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Mood, Depression, and the Suppression of
Positive and Negative Self-Referent Thoughts

Andrew J. Howell

A Thesis
in
The Department
of
Psychology

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Concordia University
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ABSTRACT

Mood, Depression, and the Suppression of Positive and Negative Self-Referent Thoughts

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Previous research has shown that moods increase the accessibility of mood-congruent thoughts relative to mood-incongruent thoughts. The present research evaluates the hypothesis that, due to the increased accessibility of mood-congruent thoughts in memory, the suppression of mood-congruent thoughts would be more difficult than the suppression of mood-incongruent thoughts. Individuals in a positive mood were expected to have more difficulty suppressing positive than negative unwanted thoughts, whereas individuals in a negative mood were expected to have more difficulty suppressing negative than positive unwanted thoughts. In Experiment 1, subjects were induced to experience positive or negative mood. During a subsequent think-aloud period, they were asked not to think about (i.e., suppress) a previously described personal life event while they verbally reported their concurrent thoughts. The life event was either positive or negative. As predicted, positive mood subjects had more difficulty suppressing the positive than the negative unwanted thought, whereas negative mood subjects had more difficulty suppressing the

negative than the positive unwanted thought. These findings were replicated in Experiment 2 when mildly depressed and nondepressed subjects suppressed thoughts of either a positive or a negative life event. Nondepressed subjects had more difficulty suppressing the positive than the negative unwanted thought, whereas depressed subjects had more difficulty suppressing the negative than the positive unwanted thought. In Experiment 3, depressed and nondepressed subjects suppressed thoughts of an experimental task for which they had received either success or failure feedback. In line with the first two studies, nondepressed subjects had more difficulty suppressing thoughts of the success experience than the failure experience, whereas depressed subjects had more difficulty suppressing thoughts of the failure experience than the success experience. Results are discussed with respect to the association between mood and cognition, the role of intrusive cognitions in depression, and the relative merits of successful and unsuccessful thought suppression.

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Mood, Depression, and the Suppression of Positive and Negative Self-Referent Thoughts

People often attempt to prevent specific thoughts from occupying their attention. People may try not to think about negative or aversive life circumstances as a means of coping with their unpleasant situation. They may also attempt to dispel thoughts of an upcoming pleasant event if such thoughts threaten to interfere with ongoing activities. These instances of thought suppression involve a conscious attempt at directing attention away from a specific topic of thought. Attempts at thought suppression succeed when unwanted thoughts no longer occupy attention, and fail when such thoughts recur.

It is often difficult to prevent an unwanted thought from recurring (Horowitz, 1975; Wegner, 1988, 1989; Wegner & Schneider, 1989; Wegner, Schneider, Carter, & White, 1987). During thought suppression, numerous intrusions of the unwanted thought are likely to occur. A self-distraction strategy in which alternative thoughts are generated to occupy attention may facilitate thought suppression. Research suggests, however, that this strategy does not fully prevent the return of the unwanted thought.

Thought Suppression Failure: Initial Demonstration

A recent experiment has investigated people's ability

to suppress an unwanted thought (Wegner et al., 1987, Exp. 1). Subjects engaged in a thought suppression task which required them not to think of a white bear. The neutral stimulus white bear was employed in order to control for the effects of thought stimulus characteristics which might affect suppression, such as the familiarity, emotionality, or complexity of the unwanted thought. Subjects verbally reported their stream-of-consciousness for a 5-min period as they attempted to suppress thoughts of the white bear. The stream-of-consciousness protocols were analyzed to determine the number of times thoughts of the white bear occurred. Results indicated that subjects found it difficult to suppress thoughts of a white bear during the suppression period; on average, they experienced more than one thought of the white bear per minute. Intrusions of the unwanted thought were found to be most frequent at the onset of suppression, and to decrease across the 5-min period.

Wegner et al. (1987) posit that subjects' failure to suppress even seemingly innocuous thoughts is due, in part, to the process of self-distraction typically used during thought suppression. When asked to suppress a thought, people often search their current environment or available memory for cues to thought content. Available cues will be used as a basis for generating associations to other, related thought content, which will also come to occupy attention. This tactic may prove beneficial in generating

novel thoughts for the short-term. However, thoughts generated in this way are unlikely to be fully engaging or interesting, increasing the possibility that attention will eventually wander back to the task at hand and, in turn, to the unwanted thought. Numerous recurrences of the thought are expected as this cycle repeats itself during attempts at suppression. Thus, thought suppression is prone to failure because it is difficult to generate alternative thought content on demand that can hold attention for an extended period of time.

Influences on Thought Suppression

The study by Wegner et al. (1987) examined the ability of subjects to suppress an apparently innocuous thought. Subjects were unable to completely inhibit thoughts of the white bear, so that numerous thought intrusions were found to occur. A greater or lesser number of thought intrusions might have been observed under different circumstances. Many variables could influence a person's ability to suppress particular thought content effectively. Variables which might influence thought suppression include those related to the availability of effective self-distracting thoughts. Effective distractors are those which direct attention away from the unwanted thought, whereas ineffective distractors are those which direct attention

back towards the unwanted thought. If many effective distractors are available to occupy attention, then the suppressed thought will be less likely to intrude. A person's immediate surroundings may act as a source of effective self-distracting thoughts, such as when a good book or a captivating movie is used to direct attention away from thought content one wishes to avoid. Similarly, a rich internal environment may serve to provide sufficient thought content for effective self-distraction.

Variables associated with the nature of the unwanted thought are a second source of influence on thought suppression. Thought stimuli can be classified along a number of dimensions. For example, thought stimuli can be classified according to their self-relevance. Thoughts which are relevant to an individual's self-concept, including those that are highly descriptive of the self and those that are discrepant with the self-image, may be difficult to dispel because such stimuli have important implications for the self. Self-relevant stimuli activate the individual's elaborate network of self-related cognitions (e.g., Markus, 1977; Rogers, Kuiper, & Kirker, 1977). This activation may serve to keep unwanted, self-relevant thoughts in awareness to a greater degree than unwanted thoughts irrelevant to the self.

Other dimensions along which thought stimuli can be classified include the affective valence (i.e., positivity

or negativity), familiarity, complexity, and imageability (e.g., vividness, abstractness) of thought content. These and other characteristics of cognitive material may influence the degree to which thought suppression will succeed or fail.

Another category of variables which may influence a person's ability to suppress thoughts are individual differences which inhibit or facilitate mental control. Thought suppression is effortful (Wegner, 1989; Wegner et al., 1987); thus, any individual difference which may influence the amount of effort exerted during the self-distraction process will affect the outcome of that process. An individual's ability to concentrate or direct attention away from an unwanted thought will influence the ease with which the thought is kept out of awareness. An individual's cognitive capacity to generate alternative, self-distracting thoughts will also influence thought suppression. Age or mood, for example, can influence cognitive capacity (e.g., Conway & Sullivan, 1989; Hasher & Zacks, 1979; Sullivan & Conway, 1989), and may therefore affect a person's ability to suppress unwanted thoughts.

Contextual factors, factors related to the unwanted thought stimuli, and individual differences affecting the availability of cognitive effort may all influence an individual's ability to suppress thoughts. When effective self-distracting thoughts are continually generated, as a

result of a rich source of alternative thought stimuli, for example, the individual's attention may be kept away from an unwanted thought. Conversely, when too few self-distracting thoughts are generated, thought suppression will fail.

Thought suppression is likely to be influenced by factors which reduce the effort requirements of suppression or which influence an individual's cognitive capacity to generate alternative thought content. The extent to which the unwanted thought and the potential distractors occupy attention may also be influenced by automatic cognitive processes (see Bargh, 1989 for a discussion of automaticity in cognition). Thoughts which occupy attention during thought suppression are likely to be automatically influenced by cues in the surrounding context or internal environment and by immediately preceding thoughts used in the self-distraction process.

Thought Suppression and the Automatic Activation of Unwanted Thoughts

The automatic activation of thoughts can be understood within an associative network model of memory (Anderson, 1976, 1983; Anderson & Bower, 1973; Collins & Quillian, 1969). Within this model, thoughts are held to be represented in memory by cognitive concept nodes. When these nodes are activated above threshold, the thoughts they

represent come to occupy awareness. Nodes within the network are interconnected, with nodes representing associated concepts being more closely connected than nodes representing unrelated ideas. Novel thoughts or stored memories whose nodes are activated by external or internal stimuli may prime nodes representing associated thought content through the spread of activation. Activation spreads first to closely connected nodes within the network and, when the associated cognitions achieve a threshold level of excitation, the connected thoughts also come to awareness. Thus, activated nodes prime related material in memory, making associated cognitive content more accessible.

Thought suppression is likely to be affected by automatic thought activation. Nodes activated at the time of self-distraction will activate other, related, material in memory. These related thoughts will become more accessible relative to other cognitions, and will thus influence the process of self-distraction. Thoughts made accessible by activated nodes in memory may include the unwanted thought itself, as well as thoughts that serve as either effective or ineffective distractors.

Factors which influence automatic thought activation will influence the process of thought suppression. A powerful influence on the types of thoughts likely to come to mind through automatic activation is mood. Mood is known to affect the accessibility of cognitions in memory.

Findings concerning the impact of mood on cognition have indicated that mood increases the accessibility of mood-congruent relative to mood-incongruent material (see Blaney, 1986; Singer & Salovey, 1988; Ucros, 1989, for reviews). Positive information is more accessible under positive moods such as happiness, whereas negative information is more accessible under negative moods such as sadness.

The Influence of Mood on Cognition

Findings of mood congruency in information processing can be understood in terms of the network theory of affect (Bower, 1981; Bower & Cohen, 1982; Gilligan & Bower, 1984; see also Clark & Isen, 1982), which holds that emotions are represented in memory within a semantic network similar to networks representing storage of cognitive material. Emotion nodes, similar to conceptual nodes, become connected to autonomic and expressive patterns associated with the emotion as well as to cognitive material which in the past has been associated with the emotion. Thus, just as thoughts come to be associated with other, related, thoughts in memory, emotions come to be associated with life events and other affective material that the individual experienced while in a particular emotional state and which tend to be congruent with that mood. Such affective material becomes encoded within the semantic network.

When an emotion is experienced, the node corresponding to that emotion is activated in memory. Activation spreads from the node to related material within the network. If the activation is sufficient to bring the associated material above threshold, the associated material becomes accessible to awareness. Thus, positive and negative moods may increase the accessibility of positive and negative cognitive material, respectively. In other words, moods may increase the accessibility of mood-congruent thoughts relative to mood-incongruent thoughts.

Research supports the view that moods enhance the accessibility of mood-congruent thoughts relative to mood-incongruent thoughts. Studies examining the impact of mood on the generation of positive and negative associations to neutral stimuli and on the latency of processes involved in the recognition and generation of positive and negative material illustrate the enhanced accessibility of different types of cognition as a function of mood.

Impact of Mood on the Valence of Thought Associations

Mood-congruent associations to neutral stimuli should be generated more frequently than mood-incongruent associations. According to the network theory of affect, mood-congruent cognitions will be highly accessible due to the influence of mood on the spread of activation within the semantic network; thus, mood-congruent cognitions will be more likely to be retrieved or produced in association to

neutral stimuli than mood-incongruent cognitions.

In one study examining the generation of autobiographical associations, psychiatric patients who experienced diurnal fluctuations in mood were asked to retrieve memories of past life experiences in association to neutral words on two occasions (Clark & Teasdale, 1982). Subjects were substantially more depressed on one of these occasions than on the other. Results indicated that subjects generated more negative autobiographical associations to the stimulus words on the more depressed occasion than on the less depressed occasion. More positive autobiographical associations were generated on the less depressed occasion than on the more depressed occasion. Mood appeared to increase the accessibility of mood-congruent autobiographical memories associated to stimulus words, increasing their probability of retrieval from memory.

Other research using the methodology of assessing autobiographical associations to stimulus words, phrases, or scenarios has yielded effects similar to these for induced moods (Gilligan & Bower, 1983; Madigan & Bollenbach, 1982, Exp. 1a, Exp. 1b; Teasdale & Taylor, 1981; Teasdale, Taylor, & Fogarty, 1980) and for naturally occurring moods (Fogarty & Hemsley, 1983; Mayo, 1983; but see Mathew & Bradley, 1983, for nonsupportive findings). Other studies examining the production of non-autobiographical associations (e.g.,

single word free associations) to stimulus words have shown that mood enhances the production of mood-congruent thoughts when moods are experimentally induced (Bower, 1981; Fisher & Marrow, 1934; Madigan & Bollenbach, 1982, Exp. 2) and when naturally occurring moods are examined (Bousfield, 1950; Johnson, 1937; Mayer & Volanth, 1985). In sum, research examining the retrieval or generation of associations to neutral stimuli has supported the notion that moods may enhance the accessibility of mood-congruent cognitions relative to mood-incongruent cognitions.

Impact of Mood on Recognition Latency and Latency of Thought Associations

Recognition latency of valenced words and latency of positive and negative memory retrieval or thought production have also been used to examine the accessibility of particular cognitions as a function of mood. Mood-congruent material, if highly accessible, should be recognized and retrieved more quickly than mood-incongruent material, leading to faster retrieval latencies (Srull & Wyer, 1980).

Several researchers have assessed recognition latency of words differing in affective valence as a function of mood. For example, Small (1985) induced depressed or neutral moods in subjects and assessed latency to recognize depressed- and neutral-content words. Depressed subjects recognized depressed-content words faster than neutral-content words, whereas subjects in a neutral mood recognized

the two sets of stimuli equally quickly. Depressed subjects' faster recognition of depressed-content relative to neutral-content words was replicated in a subsequent study (Small & Robins, 1988). This study also included elated-content words, which were recognized more slowly than depressed-content words but more quickly than neutral-content words by depressed subjects, a result not fully consistent with the mood-congruency framework. The recognition thresholds of neutral mood subjects were not differentiated by the affective valence of word stimuli. The impact of mood on recognition latency has been supported by other studies demonstrating faster recognition of mood-congruent relative to mood-incongruent stimuli (Izard, Wehmer, Livsey, & Jennings, 1965; Postman & Brown, 1952; Powell & Hemsley, 1984; but see Clark, Teasdale, Broadbent, & Martin, 1983; MacLeod, Tata, & Mathews, 1987, for nonsupportive findings).

The impact of mood on thought accessibility has also been studied by examining latency of associative memory retrieval. In one study, subjects were induced to experience at different times elated and depressed mood. After each mood induction subjects retrieved memories of past life experiences in association to neutral stimulus words (Teasdale & Taylor, 1981). The latency of each memory retrieval was assessed. Subjects judged the pleasantness of their retrieved memories following the retrieval task.

Results indicated that subjects in the elation condition retrieved pleasant memories faster than unpleasant memories, whereas subjects in the depression condition retrieved unpleasant memories faster than pleasant memories. Mood appeared to increase the accessibility of mood-congruent autobiographical memories, leading to faster retrieval latencies for mood-congruent relative to mood-incongruent memories. Similar effects have been obtained when latencies for autobiographical memory retrieval to stimulus words, or latencies for the production of non-autobiographical associations to stimulus words, were assessed in mood induction studies (Fisher & Marrow, 1934; Lishman, 1972, 1974; Riskind, 1983; Riskind, Rholes, & Eggers, 1982; Teasdale & Fogarty, 1979; Teasdale et al., 1980) and in a study examining naturally occurring moods (Lloyd & Lishman, 1975). Two studies have failed to find differential effects of mood on the latency of mood-congruent and mood-incongruent memory retrieval, one which examined latencies for retrieval of autobiographical memories in response to stimulus words (Clark & Teasdale, 1982), and one which examined the production of non-autobiographical associations to stimulus words (Johnson, 1937).

Research on recognition latency of positive and negative words and research examining the probability and latency of retrieval and generation of associations to neutral stimuli suggests that mood can increase the

accessibility of mood-congruent material relative to mood-incongruent material. In addition, increased thought accessibility as a function of mood is also suggested by studies examining the impact of mood on recall of positive and negative material. These studies have revealed that material which is affectively congruent with mood (e.g., a memory from one's past or an item from a word list) is more likely to be retrieved from memory than mood-incongruent material (see Blaney, 1986; Singer & Salovey, 1988; Ucros, 1989, for reviews). This link between mood and memory retrieval adds further support to the notion that mood-congruent material is more highly accessible than is mood-incongruent material.

In sum, research on word recognition and on the probability and speed of memory retrieval and thought generation underscores the influence of mood on thought accessibility by demonstrating that mood increases the accessibility of mood-congruent cognitions relative to mood-incongruent cognitions. According to the network theory of affect, this occurs as a result of activated mood nodes priming related material in memory through the spread of activation. Positive moods, such as happiness, will enhance the accessibility of positive material, increasing both the likelihood and speed of positive memory retrieval or thought production. Conversely, negative moods, such as sadness, will enhance the accessibility of negative material,

increasing both the likelihood and speed of negative memory retrieval or thought production.

The Influence of Mood on Thought Suppression

The act of suppressing thoughts from awareness, like memory retrieval or thought production, may be influenced by mood. Mood may affect a person's ability to suppress thoughts from awareness by increasing the accessibility of mood-congruent information available during suppression. As a result of this increased accessibility, mood-congruent thoughts should be more difficult to suppress than mood-incongruent thoughts. It follows from the network theory of affect that, during thought suppression, activation spreading from the mood node to the unwanted but congruent thought will increase the accessibility of the unwanted thought, thereby increasing the possibility that the thought will enter into awareness. In addition, the search for alternative, self-distracting thoughts will be biased in the direction of congruence with the individual's mood. Thoughts and memories which are congruent with mood will be more likely to come to mind and will come to mind more quickly than cognitions incongruent with mood. These mood-congruent distractors will be ineffective to the extent that they spread activation to the mood-congruent, unwanted, thought. Thus, two forms of activation spreading from an

activated mood node--activation spreading directly from the mood node and activation emanating from mood-congruent thoughts primed by the mood node--increase the possibility that thought suppression will be more difficult when the thought is affectively congruent with mood than when it is incongruent with that mood.

