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Risk for and Resilience to Negative Moods:
Predicting Response to a Depressive Mood Induction Procedure

by

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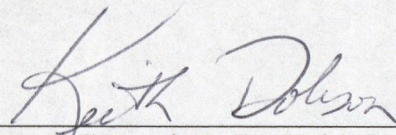
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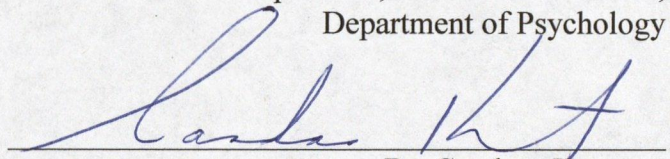
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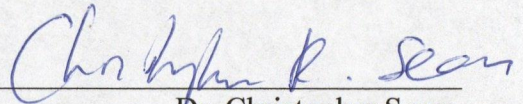
The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies for acceptance, a thesis entitled "Risk for and Resilience to Negative Moods: Predicting Response to a Depressive Mood Induction Procedure" submitted by Martin C. Scherrer in partial fulfillment of the requirements for the degree of Master of Science.



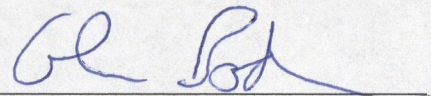
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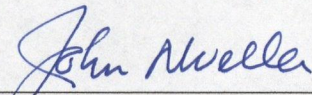
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Abstract

Inducing various mood states—sad or depressed mood in particular—has become a widely employed and accepted means of experimentally examining the link between emotion and cognition, particularly with research on cognitive theory and depression. Studies utilizing mood induction procedures typically report successful induction of the desired mood in participants at rates ranging from 50-75%. Individual differences in susceptibility to mood induction procedures, however, has received little attention, and the literature reveals that rarely is any consideration given specifically to those individuals who do *not* respond. A number of predictors were examined in order to determine which variable(s), either alone or in combination, best predicted both *occurrence* and *extent* of negative mood induction. Results indicated that, first, decreased social desirability and increased occurrence of recent negative events were associated with successful mood induction, and increased recent occurrence of negative events was identified as the strongest predictor of successful induction. Second, increased anxiety and the occurrence and perceived aversiveness of recent negative events were all associated with increased negative shift in mood, although increased recent occurrence of negative events was found to most strongly predict extent of negative mood shift. Thus, of the possible predictors assessed in the current study, increased recent negative events best predicted both occurrence and extent of negative mood induction using the Velten mood induction procedure. The implications of these results and future research directions are discussed.

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Finally, I wish to acknowledge my parents, Herbert and Ursula; my in-laws, John and Linda; and my wife, Bonnie. For your unwavering support and unending encouragement I thank you all.

DEDICATION

This thesis is dedicated to my wife, Bonnie, who has been a constant source of support, understanding, and encouragement throughout its completion.

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Introduction

Inducing various mood states in normal subjects has become a widely employed and accepted means of experimentally examining the link between emotion and cognition. Cognitive theory of depression, in particular, is one area that has generated a great deal of interest in, and research utilizing, mood induction procedures (MIPs; Clark, Beck, & Alford, 1999). However, reviews of the mood induction research literature have observed that the question of individual differences in susceptibility to induction has been to date a relatively neglected topic. Indeed, though studies utilizing MIPs report successful induction in subjects ranging from approximately 50 to 75% (Martin, 1990), rarely is any consideration given to those subjects who do *not* respond (Clark et al., 1999). The present study was designed to examine a range of factors possibly associated with individual response to a depressive mood induction procedure and in so doing, address two primary aims. First, in terms of past mood induction research, this study addressed the dearth of attention given to individual differences in susceptibility to mood induction and second, this study's identification of predictive factors of invulnerability to mood induction had implications for protective factors in the development of depressed mood states in general.

A number of procedures have been employed in the induction of depressive mood states, including the use of mood-suggestive music, hypnotic suggestion, recollection of autobiographical or imagination of hypothetical mood-evoking events, and viewing of emotionally evocative film clips (e.g., Martin, 1990). The most commonly employed and widely researched mood induction procedure, however, is the Velten self-statement method (Velten, 1968) which, according to Clark's review, "produces a state which is a good analogue of mild, naturally occurring retarded depression" (1983, p. 45). Reviews of these mood induction procedures have appeared in the literature (e.g., Clark, 1983; Gerrads-Hesse, Spies, & Hesse,

1994; Martin, 1990; Westermann, Spies, Stahl, & Hesse, 1996).

