more vivid or realistic than others?

If so, which parts?

Did the vividness or realism of the image change while you were imagining the scene? If so, how? When?

Emotion

Describe your emotions and feelings while imagining the scene.

What other emotions and feelings did you experience while imagining the scene? Any others?

Did the emotions or feelings seem to be connected to any specific parts of the scene (if not obvious)?

What is the one word or phrase that best describes your overall emotional reaction while imagining the scene? (If they say more than one, ask them to pick just one.)

Cognition

(Wherever possible and appropriate, get them to expand on their thoughts by saying, "Tell me more about that" or "Could you quote the actual thoughts?")

What thoughts went through your head while you were imagining the scene? Please try to "quote" the thought exactly, in the same words that you thought it in, rather than describing it.

Were there any other, related thoughts?

Did any of these thoughts occur more than once? If so, which ones? How many times did you think each one?

(If you had jotted down any thoughts earlier which they do not mention here, for each one say "Earlier you mentioned thinking _____. Tell me more about that." Restate their thoughts as exactly as possible. Restate each one that has not yet been mentioned in this section of the interview.)

(If they talk about a thought, ask them "What exactly was the thought?" or "Could you quote that exact thought for me?"")

Some thoughts are hard to remember unless you really concentrate. Try to really concentrate and remember what other thoughts went through your head.

(Whenever they mention additional thoughts, ask "Did any of them occur more than once? If so, which ones? How many times did you think each one?"

Some thoughts are hard to remember even when you concentrate. I'd like you to start over and imagine the scene again from start to finish. Repeat out loud all the thoughts you remember as they happened.

How many thoughts did you have about the opposite-sex person on the bench across from you?

How many thoughts did you have about the same-sex acquaintance who didn't notice you?

How many thoughts did you have about the same-sex stranger who sat next to you?

How many thoughts did you have about the quiz?

Appraisals

(You do not need to jot down thoughts and appraisals for the rest of the interview.)

Now I'm going to ask some more detailed questions about some of the thoughts you mentioned. I'd like you to answer them in terms of how you felt and what you thought while imagining the scene.

(For each possible appraisal related to the opposite-sex person, the same-sex acquaintance not noticing them, the same-sex stranger who sat down next to them, or the quiz, ask the following:)

1. (Restate the appraisal) "You mentioned thinking. . . ."
2. (Clarify, unless it's already clear)
 - a. (If outcome isn't clear) "How did you expect . . . [the situation] . . . to come out?"
 - b. (If they mention wanting to do something or feel differently) "What did you expect to happen if you . . . [restate proposed action or feelings]. . . ?"

- c. (If the subject's interpretation of the behavior, intentions, or motivations of others is not clear) "What did you think that meant?" or "What did you think was the reason that . . . [restate the behavior being interpreted or wondered about] . . . ?"
 - d. (If the thought is a question) "What did you think was the answer to . . . [restate question] . . . ?"
 - e. (When in doubt about what to ask the subject) "Tell me more about what you thought about . . . [restate unclear part] . . . ?"
3. What would . . . (the outcome) . . . have been like for you?
 4. Rate how good or bad . . . (restate outcome or interpretation) . . . seemed, using this scale (#3).
 5.
 - a. (For present outcomes) Rate how certain you were that . . . (restate anticipated outcome) . . . (using Scale #4).
 - b. (For future outcomes) Rate how likely it seemed that . . . (restate anticipated outcome) . . . (using Scale #4).
 - c. (For future interpretations) Rate how likely it seemed that . . . (restate interpretation) . . . (using Scale #4).
 - c. (For future actions) Rate how certain you were that if you . . . (restate the action) then . . . (restate the anticipated outcome) . . . (using Scale #4).
 6. (If appraisal is of an event or outcome which has already happened in the imagined scene, go on to item 7.)
(If outcome or event has not yet happened) Rate when it seemed that . . . (restate event or outcome) . . . would happen (using Scale #5).
 7. Rate how important . . . (restate outcome or event) . . . would have been to you (using Scale #6).
 8. (If appraisal is of event or outcome which has already happened in the imagined scene, skip to the next appraisal.)
(If appraisal is of event or outcome that has not yet happened):
 - (For negative outcomes) Rate how hard it would have been to avoid or prevent . . . (restate the outcome or event) . . . (using Scale #7).
 - (For positive outcomes) Rate how hard it would have been to get . . . (restate the outcome or event) . . . to happen (using Scale #7).
- (Ask questions 1 through 8 in the Appraisals section for each appraisal.)

Realism of Responses

Rate how similar your thoughts and feelings were while imagining the scene to the way you would react in that real-life situation (using Scale #8).

Can you think of any ways your reactions were different?

(When finished, turn off tape recorder.)

O.K. Now we'll imagine one last scene.

(Change tapes back to the appropriate instruction tape and continue playing where you left off until it says "Open your eyes.")

There's one last questionnaire to fill out.