Thoughts incongruent with an individual's mood may be easier to suppress than mood-congruent thoughts as a result of activation spreading from an activated mood node. Direct activation from the mood node to the suppressed thought will be weaker as the suppressed thought will not be strongly associated with the mood node. In addition, self-distracting thoughts primed by the activated mood node are likely to be of a different emotional valence than the unwanted thought, facilitating thought suppression.

A recent study has investigated the impact of mood on thought suppression (Wenzlaff, Wegner, & Roper, 1988, Exp. 1). The ability of depressed individuals relative to nondepressed individuals to suppress positive and negative thoughts was investigated. Wenzlaff et al. (1988) reasoned that the negative cognitive style of depressed individuals may result, in part, because depressed individuals have more difficulty than nondepressed individuals suppressing negative thought content, but not positive thought content, due to the impact of negative mood on the priming of negative cognitions. In order to test this hypothesis,

mildly depressed and nondepressed students read, in counterbalanced order, a positive and a negative life event description while under instructions to imagine themselves in the situation. Immediately after reading each story, subjects attempted to suppress thoughts of the description while writing down their stream-of-consciousness for a 9-min period. Subjects made a checkmark each time they thought about the story.

Results indicated that thoughts about the negative story were more likely to intrude for depressed than nondepressed subjects during the final 3-min interval of the suppression period. Depressed and nondepressed individuals did not differ in their suppression of the negative story during the first six minutes of the suppression period, and thought intrusions decreased steadily across this time interval for both groups. In the final three minutes of the suppression period, however, negative thought intrusions of depressed subjects returned to a level observed at the onset of the suppression period, whereas negative thought intrusions of nondepressed subjects continued to abate. Depressed and nondepressed subjects did not differ in their suppression of thoughts about the positive story during any interval of the suppression period.

Wenzlaff et al. (1988) argued that the negative mood of depressed subjects enhanced the accessibility of negative thoughts in memory. Attempts at self-distraction by

depressed subjects were biased in the direction of these accessible negative thoughts, which made suppression of an unwanted negative thought particularly difficult. For nondepressed subjects, the suppression of negative thoughts did not prove difficult, presumably because the positive mood of nondepressed individuals did not increase the accessibility of negative thoughts in memory.

The findings of Wenzlaff et al. (1988) suggest that mood may exert an effect on thought suppression; negative mood associated with depression hindered the suppression of negative thoughts but not positive thoughts. An alternative interpretation of the findings observed by Wenzlaff et al. (1988) is that cognitive structures typical of nondepressed and depressed individuals contributed to the observed effects, independent of the impact of subjects' mood. Depressed individuals are known to have a negative cognitive set (e.g., Beck, Rush, Shaw, & Emery, 1979) through which they process social information. As a result of this cognitive set, negative cognitions are more chronically accessible for depressed individuals relative to nondepressed individuals (Bargh & Tota, 1988; Gotlib & McCann, 1984; McCabe & Gotlib, 1989; Wenzlaff, 1988; Williams & Nulty, 1986). These highly accessible and automatically activated negative cognitions may serve to prime congruent thoughts independent of the affective component of depression. Thus, suppression of negative

thoughts would be more difficult than the suppression of positive thoughts due to the priming of mood-congruent thoughts by the negative cognitive set associated with depression. This alternative explanation can be ruled out by examining thought suppression among individuals who have been randomly assigned to inductions of positive and negative moods.

Certain findings obtained by Wenzlaff et al. (1988) also call into question the strength of the mood-congruency explanation of their findings. First, the impact of mood on the suppression of positive and negative thoughts was not observed for nondepressed subjects. Nondepressed individuals were not found by Wenzlaff et al. (1988) to experience more intrusions of positive relative to negative unwanted thoughts. As nondepressed individuals typically experience positive mood (Matlin & Stang, 1978), the mood-congruency framework would predict that nondepressed individuals would experience more difficulty suppressing positive thoughts than negative thoughts, due to the priming influence of positive mood on the activation of positive thoughts.

Second, the finding of increased intrusions of negative relative to positive unwanted thoughts for depressed individuals was observed only during the final three minutes of the suppression period. Additional theorizing beyond the mood-congruency framework would be needed to explain this

delay effect.

The study by Wenzlaff et al. (1988) was the first to examine whether mood may influence thought suppression. Their results suggest that mood may affect thought suppression such that mood-congruent thoughts are more difficult to suppress than are mood-incongruent thoughts. These findings are subject to an alternative explanation, however, which posits that the negative cognitive structures associated with depression influenced thought suppression independently of the negative mood component of that affective state. In addition, the absence of mood-congruency effects for depressed individuals prior to the final three minute interval of the suppression period and the absence of mood-congruency effects for nondepressed individuals suggests that further research is required before one can conclude that mood influences the suppression of unwanted positive and negative thoughts.

The Present Research

The present research further investigated the impact of mood on thought suppression.¹ In the current studies,

¹In actuality, some of the research presented herein was conducted prior to publication of the Wenzlaff et al. (1988) research. Nevertheless, the current series of independently conceived studies supports and extends the work by Wenzlaff and colleagues.

subjects experiencing a positive or negative mood attempted to suppress positive or negative thought stimuli.

Suppression was attempted during a period in which subjects were asked to report their stream-of-consciousness verbally (i.e., to "think aloud"). Instructions for the think aloud period were based on those developed by Ericsson and Simon (1984) and Wegner et al. (1987): Following a series of practice trials designed to facilitate thinking aloud, subjects were asked to say out loud everything that was on their mind for a 5-min period. According to Ericsson and Simon (1984), this verbal report task can be readily performed, in contrast to more demanding cognitive tasks such as concurrently reporting on the successive cognitive steps taken while solving a problem, or retrospectively accounting for performance on a problem-solving task. The think aloud technique is held to be an accurate measure of stream-of-consciousness (Ericsson & Simon, 1984; Genest & Turk, 1981; Pope, 1978; Wegner et al., 1987).

For the suppression period, subjects were given additional instructions not to think of either a positive or a negative life event they had reported earlier. As in previous research, each time they thought of the event or found themselves talking about the event, they were to ring a bell in front of them (cf. Wegner et al., 1987). The number of bell rings made by a subject plus the number of times a subject verbally mentioned the suppressed thought

served as the primary dependent measure. This dependent measure was examined as a function of mood group and thought valence condition.

The present studies were designed to maximize the probability of observing mood-congruent effects on thought suppression. First, the research asked subjects to suppress thought stimuli which were highly relevant to them. In contrast to having subjects imagine themselves in novel scenarios and then suppress thoughts of those situations (cf. Wenzlaff et al., 1988), the present studies required subjects to suppress thoughts of past real-life experiences. The positive and negative stimuli employed are thus highly self-relevant, a feature which augments the effects of mood on cognitive variables (Blaney, 1986; Ucros, 1989). Second, the think aloud procedure was employed. This procedure may enhance mood-congruency effects compared to effects observed with the written stream-of-consciousness method employed by Wenzlaff and colleagues (1988). It is possible that subjects are more able to verbalize concurrent thoughts than to write them down, as the former method is likely to be quicker. If speed of verbalization enhances the adequacy of stream-of-consciousness measurement, this present stream-of-consciousness methodology may be more sensitive to the impact of mood on cognition.

These methodological choices were aimed at maximizing the strength of mood-congruent effects observed during

thought suppression. In the present research, positive mood was expected to be associated with an increased number of intrusions of an unwanted positive thought, just as negative mood was expected to be associated with an increased number of intrusions of an unwanted negative thought. In addition, mood-congruent effects were expected to be observed across the entire suppression period, rather than during only part of the time interval under investigation (cf. Wenzlaff et al., 1988).

Finally, an attempt was made to reduce possible demand characteristics by using elaborate cover stories and between-subjects experimental designs. Subjects are less likely to respond to the demand characteristics inherent in the experimental hypotheses if a plausible alternative rationale is provided and if they are exposed to only one level of an independent variable, in this case, either the positive or negative thought suppression condition.

Experiment 1

Experiment 1 employed an experimental mood induction procedure to examine the impact of mood on thought suppression. Positive and negative moods were induced in subjects who then attempted to suppress thoughts of either a positive or negative life event from their past.

The hypothesis examined in Experiment 1 was that

thought suppression will be more difficult when the unwanted thought is congruent with an individual's mood than when the unwanted thought is incongruent with that mood. Subjects induced to experience positive mood were expected to have more difficulty suppressing positive thoughts than negative thoughts, whereas subjects induced to experience negative mood were expected to have more difficulty suppressing negative thoughts than positive thoughts.

Method

Subjects

Subjects were 47 female undergraduates recruited from introductory psychology classes at Concordia University. Subjects, whose age ranged from 18 to 25 years ($M = 20.5$), were each paid \$7 for their participation. The data of seven subjects were deleted; one subject suspected that there was a relation between the mood induction and think aloud periods and six subjects failed to follow instructions correctly (i.e., did not think aloud, did not understand instructions for the suppression period, or did not attend to the mood-induction stimulus).

Overview of Study

Prior to the start of each session, subjects were nonsystematically assigned within blocks of four to either the positive or negative mood condition and to either the positive or negative thought condition. The male experimenter was blind to the former assignment, and remained so throughout each session.

Subjects were tested individually in an experimental session of 1 hr 15 min. To avoid demand characteristics relating mood to subsequent thought processes, the true purpose of the study was disguised. Subjects were read an introduction to the study, following which they completed a life events questionnaire used to derive the individually relevant positive and negative suppression targets employed

later in the study. Subjects then completed a first, practice, think aloud period. Next, subjects underwent either a positive or a negative mood induction. The second think aloud period was then completed, during which subjects were additionally instructed not to think about a specific event from their own past. This event was either the positive or the negative event described previously by subjects on the life events questionnaire, depending on a subject's experimental condition. Next, a mood measure was administered and subjects judged the perceived pleasantness of the thought they were asked to suppress. Subjects were then debriefed, remunerated, and thanked for their participation. To remove any negative effects of the musical mood induction that remained, all subjects listened to pleasant music during debriefing. Of the 40 subjects retained in the study, none indicated an awareness that the study concerned the impact of mood on thought processes.

Materials and Procedure

Introduction. Subjects received a copy of the introduction to the study, which the experimenter read aloud as subjects followed along (see Appendix A). The study ostensibly concerned the impact of age on various aspects of human cognition. Subjects were informed that people of various ages would be participating in the study, and that each would be asked to complete a number of thought and perceptual tasks in random order. In order to study the

impact of age on natural thought processes, participants would be asked to verbalize their thoughts during different think aloud periods. The impact of age on perceptual processes would be investigated through subjects' perception of musical selections and descriptions of life events.

Life events questionnaire. The life events questionnaire was completed following the introduction. This questionnaire consisted of two parts, counterbalanced for order across subjects within each experimental condition (see Appendix B). In each part, subjects were required to read a set of life event descriptions. One set was comprised of positive life events (e.g., having a warm conversation with someone you like a lot), whereas the second was comprised of negative life events (e.g., losing a really good friend). The positive and negative life events were similar in content, and each event referred to an interpersonal experience. For both sets of descriptions, subjects were asked to imagine a specific instance of each event that had occurred in their own lives, and then to indicate on the questionnaire which of the events from their own past was associated with the most happiness (for the positive life events) and sadness (for the negative life events). Subjects were then asked to generate two or three key words that could be used to refer to each targeted event. Thus, one event and set of key words associated with happiness were generated by each subject, as were one event

and set of key words associated with sadness. Finally, subjects were informed that the experimenter would make use of the key words later in the study. They were thus requested to rewrite the key words on index cards which the experimenter would employ at a later time.

Initial think aloud period. In the first think aloud period, which followed completion of the life events questionnaire, subjects were required to verbalize their concurrent thoughts (i.e., think aloud) for 5 min (Ericsson & Simon, 1984; Genest & Turk, 1981; Pope, 1978; Wegner et al., 1987). Subjects were informed that they were to say out loud whatever they were thinking, that there were no restrictions as to what they could say, and that they should try to keep talking for the duration of the task. An example of what someone might say when they were asked to think aloud was presented. The experimenter then demonstrated the task by thinking aloud, following which the subject completed two warm-up examples, which were tape-recorded with subjects' full knowledge (e.g., "think back to when you were 15 and tell me how many windows there were in the place that you lived"). The subject thus became accustomed to thinking aloud under circumstances where it was comparatively easy. Following the warm-up examples, subjects completed the first think aloud period with the experimenter absent from the room. This think aloud period was also tape-recorded with subjects' full knowledge.

Mood induction. Nonlyrical music was employed to induce positive and negative moods prior to the suppression period. The materials and procedure of Pignatiello, Camp, and Rasar (1986) were adopted for this purpose. Subjects were asked to listen carefully to a number of musical selections and were told that they would later be asked questions about what they heard. In order to reduce demand characteristics, subjects were not told that the tapes were designed to alter mood, but instead believed that the music comprised one of the perceptual tasks. In the absence of the experimenter, subjects listened through headphones to a 20 min musical selection which commenced with a neutral selection. For positive mood subjects, the music became more elating with each successive selection, whereas for negative mood subjects the music became more depressing with each successive selection.

This musical mood induction technique has proven to be an effective means of inducing positive and negative mood for a population of college students. In two studies, subjects who experienced the positive mood induction showed enhanced positive mood relative to those who experienced the negative mood induction (Pignatiello et al., 1986). In addition, negative mood subjects showed reduced psychomotor speed when compared to positive mood subjects (Pignatiello et al., 1986, Study 2).

Suppression period. Subjects completed a second think

aloud period, comprising the suppression period, immediately following the mood induction. This second think aloud period was identical to the first, with one exception. Subjects were asked to think aloud as they had done previously, but were additionally instructed to try not to think about a personal event they had described earlier. The key words corresponding to one of the events described on the life events questionnaire were read aloud by the experimenter to indicate to which event the experimenter was referring. Subjects in the positive thought condition were read the key words corresponding to the positive event, whereas subjects in the negative thought condition were read the key words corresponding to the negative event. Subjects were told "every time you think about the event or the words _____, _____, or _____ (here the key words were repeated), or have the event or the words come to mind, please ring the bell in front of you." Again, subjects verbalized their thoughts for a 5-min period, during which the tape-recorder was on and the experimenter was absent from the room.

Mood assessment. A measure of acute mood was obtained from each subject in order to assess the effects of the mood induction (see Appendix C). Mood was assessed following the suppression period in order to avoid making references to subjects' moods prior to completion of the suppression period. All subjects were asked to rate their present mood

in terms of 17 positive and 18 negative mood adjectives, each followed by a 15-point scale with endpoints labelled not at all (1) and extremely (15). The adjectives were chosen to reflect the full range of emotions that have been identified by Watson and Tellegen (1985): high versus low negative emotion; high versus low positive emotion; pleasantness versus unpleasantness; and engagement versus disengagement.

Ratings of thought stimuli. Following completion of the direct mood assessment, subjects judged the perceived pleasantness of the thought they were asked to suppress on a 9-point scale with endpoints labelled very unpleasant (-4) and very pleasant (+4) (see Appendix D). This item was used to determine the effectiveness of the manipulation of thought valence.

Results

Mood group (positive vs. negative) and thought valence (positive vs. negative) were between-subjects factors. For each of the following measures, analyses of variance (ANOVAs) were first conducted including order of life event descriptions (positive vs. negative descriptions first) as a variable. As there were no reliable effects associated with this variable, it was omitted from the reported analyses. Degrees of freedom fluctuate slightly due to missing data.

Acute Mood

The two mood groups were compared on the measure of acute mood completed following the suppression period. Cluster analyses were performed on the responses to the mood items. Four major clusters emerged. Cluster scores were derived by averaging responses to items with high inter-correlations (>.40). Higher scores on all clusters represent more intense mood states. The positive mood cluster contained the adjectives active, excited, peppy, and the negatively correlating items drowsy, motionless, and sleepy. The scales of these latter three adjectives were reversed, as they reflect low levels of positive mood. The pleasantness cluster contained the adjectives good, satisfied, pleased, and content. The unpleasantness cluster contained the adjectives sad, unhappy, miserable, distressed, and sorry. Finally, the negative mood cluster contained the adjectives quiet, at rest, calm, and relaxed.

The scales of these latter four adjectives were reversed, as they reflect low levels of negative mood (that is, high levels of negative mood reflect the absence of feeling at rest, calm, etc.). Negative mood subjects were expected to report higher levels of negative mood and unpleasantness and lower levels of positive mood and pleasantness than positive mood subjects.

Inter-correlations conducted on the four mood clusters revealed nonsignificant correlations, with the exception of the negative correlation between scores on the unpleasantness and pleasantness clusters, $r(40) = -.40$, $p < .005$, a finding consistent with the model of Watson and Tellegen (1985). As cluster scores were largely independent, subjects' scores on each of the mood clusters were analyzed in separate 2 (positive vs. negative mood) x 2 (positive vs. negative thought) ANOVAs (Tabachnick & Fidell, 1983). The analysis on the negative mood cluster yielded a significant effect for mood group, $F(1,36) = 4.73$, $p < .04$, and no other significant effects, $F_s < 1$. Negative mood subjects ($M = 7.11$) reported more negative mood than positive mood subjects ($M = 6.11$). Analyses on the unpleasantness cluster yielded a marginally significant effect for mood group, $F(1,36) = 3.03$, $p < .09$, and no other significant effects, $F_s < 2.4$, $p_s > .15$. Negative mood subjects ($M = 3.42$) tended to report greater unpleasantness than positive mood subjects ($M = 2.00$). Differences did not

emerge between negative ($M_s = 7.21$ & 7.94) and positive ($M_s = 8.27$ & 8.40) mood subjects on the positive affect and pleasantness factors, respectively, $F_s < 2.5$, $p_s > .15$. In sum, negative mood subjects appeared to experience more dysphoric mood than did positive mood subjects.