Although it has been posited that all mood induction procedures rely, to varying degrees, on negative cognitions (Martin, 1990), the Velten MIP explicitly utilizes negative self-relevant statements. In the Velten procedure, a series of statements is read by the participants, who are encouraged to try to feel the mood that they suggest. The effectiveness of the Velten MIP has been demonstrated in a number of reviews of the mood induction literature (e.g., Gerrads-Hesse et al., 1994; Westermann et al., 1996), and the procedure has been found to be successful in approximately 50 to 75% of participants (Clark, 1983; Martin, 1990), a success rate that is comparable to a number of other MIPs. The Velten MIP has also been shown to be effective in inducing a depressive mood state as evidenced not only by self-report of mood, but other indications such as psychomotor retardation as well (Clark, 1983). This success rate, of course, also reflects considerable variation in response in that a significant portion of individuals are not successfully mood induced. Though individual response to MIPs such as the Velten has not received extensive attention, attempts have been made to identify predictors of successful mood induction.

It remains unclear exactly how depressed mood is induced by the Velten procedure, and which models of mood are supported by its effects (e.g., Clark, 1985; Riskind & Rholes, 1985a; Riskind & Rholes, 1985b). Using a shortened version of the Velten MIP with a sample of 40 students, Blackburn, Cameron, and Deary (1990) identified a number of predictors of successful negative mood induction, including increased basal level of depression, frequency of negative thoughts, neuroticism, experience of recent negative events, and degree of belief in the MIP statements, all of which were significantly associated with both measures of depressed mood employed. Suggestibility and social desirability were associated with one of two mood measures,

and level of introversion and gender did not predict response based on either measure of mood induction. Employing two variant MIPs based on Velten's statements, one based on a cognitive model and the other on a behavioral model of depression, Rexford and Wierzbicki (1989) found that contrary to expectations, increased depression-inducing cognitions and behaviors were not differentially predictive of response to the associated MIP. Instead, among their sample of 83 college students, cognitive and behavioral factors were unrelated to response to the mood induction. More recently, a similar study conducted by McHugh and Wierzbicki (1998) attempted to differentially predict response to a cognitive, Velten-like MIP and a behavioral MIP that did not employ self-statements among a sample of 59 students. Like the Rexford and Wierzbicki study, behavioral indices failed to predict response to the behavioral MIP; however, while one cognitive measure, the Dysfunctional Attitudes Scales (DAS) did not predict response to the cognitive MIP, another, the Automatic Thoughts Questionnaire (ATQ), did.

Thus, there is some inconsistency across the few studies that have examined predictors of response to MIP. While frequency of dysfunctional thoughts, as assessed by the ATQ, has been found to predict response to Velten-like induction (e.g., Blackburn et al., 1990, McHugh & Wierzbicki, 1998), other cognitive measures, such as the DAS, have not (e.g., McHugh & Wierzbicki, 1998; Rexford & Wierzbicki, 1989). Further, while some researchers have found recent negative events to be associated with response to mood induction (e.g., Blackburn et al., 1990), this result has not been found consistently across investigations (e.g., McHugh & Wierzbicki, 1998; Rexford & Wierzbicki, 1989).

It is important to note that the studies discussed above differed in their precise use of the Velten procedure. While Blackburn et al. (1990) employed a shortened procedure utilizing 15 Velten statements, Rexford and Wierzbicki (1989) developed and compared two sets of 59

statements that were “parallel to Velten’s original” ones (p. 289), and McHugh and Wierzbicki (1998) compared a cognitive mood induction employing statements based on Velten’s with a behavioral mood induction involving insoluble discrimination problems. It is not entirely clear, then, if results are comparable across these investigations.

Much current mood induction research is situated within, and tests various facets of, Beck’s cognitive model of depression. The present study was designed to build and expand upon prior research and theory in its attempt to identify a range of factors possibly associated with individual response to the Velten MIP. In the following section, each of the predictors examined in the present study are discussed in turn.