(Give them the Participant's Evaluation Form and answer sheet.)

We're just about at the end of the study. Do you have any questions about it?

If you have any other questions about the study or if you'd like to discuss your experiences or emotional reactions further, Jim Pretzer or Barbara Fleming will be glad to meet with you.

(Hand them referral sheet.)

If you should have any feelings or reactions to this study which you're concerned about, or if any come up later on, Dr. Thornton who is listed on this sheet can help you to sort them out. Do you have any questions?

Please don't discuss this study with anyone who has not completed the study yet, since it might influence their responses during their second session.

How are you feeling now?

(If they're feeling o.k., sign their credit card, thank them for their participation, and say good-bye. If they express strong unpleasant feelings or concerns related to the study, encourage them to contact Dr. Thornton immediately. Mention that his phone number is on the sheet and suggest that they call from the Psych Research Building secretary's office. If that office is closed, call from the campus phone in the Synder Hall lobby or the pay phone in Baker Hall. If Dr. Thornton is not available immediately and the subject doesn't want to wait, have them try calling him at home or try to get in touch with Jim or Barb. If neither Dr. Thornton nor we are available and the subject doesn't want to wait, suggest that they call (1) the Listening Ear, (2) the DEC, or (3) the Counseling Center. As a final back-up, Ingham Community Mental Health Center has a 24-hour emergency service.

(After the subject has left, score the DACLs and the tape immediately.)

Guidelines to Answering Questions in Session 2

1. I refuse to have my interview tape-recorded.

Ans.--It is a necessary part of running this study and we cannot use any of the information collected unless we also have the tape-recording. (If they still refuse, give them 1 credit for showing up, thank them, and send them home.)

2. Why does my tape have to be kept for 20 years?

Ans.--Although this particular study will probably be finished by August, the results of the study may raise other important ideas for more research. Keeping the tapes for 20 years insures that there will be time to complete this study and that this information will be available in case it is useful for later follow-ups of this study.

3. I don't want my tape kept for 20 years.

Ans.--Would you be more comfortable if it were kept only 5 years? (If so, change the release form and have them sign it.) (If not, ask "How long would you feel comfortable having the tape kept?" If they say less than 1 year, explain that that may not be long enough to complete the study and suggest the period of 1 year. If they agree to any time period of 1 year or more, change the release form and have them sign it. If they insist on less than 1 year, give them 1 credit for showing up, thank them, and send them home.)

4. Why do I have to be tape-recorded?

Ans.--I couldn't possibly write down every single thing you say, and we do need all the information from the interview for this study.

5. Why do I have to close my eyes?

Ans.--It helps to reduce distractions and makes it easier to clearly imagine the scene.

6. Do I have to close my eyes?

Ans.--It would help to reduce distractions, but you don't have to close your eyes. If you would rather not, just stare at a blank spot on the wall as you imagine the scene.

7. Should I lean all the way back on the chair?

Ans.--You can if you want to. The most important thing is that you feel comfortable.

8. What are you looking for? Give me more details about the questionnaires, scenes, the study in general, etc.

Ans.--I can't really give you any more details now because it might influence the way you respond during the session. After this session you can discuss your questions either with me or with Jim Pretzer or Barbara Fleming.

9. I want to discontinue the study right now.

Ans.--Would you be willing to imagine one last scene to help you relax before leaving? (If so, play the last scene. If not, don't argue with them.)

(Then, skip to "If you have any other questions about the study or if you'd like to discuss your experiences or emotional reactions further. . . ." and finish the instructions. If they won't even let you do that, do be sure to hand them the referral sheet and sign their credit card, giving them 1 credit for each 1/2 hour they were there.

APPENDIX J

AUDIO-TAPE RELEASE FORM

APPENDIX J

AUDIO-TAPE RELEASE FORM

I agree to permit audiotape recordings of interviews in which I appear to be used for research purposes for up to 20 years from the date noted below. I understand that I may withdraw my permission for use of these materials in general, or for any specific purpose or situation, at any time, by making a written request to Michigan State University or the Department of Psychology. I understand that the confidentiality of the material presented will be preserved.

These materials will be stored and protected as confidential material by the researchers, James Pretzer and Barbara Fleming. The specific methods of maintaining confidentiality and for storage are determined by the researchers. When the materials are no longer useful for research purposes, or at my written request, they will be mechanically erased or destroyed.

Signed _____

Date _____

Witness _____

APPENDIX K

PARTICIPANT'S EVALUATION FORM

APPENDIX K

PARTICIPANT'S EVALUATION FORM

Your evaluation of this study is important both so that we can determine if the study worked the way we expected it to and so that we can design future studies to eliminate any problems you've become aware of. Please answer the following questions. For most of the questions you will mark a space on the answer sheet, but a few questions will ask you to write out answers on the back of the answer sheet. Be sure to number the answers you write on the back of the answer sheet and to skip the space on the front of the answer sheet for that question.