Ratings of Thought Stimuli

Subjects rated the perceived pleasantness of the thought that they were asked not to think about during the suppression period. A 2 (positive vs. negative mood) x 2 (positive vs. negative thought) ANOVA on subjects' perceptions of the pleasantness of the thought they suppressed revealed an expected main effect for thought valence, $F(1,36) = 57.19$, $p < .001$, and no other significant effects, $F_s < 1$. This finding confirms that the thought suppressed by individuals assigned to the positive thought condition was perceived as pleasant ($M = +2.05$) and that the thought suppressed by individuals assigned to the negative thought condition was perceived as unpleasant ($M = -2.00$).

Unwanted Thought Intrusions

Intrusions of the unwanted thought were determined from tape-recordings of subjects' verbalizations during the suppression period. The recordings were coded for the following thought indices by an individual blind to subjects' mood condition: (1) bell rings and mentions of the to-be-suppressed event occurring simultaneously; (2) bell rings occurring alone; (3) mentions of the to-be-

suppressed event occurring alone; and (4) indirect references to the to-be-suppressed event occurring in the absence of both a bell ring or a direct mention of the event (e.g., "I find myself thinking of that event again"). The first three of these categories have been used in previous research (Wegner et al., 1987). The complex nature of the material suppressed in the present research relative to previous studies necessitated the use of the fourth category. Results reported herein are virtually identical if the fourth, novel, category is not included.

A second judge blind to mood condition coded a random sample of 20 recordings; the codings of the two judges correlated .94, .95, .90, and .96 for the four thought intrusion categories. The primary dependent measure of thought intrusion was calculated for each subject by summing across the different intrusion categories. The codings of the two judges correlated .99 for this overall index.

The total number of unwanted thought intrusions experienced by subjects was expected to be higher when the suppressed thought was congruent with induced mood than when the thought was incongruent with induced mood. In other words, an interaction between mood group and thought valence was expected to emerge, such that positive mood subjects would have more difficulty suppressing positive thoughts than negative thoughts, whereas negative mood subjects would have more difficulty suppressing negative thoughts than

positive thoughts.

A 2 (positive vs. negative mood) x 2 (positive vs. negative thought) ANOVA was conducted on the total number of unwanted thought intrusions experienced by each subject. Tests for normality and homogeneity of variance revealed that these assumptions were not violated. The expected Mood Group x Thought Valence interaction did emerge. As Figure 1 illustrates, positive mood subjects experienced a greater number of positive ($\bar{M} = 5.00$) than negative ($\bar{M} = 3.70$) thought intrusions, whereas negative mood subjects experienced a greater number of negative ($\bar{M} = 5.30$) than positive ($\bar{M} = 1.60$) thought intrusions, $F(1,36) = 11.66$, $p < .01$. No main effect for mood group emerged, $F < 1$, whereas the main effect for thought valence approached significance, $F(1,36) = 3.00$, $p < .09$.

An estimate of the magnitude of the interaction effect was obtained by computing the product moment r , which has been recommended as the statistic for estimating the effect size of a 1-df numerator test (Rosnow & Rosenthal, 1988). An effect size of .49 resulted, which can be considered "large", according to the guidelines of Cohen (1977). Thus, the statistically significant interaction effect can also be considered practically significant.

The significant interaction between mood group and thought valence was further examined by decomposing the cell means contributing to the interaction into residuals, or

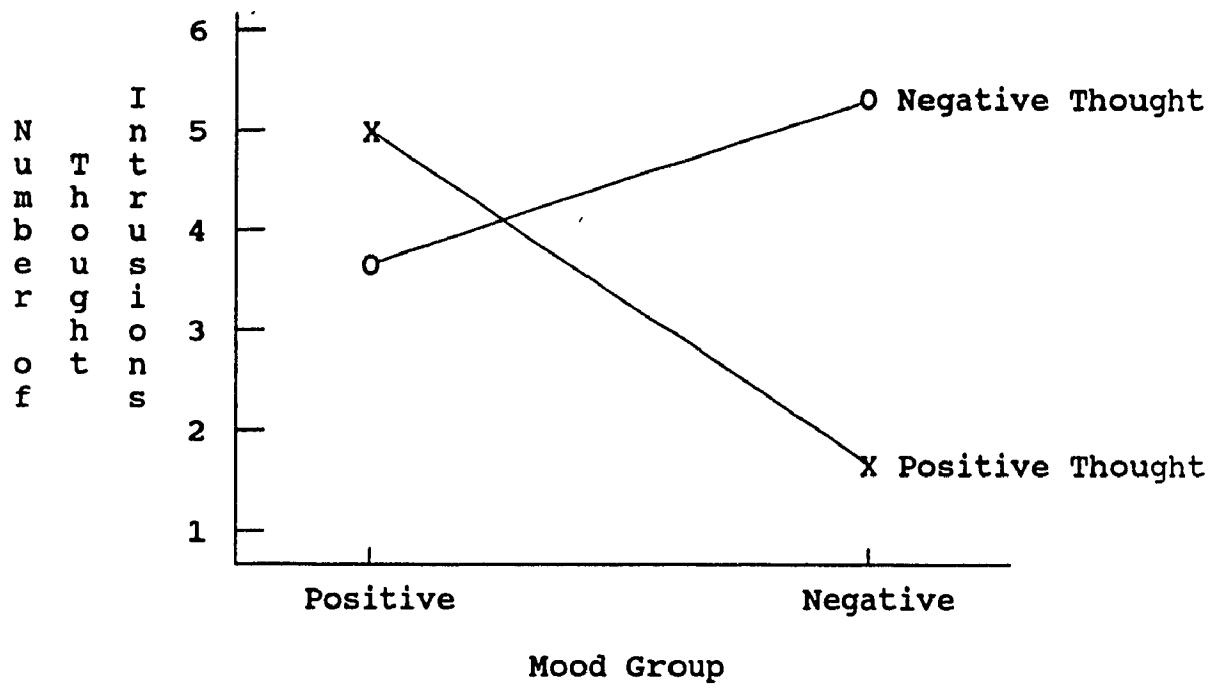


Figure 1. Mean number of unwanted thought intrusions as a function of mood group and thought valence (Exp. 1).

leftover effects. Residuals are obtained by removing lower order effects (i.e., main effects) from the cell means. It has been argued that this is a more appropriate way of examining interaction effects than are tests for simple main effects, as the means employed in the latter tests are made up only partially of effects attributable to the interaction between factors (Rosenthal & Rosnow, 1984; Rosnow & Rosenthal, 1989a, 1989b). In other words, the impact of a significant interaction effect on a dependent measure independent of main effects can only be determined by examining residuals. The result of such a decomposition for a 2 x 2 factorial design will always be an x-shaped function (Rosnow & Rosenthal, 1989a, 1989b).

The plot of residuals for the present study is presented in Figure 2 and illustrates that (in relation to the incongruent thought) positive mood subjects had difficulty suppressing positive thoughts to the same degree that negative mood subjects had difficulty suppressing negative thoughts. The predicted relation between mood and suppression of valenced thoughts was fully supported by the present results.

Thus, although the pattern of cell means suggests an asymmetry in the interaction between mood group and thought valence (i.e., the difference between suppression of positive and negative thoughts was larger for negative than for positive mood subjects), examination of the interaction

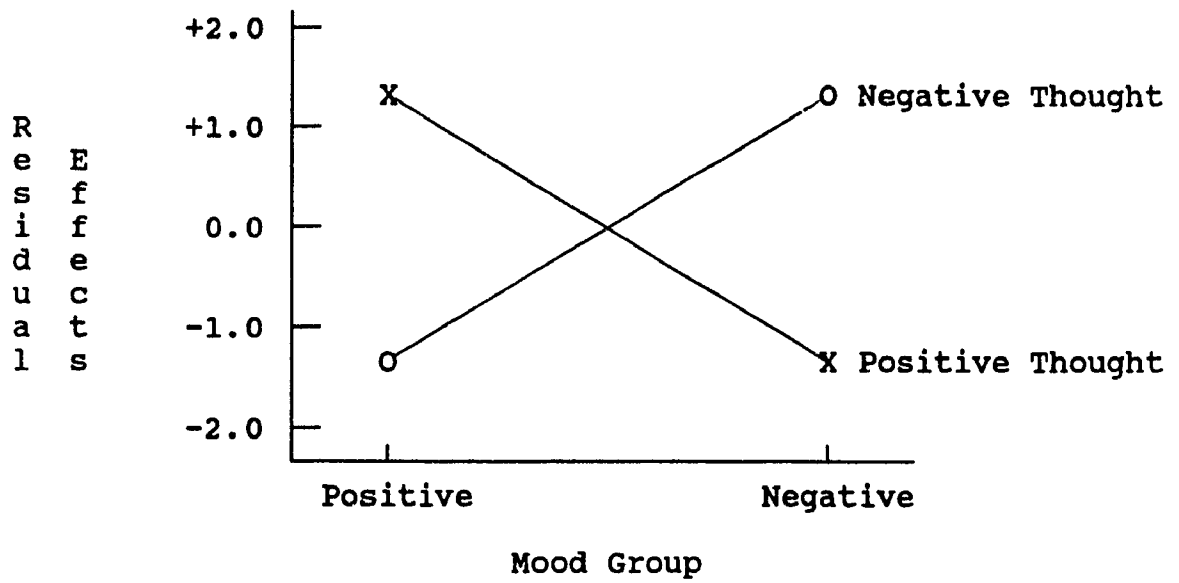


Figure 2. Residuals of the mood group x thought valence interaction effect (Exp. 1).

residuals indicates that the apparent asymmetry disappears when the impact of main effects are removed. The marginally significant main effect for thought valence contributed to the asymmetry in the interaction between mood group and thought valence. The overall higher frequency of negative unwanted thought intrusions across mood groups narrowed the discrepancy between positive and negative thought intrusions for positive mood subjects but widened it for negative mood subjects (see Figure 1).

Finally, in order to examine whether unwanted thought intrusions generally decreased over time (cf. Wegner et al., 1987), or whether a rebound in unwanted thought intrusions occurred as a function of mood group or thought valence (cf. Wenzlaff et al., 1988), an additional analysis was performed in which the number of unwanted thought intrusions per minute was examined in a 2 (positive vs. negative mood) x 2 (positive vs. negative thought) x 5 (time interval) ANOVA. In addition to the Mood Group x Thought Valence interaction, a main effect for time interval emerged, $F(4,144) = 10.37$, $p < .001$, which was qualified by a Thought Valence x Time Interval interaction, $F(4,144) = 2.28$, $p < .06$. Whereas unwanted thought intrusions tended to decrease steadily over time for subjects in the positive thought conditions ($M_s = 1.09, 0.76, 0.76, 0.44, \& 0.27$ for the 1st through 5th minute, respectively), subjects in the negative thought conditions experienced a rebound of unwanted thought

intrusions in the final minute ($M_s = 1.60, 1.30, 0.55, 0.30,$
& 0.75). Regardless of subjects' acute mood state, positive
thoughts may become easier to suppress as time progresses,
whereas negative thoughts may be difficult to suppress at
both short and long time intervals.

Discussion

Results of Experiment 1 reveal that subjects in a positive mood experienced greater difficulty suppressing a positive thought than a negative thought, whereas subjects in a negative mood experienced greater difficulty suppressing a negative thought than a positive thought. This pattern of findings is consistent with the position that the spread of activation from an activated mood node to memories and cognitions related to that mood can interfere with the suppression of a mood-congruent thought.

Two additional findings emerged in this initial study. Negative thoughts tended to be more difficult to suppress than positive thoughts for subjects in both a positive and negative mood. Intrusions of negative unwanted thoughts were also found to increase in the final minute of the suppression period for both mood groups, whereas intrusions of positive unwanted thoughts continued to decrease across the time interval. These observations suggest that, in general, unpleasant thoughts are more difficult to suppress than are benign thoughts. The relative infrequency of unpleasant thoughts for most people (e.g., Kendall, Howard, & Hays, 1989; Schwartz, 1986; Schwartz & Garamoni, 1986, 1989) may increase their salience and thus their likelihood of intrusion into awareness.

An important feature of Experiment 1 was that moods were experimentally induced. Subjects were randomly

assigned to either the positive or the negative mood condition. The induction of moods in Experiment 1 strongly suggests that the observed effects were due to subjects' moods and not to some other variables correlated with mood, such as chronically accessible cognitive sets. The findings of this initial study thus provide strong evidence that mood influences the suppression of positive and negative thoughts independent of individual differences in cognitive set which may accompany naturally occurring moods.

An alternative account of the present findings is that cognitive priming associated with aspects of the experimental procedure influenced thought suppression. The cognitive priming hypothesis argues that cognitions elicited by an emotion-producing event prime or semantically cue related items in memory (Rholes, Riskind, & Lane, 1987). Thoughts which precede or independently accompany mood may prime related thoughts in memory, rather than the mood itself priming these associated cognitions.

There are two ways in which cognitive priming emanating from activated cognitions associated with an emotion-producing event may have influenced subjects' ability to suppress thoughts in the present study. First, cognitions initially primed by the life events questionnaire may have remained active during the suppression period and thus interfered with the suppression of mood-congruent cognitions relative to mood-incongruent cognitions. However, because

all subjects read both positive and negative life event descriptions, both positive and negative cognitions should have been activated. In other words, the life events questionnaire may have primed related material in subjects' memory, but that material would be both positive and negative, and thus should not differentially affect the suppression of mood-congruent thoughts.

Second, cognitive priming may have resulted from the mood-induction procedure. Mood inductions often require subjects to read self-evaluative material or recall autobiographical material in order to induce particular moods. The cognitive nature of this material, in addition to altering mood, may prime related mood-congruent thoughts and cognitions. The increased accessibility of these mood-congruent thoughts may then affect thought suppression. In the present study, the mood induction procedure employed was nonverbal and thus is less likely to directly prime related verbally-coded information in memory. Indeed, it has been argued that the musical mood induction procedure minimizes cognitive priming (Blaney, 1986).

It appears that cognitive priming explanations are unlikely to account for the findings of Experiment 1. However, there is an additional alternative explanation that might have affected the results of the present study. Subjects may have been reacting to demand characteristics of the experiment which sensitized them to the true purpose of

the research. This demand interpretation is not considered tenable. First, precautions were taken to disguise the true purpose of the study by way of a cover story and by designing the study in a between-subjects manner. It is thus unlikely that subjects were aware of the experimental hypothesis. Second, no mention was made that the mood-inducing musical selections were aimed at altering subjects' mood. Indeed, the musical mood-induction technique employed in Experiment 1 is much less demand-prone than are other mood-induction procedures, such as the Velten technique (Pignatiello et al., 1986; Singer & Salovey, 1988). Furthermore, mood measures were administered following completion of the major aspects of the study to avoid sensitizing subjects to the importance of mood. Omitting all references to mood in the experimental procedure and using a well-disguised mood induction reduced the possibility that subjects would associate the mood-induction procedure with their performance during the subsequent suppression period. Third, the manipulation check on subjects' mood confirmed that there were significant differences between subjects in the positive and negative mood groups on self-reported mood. In sum, subjects' sensitivity to the true purpose of the study and consequent behavioral enactment of the experimental hypotheses seems an unlikely explanation of the current results.

It is unlikely, therefore, that the alternative

explanations of cognitive priming and experimental demand can account for the findings of Experiment 1. In contrast, the impact of mood on the increased accessibility of mood-congruent cognitions in memory compared with mood-incongruent cognitions seems a more viable explanation of the observed effects.

Experiment 2

Results of Experiment 1 suggest that induced positive and negative moods influence subjects' ability to suppress positive and negative thoughts, such that positive thoughts are most difficult to suppress while in a positive mood, whereas negative thoughts are most difficult to suppress while in a negative mood. These findings are consistent with the position that thoughts which are congruent with current mood are more difficult to suppress than thoughts incongruent with mood due to their increased accessibility in memory.

A second study was conducted in order to replicate findings of Experiment 1, and to address questions raised by the initial study. Most significantly, Experiment 2 sought to add convergent validity to the findings of Experiment 1 by examining the influence of naturally occurring moods on thought suppression. Positive and negative moods were experimentally induced in the initial study. Although

experimental inductions of mood have been shown to have effects on cognition and behavior which are similar to those observed for naturally occurring moods (Clark, 1983; Goodwin & Williams, 1982), the extent to which the present results generalize to naturally occurring moods is unclear. In Experiment 2, mildly depressed and nondepressed university students attempted to suppress thoughts of either a positive or negative event from their own past.

Subjects were selected for Experiment 2 on the basis of their scores on the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961). A pre-determined cut-off score was used to classify subjects as depressed or nondepressed.

It has been suggested that university students classified as depressed on the basis of their BDI scores should be termed "dysphoric" rather than depressed (Kendall, Hollon, Beck, Hammen, & Ingram, 1987); however, in keeping with the current research literature, the latter term is used herein. Although few subjects classified as depressed in Experiment 2 on the basis of their BDI scores would meet the criteria for a diagnosis of clinical depression, they are distinguished from nondepressed subjects by the presence of negative mood. Scores on the BDI have been found to correlate with measures of negative affectivity (Watson & Clark, 1984). Thus, subjects obtaining high scores on the BDI can be said to be experiencing negative mood.

In Experiment 2 it was predicted that for individuals experiencing naturally occurring nondepressed or depressed mood, a past life event would be more difficult to suppress when the event is congruent with mood than when it is incongruent with mood. Specifically, nondepressed subjects were expected to have more difficulty suppressing positive thoughts than negative thoughts, whereas depressed subjects were expected to have more difficulty suppressing negative thoughts than positive thoughts.