As Dozois and Dobson have noted, “unquestionably, the dominant cognitive paradigm for depression has been Beck’s model,” which implicates maladaptive cognition in both the etiology and maintenance of the disorder (2001, p. 236). Indeed, a central proposition of Beck’s model is the “primacy hypothesis,” which states that “negative cognition and biased information processing will critically influence the behavioral, affective, somatic, and motivational symptoms of depression” (Clark et al., 1999, p. 142). Clark et al. argue that the most direct test of the primacy hypothesis comes from mood induction research, and specifically MIPs that utilize negative self-referent thoughts such as the Velten technique. As noted above, the relationship between negative thoughts and response to mood induction has been examined in past research, but results have been equivocal. Because negative cognitions are central moderators of depressive symptomatology, it was hypothesized in this study that those individuals who displayed more maladaptive cognitions would also be more susceptible to mood induction than those who did not.

“Schemas” are defined by Clark et al. as “relatively enduring internal structures of stored

generic or prototypical features of stimuli, ideas, or experience that are used to organize new information in a meaningful way thereby determining how phenomena are perceived and conceptualized” (1999, p.79). An individual’s past experience, then, influences the formation and content of his/her schemas, which themselves in turn act as a “filter” through which current information and experience is processed and further, past experience with depression may act as a risk factor in the future development of the disorder. Prior research has confirmed that a past history of depression is associated with increased dysfunctional attitudes (Persons & Miranda, 1992); here, it was hypothesized that both would be associated with increased responses to mood induction.

Alternatively, history of psychotherapy, and in particular cognitive-behavior therapy (CBT), may serve as a protective factor from negative mood induction in that individuals who have undergone therapy are assumed to have learned specific techniques for recognizing and dealing with negative cognitions. Segal, Gemar, and Williams (1999), for example, found that formerly depressed patients who had undergone cognitive-behavior therapy endorsed fewer dysfunctional cognitions than pharmacotherapy patients as mood worsened over the course of a musical MIP. It was hypothesized here that those individuals who self-reported a history of psychotherapy in general, and cognitive-behavior therapy in particular, would display less susceptibility to mood induction.

Self-concept is an integral component of the cognitive model of depression. Beck’s earliest formulations of his model recognized the importance of negative self-view in depression, which is one of the three components of the postulated “cognitive triad.” As Clark et al. note, “the cognitive model has consistently emphasized the importance of negative self-schema structures and processes in understanding cognitive vulnerability for depression” (1999, p. 347),

and research has consistently associated negative self-evaluations with depression. It was hypothesized, then, that low self-esteem/concept would predict increased susceptibility to mood induction, while high self-esteem would serve as a protective factor and thus be associated with decreased response to the MIP.

Recent formulations of Beck's cognitive theory of depression emphasize interpersonal factors in the development of the disorder. For example, the "relationship hypothesis" posits that "cognitive structures and content that predispose for depression are associated with a characteristic interpersonal style that affects the quality and nature of social relations with significant others" (Clark et al., 1999, p. 367). The onset of depression impacts negatively on social relationships, which in turn promotes the maintenance of the disorder in vulnerable individuals. Alternatively, it might also be expected that strong interpersonal relationships would constitute a protective factor in the initial development of the disorder itself—strongly positive social support in the face of significant stressors may mitigate their effects and ultimately prevent the triggering of a depressive episode. It was hypothesized that subjects who reported less satisfaction with interpersonal relationships would be more susceptible to mood induction, while high satisfaction was expected to be associated with less response to mood induction.

Based on cognitive theory, current mood state might also predict response to mood induction, in that increased symptoms of depression would be associated with increased response to a depressive MIP. For example, it has been argued that high negative affect, characterized by an increase in such feelings as sadness, anxiety, and guilt, may be associated with both depression and anxiety (Roberts & Kassel, 1996). As Blackburn et al. (1990) hypothesized, low mood may increase accessibility of depressive schemata which in turn would increase the effect of the depressive MIP. Further, the high degree to which the constructs of anxiety and

depression, as they are currently defined and measured, are correlated has been demonstrated by considerable research (e.g., Clark et al., 1999; Dobson, 1985a; Dobson, 1985b). Thus, it was expected that high levels of state anxiety, depression, and negative affect would be predictive of increased response to mood induction.