Be sure to mark your student number on the answer sheet before you begin.

1. How clear and understandable was the explanation of the purpose of the study?
 - A. Very clear and understandable
 - B. Clear and understandable
 - C. A bit hard to understand
 - D. Hard to understand
 - E. Impossible to understand
2. How clear and understandable were the explanations of the procedures for each session?
 - A. Very clear and understandable
 - B. Clear and understandable
 - C. A bit hard to understand
 - D. Hard to understand
 - E. Impossible to understand
3. How reasonable did the explanation of the purposes of the study seem?
 - A. Quite reasonable and convincing
 - B. Reasonable enough
 - C. I had a few doubts about it
 - D. I found it hard to accept
4. Did you feel like you needed more information about any part of the study? If so, what? (Answer this on the back of the answer sheet and skip space 4 on the front of the answer sheet.)

5. Was the timing of images too fast or too slow?
 - A. Much too fast
 - B. A bit too fast
 - C. About right
 - D. A bit slow
 - E. Much too slow
6. Did knowing you would be interviewed after the second imaginary scene change the realism of that scene? If so, in what way? (Answer this on the back of the answer sheet and skip space 6 on the front of the answer sheet.)
7. Did knowing you would be interviewed after the second imaginary scene change your feelings and emotions during the second scene? If so, in what way? (Answer this on the back of the answer sheet and skip space 7 on the front of the answer sheet.)
8. Did knowing you would be interviewed after the second imaginary scene change your thoughts during the second scene? If so, in what way? (Answer this on the back of the answer sheet and skip space 8 on the front of the answer sheet.)

Did you ever experience images other than the requested ones when you were asked to image a scene? If so, answer the next five questions. If not, skip to question 14.

9. Were these extra images more pleasant or less pleasant than the requested images?
 - A. Always more pleasant
 - B. Usually more pleasant
 - C. Usually less pleasant
 - D. Always less pleasant
 - E. I can't remember
10. Were these extra images similar to your dreams?
 - A. Usually very similar
 - B. Usually somewhat similar
 - C. Usually not similar
 - D. Usually completely different
 - E. I can't remember
11. Were these extra images similar to your daydreams?
 - A. Usually very similar
 - B. Usually somewhat similar
 - C. Usually not similar
 - D. Usually completely different
 - E. I can't remember

12. Did these images seem connected to your past?
 - A. They usually seemed clearly connected to my past.
 - B. They sometimes seemed connected to my past.
 - C. They usually didn't seem connected to my past.
13. Did these images seem connected to your daily life?
 - A. They usually seemed clearly connected to my daily life.
 - B. They sometimes seemed connected to my daily life.
 - C. They usually didn't seem connected to my daily life.
14. Do you think the questionnaires you filled out during the first session influenced the way you imagined the scenes today or your reactions to the scenes you imagined? If so, how? (Answer this on the back of the answer sheet and skip space 14.)
15. Do you have any suggestions for ways in which the interview following the second imaginary scene could be improved or changed? If so, how? (Answer this on the back of the answer sheet and skip space 15.)
16. What do you think the questionnaires you filled out during the first session were measuring? (Answer this on the back of the answer sheet and skip space 16.)
17. The general purpose of the study was explained, but the exact theories being tested weren't explained to you. Exactly what do you think was being tested? (Answer this on the back of the answer sheet and skip space 17.)
18. Do you think the experimenters found what they were looking for?
 - A. Yes, I'm sure of it.
 - B. I think so.
 - C. I really don't know.
 - D. I doubt it.
 - E. I'm certain they didn't.
19. If you have any other comments or suggestions, please write them on the back of the answer sheet.

APPENDIX L

BRIEF EXPLANATION OF STUDY

APPENDIX L

BRIEF EXPLANATION OF STUDY

The Purpose of the Study

You've probably learned (or will soon learn) that there are a number of different theories of emotion. One leading theory says that what a person thinks determines the emotions that they will experience. This is the basic assumption that this study has been testing. The questionnaires which you filled out in the first session were designed to measure your style of thought, your attitudes and beliefs, and your moods and feelings. The questionnaires you filled out today were designed to measure your thoughts and feelings just before the experiment and during the experiment. We asked you to imagine the scenes so that we could ask you about your thoughts and feelings in those situations. By knowing what you thought and how you felt in those situations we can study the relationship between thought and emotion.

Please, don't discuss the purpose of this study with people who haven't completed the study yet, since it might influence their responses during the second session.

If You Have Any Questions or Concerns

If you have any questions about the study, or if you would like to talk about your experiences, Jim Pretzer and Barbara Fleming will be glad to meet with you to answer questions and discuss your experiences.

If at any time you are concerned about your emotional reactions to the study or have any other concerns related to the study, please contact Dr. Dozier Thornton. He will be glad to help you understand and deal with your feelings. If he isn't in his office when you call and you don't want to wait to call him again, please contact Barbara Fleming or Jim Pretzer.

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