Method

Subjects

Subjects were recruited from a pool of undergraduates. Volunteers whose first language was not English, who were enrolled in psychology, and who were over 26 years of age were excluded from the subject pool. The sign-up procedure required that participants complete the Beck Depression Inventory (BDI; Beck et al., 1961). The BDI was readministered at the time of the study. Using predetermined cut-off scores, subjects who received scores of 6 or less on the BDI were defined as nondepressed, and subjects who received scores of 10 or more were defined as depressed (cf. Kendall et al., 1987; Pyszczynski & Greenberg, 1985; Sullivan & Conway, 1989). Only the data for subjects who scored within the depressed or nondepressed range at the time of the study were used in further analyses. This selection procedure yielded a total of 45 subjects. The data from five subjects were excluded from analyses; four of these subjects failed to follow instructions (i.e., did not think aloud or thought only of the to-be-suppressed event; completed the life events questionnaire incorrectly), and one suspected that thought suppression was a major focus of the study. The final sample of 21 depressed subjects (11 males, 10 females) had a mean BDI score of 16.1, and the final sample of 19 nondepressed subjects (10 males, 9 females) had a mean BDI

score of 4.4. The mean age of the sample was 21.1 years with a range of 18 to 26. Subjects were each paid \$7 for their participation.

Overview of Study

The design and procedure were similar to that of Experiment 1, except for the mood induction procedure. Prior to the start of each session, subjects were nonsystematically assigned to either the positive or negative thought condition. The male experimenter was blind to subjects' depression level, and remained so throughout the session.

Subjects were tested individually in an experimental session of 1 hr 15 min. The true purpose of the study was disguised. Subjects were read an introduction to the study, following which they completed the life events questionnaire used to derive the subject-specific positive and negative thought stimuli. Subjects then completed the first think aloud period. Next, all subjects listened to a selection of neutral music. Subjects listened to neutral music between the two think aloud periods in order to replicate the procedure of Experiment 1 as closely as possible and to maintain the identical cover story employed in the first study. The second think aloud period was then completed, during which subjects were instructed not to think about either the positive or the negative event from their own past that they had described earlier. Next, the BDI was

administered, following which subjects rated the thought they were asked to suppress along a number of dimensions. Subjects were then debriefed, remunerated, and thanked for their participation. Although subjects were informed that the study concerned the relation between current mood and thought suppression, subjects were not informed that they had been chosen for the study on the basis of their BDI score.

Materials

The introduction, life events questionnaire, and think aloud periods were identical to those employed in Experiment 1. The neutral music was selected from the neutral musical selections validated by Pignatiello et al. (1986).

The BDI is a 21-item self-report instrument designed to measure the cognitive, affective, motivational, and subjective physiological manifestations of depression (see Appendix E). Scores on this instrument range from 0 to 63, with high scores indicating high levels of depression. Acceptable levels of reliability for the BDI have been reported by several investigators (Beck et al., 1961; Beck & Beamesderfer, 1974). Further work indicates that the BDI is appropriate for use with college or university populations (Bumberry, Oliver, & McClure, 1978; Lips & Ng, 1985).

Subjects judged the perceived pleasantness of the thought they were asked to suppress on a 9-point scale with endpoints labelled very unpleasant (-4) and very pleasant

(+4) (see Appendix F). Two additional questions were included in Experiment 2 to ensure that thoughts suppressed by depressed and nondepressed subjects did not differ on variables that may affect their intrusiveness. Specifically, the recency of the event described in the suppressed thought and the intensity of the suppressed thought may affect the thought's intrusiveness. These variables could account for observed mood-congruency in thought suppression if, for example, depressed subjects generated negative thoughts that were more recent or more intense than their positive thoughts, while nondepressed subjects generated positive thoughts that were more recent or more intense than their negative thoughts. Subjects thus rated how recently the event they attempted to suppress had occurred. Subjects indicated whether the event had occurred within the last few days, week, two weeks, month, six months, year, or greater than one year ago. These categories were assigned the values 1 through 7, respectively. Subjects also indicated how intense they found the thought they attempted to suppress on a 9-point scale with endpoints labelled not intense (1) and extremely intense (9).

Results

The statistical design was similar to that of Experiment 1. Depression group (nondepressed vs. depressed) and thought valence (positive vs. negative) were between-subjects factors. The additional factor of order of life event descriptions (pleasant vs. unpleasant first) was initially included in all analyses reported herein. As no effects emerged for the order of life event descriptions, this factor was omitted from the reported analyses. Degrees of freedom fluctuate slightly due to missing data.

Depression Levels

To assess differences in group levels of depression, subjects' scores on the BDI completed during the study were analyzed by a 2 (nondepressed vs. depressed) x 2 (positive vs. negative thought) ANOVA. The expected main effect for depression was found, which indicated that the depressed group reported a significantly higher level of depression ($M = 16.10$) than the nondepressed group ($M = 4.38$), $F(1,38) = 134.71$, $p < .0001$. No other effects emerged on this analysis, $F_s < 1$.

Ratings of Thought Stimuli

Subjects rated the perceived pleasantness of the thought they were asked not to think about during the suppression period. A 2 (nondepressed vs. depressed) x 2 (positive vs. negative thought) ANOVA on subjects' pleasantness ratings revealed an expected main effect for

thought valence, $F(1,38) = 81.49, p < .0001$. This finding confirms that the thought suppressed by individuals assigned to the positive thought condition was perceived as pleasant ($M = +2.10$) and that the thought suppressed by individuals assigned to the negative thought condition was perceived as unpleasant ($M = -2.45$). The pleasantness judgments did not vary as a function of depression, $F < 1$.

Subjects also indicated how recently the event described in the thought they attempted to suppress occurred to them. An analysis on this variable revealed a marginally significant effect for thought valence, $F(1,32) = 3.87, p < .06$, which was qualified by a Depression Group x Thought Valence interaction, $F(1,32) = 4.75, p < .04$. Positive thoughts generated by depressed subjects referred to more recent events ($M = 2.88$) than did negative thoughts generated by depressed subjects ($M = 5.20$), whereas no differences were found between the recency of positive ($M = 4.11$) and negative thoughts ($M = 4.00$) generated by nondepressed subjects. Within each of the thought conditions, no differences between depressed and nondepressed subjects emerged. Finally, no effects emerged from analyses conducted on subjects' ratings of how intense the event was they attempted to suppress. Across conditions, subjects rated the event they attempted to suppress at the mid-point of the intensity scale ($M = 5.22$).

Unwanted Thought Intrusions

Indices of unwanted thought intrusion, identical to those employed in Experiment 1, were coded from recordings of subjects' verbalizations during the suppression period by an individual blind to subjects' depression condition: (1) bell rings and mentions of the to-be-suppressed event occurring simultaneously; (2) bell rings occurring alone; (3) mentions occurring alone; and (4) indirect references to the event occurring in the absence of both a bell ring or a direct mention of the event. A second judge blind to depression condition coded a random sample of 20 recordings; the codings of the two judges correlated .90, .98, .84, and .81 for the four thought intrusion categories. The primary dependent measure of thought intrusion was calculated for each subject by summing across the different intrusion categories. The codings of the two judges correlated .99 for this overall index.

As in Experiment 1, the total number of unwanted thought intrusions experienced by subjects was expected to be higher when the suppressed thought was congruent with subjects' mood than when the thought was incongruent with subjects' mood. In other words, an interaction between depression group and thought valence was expected to emerge, such that nondepressed subjects would have more difficulty suppressing positive than negative thoughts, whereas depressed subjects would have more difficulty suppressing

negative than positive thoughts.

A square root transformation was made on the total number of unwanted thought intrusions for each subject to achieve homogeneity of variance. A 2 (nondepressed vs. depressed) x 2 (positive vs. negative thought) ANOVA was conducted on these transformed scores, which yielded results virtually identical to those emerging on an analysis of the raw cell means. For clarity, cell means prior to transformation are presented. A Depression Group x Thought Valence interaction emerged, as expected. As Figure 3 illustrates, nondepressed subjects experienced a greater number of positive ($M = 5.60$) than negative ($M = 2.18$) thought intrusions, whereas depressed subjects experienced a greater number of negative ($M = 6.45$) than positive ($M = 2.50$) thought intrusions, $F(1,38) = 12.23$, $p < .001$. No significant main effects emerged, $F_s < 1$.

An analysis of residual effects to investigate the Depression Group x Thought Valence interaction further was not required due to the absence of main effects. An estimate of the magnitude of the interaction effect was obtained by computing the product moment r . An effect size of .49 resulted, which can be considered "large", according to the guidelines of Cohen (1977). Thus, the statistically significant interaction effect can also be considered practically significant.

An additional analysis was performed in which the

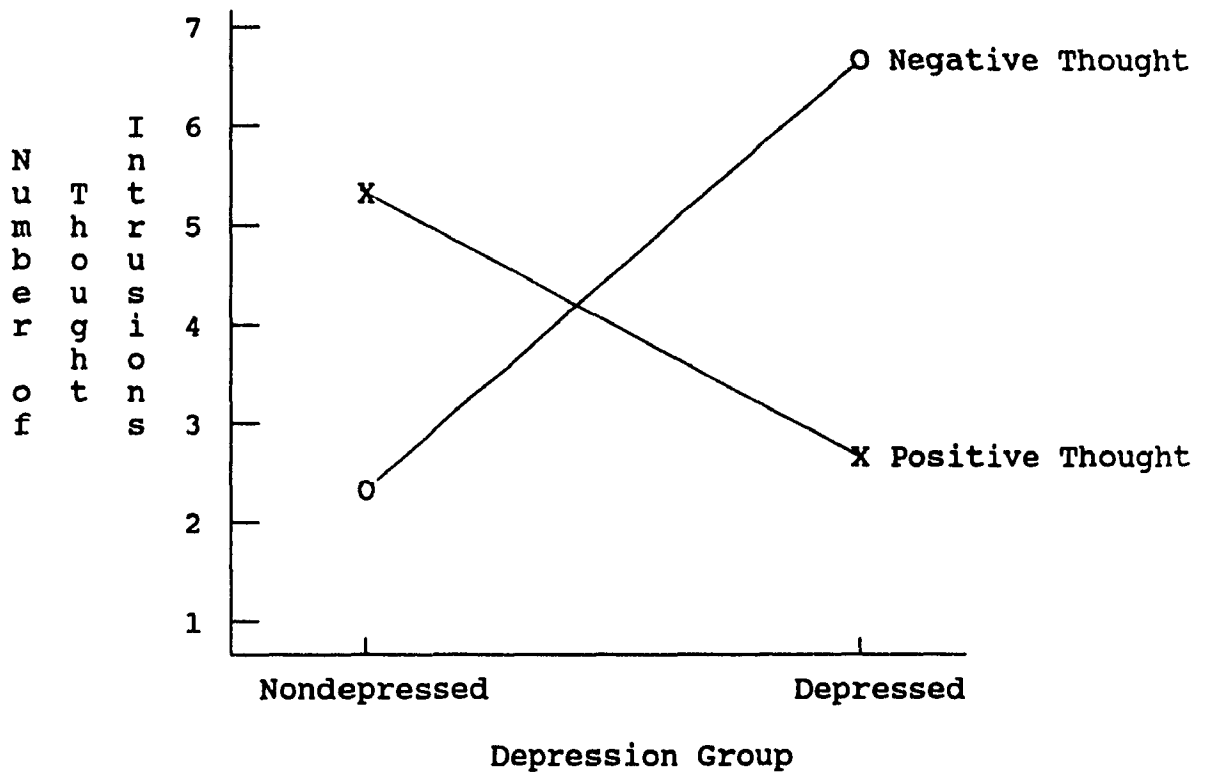


Figure 3. Mean number of unwanted thought intrusions as a function of depression group and thought valence (Exp. 2).

number of unwanted thought intrusions per minute, subject to square root transformations, were examined in a 2 (nondepressed vs. depressed) x 2 (positive vs. negative thought) x 5 (time interval) ANOVA. In addition to the Depression Group x Thought Valence interaction, a main effect for time interval emerged, $F(4,144) = 12.99, p < .001$. Across experimental conditions, the number of unwanted thought intrusions tended to decrease over time (untransformed $M_s = 1.90, .71, .57, .57, \& .45$ for the 1st through 5th minutes, respectively). No other effects emerged on this analysis, $F_s < 1$.

Additional Analysis

Negative thoughts suppressed by depressed subjects were rated as occurring less recently than positive thoughts suppressed by depressed subjects. To address this confound of time delay with thought valence, an additional 2 (nondepressed vs. depressed) x 2 (positive vs. negative thought) ANOVA was conducted on the transformed thought intrusion scores with the perceived recency of the suppressed thought introduced as a covariate. This analysis yielded only the significant Depression Group x Thought Valence interaction revealed in earlier analyses, $F(1,31) = 10.69, p < .003$. Thus, the relation between mood and thought suppression difficulty was not mediated by the perceived recency of the event suppressed.

Discussion

The results of Experiment 2 indicate that nondepressed subjects experienced greater difficulty suppressing a positive thought than a negative thought, whereas depressed subjects experienced greater difficulty suppressing a negative thought than a positive thought. These findings replicate those of Experiment 1 for subjects experiencing naturally occurring moods and once again are consistent with the position that moods prime related cognitions which interfere with the suppression of mood-congruent thoughts more than mood-incongruent thoughts.

The findings of Experiment 2 can be compared with those reported by Wenzlaff et al. (1988), as both studies examined the suppression of positive and negative stimuli by mildly depressed and nondepressed individuals. As discussed previously, Wenzlaff et al. (1988) asked depressed and nondepressed subjects to suppress thoughts of a positive or negative story they had just read. Findings of that study revealed that while no differences were found between the two groups for suppression of the positive story, depressed subjects had greater difficulty suppressing thoughts of the negative story than nondepressed subjects in the final 3 min of the 9-min suppression period.

Stronger support for the impact of naturally occurring depressed and nondepressed mood on thought suppression was observed in Experiment 2 of the present research.

Specifically, the current study yielded differences between nondepressed and depressed groups on the suppression of both positive and negative stimuli. The symmetrical effect observed in Experiment 2 was expected, given that nondepressed individuals typically experience positive mood (Matlin & Stang, 1978). The positive mood of nondepressed individuals and the negative mood of depressed individuals were expected to prime related thoughts in memory, thereby interfering with the suppression of mood-congruent thoughts relative to mood-incongruent thoughts. The differences revealed in the current study between nondepressed and depressed subjects were also found for the complete time interval examined, rather than for a portion of the suppression period. In contrast to the findings of Wenzlaff et al. (1988), there was no evidence in Experiment 2 that differences between depressed and nondepressed individuals on the number of thought intrusions were larger in the final minutes of the suppression period than in the preceding minutes of that period.

The fact that the findings of Experiment 2 are more strongly supportive of the hypothesized mood congruency effect on thought suppression than are those of Wenzlaff et al. (1988) may be due, in part, to the nature of the thought stimuli employed in each study. The stimuli used in Experiment 2 were positive and negative life events generated by each subject, and were thus more self-relevant

than the experimenter-generated positive and negative stories employed by Wenzlaff and colleagues (1988). Mood-congruent effects are most likely to emerge when stimuli are relevant to the self (Blaney, 1986). Findings in strong support of mood-congruency observed in Experiment 2 may also have resulted from the method used to assess subjects' concurrent thoughts during the suppression period. The think-aloud procedure may have been a more sensitive index of subjects' stream-of-consciousness relative to the written protocols obtained by Wenzlaff et al. (1988), thereby increasing the possibility of revealing strong mood-cognition relations.

Alternative accounts to mood-congruency for the findings of Experiment 2 should also be considered. As in Experiment 1, demand characteristics of Experiment 2 are likely minimized by methodological aspects of the study. The use of a cover story, employing a between-subjects design, and administration of the mood measure following completion of the major aspects of the study, likely served to minimize the possibility that subjects were aware of, and thus behaved in agreement with, the hypothesis being tested.

Cognitive structures typically associated with naturally occurring nondepressed and depressed moods may have contributed to the observed effects of Experiment 2. The negative cognitive structure of depressed individuals may serve to prime negative thoughts independent of the

affective component of depression. Similarly, a positive cognitive structure may have primed positive thoughts for nondepressed individuals. Suppression of congruent thoughts would be difficult due to the priming influence of the cognitive network of mood-congruent thoughts associated with naturally occurring depressed and nondepressed moods. This interpretation is weakened, however, by the results of Experiment 1. Because subjects were randomly assigned to mood condition in that study, explanations which hinge solely on individual differences in cognitive structure cannot account for observed effects linking mood with thought suppression difficulty.

Experiment 3

Results of the first two studies suggest that positive and negative moods, whether experimentally induced or naturally occurring, influence subjects' ability to suppress positive and negative thoughts. Positive thoughts are most difficult to suppress while in a positive mood, whereas negative thoughts are most difficult to suppress while in a negative mood. These findings are consistent with the position that thoughts which are congruent with an individual's current mood are difficult to suppress because moods increase the accessibility of mood-congruent material.

A final experiment sought to extend these findings. In

the initial two studies, suppression of thoughts from an individual's past was examined as a function of both mood and valence of the unwanted thought. Experiment 3 examined whether the suppression of thoughts about a self-relevant behavioral event in an individual's immediate experience would be subject to similar mood-congruency effects. The event selected was performance on a test, which was manipulated to be either successful or unsuccessful. Successful performance was assumed to be congruent with positive mood, whereas unsuccessful performance was assumed to be congruent with negative mood. Demonstrating that suppression of thoughts related to a current performance is most difficult when the performance is mood-congruent would increase the importance of the previous findings by suggesting that immediately following the occurrence of an event, thoughts about the event will be more difficult to suppress if the outcome of the event is congruent with mood.

Assessing subjects' ability to suppress thoughts of immediately preceding events will eliminate a confound observed in Experiment 2 which resulted from the tendency of depressed and nondepressed individuals to generate positive and negative life events that occurred at disparate points in time. Depressed and nondepressed subjects in Experiment 3 will attempt to suppress thoughts of a successful or unsuccessful test performance that they experienced immediately prior to the suppression period.