Cognitive theory proposes that stressors play an important role not only in the onset, but also in the maintenance of depressive symptoms, and the diathesis-stress hypothesis is a major component of the cognitive model of depression (Clark et al., 1999). “Cognitive vulnerability in the form of dysfunctional schemas and maladaptive personalities,” Clark et al. argue, “are diatheses that remain latent in the nondepressed state until primed or activated by an eliciting event or stimulus,” and the prime that has received the greatest attention is proximal negative life stressors or daily hassles (p. 292). These authors also note that the occurrence of negative or stressful life events is of less importance than how such an event is appraised by the individual who experienced it. Based on cognitive theory and in line with prior findings (e.g., Blackburn et al., 1990), it was expected that increased occurrence and perceived aversiveness of recent negative life events would predict increased response to depressive mood induction.

Finally, in the context of mood induction research, subjects may feel pressure to respond in ways they perceive to be expected by the researcher—namely, to report experiencing the mood they are attempting to achieve, regardless of whether it has actually been induced. Though the influence of demand effects cannot be completely discounted, several lines of research argue against their centrality in mood induction procedures in general (e.g., Clark, 1983; Martin, 1990; Westermann et al., 1996) and the Velten MIP in particular (e.g., Finegan & Seligman, 1995). Nonetheless, it was expected that if demand effects are at play, the relationship would be a positive one, where increased social desirability would predict increased response to the MIP.

As evidenced by the preceding discussion, both theoretical implications and past research findings indicate a number of factors that may be associated with individual susceptibility to mood induction techniques in general, and the Velten procedure in particular. As such, the current study hypothesized that the following factors would be associated with increased susceptibility to a depressive Velten MIP: increased maladaptive cognitions, history of depression, decreased self-concept/esteem, decreased interpersonal satisfaction; increased state anxiety, depression, and negative affect and decreased positive affect; and increased occurrence and rated unpleasantness of recent negative events. A history of psychotherapy and CBT in particular was expected to be predictive of decreased response, and it was further expected that the influence of demand effects, if present, would predict increased response to the MIP.

The above factors were analyzed for those individuals who did and did not respond to the Velten MIP to determine which may constitute risk or protective factors in the development of depressed mood states. Thus, the primary research question addressed was which variable(s), either alone or in combination, best predicted the *occurrence* of negative mood induction (i.e., whether mood induction occurs). A secondary and related research question was which variable(s) best predicted the *degree* of negative mood induction (i.e., extent of mood shift).

Method

Participants

A total of 103 University of Calgary undergraduate students were recruited through the Department of Psychology bonus credit system. Three participants were withdrawn for methodological reasons, resulting in a final sample of 100 participants. The sample consisted of 20 males and 80 females, with an age range from 18 to 66 years and a Mean of 22.27 ($SD = 6.12$) years. The ethnic composition of the sample was predominantly Caucasian (71%),

followed by Other (14%), Southeast Asian/Oriental (13%), Black (1%), and Hispanic (1%).

Participants received course credit for their participation.

Measures

Success of mood induction. Participants rated their mood before and after the MIP using the Visual Analogue Mood Scale (VAMS; Luria, 1975). The VAMS asked participants to rate their current mood by placing a dash on a 10 centimeter line, marked with 0 and “Very Sad” on the left end and 100 and “Very Happy” on the right (see Appendix A). A score from 0 to 100 was derived by measuring the distance of the dash from the left pole in millimeters, and a difference score was derived by subtracting the post-MIP score from the pre-MIP one, to provide a numerical indication of the degree of shift in mood. Martin (1990) observed that while there is no agreed-upon standard, generally a shift of at least 10 points in the depressed direction is required to infer that a change in mood has occurred. In the present study, a shift of 20 points was required to indicate induction of a depressive mood state, a criterion that has been employed in prior research to denote a significant change in mood (e.g., Teasdale & Fogarty, 1979; Teasdale & Russell, 1983; Teasdale & Taylor, 1981). Luria (1975) cites evidence for the validity and reliability of the VAMS, particularly when employed to assess depression, and the scale has been used extensively in previous mood induction research (e.g., Bates, Thompson, & Flanagan, 1999; Blackburn et al., 1990; Brosse, Craighead, & Craighead, 1999; Segal et al., 1999).

Cognition. The Dysfunctional Attitude Scale (DAS; Weissman, 1979) is a widely used measure of maladaptive thinking patterns and dysfunctional cognitions that was specifically designed to measure the presence of Beck’s postulated “negative cognitive triad”—a negative view among depressed individuals toward themselves, their world, and their future (Nezu, Ronan, Meadows, & McClure, 2000). Two abbreviated forms of the DAS are available, the

DAS-A and the DAS-B. Due to the questionable equivalency between these two forms (Power et al., 1994) and the fact that the DAS-A has been used much more widely in previous research (e.g., Brosse et al., 1999; Gemar, Segal, Sagratti, & Kennedy, 2001), this 40-item measure was employed in the present study to assess participants' cognitive styles, particularly the presence of dysfunctional cognitions. Possible scores range from 40-280, with higher scores indicating greater dysfunctional cognition. The DAS displays strong psychometric properties, and has been evaluated with a range of populations (Nezu et al., 2000).

History of depression, psychotherapy. Information regarding history of depression was gathered through a Background Information Form (see Appendix B) developed for this study. Participants were asked to respond to the question "Have you ever been clinically depressed or treated for depression?" by checking "Yes" or "No." Participants also completed the Diagnostic Inventory for Depression (DID; Zimmerman, 1997, personal communication, February 15, 2003), a 38-item self-report questionnaire designed to identify cases of major depression as defined by DSM-IV criteria. The DID is comprised of three subscales, the first of which measures severity of depression related symptoms over the past week, and thus provides a measure of recent experience with depression. Possible scores range from 0-88, with increased scores indicating greater symptoms of depression. Strong psychometric properties, in terms of reliability and validity, have been reported for the DID (Nezu et al., 2000). History of psychotherapy was assessed through the Background Information Form, which asked participants to answer "Yes" or "No" to the following question, "Have you ever received psychological therapy for any reason?" which was followed by the questions, "If yes, what was the reason?" and "If yes, what specific form of treatment(s) did you receive, if any?" (see Appendix B).

Self-esteem. The Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965) is a brief 10-item self-report measure that is used to assess participant self-esteem. Developed for use with adolescents (Rosenberg, 1965), the RSES is widely used with adults and has become a primary measure of global self esteem (Lorr & Wunderlich, 1986; Blascovich & Tomaka, 1991). Possible scores range from 10-40, where higher scores reflect greater self-esteem. Blascovich & Tomaka (1991) have reported on numerous studies that demonstrate the scale's strong reliability and validity properties.

Interpersonal satisfaction. In order to assess satisfaction with psychosocial functioning in general and interpersonal relationships in particular, participant scores on the psychosocial functioning subscale of the DID (Zimmerman, 1997) were examined. This scale asks respondents to rate their level of satisfaction with relationships over the past week with friends, family members, and, if applicable, partner. The scale also assesses general satisfaction with daily responsibilities, leisure and recreation activities, mental and physical health and overall quality of life. Possible scores range from 0-36, with higher scores reflecting increased interpersonal dissatisfaction. As noted above, strong psychometric properties have been reported for the DID.

Current mood state. Current mood state was assessed using three measures. First, the Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) were used as a measure of current affect. The self-report PANAS consists of two scales of 10 items each that measure positive affect, reflecting a state of energy, concentration, and pleasurable engagement; and negative affect, reflecting a general state of subjective distress and unpleasurable engagement (e.g., anger, fear, guilt etc.; Watson et al., 1988). Both the PANAS-P and PANAS-N range in possible scores from 10-50, where increased scores reflect higher positive or negative

affect, respectively. Watson et al. (1988) report on the strong psychometric qualities of the PANAS.

Second, in order to assess current level of depression, participants completed the Beck Depression Inventory-II (BDI-II; Beck, Steer, & Brown, 1996), a 21-item self-report questionnaire designed to assess the severity of depressive symptoms, as outlined in the DSM-IV, over the past two weeks including the present day. Possible scores range from 0-63, where higher scores indicate greater symptoms of depression. The BDI has become the most widely used self-report measure of depressive symptoms in research and clinical settings (Nezu et al., 2000), and Beck et al. (1996) report on the measure's strong psychometric properties in terms of reliability and validity for use with clinical and nonclinical populations.

Third, the Beck Anxiety Inventory (BAI; Beck & Steer, 1993) was employed as a measure of current level of anxiety. The BAI is a self-report, 21-item questionnaire that assesses severity of anxiety symptoms over the past week, including today. Possible scores range from 0-63, where increased scores indicate greater symptoms of anxiety. Beck and Steer (1993) report on the strong psychometric properties of the BAI, in terms of reliability and validity, when used with clinical and nonclinical populations (e.g., Dent & Salkovskis, 1986, as cited in Beck & Steer, 1993).