Examining intrusions of thought regarding a prior success or failure experience may help explain a previous finding that depressed individuals underestimate the frequency or importance of success experiences, but overestimate the frequency or importance of failure experiences relative to nondepressed individuals (Buchwald, 1977; Craighead, Hickey, & DeMonbreun, 1979; DeMonbreun & Craighead, 1977; Dobson & Shaw, 1981; Gotlib, 1981, 1983; Ingram, 1984a; Kennedy & Craighead, 1988; Nelson & Craighead, 1977; Rude, Krantz, & Rosenhan, 1988; Wener & Rehm, 1975; Wenzlaff & Grozier, 1988). Depressed individuals may overestimate the occurrence of failure relative to the occurrence of success because they are less able to suppress thoughts of their failure experiences. The greater accessibility of mood-congruent events in memory may result in greater weight being given to this information when judgments of the relative frequency of various events are being made (cf. Tversky & Kahneman, 1973, 1974).

In Experiment 3, depressed and nondepressed individuals attempted to suppress thoughts of either a success or a failure experience. Subjects completed a bogus measure of social perception and were then given either success or failure feedback regarding their performance on the task. Immediately after receipt of the feedback, subjects attempted to suppress thoughts about the social perception task. Thought intrusions were examined as a function of

both depression group and feedback condition.

It was predicted that thoughts of an immediately preceding experience would be more difficult to suppress when the experience is congruent with current mood relative to when the experience is incongruent with current mood. Specifically, nondepressed subjects were expected to have more difficulty suppressing thoughts of an immediately preceding success experience than thoughts of a preceding failure experience, whereas depressed subjects were expected to have more difficulty suppressing thoughts of an immediately preceding failure experience than thoughts of a preceding success experience.

Method

Subjects

Subjects were recruited from a pool of undergraduates who completed a package of questionnaires in order to qualify to win a monetary prize. Volunteers whose first language was not English, who were enrolled in psychology programs, and who were over 26 years of age were excluded from the pool of subjects. The questionnaire package included the short form of the Beck Depression Inventory (BDI-SF; Beck & Beck, 1972). The BDI-SF was readministered at the time of the experiment. Using predetermined cut-off scores, subjects who received scores of 3 or less on the BDI-SF were defined as nondepressed, and subjects who received scores of 6 or more were defined as depressed (cf. Beck & Beck, 1972; Krantz & Liu, 1987). Only the data for subjects who scored within the depressed or nondepressed range at the time of the experiment were analyzed. This selection procedure yielded 46 subjects. The data from four subjects were excluded from analyses; two of these subjects failed to follow instructions for the suppression period correctly, and two were suspicious about the validity of the social perception task. The final sample of 21 depressed subjects (10 males, 11 females) had a mean BDI-SF score of 9.9, and the final sample of 21 nondepressed subjects (11 males, 10 females) had a mean BDI-SF score of 1.1. The mean age of the sample was 21.9 years with a range of 18 to 26.

Subjects were each paid \$7 for their participation.

Overview of Study

Prior to the start of each session, subjects were nonsystematically assigned to either the success or failure feedback condition. The male experimenter was blind to subjects' depression status, and remained so throughout the session.

Subjects were tested individually in an experimental session of 1 hr 15 min. The true purpose of the study was disguised. Subjects were read an introduction to the study, following which they completed the D30 (Dempsey, 1964), a depression measure used as an additional check on subjects' mood classification. Subjects then completed the first think aloud period. Next, all subjects completed a bogus measure of social perception and received success or failure feedback regarding their performance on that measure. The suppression period followed, during which subjects were instructed not to think about the social perception task completed immediately before. Next, the BDI-SF and a questionnaire concerning the social perception task were administered. Subjects were then debriefed, remunerated, and thanked for their participation. The debriefing carefully described the false nature of the feedback subjects received on the social perception task. Although subjects were informed that the study concerned the relation between mood and thought suppression, subjects were not

informed that they had been chosen for the study on the basis of their BDI-SF score.

Materials and Procedure

Introduction. Subjects each received a copy of the introduction to the study which the experimenter read aloud as subjects followed along (see Appendix G). As in the two previous studies, the study ostensibly concerned the impact of age on various aspects of human cognition. Subjects were informed that people of various ages would be participating in the study, and that each would be asked to complete a number of thought and perceptual tasks in random order. In order to study the impact of age on natural thought processes, participants would be asked to verbalize their thoughts during different think aloud periods. The impact of age on perceptual processes would be investigated by having subjects complete a measure of social perception.

D30. The D30 (Dempsey, 1964), a shortened version of the Minnesota Multiphasic Personality Inventory depression scale, was administered immediately following the introduction (see Appendix H). Depression was assessed at this time in order to ensure that the nondepressed and depressed groups differed on depression at a point in the study prior to the success-failure manipulation. The D30 thus provides a measure of depression uncontaminated by the success-failure manipulation.

The D30 is a 30-item self-report instrument designed to

measure the affective, cognitive, motivational and somatic manifestations of depression. The measure was normed, in part, on college students, and acceptable levels of test-retest reliability have been reported (Dempsey, 1964).

The D30 consists of negative and positive statements which describe symptoms characteristic of the presence and the absence of depression, respectively (e.g., "I cry easily"; "I am happy most of the time"). Subjects determine whether each statement is true or false as applied to them. Total D30 scores are obtained by summing the number of "true" responses to depressive statements and the number of "false" responses to nondepressive statements. Scores on this instrument range from 0 to 30, with higher scores indicating higher levels of depression.

An advantage of the D30 as a measure of depression is that, unlike the BDI-SF, the measure is comprised equally of positive and negative self-referential statements. Thus, administering this measure at the outset of the current study was less likely to sensitize subjects to the fact that the presence or absence of depression was a major aspect of the research.

Initial think aloud period. The first think aloud period was identical to that of Experiments 1 and 2 and was completed after administration of the D30. Following several practice think aloud trials, subjects were asked to report their current thoughts verbally for a 5-min period.

During this period, the tape-recorder was on and the experimenter was absent from the room.

Social perception task and success-failure feedback.

The social perception task was next described to subjects as a test used to evaluate people's ability to accurately judge and make predictions about other individuals (see Appendix I). Successful performance on this task would ostensibly rest on people's intuitive skills, logic, and on what they knew about "life". In actuality, the social perception task was a bogus task designed to manipulate success or failure (cf. Ingram, 1984a; Ingram, Smith, & Brehm, 1983; Rizley, 1978; Slade, 1985).

Subjects were told that the scale had been in use for a number of years and was very accurate as a measure of people's interpersonal judgment skills. The scale was purportedly being used on a large scale because it was generally agreed in the professional community that social perception was one of the most important components of intellectual ability.

The social perception task was described as a written test that involved the evaluation of two case studies. Ostensibly, the individuals described in the case studies had been followed by psychologists from high school to adulthood. Each description was a "thumbnail sketch" of the individual, based on personal interviews and psychological test results.

Subjects were asked to read each case study and then answer 10 multiple choice questions about the person described (see Appendix J). Subjects were informed that although one or more answers to each question might appear to be correct, there was only one correct answer for each question and they would only get points for correct answers. Finally, subjects were told that they would be given feedback for the social perception task immediately following the testing period. Both their own score and the average score of people in their age category would be provided.

When subjects had completed the social perception task, the experimenter "scored" their answer sheet out of subjects' view. The success or failure feedback was provided as the experimenter handed back the subject's answer sheet. For subjects in the success feedback condition, the experimenter commented, "It looks like you did very well. As you can see, your score was 18 out of 20. That's one of the highest scores I've seen. The average score for university students in your age group is 12 out of 20." These scores also appeared on the subject's answer sheet. For subjects in the failure feedback condition, the experimenter commented, "It looks like you didn't do very well. As you can see, your score was 6 out of 20. I guess you're just not very good at this sort of thing. The average score for university students in your age group is

12 out of 20." Again, these scores also appeared on the subject's answer sheet.

In order to move directly to the suppression period, subjects were told that they could discuss their performance on the social perception task with the experimenter at a later time, if they wished, but for now they would have to move on to the next part of the study to keep the experimental procedure standard for all participants.

Suppression period. Subjects engaged in the suppression period immediately following the completion of the social perception task. Subjects were asked to think aloud as they had done previously, but were additionally instructed to try not to think about tasks that they had completed in the study since the last think aloud period. Of course, for all subjects, this meant the social perception task for which they had received false feedback. Subjects were told "every time you think about that task or have the task come to mind, please ring the bell on the table before you". Again, subjects verbalized their thoughts for a 5-min period, during which the tape-recorder was on and the experimenter was absent from the room.

BDI-SF. Subjects completed the BDI-SF (Beck & Beck, 1972; for additional validity data see Beck, Rial, & Rickels, 1972) immediately following the suppression period (see Appendix K). The BDI-SF was developed by selecting items from the BDI that correlated highly with the total BDI

score and with an interview-based rating of depression. The resulting 13-item short form is scored in a manner similar to the BDI. Scores on the BDI-SF range from 0 to 39; high BDI-SF scores indicate high levels of depression.

Social perception task self-report. As a manipulation check on subjects' perceptions of the success or failure feedback they received, subjects responded to three questions regarding their performance on the social perception task (see Appendix L). Subjects rated how favorable the results were they received on the social perception task, how well the results described them, and how important it was for them to do well on the task. Subjects responded to these questions on 9-point scales with endpoints labelled not at all (1) and very much (9).

Results

Depression group (nondepressed vs. depressed) and feedback condition (success vs. failure) were between-subjects factors. Degrees of freedom fluctuate slightly due to missing data.

Depression Levels

Subjects' scores on the D30 were analyzed by a 2 (nondepressed vs. depressed) x 2 (success vs. failure feedback) ANOVA. A main effect for depression was found, indicating that the depression group reported a significantly higher level of depression ($M = 13.95$) than the nondepressed group ($M = 5.32$), $F(1,39) = 38.07$, $p < .001$. No other effects emerged, $F_s < 1$.

A similar 2 (nondepressed vs. depressed) x 2 (success vs. failure feedback) ANOVA was conducted on subjects' scores on the BDI-SF completed during the study. Again, a main effect for depression was found, which indicated that the depression group reported a significantly higher level of depression ($M = 9.90$) than the nondepressed group ($M = 1.14$), $F(1,39) = 91.56$, $p < .0001$. No other effects emerged, $F_s < 2$, $p_s > .15$. These analyses confirm that depressed subjects in both feedback conditions were experiencing more negative mood than were nondepressed subjects.

Ratings of Feedback

Subjects rated the favorability of the feedback that they received on the social perception task. A 2

(nondepressed vs. depressed) x 2 (success vs. failure feedback) ANOVA on subjects' favorability ratings revealed an expected main effect for feedback condition, $F(1,39) = 488.70$, $p < .0001$, and no other significant effects, $F_s < 1$. This finding confirms that the feedback provided to subjects in the success condition was perceived as favorable ($M = 8.43$) and that the feedback provided to subjects in the failure condition was perceived as unfavorable ($M = 1.55$).

Subjects also judged the perceived descriptiveness of the feedback they received on the social perception task. These ratings were subject to a 2 (nondepressed vs. depressed) x 2 (success vs. failure feedback) ANOVA, which yielded a significant effect for feedback condition, $F(1,39) = 24.94$, $p < .001$. Feedback provided to subjects in the success condition was deemed more self-descriptive ($M = 6.43$) than the feedback provided to subjects in the failure condition ($M = 3.41$), a result consistent with previous research (cf., Greenwald, 1980; Wenzlaff & Grozier, 1988). No other significant effects emerged, $F_s < 1$.

Finally, subjects rated the extent to which it was important for them to perform well on the social perception task. No significant differences emerged as a function of feedback condition or depression group on this variable, $F_s < 1$. All subjects indicated that it was moderately important ($M = 5.09$) for them to perform well on the social perception task. Taken together, these three manipulation

check indices suggest that nondepressed and depressed subjects perceived the success or failure feedback they were given in a similar manner: Both groups felt that success feedback was more favorable and more self-descriptive than was failure feedback, and the groups ascribed equal importance to performing well on the task.

Unwanted Thought Intrusions

Indices of thought intrusion, identical to those employed in Experiments 1 and 2, were coded from tape-recordings of subjects' verbalizations during the suppression period by an individual blind to subjects' depression condition: (1) bell rings and mentions of the to-be-suppressed event occurring simultaneously; (2) bell rings occurring alone; (3) mentions occurring alone; and (4) indirect references to the event occurring in the absence of both a bell ring or a direct mention of the event. A second judge blind to depression condition coded a random sample of 20 subjects' tape-recordings; the codings of the two judges correlated .90, .99, 1.00, and .88 for the four thought intrusion categories. The primary dependent measure of unwanted thought intrusion was calculated for each subject by summing across the different intrusion categories. The codings of the two judges correlated .99 for this overall index.

The total number of unwanted thought intrusions experienced by subjects was expected to be higher when the

suppressed thought was congruent with mood state than when the thought was incongruent with mood state. In other words, an interaction between depression group and feedback condition was expected to emerge, such that nondepressed subjects would have more difficulty suppressing thoughts of a success than of a failure, whereas depressed subjects would have more difficulty suppressing thoughts of a failure than of a success.

A 2 (nondepressed vs. depressed) x 2 (success vs. failure feedback) ANOVA was conducted on the total number of unwanted thought intrusions for each subject. Tests for normality and homogeneity of variance revealed that these assumptions were not violated. A Depression Group x Feedback Condition interaction emerged, as expected. As Figure 4 illustrates, nondepressed subjects experienced more difficulty suppressing thoughts of a success ($M = 4.80$) than of a failure ($M = 2.09$), whereas depressed subjects experienced more difficulty suppressing thoughts of a failure ($M = 5.00$) than of a success ($M = 2.64$), $F(1,38) = 7.21$, $p < .02$. No significant main effects emerged, $F_s < 1$.

An analysis of residual effects to investigate the Depression Group x Feedback Condition interaction further was not required due to the absence of main effects. An estimate of the magnitude of the interaction effect was obtained by computing the product moment r . An effect size of .40 resulted, which can be considered "medium-large",

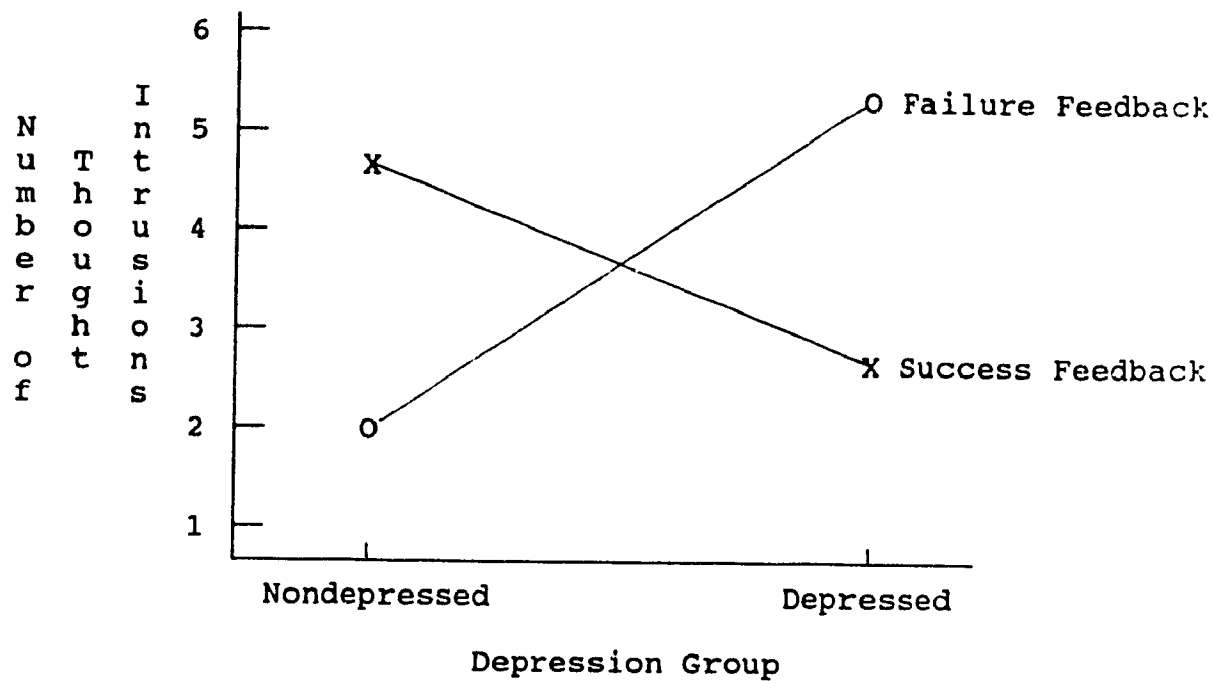


Figure 4. Mean number of unwanted thought intrusions as a function of depression group and feedback condition (Exp. 3).

according to the guidelines of Cohen (1977). Thus, the statistically significant interaction effect can also be considered practically significant.

An additional analysis was performed in which the number of unwanted thought intrusions per minute was examined in a 2 (nondepressed vs. depressed) x 2 (positive vs. negative thought) x 5 (time interval) ANOVA. Unwanted thought intrusions per minute were subject to a square root transformation to achieve homogeneity of variance. In addition to the Depression Group x Feedback Condition interaction reported above, a main effect for time interval emerged, $F(4,152) = 13.38, p < .001$, which was qualified by a Depression Group x Time Interval interaction, $F(4,152) = 3.22, p < .02$. Whereas intrusions of nondepressed subjects diminished over time (untransformed $M_s = 1.89, 0.63, 0.30, 0.44, \& 0.20$ for the 1st through 5th minutes, respectively), depressed subjects experienced a rebound of unwanted thought intrusions in the final time interval (untransformed $M_s = 1.26, 0.81, 0.73, 0.30, \& 0.73$). Tests for simple main effects revealed that the intrusions of nondepressed and depressed subjects differed only in the final time interval, $F(1,135) = 4.59, p < .05$. Finally, the number of intrusions over time for depressed and nondepressed subjects did not reliably differ as a function of feedback condition, $F < 1$.