Stressful/negative life events. The Unpleasant Events Schedule (UES; Lewinsohn, Mermelstein, Alexander, & MacPhillamy, 1985) is a self-report measure that assesses both the frequency and subjective impact of a range of stressful life events over the past 30 days. The original UES and short forms based upon it have shown strong psychometric qualities (e.g., Lewinsohn et al., 1985; Lewinsohn & Amenson, 1978; Nezu et al., 2000). A 31-item form was employed in the present study to assess participants' recent experience of stressful events.

Respondents rated the items twice, resulting in two UES scores. The first rating, the UES-A, indicates the occurrence of such events over the past thirty days; the second, the UES-B, rates subjective unpleasantness regarding such events. Both the UES-A and UES-B range in possible scores from 0-62, with greater scores indicating increased occurrence or perceived unpleasantness, respectively, of recent negative life events.

Social desirability. The Marlowe-Crowne Social Desirability Scale (MCSDS) assesses participant need to respond in culturally sanctioned ways (Crowne & Marlowe, 1960). The measure has demonstrated strong reliability and validity (Paulhus, 1991). A short form of the MCSDS is also available and consists of 13 self-report true-false questions (Reynolds, 1982). Possible scores range from 0-13, where higher scores indicate greater social desirability. The psychometric properties of the short form, which was employed in the present study, appear to be roughly equivalent to those of the full version; for example, in terms of reliability, Reynolds (1982) reported an acceptable Cronbach alpha of .76 for the short form (comparable to .79 for the full version).

Mood Induction

Administration of the Velten MIP was standardized across participants. As is common in research using this technique, a shortened version was employed, where 30 statements were chosen from each of Velten's negative or "depressive," and positive or "elation," mood induction statements (see Appendix C). Sample depressive statements included "I've doubted that I'm a worthwhile person" and "Everything seems utterly futile and empty" while elation statements included "I feel enthusiastic and confident now" and "Things will be better and better today." Participants underwent the MIP individually, and all participants completed a negative MIP, as the experimental task, and then a positive MIP, as an ethical consideration prior to leaving the

laboratory. A spiral booklet comprised of Velten's MIP instructions, 30 negative mood induction statements, and 30 positive mood induction statements was employed, where statements were printed individually on 14 cm by 21.5 cm pages. Participants first read the Velten instructions, which instructed them to read each statement and try to feel the mood that each suggested. Participants spent 20 seconds on each statement, before being prompted to flip the page to the next by an audio recording. Each mood induction required 10 minutes to complete. This administration followed the format originally outlined by Velten (1968), and employed in more recent mood induction research (e.g., Bates et al., 1999).

Procedure

All participants completed the following procedure. First, informed consent was obtained from all participants, which involved a brief review of the study's objectives and explanation of the procedure (see Appendix D). Thus, participants were aware that they may or may not experience a shift in mood as a result of their taking part in the study. Participants then completed the first of three VAMS ratings, for which they were instructed to focus on how they were feeling at that moment. Participants then completed a questionnaire package, which was comprised of the Background Information Form, BDI-II, PANAS, DAS-Form A, DID, MCSDS, RSES, BAI, and UES-A and UES-B. Participants then underwent the depressive MIP, after which they completed the VAMS for a second time, again being instructed to focus on how they were feeling at that moment. Next, although the effects of the Velten negative MIP have been demonstrated to be brief in duration (i.e., 6-12 minutes, Chartier & Ranieri, 1989), due to ethical considerations all participants underwent the elation MIP, which has been shown to be effective in ameliorating the depressive effects of the negative Velten MIP (e.g., Frost & Green, 1982). The elation MIP was identical to the depressive one, except for the content of the statements

themselves. Participants then completed a third and final VAMS and were asked to describe to the experimenter any techniques they might have used when reading the MIP statements in order to feel the mood that they suggested. If participants had difficulty responding, they were asked if they used specific techniques including memory of past events and/or concentrating on or repetition of the statements themselves. Finally, all participants were fully debriefed (see Appendix E) and provided the opportunity to express any questions or concerns.

Results

The following section presents the results of the study in several sections. First, the success of the mood induction procedure is reported. Following this report, two primary analyses are reported: 1) an investigation of predictors of the success of mood induction, and 2) an investigation of the degree of mood induction. Finally, a more descriptive section is presented, in which the participants' reports of the methods they used to induce negative mood are described. All data analyses were conducted using the statistical package SPSS 11.5 for Windows. An alpha level was set at $p < .05$ for all *a priori* hypotheses, and used unless otherwise indicated.

Success of Mood Induction

Success of mood induction was determined by examining participants' change in VAMS ratings from pre to post negative mood induction. In the absence of any definitive criteria in the research literature (Martin, 1990), a shift of 20 points or greater was taken to indicate that the negative mood induction was successful, while a shift of 19 points or less was taken to indicate that the MIP had not produced a significant shift in mood. Using this criterion, 58 participants were classified as having successfully experienced a negative shift in mood, while 42 were found to have not experienced a significant shift in mood. VAMS change scores ranged from an increase of 8 points to a decrease of 72 points among the full sample of participants. Among

those who were mood induced, VAMS scores dropped an average of 32.16 points ($SD = 11.88$) toward the “Very Sad” pole of the scale following the depressive MIP. Among those who did not successfully experience a shift in mood, the average shift in mood was 8.55 VAMS points ($SD = 7.52$) toward the “Very Sad” pole. The observed success rate of 58% is in line with prior findings using the Velten depressive MIP (e.g., Clark, 1983; Martin, 1990).

Predicting Occurrence of Mood Induction

In order to address the primary research question, which variable(s), either alone or in combination, best predicted the *occurrence* of negative mood induction, logistic regression (LR) was conducted. Prior to conducting LR, the individual predictors were examined to determine their ability to differentiate between those who were and were not mood induced, using one-way analysis of variance (ANOVA; see Table 1) or contingency analysis, as appropriate.

The hypothesized relationship between history of depression and response to MIP was examined through DID-symptom (DID-1) scores and Background Information Questionnaire self-reported history of depression. No significant difference was observed on mean DID-1 scores, $F(1, 98) = .76, ns$, between those who were and were not mood induced. Of the 13 participants who reported a history of depression on the Background Information Form, 9 were successfully mood induced and 4 were not, a difference that did not reach statistical significance, $X^2(1, N = 100) = .77, ns$. Examination of self-reported history of psychotherapy revealed that of the 21 participants who reported a history of psychotherapy, 15 were successfully mood induced and 6 were not. This difference was not statistically significant, $X^2(1, N = 100) = 1.97, ns$.

The test of the hypothesized relationship between cognition and response to MIP revealed a non-significant difference between those who were and were not mood induced, $F(1, 98) = .02, ns$. The hypothesized relationship between self-esteem and response to MIP was examined

through one-way ANOVA on mean RSES scores, and also revealed a non-significant difference across induced and non-induced participants, $F(1, 98) = .06, ns$. Next, the hypothesized relationship between interpersonal satisfaction and MIP response was examined through one-way ANOVA on mean DID-psychosocial (DID-2) scores, revealing a non-significant difference between those who were and were not mood induced, $F(1, 98) = .14, ns$.

In order to test the hypothesized relationship between current mood state and response to MIP, a series of one-way ANOVAs were conducted on PANAS-P, PANAS-N, BDI-II, and BAI scores. Neither positive affect, as assessed by the PANAS-P, $F(1, 98) = .54, ns$, nor negative affect, as assessed by the PANAS-N, $F(1, 98) = .02, ns$, were found to differ significantly between induced and non-induced participants. BDI-II mean scores also did not differ significantly between the two group of participants, $F(1, 98) = .75, ns$, and neither did mean scores on the BAI, $F(1, 98) = 1.90, ns$.

A statistically significant difference was found between those participants who were and were not induced for occurrence of recent negative events, $F(1, 98) = 8.56, p < .05$, as the mean UES-A score was significantly higher among mood induced participants. This finding was consistent with the hypothesized relationship between recent negative events and response to MIP. Participants' subjective experience of such events, as assessed by mean UES-B scores, however, did not differ significantly between the two groups, $F(1, 98) = 3.05, ns$.

Finally, in order to examine the possible relationship between social desirability and response to MIP, a one-way ANOVA was conducted on mean MCSDS for those who were and were not mood induced. A significant difference was found, in that those who were mood induced reported significantly lower social desirability scores than those who were not mood induced, $F(1, 98) = 4.88, p < .05$. This finding was in the opposite direction to what was

hypothesized, and was further examined in terms of possible moderators of group differences by analyzing gender and MCSDS scores through a 2 (induced, not induced) X 2 (male, female) ANOVA on MCSDS scores. A significant interaction was found, $F(1, 96) = 7.14, p < .01$, where males who were induced reported a mean MCSDS score of 4.5 compared to 8.5 for males who were not successfully induced. Among female participants, those who were induced reported a mean MCSDS score of 5.34, compared to 5.67 for those who were not. These results indicate that among male participants, those reporting higher social desirability were less likely to report a significant negative shift in mood.