Discussion

The results of Experiment 3 indicate that nondepressed subjects experienced greater difficulty suppressing thoughts about success than thoughts about failure, whereas depressed subjects experienced greater difficulty suppressing thoughts about failure than thoughts about success. These findings parallel those observed in Experiments 1 and 2 and once again are consistent with the position that moods prime related cognitions which interfere with the suppression of mood-congruent thoughts relative to mood-incongruent thoughts.

Depressed and nondepressed subjects in Experiment 3 found it more difficult to suppress thoughts about a mood-congruent event that they had just experienced relative to thoughts about a mood-incongruent event. These findings extend those observed in Experiments 1 and 2, as well as those obtained by Wenzlaff et al. (1988), by suggesting that mood interferes with the suppression of thoughts concerning mood-congruent events which have just occurred in addition to thoughts concerning mood-congruent events from one's more distant past. When an event is experienced and immediately becomes a target for suppression, it will be more difficult to suppress if the valence of the event is congruent with mood than if it is incongruent with mood.

These findings are consistent with past research which has examined nondepressed and depressed individuals'

estimates of the frequency of success and failure experiences. Depressed subjects often overestimate the frequency of failure experiences, whereas their judgment of the frequency of success experiences is often underestimated relative to nondepressed individuals. The results of Experiment 3 suggest that this bias might occur because depressed individuals are more likely to experience thought intrusions about failure experiences relative to nondepressed individuals, whereas nondepressed individuals are more likely to experience thought intrusions about success experiences relative to depressed individuals. If thoughts of failure persist despite a depressed individual's attempt to suppress them, such experiences may be judged to have occurred more frequently than success experiences. The relative infrequency of depressed individuals' intrusive thoughts regarding success experiences may lead to an underestimation of the frequency of such positive experiences by depressed individuals.

Alternative accounts for the observed mood-congruency effects in Experiment 3 need to be considered. As in Experiments 1 and 2, the attempt was made to minimize demand characteristics in the current study through the use of a cover story and a between-subjects experimental design, and by administering the depression measure following completion of the major aspects of the study. It is thus unlikely that subjects were aware of the true nature of the experimental

hypothesis. The impact of positive and negative cognitive structures associated with naturally occurring nondepressed and depressed mood, respectively, is unlikely to account for the present findings, as the results parallel those obtained with induced moods in Experiment 1. The impact of mood on the accessibility of thoughts in memory seems the most likely explanation of the findings of Experiment 3.

In addition to the mood-congruency findings for thought suppression, depressed individuals in Experiment 3 were also found to experience a greater number of unwanted thought intrusions than nondepressed subjects during the final minute of the suppression period, regardless of feedback condition. Depressed subjects experienced a rebound of unwanted thought intrusions during the final time interval, whereas thought intrusions of nondepressed subjects continued to decrease in frequency.

Theoretical constructs other than mood congruency must be invoked in order to explain this additional finding of Experiment 3. One possibility consistent with other recent research is that negative mood associated with depression may reduce the amount of cognitive effort an individual can exert on a task. Mood is known to be related to the amount of effort available to expend on a task (Conway & Sullivan, 1989; Ellis & Ashbrook, 1988; Hasher & Zacks, 1979; Sullivan & Conway, 1989). Thought suppression is a task which requires cognitive effort (Wegner, 1989; Wegner et al.,

1987). Negative mood may reduce the effort available for thought suppression, leading to an increased number of both positive and negative intrusions.

In sum, Experiment 3 revealed that mood interferes with the suppression of thoughts regarding a mood-congruent behavioral event an individual has just experienced more than the suppression of a mood-incongruent event. Nondepressed individuals had more difficulty suppressing thoughts of success relative to failure, whereas depressed individuals had more difficulty suppressing thoughts of failure relative to success.

General Discussion

Past research suggests that mood influences cognitive processes in part by increasing the accessibility of mood-congruent cognitions relative to mood-incongruent cognitions. In the current research, it was hypothesized that the suppression of a mood-congruent thought would be more difficult than the suppression of a mood-incongruent thought as a result of the increased accessibility of mood-congruent material in memory. Subjects in a positive mood were expected to experience more difficulty suppressing a positive thought, whereas subjects in a negative mood were expected to experience more difficulty suppressing a negative thought.

Three studies examined the impact of mood on thought suppression. In Experiment 1, subjects who were induced to experience either positive or negative mood were found to have more difficulty suppressing thoughts about a mood-congruent past life event than thoughts about a mood-incongruent event. Subjects in a positive mood experienced more intrusions of an unwanted positive thought, whereas subjects in a negative mood experienced more intrusions of an unwanted negative thought.

Experiment 2 revealed that mildly depressed and nondepressed subjects experienced more difficulty suppressing a mood-congruent relative to a mood-incongruent

thought from their past. Nondepressed subjects experienced more intrusions of an unwanted positive thought, whereas depressed subjects experienced more intrusions of an unwanted negative thought.

Finally, depressed and nondepressed subjects in Experiment 3 were observed to have more difficulty suppressing thoughts of an immediately previous performance that was congruent with their mood state than a performance that was incongruent with mood. Nondepressed subjects experienced more intrusions of a success than of a failure, whereas depressed subjects experienced more intrusions of a failure than of a success.

The consistent pattern of results emerging from these studies suggests that the relationship between mood and thought suppression is robust. In all three studies, mood and thought valence interacted to influence thought suppression, such that mood-congruent thoughts were more difficult to suppress than mood-incongruent thoughts. Mood appears to interfere with the suppression of mood-congruent thoughts more than the suppression of mood-incongruent thoughts.

The major findings of the present research, together with those of Wenzlaff et al. (1988), point to a novel impact of mood on information processing. Recent reviews have underscored the various influences of mood on thought processes through its influence on the relative

accessibility of mood-congruent and mood-incongruent material (Blaney, 1986; Singer & Salovey, 1988; Ucros, 1989). Thought suppression can be added to the list of cognitive processes known to be affected by mood. In addition, thought suppression research provides a novel means of assessing mood-cognition relations. The method of examining intrusions of positive and negative thoughts during a period of thought suppression as a function of mood is unlike the tasks typically used to examine the impact of mood on information processing. In sum, both the findings and the novel methodology of thought suppression research add to the generality of previous findings concerning the relation between mood and cognition.

Future Research Directions

Future research could further investigate the impact of mood on intrusive thoughts. One extension of the present work would be to examine thought intrusions in the absence of a direct request to suppress such thoughts. For example, depressed and nondepressed subjects could be asked to think aloud following the experience of a success or failure, and mentions of the experience could be examined as a function of depression. In line with the findings observed in the present research, nondepressed subjects would be expected to mention the success experience more than the failure

experience, whereas depressed subjects would be expected to mention the failure experience more than the success experience. Indeed, the research of Wenzlaff et al. (1988, Exp. 1) did include additional control groups which examined positive and negative thought intrusions among nondepressed and depressed subjects who were not requested to suppress such thoughts, and found results largely in line with the mood-congruency hypothesis. Extending and replicating these results would allow one to argue with confidence that, in general, mood states influence the extent to which mood-congruent and mood-incongruent information occupies the stream-of-consciousness.

A second line of future research could be aimed at examining the impact of mood states other than happiness and sadness on thought suppression. Mood states such as anger and fear have been shown to reveal mood-congruency effects similar to those obtained with happiness and sadness (e.g., Laird, Wagener, Halal, & Szegda, 1982; Macht, Spear, & Levis, 1977). Examining the tendency for these and other affective states to interfere with the suppression of mood-congruent relative to mood-incongruent stimuli would increase the generalization of results obtained in the current research.

A third possible direction for future research concerns the nature of the target stimuli presented for suppression. Research suggests that mood-memory relations are strongest

for stimuli that are highly self-referent (Blaney, 1986; Ucros, 1989). The present research employed stimuli that were explicitly self-referential in that subjects suppressed thoughts about positive and negative life events from their own past. The research of Wenzlaff et al. (1988) required subjects to suppress thoughts of scenarios they had previously imagined themselves enacting, thereby increasing the self-referent quality of the stories employed. Future research could systematically vary the self-referential quality of thought stimuli to examine the importance of this variable for the impact of mood on thought suppression. Other dimensions of thought stimuli (e.g., familiarity, complexity) could also be examined.

The final extension of the present research to be considered here concerns the suppression of unwanted material by subjects who are clinically depressed (e.g., those meeting DSM-III-R criteria for Major Depressive Episode). Although findings obtained using mood-induction procedures or subjects experiencing subclinical levels of depression are often similar to those obtained with clinically depressed individuals (Goodwin & Williams, 1982), other researchers have cautioned against the extrapolation of findings obtained with nonclinical subjects to clinically depressed populations (e.g., Depue & Monroe, 1978). Future research, therefore, should examine the ability of clinically depressed subjects to suppress positive and

negative thought stimuli relative to nondepressed psychiatric control subjects and to nondepressed nonpsychiatric control subjects.

Implications for Depression and Depressive Phenomena

Although the clinical significance of the current findings would be enhanced by replicating the effect with clinically depressed individuals, the present findings are relevant to our understanding of how cognitive processes affect and maintain negative mood states associated with depression. Recent conceptualizations of depression have emphasized the reciprocal influence of mood and cognition as a factor involved in the development and maintenance of depression (Blaney, 1986; Clark & Teasdale, 1982; Ingram, 1984b; Teasdale & Russell, 1983). These models posit that the negative mood state associated with depression primes congruent material in memory which may, in turn, reactivate the negative mood node. The present thought suppression research suggests that not only may mood prime related material in memory, but because that material is very difficult to suppress, it is difficult to circumvent the automatic re-activation of the mood node. Negative emotional states may not easily be overcome simply by attempting to inhibit the negative thinking that is often associated with such moods.

In addition to being relevant to general conceptualizations of depression, the present findings are consistent with phenomena recently found to be associated with depression. The following investigations have not been explicitly concerned with the intrusiveness of unwanted thoughts, but can be interpreted in a manner consistent with the hypothesis that depression is associated with increased intrusions of unwanted mood-congruent cognitions. One example already examined concerned the role of intrusive cognitions in depressed individual's tendency to overestimate the frequency of past failure and underestimate the frequency of past success relative to nondepressed individuals. Biased estimates of the relative frequency of mood-congruent experiences relative to mood-incongruent experiences may be due, in part, to a failure to suppress mood-congruent thoughts.

A relation between depression and intrusive negative cognitions is also suggested by research linking attributional processes, thought intrusions, and task performance. Research suggests that the attributions an individual makes for a failure experience may be related to the occurrence of intrusive thoughts regarding one's performance (Mikulincer & Nizan, 1988). Attributing a failure experience to a global cause (e.g., "I am not intelligent") as opposed to a specific cause (e.g., "I am not good on these kinds of tasks") increased the frequency

of interfering cognitions which in turn deteriorated later task performance. Other research suggests that depressed individuals are more likely to attribute failure experiences to global causes than are nondepressed individuals (Kuiper, 1978; Raps, Peterson, Reinhard, Abramson, & Seligman, 1982; Rizley, 1978; Ruehlman, West, & Pasahow, 1985; Taylor & Brown, 1988). It is possible, therefore, that the association between attributions and intrusive thoughts observed by Mikulincer and Nizan (1988) was mediated by subjects' mood state. In line with results of the present studies, subjects in the study of Mikulincer and Nizan (1988) who were experiencing mild levels of depression and who thus attributed their failure experience to global causes may have experienced intrusions about the failure experience as a result of the impact of mood on the accessibility of mood-congruent cognitions.

Intrusive negative cognitions may be implicated in the findings of a recent study concerning information-processing deficits in depression. Kuhl and Helle (1986) have suggested that depression is maintained by unrealistic motivational or intentional states which persevere and claim cognitive capacity needed to enact more realistic intentions. To test this hypothesis, depressed patients, nondepressed patients, and nondepressed students were randomly assigned to one of two experimental conditions. In one condition, subjects were asked to clean up a messy table

in the laboratory, but were given no time during the experiment to complete this task. This manipulation was intended to invoke in subjects an unfulfillable intentional state. In the control condition, subjects were not instructed to clean up the messy table. The extent to which the unfulfillable intentional state persevered for subjects was assessed by inducing a second intentional state. Forgetting to enact this second intentional state would suggest interference from the initially induced, unrealistic, intentional state. Finally, subjects' short-term memory spans were assessed to determine whether maintaining the unrealistic intentional state occupied cognitive capacity.

Results indicated that depressed subjects who were requested to clean-up the messy table showed more forgetting of the second, realistic, intention and showed a reduced short-term memory capacity relative to all other groups of subjects. Thus, depressed subjects who experienced a persevering intentional state showed subsequent reductions in cognitive capacity. Importantly, depressed subjects who were requested to clean-up the messy table also reported thinking more about the messy table during the experiment than other subjects.

The present research suggests an alternative and more parsimonious explanation of the findings of Kuhl and Helle (1986). Research indicates that depressed individuals

respond to tasks which they are unable to complete in a manner similar to the way they respond to failure (Johnson, Petzel, Hartney, & Morgan, 1983). From the current framework, therefore, depressed individuals in the Kuhl and Helle (1986) study who experienced the unrealistic and uncompleted intention (i.e., failure) may have been unable to rid themselves of mood-congruent thoughts concerning that intention. These intrusive thoughts, which were observed by Kuhl and Helle (1986), may have interfered with subsequent cognitive activities. The impact of mood on the intrusiveness of mood-congruent cognitions may have led depressed subjects to be more likely to forget the second intentional state and to perform more poorly on the short-term recall task following failure than nondepressed subjects.

The intrusiveness of unwanted negative cognitions may also be relevant to the well-established association between depression and self-focus, and the interfering effect of self-focused attention on task performance. Numerous studies have demonstrated that depressed individuals tend to be higher in self-focus than nondepressed individuals (Brockner, Hjelle, & Plant, 1985; Ingram, 1990; Ingram, Lumry, Cruet, & Sieber, 1987; Ingram & Smith, 1984; Larsen & Cowan 1988; Musson & Alloy, 1988; Pyszczynski & Greenberg, 1987; Pyszczynski, Holt, & Greenberg, 1987; Smith & Greenberg, 1981; Smith, Ingram & Roth, 1985; Strack, Blaney,

Ganellen, & Coyne, 1985). In particular, depressed individuals are likely to evidence more personally unfavorable self-focused attention than nondepressed individuals (Ingram et al., 1987). Increased levels of self-focused attention have been shown to be associated with problem-solving deficits among depressed individuals (Strack et al., 1985).

Self-focused attention has been measured through subjects' reports regarding the amount of time they thought about themselves or about their performance on a task, or by use of projective measures (e.g., Exner, 1973). These operationalizations of self-focused attention suggest that self-focus can be equated with intrusive self-relevant cognitions (see also Carver, 1979). Thus, the relationship between increased self-focused attention and poor task performance among depressed individuals may reflect the impact of depression on the increased accessibility of intrusive negative cognitions which interfere with subsequent task performance.

In general, it would appear that intrusions of unwanted thoughts as a result of the influence of mood may be one means by which depression leads to deficits in information processing. However, the current research examined the impact of mood on unwanted thought intrusions under conditions where subjects consciously attempted to suppress the unwanted thought. In other research, intrusions of

thought have been inferred or examined in the absence of any conscious request to inhibit them. This raises the question as to whether depressed individuals do indeed experience a higher ratio of negative thought intrusions to positive thought intrusions than nondepressed individuals when not engaging in the suppression of the unwanted thought. The findings of Wenzlaff et al. (1988) and other research examining the impact of mood on the increased accessibility of mood-congruent thoughts suggests that even in the absence of attempts at suppression, thought intrusions will occur more frequently for mood-congruent thoughts than for mood-incongruent thoughts.

Benefits and Costs of Thought Suppression

Intrusions of unwanted thoughts--be they positive or negative--have thus far been considered thought suppression failures. This suggests that thought intrusions may be associated with some form of psychological cost to the individual. Indeed, there appear to be numerous negative consequences of unwanted thought intrusions. Intrusive thoughts may maintain aversive mood states, such as depression. They may bias our judgments in a manner consistent with the valence of the intrusive thought. They may reduce cognitive capacity available for other, ongoing, tasks. Intrusive cognitions can also interfere with

subsequent task performance (e.g., Mikulincer, 1989; Mikulincer & Nizan, 1988; Strack et al., 1985)

Negative costs of intrusive thoughts have also been noted by investigators working from a clinical perspective. Freud (1926/1959) argued that intrapsychic conflict is associated with a failure to inhibit unacceptable thoughts, wishes, or desires. Thus, the suppression of disturbing thoughts would serve an adaptive function. More recently, Lazarus (1983) and Taylor and Brown (1988) have considered the adaptive aspects of some forms of denial, positive illusion, and self-deception. Proponents of thought stopping techniques (Wolpe & Lazarus, 1966) have suggested that maladaptive cognitions which recur should be eliminated, or at least modified, to facilitate more adaptive functioning.

Unfortunately, evidence for the effectiveness of the technique of thought stopping is weak (Reed, 1985; Wegner, 1988, 1989; Wegner et al., 1987). Moreover, other research suggests that there may be negative consequences of thought suppression, and that at times it may be beneficial to allow unwanted thoughts to intrude into awareness. An unexpected negative consequence of thought suppression is that a preoccupation or obsession with the unwanted thought may develop following attempts at inhibition (Wegner, 1988, 1989; Wegner et al., 1987). In their original thought suppression study, Wegner et al. (1987) demonstrated that

subjects who attempted to suppress thoughts of a white bear reported thinking more about the white bear at a later time when compared with subjects who did not initially engage in thought suppression. Pennebaker and colleagues (e.g., Pennebaker, 1985, 1989; Pennebaker & Hoover, 1985; Pennebaker, Hughes & O'Heeron, 1987; Pennebaker, Kiecolt-Glaser, & Glaser, 1988) have also argued that inhibition of unwanted thoughts may lead to subsequent preoccupation with the same thoughts. Moreover, these researchers have found evidence for negative health consequences of inhibition. For example, Pennebaker and Hoover (1985) have shown that traumatic events not discussed with others are likely to be associated with relatively high rates of disease.

Consideration has also been given to the possible ameliorative and adaptive effects of the intrusion of unwanted thoughts. Horowitz (1975, 1983) has suggested that intrusions of unwanted thoughts may allow an individual to find meaning in the experience that triggered the rumination. Others arguing from a motivational perspective have argued that intrusive thinking may allow one to discover alternative ways of fulfilling important goals which have proven difficult to attain (Martin & Tesser, 1989). Finally, Taylor and Schneider (1989) have recently presented a theory concerning the role of simulation in the process of coping with stressful events. These authors argue that ruminations concerning past stressors, as one

component of event simulation, can increase one's understanding of the reality of the imagined experience, can provide a framework for organizing that experience, and can provide a mechanism for the activation of appropriate states of emotion and arousal. Thus, intrusive, unwanted, thoughts may play an integral role in both the problem- and emotion-focused aspects of coping (Taylor & Schneider, 1989).

The current research does not speak to the relative cost or benefit of intrusive thoughts. Rather, the present findings underscore an important influence on the occurrence of unwanted thoughts. Specifically, evidence was garnered to suggest that mood can interfere with the suppression of mood-congruent thoughts relative to mood-incongruent thoughts. Thoughts are more likely to intrude into awareness against an individual's will if they are congruent with mood than if they are incongruent with mood. It remains for future research to determine the conditions under which such thought intrusions will undermine or benefit an individual's psychological well-being.

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Appendix A

Introduction to Experiments 1 and 2

Introduction

In this study, we are interested in studying age differences in various aspects of human cognition. Two aspects of human cognition that psychologists are particularly interested in are thought and perceptual processes. By thought processes we mean how people go about thinking of different things. By perceptual processes we mean how people perceive different things around them. We are studying these two aspects of cognition because past research has indicated that age may have different effects on each.

In this study we are asking people of different ages to complete a number of different and separate tasks which have to do with human thought and perceptual processes. People are asked to complete a number of different perceptual and thought tasks in random order. We have people complete these tasks in random order because people are less accurate if they complete too many tasks of the same type at one time. Therefore, today you may be asked to complete a thought task, then a perceptual task, then another perceptual task, and so on.

Let me first tell you about the kind of thought task that we will be using. We are interested in studying people's natural thinking. Often, in daily life, we think of things; we plan things in our minds. We do this naturally, in our heads, as if we are talking to ourselves,

the only difference being that we do not talk aloud. As an example, a person waiting at a bus stop when a nice sports car goes by might say to herself, "I wish I was in there." Because we want to better understand people's natural thought processes in this study, we are asking people to think aloud. We want them to say what they are thinking of. Basically, we want people to say whatever comes to mind. So that is the type of thought task we are going to ask you to do. We're interested in age differences in these kinds of natural thought processes, including differences in the content and structure of thought.

Now let me tell you about the type of perceptual tasks you will be asked to do. On one perceptual task, we are interested in studying people's perception of different musical selections. In order to study people's perceptions of music, we will ask you to listen to a musical selection and will later ask you questions about what you heard. On other perceptual tasks, we are interested in studying how people of different ages perceive different descriptions of life events. We are studying these different perceptual tasks because age differences in behavior may be partly caused by age differences in the perception of everyday things, such as music or life events.

Finally, let me tell you one other thing about what you will be doing here today: Everything that you do today will be kept anonymous and confidential. Your name will not be

put on any of the materials we use today.

Appendix B

Life Events Questionnaires for Experiments 1 and 2

AGE: _____

Questionnaire F

PART ONE

A. In this questionnaire, we have listed a number of events that occur in people's lives. People of different ages may experience these events in different ways. We would like you to look over each event carefully. As you read each event, think of things that it reminds you of from your own experience. We would like you to decide which of the events you are reminded of is most associated with feelings of sadness for you. Please write the event that makes you feel most sad in the space provided below.

Think of events that have happened to you:

1. Having someone you care about yell at you.
2. Losing a really good friend.
3. Saying something to someone close to you that you regret later.
4. Watching other people you care about fight.
5. Seeing someone you care about suffering.
6. Arguing with someone you like a lot.
7. Breaking up with a boyfriend or girlfriend.
8. Being apart from someone you care about for a long time.

Write the event from your past that makes you feel most sad in this space. Just describe it in your own words:

B. For the event you listed in the space above, we would like you to write a few key words that you would use to refer to such an incident. These key words should make it clear to yourself the incident you are referring to. You should word it in a way that you would feel comfortable saying it to the investigator, as we will make use of these key words later on.

Please write 2 or 3 key words that describe the event chosen above in the space provided below and on one of the index cards. The index card will be given to the investigator for later use in the study.

KEY WORDS: _____

Questionnaire F (continued)

PART TWO

A. Once again, we have listed below a number of events that occur in people's lives that we would like you to look over carefully. As before, think of things that each event reminds you of from your own experience. This time, we would like you to decide which of the events you are reminded of is most associated with feelings of happiness for you. Please write the event that makes you feel most happy in the space provided below.

Think of events that have happened to you:

1. Having a warm conversation with someone you like alot.
2. Meeting a new boyfriend or girlfriend.
3. Seeing someone you care about succeeding.
4. Making a really good friend.
5. Having someone you care about express affection towards you.
6. Watching other people you care about get along really well.
7. Being able to be together with someone you care about for a long time.
8. Saying something to someone close to you that makes them feel good.

Write the event from your past that makes you feel most happy in this space. Just describe it in your own words:

B. Once again, for the event you listed in the space above, we would like you to write a few key words that you would use to refer to such an event.

Please write 2 or 3 key words that describe the event chosen above in the space provided below and on the remaining index card.

KEY WORDS: _____

AGE: _____

Questionnaire G

PART ONE

A. In this questionnaire, we have listed a number of events that occur in people's lives. People of different ages may experience these events in different ways. We would like you to look over each event carefully. As you read each event, think of things that it reminds you of from your own experience. We would like you to decide which of the events you are reminded of is most associated with feelings of happiness for you. Please write the event that makes you feel most happy in the space provided below.

Think of events that have happened to you:

1. Having a warm conversation with someone you like alot.
2. Meeting a new boyfriend or girlfriend.
3. Seeing someone you care about succeeding.
4. Making a really good friend.
5. Having someone you care about express affection towards you.
6. Watching other people you care about get along really well.
7. Being able to be together with someone you care about for a long time.
8. Saying something to someone close to you that makes them feel good.

Write the event from your past that makes you feel most happy in this space. Just describe it in your own words:

B. For the event you listed in the space above, we would like you to write a few key words that you would use to refer to such an event. These key words should make it clear to yourself the incident you are referring to. You should word it in a way that you would feel comfortable saying it to the investigator, as we will make use of these key words later on.

Please write 2 or 3 key words that describe the event chosen above in the space provided below and on one of the index cards. The index card will be given to the investigator for later use in the study.

KEY WORDS: _____

Questionnaire G (continued)

PART TWO

A. Once again, we have listed below a number of events that occur in people's lives that we would like you to look over carefully. As before, think of things that each event reminds you of from your own experience. This time, we would like you to decide which of the events you are reminded of is most associated with feelings of sadness for you. Please write the event that makes you feel most sad in the space provided below.

Think of events that have happened to you:

1. Having someone you care about yell at you.
2. Losing a really good friend.
3. Saying something to someone close to you that you regret later.
4. Watching other people you care about fight.
5. Seeing someone you care about suffering.
6. Arguing with someone you like a lot.
7. Breaking up with a boyfriend or girlfriend.
8. Being apart from someone you care about for a long time.

Write the event from your past that makes you feel most sad in this space. Just describe it in your own words:

B. Once again, for the event you listed in the space above, we would like you to write a few key words that you would use to refer to such an event.

Please write 2 or 3 key words that describe the event chosen above in the space provided below and on the remaining index card.

KEY WORDS: _____

Appendix C

Acute Mood Measure for Experiment 1

Questionnaire A

In this questionnaire, we would like you to indicate how you are now feeling at this very moment. Please indicate your present feelings by circling a number on each of the scales. The scales are like this one:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

With each scale, there is a word that describes certain feelings. For each word, decide the degree to which the word describes your present feelings. To answer, circle the appropriate number on the scale.

Please note that any of the numbers on the scale can be circled.

Please be frank. Your responses will remain anonymous and confidential. Please turn to the next page and begin.

AT THIS MOMENT ...

I feel AGREEABLE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel SAD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel AROUSED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel UNWORTHY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel ENTHUSIASTIC

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel FEARFUL

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel DROWSY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel UNHAPPY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel ACTIVE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel AT REST

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

AT THIS MOMENT ...

I feel LONELY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel GROUCHY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel SORRY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel GOOD

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel DULL

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel STRONG

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel HAPPY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel EXCITED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel PEPPY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel HOSTILE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

AT THIS MOMENT ...

I feel CALM

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel SLEEPY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel DISCOURAGED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel DISTRESSED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel WARM HEARTED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel SURPRISED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel NERVOUS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel SATISFIED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel PLEASED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel RELAXED

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

AT THIS MOMENT ...

I feel JUMPY

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel CONTENT

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel MISERABLE

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel QUIET

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

I feel MOTIONLESS

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
not at all a little bit moderately quite a bit extremely

Appendix D
Manipulation Check for Experiment 1

Questionnaire T

In this questionnaire, we would like you to answer a question regarding the thought tasks you have already completed in this study.

Your response will remain anonymous and confidential.

1. How pleasant or unpleasant do you find the thought you were asked not to think about during the second thought task?

-4	-3	-2	-1	0	+1	+2	+3	+4
very		mildly		neutral		mildly		very
unpleasant		unpleasant				pleasant		pleasant

Appendix E
Beck Depression Inventory

B Scale

In this questionnaire we would like you to read a number of statements and to indicate those that describe how you feel about yourself. The statements are presented in groups (Group A, B, C, etc.). For each group circle the number in front of the one statement that best represents how you feel about yourself. So, circle one statement in group A, one in group B, and so on. Please be honest. Your responses will be anonymous and confidential.

- A. 0 I do not feel sad.
 1 I feel blue or sad.
 2a I am blue or sad all the time and I can't snap out of it.
 2b I am so sad or unhappy that it is quite painful.
 3 I am so sad or unhappy that I can't stand it.
-

- B. 0 I am not particularly pessimistic or discouraged about the future.
 1a I feel discouraged about the future.
 2a I feel I have nothing to look forward to.
 2b I feel that I won't ever get over my troubles.
 3 I feel that the future is hopeless and that things cannot improve.
-

- C. 0 I do not feel like a failure.
 1 I feel I have failed more than the average person.
 2a I feel I have accomplished very little that is worthwhile or that means anything.
 2b As I look back on my life all I can see is a lot of failures.
 3 I feel I am a complete failure as a person (parent, husband, wife).
-

- D. 0 I am not particularly dissatisfied.
 1a I feel bored most of the time.
 1b I don't enjoy things the way I used to.
 2 I don't get satisfaction out of anything any more.
 3 I am dissatisfied with everything.
-

- E. 0 I don't feel particularly guilty.
 1 I feel bad or unworthy a good part of the time.
 2a I feel quite guilty.
 2b I feel bad or unworthy practically all the time now.
 3 I feel as though I am very bad or worthless.

- F. 0 I don't feel I am being punished.
1 I have a feeling that something bad may happen to me.
2 I feel I am being punished or will be punished.
3a I feel I deserve to be punished.
3b I want to be punished.
-

- G. 0 I don't feel disappointed in myself.
1a I am disappointed in myself.
1b I don't like myself.
2 I am disgusted with myself.
3 I hate myself.
-

- H. 0 I don't feel I am worse than anybody else.
2 I am critical of myself for my weaknesses or mistakes.
2 I blame myself for my faults.
3 I blame myself for everything bad that happens.
-

- I. 0 I don't have any thoughts of harming myself.
1 I have thoughts of harming myself but I would not carry them out.
2a I feel I would be better off dead.
2b I feel my family would be better off if I were dead.
3a I have definite plans about committing suicide.
3b I would kill myself if I could.
-

- J. 0 I don't cry any more than usual.
1 I cry more now than I used to.
2 I feel irritated all the time.
3 I used to be able to cry but now I can't cry at all even though I want to.
-

- K. 0 I am no more irritated now than I ever am.
1 I get annoyed or irritated more easily than I used to.
2 I feel irritated all the time.
3 I don't get irritated at all at the things that used to irritate me.
-

- L. 0 I have not lost interest in other people.
1 I am less interested in other people now than I used to be.
2 I have lost most of my interest in other people and have little feeling for them.
3 I have lost all my interest in other people and

don't care about them at all.

- M. 0 I make decisions about as well as ever.
1 I try to put off making decisions.
2 I have great difficulty in making decisions.
3 I can't make decisions at all anymore.
-
- N. 0 I don't feel I look any worse than I used to.
1 I am worried that I am looking old or unattractive.
2 I feel that there are permanent changes in my appearance and they make me look unattractive.
3 I feel that I am ugly or repulsive looking.
-
- O. 0 I can work about as well as before.
1a It takes extra effort to get started at doing something.
1b I don't work as well as I used to.
2 I have to push myself very hard to do anything.
3 I can't do any work at all.
-
- P. 0 I can sleep as well as usual.
1 I wake up more tired in the morning than I used to.
2 I wake up 1-2 hours earlier than usual and find it hard to get back to sleep.
3 I wake up early every day and can't get more than 5 hours sleep.
-
- Q. 0 I don't get any more tired than usual.
1 I get tired more easily than I used to.
2 I get tired from doing anything.
3 I get too tired to do anything.
-
- R. 0 My appetite is no worse than usual.
1 My appetite is not as good as it used to be.
2 My appetite is much worse now.
3 I have no appetite at all any more.
-
- S. 0 I haven't lost much weight, if any, lately.
1 I have lost more than 5 pounds.
2 I have lost more than 10 pounds.
3 I have lost more than 15 pounds.
-

- T. 0 I am no more concerned about my health than usual.
1 I am concerned about aches and pains OR upset stomach OR constipation.
2 I am so concerned with how I feel or what I feel that it's hard to think of much else.
3 I am completely absorbed in what I feel.
-

- U. 0 I have not noticed any recent change in my interest in sex.
1 I am less interested in sex than I used to be.
2 I am much less interested in sex now.
3 I have lost interest in sex completely.

Appendix F
Ratings of Thought Stimuli for Experiment 2

Questionnaire T

In this questionnaire, we would like you to answer some questions regarding the thought tasks you have already completed in this study.

Please read each question carefully before answering it. Your responses will remain anonymous and confidential.

1. How pleasant or unpleasant do you find the thought you were asked not to think about during the second thought task?

-4	-3	-2	-1	0	+1	+2	+3	+4
very unpleasant		mildly unpleasant		neutral		mildly pleasant		very pleasant

2. Approximately how long ago did the event occur that you were asked not to think about during the second thought task? Place a checkmark. The event occurred:

Within the last few days

Within the last week

Within the last month

Within the last 6 months

Within the last year

Within the last 2 years

Greater than two years ago

3. How intense do you find the thought you were asked not to think about during the second thought task?

1	2	3	4	5	6	7	8	9
not intense		a little intense		somewhat intense		very intense		extremely intense

Appendix G
Introduction to Experiment 3

Introduction

In this study, we are interested in studying age differences in various aspects of human cognition. Two aspects of human cognition that psychologists are particularly interested in are thought and perceptual processes. By thought processes we mean how people go about thinking of different things. By perceptual processes we mean how people perceive different things around them. We are studying these two aspects of cognition because past research has indicated that age may have different effects on each.

In this study we are asking people of different ages to complete a number of different tasks in random order which have to do with human thought and perceptual processes. We have people complete these tasks in random order because people are less accurate if they complete too many tasks of the same type at one time. In addition to the perceptual and thought tasks, we will ask you to complete a few general questionnaires at different times in the study. These questionnaires will allow us to better understand the results of the other tasks. We are also interested in looking at age differences on these questionnaires.

Let me first tell you about the kind of thought task that we will be using. We are interested in studying people's natural thinking. Often, in daily life, we think of things; we plan things in our minds. We do this

naturally, in our heads, as if we are talking to ourselves, the only difference being that we do not talk aloud. As an example, a person waiting at a bus stop when a nice sports car goes by might say to herself "I wish I was in there." Because we want to better understand people's natural thought processes in this study, we are asking people to think aloud. We want them to say what they are thinking of. Basically, we want people to say whatever comes to mind. So that is the type of thought task we are going to ask you to do. We're interested in age differences in these kinds of natural thought processes, including differences in the content and structure of thought.

Now let me tell you about the type of perceptual task you will be asked to do. We are interested in studying social perception; that is, how people make decisions and predictions about other people. Making decisions and predictions about other people's attitudes or behavior is something we often do when we interact with other people. Because we want to better understand people's social perception in this study, we are asking people to complete a measure of social perceptiveness. We will ask you to read a description of another person and then answer questions about the person described. We are studying this perceptual process because age differences in behavior may be partly caused by age differences in how we perceive those around us.

Finally, let me tell you one other thing about what you will be doing here today: Everything that you do today will be kept confidential. Your name will not be put on any of the materials we use today.

Appendix H
D30 Depression Scale

Questionnaire D

This questionnaire consists of a number of statements. Please read each statement and decide whether it is true as applied to you or false as applied to you.

If a statement is TRUE or MOSTLY TRUE, as applied to you, place a "T" in the space provided beside the statement. If a statement is FALSE or NOT USUALLY TRUE, as applied to you, place an "F" in the space provided beside the question.

Your responses will remain confidential.

1. My daily life is full of things that keep me interested _____
2. I am about as able to work as I ever was _____
3. I find it hard to keep my mind on a task or job _____
4. At times I feel like smashing things _____
5. I have had periods of days, weeks, or months when I couldn't take care of things because I couldn't "get going" _____
6. My sleep is disturbed _____
7. I prefer to pass by school friends, or people I know but have not seen for a long time, unless they speak to me first _____
8. I am a good mixer _____
9. I wish I could be as happy as others seem to be _____
10. I am certainly lacking in self-confidence _____
11. I usually feel that life is worth while _____
12. I don't seem to care what happens to me _____
13. I am happy most of the time _____
14. I seem to be about as capable and smart as most others around me _____

15. I do not worry about catching diseases _____
16. Criticism or scolding hurts me terribly _____
17. I certainly feel useless at times _____
18. Most nights I go to sleep without thoughts or ideas bothering me _____
19. During the past few years I have been well most of the time _____
20. I cry easily _____
21. I cannot understand what I read as well as I used to _____
22. I have never felt better in my life than I do now _____
23. My memory seems to be alright _____
24. I am afraid of losing my mind _____
25. I feel weak all over much of the time _____
26. I enjoy many different kinds of play and recreation _____
27. I brood a great deal _____
28. I believe I am no more nervous than most others _____
29. I have difficulty in starting to do things _____
30. I work under a great deal of tension _____

Appendix I

Description of the Social Perceptiveness Scale

Social Perceptiveness Scale

Psychologists have developed a test to evaluate people's ability to accurately judge and make predictions about other individuals. This test is called the Social Perceptiveness Scale, or SPS. In order to do well on this task, people have to rely on intuition, logic, and on what they know about life.

The SPS has been in use for a number of years and has been shown to be very accurate in measuring people's interpersonal judgment skills. This test is presently being used on a large scale because there is general agreement in the professional community that social perception is one of the most important components of intellectual ability.

The one drawback of the SPS is that it is a very lengthy test. Recently, a short form of the test has been constructed. Statistical analysis of the full SPS test has shown that the short form provides the best measure of social perceptiveness skills.

The short form of the SPS is a written test that consists of evaluating two case studies. The individuals described in the case studies have been followed by a group of psychologists from high school to early adulthood. Each description is a "thumbnail sketch" of the individual, based on personal interviews and psychological testing results

You will be asked to read each case study and then answer 10 multiple choice questions about the person

described. At first glance, you might get the impression that one or more answers to each question is correct. However, you should think about the question carefully and select the best answer. People only get points for correct answers, and there is only one correct answer for each question. As part of our usual procedure, we will give you performance feedback for the SPS immediately following the testing period. You will receive both your own score and the average score of people in your age category. Both scores are out of a total of 20.

Appendix J
Social Perceptiveness Scale

Social Perceptiveness Scale

Personal Profile: Mark Vaughan

(names have been changed to maintain anonymity)

Mark Vaughan attended the University of Western Ontario and graduated in 1979 with a bachelor of science in engineering. His academic records and homeroom teachers reported that he was a bright, attentive teenager from a suburban Toronto high school, with grades considerably above average. He reported a keen interest in pursuing a degree in engineering, believing that it would lead to secure and gainful employment in the future. Following his graduation from university, he did, in fact, gain a position as a junior design assistant with an engineering firm in Hamilton, Ontario.

At university, some of his friends and colleagues were asked about their impressions of him as a friend, fellow student, and working associate. Those people closer to him described him as friendly, talkative, generally considerate of others, though somewhat predictable in his social behaviour. That is, he was keen on frequenting the same clubs on a routine basis and tended to socialize with his immediate friends almost to the exclusion of other people beyond his immediate social circle. He dated rather infrequently and friends claimed that he seemed somewhat uneasy in dating situations. Some of the other students, knowing him more as a working associate, reported that he

was always diligent in completing assignment deadlines and that he was dependable in collaborative efforts to fulfill his work requirements. Those same working colleagues also reported that Mark could be unforgiving and angry if fellow students failed to meet their specified requirements for group projects. After leaving university and beginning work, Mark began dating more frequently and 10 months after graduation he met the woman he was to marry a year later. Mark believes that the relationship he has with his wife could best be described as traditional with her staying at home to raise their five year old daughter. They both believe in maintaining close sensitivity for each other, and his wife, Jennifer, supports all Mark's efforts in furthering his career. The researchers had asked Mark a question concerning contact with his old university friends, to which he replied, "I really can't say because I haven't kept up contact--it seems that in the past five years I've really moved further away from those times and memories. The people I know now seem so different, and I don't have the opportunities to go out like before--I have important responsibilities to my work and family".

Social Perceptiveness Scale

Multiple Choice Questionnaire

Personal Profile: Mark Vaughan

Below are a number of questions pertaining to the description of Mark you have just read. Please read each question carefully and select the response to each question which you think is most accurate. Write the letter corresponding to the chosen response (a,b,c, or d) in the space provided on the answer sheet. DO NOT WRITE ON THIS QUESTION BOOKLET.

1. How would you best describe the motivational factors in Mark's life?

(a) he is driven by a strong need to excel and succeed in his chosen field.

(b) he is driven by an acute awareness of his economic responsibilities to his wife and family.

(c) there does not seem to be any one potent motivational force in his life.

(d) he strives for the personal satisfaction that accompanies completion of problems, and successful interactions with others.

2. How would you best describe Mark's current mode of discipline to his daughter and his likely mode of discipline when she becomes a teenager? Choose one of the following "current/likely" pairs.

(a) distant / inconsistent.

(b) strict / overbearing.

(c) lenient / protective.

(d) distant / aloof.

3. How do you think Mark feels about his academic and career achievements?

(a) he is proud of his achievements and tells others that his success is due to his ongoing diligence and hard work.

(b) he quietly acknowledges that he has done well so far but is cynically skeptical of the value assigned to diplomas, degrees, and professions by our society.

(c) he sees them as only a small part of his life and is more concerned with the development of his family as a closely knit unit.

(d) he is proud of his achievements but feels that his work in the next few years will outshine his earlier successes.

4. Which of the following do you think best represents the pattern of family life that Mark has with his wife and daughter?

(a) their domestic life is characterized by an easy-going atmosphere with a frequent display of warm emotions.

(b) their domestic life is dotted with frequent arguments on trivial matters, but family cohesion is never threatened.

(c) emphasis is placed on family activities, a sensitivity for one another, and a reliance on each other for support.

(d) their domestic life could be best described as stale with Mark too tired for activities after work, and a need to catch up on chores during the weekend.

5. If Mark had gone out of his way to help another person with a problem, what do you think his expectations would be of that person?

(a) he would expect a complete pay-back of time and effort from that person if he, himself, was in need.

(b) he would expect nothing in return for the assistance he gave.

(c) he would not expect a total pay-back of time and effort, but at least some indication of appreciation.

(d) he would expect a substantial pay-back of time and effort and if it failed to come he would think that he had not done enough in his original effort.

6. How do you think Mark feels about the future?

(a) he is preoccupied with maintaining economic security and worries about the possible loss of that security.

(b) he is concerned about seeing his family grow and develop together.

(c) he is more philosophical about the future, knowing that he can only take one day at a time.

(d) Mark sees the future as "rosy", believing that all his work and effort so far will only bring greater rewards.

7. Which of the following is the most accurate indicator of Mark's personality?

(a) he is outgoing with an aggressive approach to life.

(b) he is withdrawn, preferring the company of his wife and daughter in the solitude of his own home.

(c) he maintains a healthy balance between being quiet and sensitive at home, yet gregarious and outgoing in the work place.

(d) he is shy and quiet in his approach to work, and is similar in his behaviour at home when he socializes.

8. Mark reported that he lost contact with his former friends from university. Which of the following do you think best characterizes his current social contacts?

(a) his current friends should really be called closer associates.

(b) he is more of a social loner now, devoting the bulk of his time to his daughter and wife.

(c) he has a few friends that he regards as close and enjoys seeing them on a regular basis.

(d) he has a few friends he has met through work, but really yearns for a closer friendship with someone.

9. Why do you think Mark was keen and attentive in his early years at school?

(a) he had a genuine interest and desire to learn.

(b) he knew that he would be punished by his parents if he did not return good grades.

(c) he had a competitive spirit early in his life and did not want to be outclassed by his fellow students.

(d) his desire to learn and achieve good grades resulted from the knowledge of rewards that would arise from a solid career.

10. Do you think Mark believes the life events involving him are beyond his control or that what happens in his life is a result of his own action?

(a) Mark seems to exhibit a care-free attitude to whatever will happen in his life.

(b) he seems to realize that what happens in his life he can only have minimal control over.

(c) Mark believes that what will happen in his life will be entirely the result of the efforts he puts in.

(d) Mark not only believes that he has control over what happens in his life, but that he can also manipulate less favourable events to work in his favour.

Social Perceptiveness Scale

Personal Profile: Kathy Altman

(Names have been changed to maintain anonymity)

Kathy Altman grew up in a small suburb of London, Ontario. She was the youngest of four children with two older brothers and an eldest sister. All the children performed well in grade school and the parents were always concerned that they all made the most of their education. Kathy, herself, graduated with a bachelor of arts in English literature from Carleton University, Ottawa. She went on to study law at York University, completing her requirements in 1980. She joined a small law practice in Toronto, and set a precedent for being the first female lawyer in the firm. At law school she was characterized as an ambitious woman with a sense of determination and dedication. Among her law school colleagues and friends, there were differing views of Kathy's characteristics and personality traits. Her working colleagues typically referred to her as cold, studious, and rather withdrawn. Conversely, her closer friends saw her as socially anxious, though still friendly and appreciative of a good time together. During law school Kathy dated a variety of men, though on a non-committal basis. She reported that professional men were the most attractive to her, believing them to have more in common with her than non-professionals.

Her current legal associates view her as hardworking, ambitious, and methodical. However, it has been said that she is easily upset when her plans or work do not materialize in the form she originally envisaged. Her current friends have said that she strives hard to justify herself in a field traditionally dominated by men. These same friends have reported feelings of envy at Kathy's professional capabilities.

Kathy's parents have voiced their pride at their daughter's achievements, though they are quick to add that they believe she might be missing the social and emotional benefits associated with a more enduring personal relationship. However, one year ago, she met a man with whom she has been having a steady relationship. Kathy has reported an element of personal conflict with her involvement in this relationship. She feels attracted to this man, and feels that it could be a long-term relationship. She believes there could be a lot of satisfaction in the role of wife and mother with the right type of man. She has been hesitant to move headlong into this relationship, however, fearing that her independence and career objectives may be compromised by an increased emotional attachment. Kathy has personally reported that the resolution of this confusion will constitute a major step forward in her life. She is cautious in advancing personal projections of her life's outcome but quietly

believes that at some point she will fulfill the role of
mother and wife.

Social Perceptiveness Scale

Multiple Choice Questionnaire

Personal Profile: Kathy Altman

Below are a number of questions pertaining to the description of Kathy you have just read. Please read each question carefully and select the response to each question which you think is most accurate. Write the letter corresponding to the chosen response (a,b,c, or d) in the space provided on the answer sheet. DO NOT WRITE ON THIS QUESTION BOOKLET.

1. Kathy has been described as ambitious. Which of the following explanations best describes the reason for Kathy's ambition?

(a) as a child, her parents and teachers encouraged and supported her work in grade school.

(b) she feels that it is her responsibility, as a woman, to use her talents and capacity for hard work, in order to show that women can compete in a profession dominated by men.

(c) from her youngest days, and throughout her formal education, she simply manifested an intrinsic desire to achieve goals and learn.

(d) her ambition is guided more by a desire to be economically secure and independent.

2. What pattern of child-rearing do you think would emerge if Kathy were to become a mother?

(a) she would exhibit nurturant behaviours, and guide her child with love and a sensitivity for his or her needs.

(b) she would be overbearing, expecting her child to excel according to her own standards.

(c) she would be extremely inconsistent, fluctuating from sensitivity of the child's needs to unrealistic expectations for academic and career advancement.

(d) she would admit to expecting a lot from her child but would always be "fair" in her expectations.

3. How do you think Kathy feels about her academic and career achievements?

(a) she is proud of her achievements and the status she has acquired.

(b) through her own achievements, she feels she has scored a small victory for women at large.

(c) she feels that her record so far is only a small part of what she will be remembered for through her career.

(d) she is content and pleased with her achievements so far but is more concerned with resolving her personal conflicts and balancing out her life.

4. Which of the following would you offer as an explanation for Kathy's apparent social anxiety?

(a) her excessive devotion to early and later studies hindered her socialization with both males and females.

(b) her anxiety results from her deep-seated misgivings about the position of men in society.

(c) her anxiety is irrationally based because she believes her friends and others are always evaluating and judging her.

(d) her anxiety emerges from a refusal to drop her "emotional guard".

5. If one of Kathy's male colleagues were to seek advice from her on a personal matter, which of the following do you think would best characterize her response?

(a) she would offer any help that she could.

(b) she would be willing to offer her help, though would claim that the value of her help would be minimal.

(c) she would steadfastly refuse to offer help, believing that such matters should not be dealt with by working colleagues.

(d) she would refuse to offer advice, believing that it would become a habit by other male colleagues, too.

6. Which of the following best describes the pattern of Kathy's social life?

(a) though she is confident in her professional conduct, she is generally apprehensive about social situations.

(b) she enjoys the contact of a wide range of people and nurtures her social activity.

(c) though she enjoys her social life with her immediate friends that know her well, she is hesitant and unsure of herself with less well-known people.

(d) she is socially outgoing and constantly seeks to make new acquaintances and friends.

7. In attempting to resolve her personal conflict over thoughts of career and possible family, which of the following do you think will have the greatest influence on the resolution of that conflict?

(a) the value she places on her career.

(b) the value she places on the institution of motherhood.

(c) the quality of interaction experienced with the man she has been seeing in a steady relationship.

(d) her obligation to fulfill the traditional role of mother and wife.

8. What do you think Kathy's reaction would have been if a classmate had sought her help in solving a difficult academic problem?

(a) she would give of her time freely and express a keen interest in solving the problem.

(b) she would feel that this was a gross encroachment on her valuable time and would refuse to help.

(c) she would downplay her ability to solve that problem, thus hoping to prevent her involvement and personal time loss.

(d) she would offer her help but would expect some form of favour in return.

9. Does Kathy believe that life events involving her are beyond her control or that what happens in her life is a result of her own actions?

(a) she seems to realize that what happens in her life she can only have minimal control over.

(b) she seems to exhibit a care-free attitude to whatever will happen in her life.

(c) Kathy believes that what will happen in her life will be entirely the result of the efforts she puts in.

(d) Kathy not only believes that she has control over what happens in her life, but that she can also manipulate less favourable events to work in her favour.

10. Which of the following is the most accurate indicator of Kathy's personality?

(a) she is outgoing with an aggressive approach to life.

(b) she is shy outside her work place and prefers the company of a professional man with whom she has plenty in common.

(c) she is withdrawn outside her work place and prefers the company of a couple of her closer girl friends.

(d) she is the epitome of a modern, progressive, high achieving woman with a well-balanced approach to work and socialization.

Appendix K

Beck Depression Inventory - Short Form

B-Scale -- SF

On this questionnaire are groups of statements. Please read the entire group of statements in each category. Then pick out the one statement in that group which best describes the way you feel today, that is, right now! Circle the number beside the statement you have chosen. If several statements in the group seem to apply equally well, circle each one.

Be sure to read all the statements in each group before making your choice.

- A. 3 I am so sad or unhappy that I can't stand it.
 2 I am blue or sad all the time and I can't snap out of it.
 1 I feel sad or blue.
 0 I do not feel sad.
-

- B. 3 I feel that the future is hopeless and that things cannot improve.
 2 I feel I have nothing to look forward to.
 1 I feel discouraged about the future.
 0 I am not particularly pessimistic or discouraged about the future.
-

- C. 3 I feel I am a complete failure as a person (parent, husband, wife).
 2 As I look back on my life, all I can see is a lot of failures.
 1 I feel I have failed more than the average person.
 0 I do not feel like a failure.
-

- D. 3 I am dissatisfied with everything.
 2 I don't get satisfaction out of anything anymore.
 1 I don't enjoy things the way I used to.
 0 I am not particularly dissatisfied.
-

- E. 3 I feel as though I am very bad or worthless.
 2 I feel quite guilty.
 1 I feel bad or unworthy a good part of the time.
 0 I don't feel particularly guilty.
-

- F. 3 I hate myself.
 2 I am disgusted with myself.
 1 I am disappointed in myself.
 0 I don't feel disappointed in myself.
-

- G. 3 I would kill myself if I had the chance.
2 I have definite plans about committing suicide.
1 I feel I would be better off dead.
0 I don't have any thoughts of harming myself.
-

- H. 3 I have lost all of my interest in other people and don't care about them at all.
2 I have lost most of my interest in other people and have little feeling for them.
1 I am less interested in other people than I used to be.
0 I have not lost interest in other people.
-

- I. 3 I can't make any decisions at all anymore.
2 I have great difficulty in making decisions.
1 I try to put off making decisions.
0 I make decisions about as well as ever.
-

- J. 3 I feel that I am ugly or repulsive-looking.
2 I feel that there are permanent changes in my appearance and they make me look unattractive.
1 I am worried that I am looking old or unattractive.
0 I don't feel that I look any worse than I used to.
-

- K. 3 I can't do any work at all.
2 I have to push myself very hard to do anything.
1 It takes extra effort to get started at doing something.
0 I can work about as well as before.
-

- L. 3 I get too tired to do anything.
2 I get tired from doing anything.
1 I get tired more easily than I used to.
0 I don't get any more tired than usual.
-

- M. 3 I have no appetite at all anymore.
2 My appetite is much worse now.
1 My appetite is not as good as it used to be.
0 My appetite is no worse than usual.
-

Appendix L
Manipulation Check on Success-Failure Feedback

Questionnaire S

In this questionnaire, we would like you to answer some questions regarding your performance on the Social Perceptiveness Scale completed earlier in this study. Please read each question carefully before answering it. Your responses will remain confidential.

01. How favorable were the results you received on the Social Perceptiveness Scale?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

02. How well do the results you received on the Social Perceptiveness Scale describe you?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much

03. How important was it for you to do well on the Social Perceptiveness Scale?

1	2	3	4	5	6	7	8	9
not at all		a little		somewhat		quite a bit		very much