To summarize, a significant difference was observed between those who were and were not successfully mood induced on two measures: the UES-A, where mood induced participants reported greater recent negative events, and the MCSDS, where mood induced participants reported lower social desirability. Following these initial analyses, a logistic regression was conducted in order to determine which variables, either alone or in combination, best predicted the occurrence of negative mood induction. As there were no *a priori* reasons to consider any of the potential variables as more important than any other, all variables were simultaneously entered into the logistic regression, with the groups being defined as the group that did experience a mood induction versus that which did not.

Of all of the measured variables, those that were found to significantly predict occurrence of mood induction were UES-A and MCSDS. A forward stepwise logistic regression indicated that a model including UES-A scores resulted in a statistically significant improvement in the prediction of occurrence of negative mood induction compared to a model including none of the predictors, $\text{Wald} = 7.47(1), p < .01$. The model that included UES-A scores correctly classified 63% of participants as mood induced or not induced. Thus, LR analysis indicated that the

variable that best predicted occurrence of induction of a negative mood state was greater occurrence of recent negative life events.

Predicting Degree of Mood Induction

In order to address the secondary research question, which variable(s) best predicted the *degree* of negative mood induction, difference scores were calculated for each participant, using the difference between the post-MIP VAMS and the pre-MIP VAMS scores. A series of Pearson correlation coefficients was calculated between participants' VAMS difference score and their scores on the self-report measures, as appropriate (see Appendix F). Scores on the following measures were not significantly correlated with extent of mood induction: DAS-A, RSES, DID-symptom (DID-1), DID-psychosocial (DID-2), PANAS-P, PANAS-N, BDI-II, and MCSDS.

Two of the hypothesized predictors were found to be significantly correlated with extent of mood induction. First, current mood state was found to be correlated with extent of induction, where increased BAI scores were correlated with greater depressive shift in VAMS following negative mood induction, $r = -.27, p < .05$. Second, participant scores on the UES-A were significantly correlated with extent of induction, as a greater reported occurrence of recent negative events was associated with increased negative shift in mood, $r = -.31, p < .005$. Scores on the UES-B were also significantly correlated with extent of induction, where greater reported unpleasantness of negative events was associated with greater negative mood shift, $r = -.23, p < .05$. Thus, of the measures assessed, increased degree of negative mood induction was associated with greater self-reported anxiety prior to induction, and greater occurrence and perceived unpleasantness of recent negative life events.

A multiple regression (MR) analysis was conducted in order to determine which variables, either alone or in combination, best predicted extent of negative mood induction. As

there were no *a priori* reasons to consider any of the potential variables as more important than any another, all variables were simultaneously entered into the multiple regression. This analysis differed from the LR in that the two categorical variables of history of depression and history of psychotherapy were not included as predictors. T-tests conducted on these variables indicated that neither history of depression, $t(98) = -.11$, *ns*, nor history of psychotherapy, $t(98) = -1.77$, *ns*, were significantly associated with extent of mood induction.

MR analysis indicated that a model including all of the predictors accounted for 21.1% of the variance in extent of mood induction, which was statistically significant, $F(11, 88) = 2.14$, $p < .05$. This analysis further identified a model including only UES-A score, which accounted for 9.6% of the total variance, as significantly predictive of extent of mood induction, $F(1, 98) = 10.41$, $p < .005$. Thus, of the variables measured, increased occurrence of recent negative life events most strongly predicted increased response to negative MIP.

Methods Employed By Participants

As an ancillary analysis, the methods employed by participants while reading the Velten MIP statements and attempting to feel the mood that they suggest were also examined. Responses from the 97 participants who were able to report this information were classified as falling into one of three categories: 1) relying primarily on autobiographical memories of negative events/times that matched the Velten statements, 2) relying primarily on repetition of and/or concentrating on the statements themselves, or 3) a combination of autobiographical memory and repetition/concentration. Participants reported employing autobiographical memories of past events/times (45.5%, $n = 44$), repetition/concentration (14.4%, $n = 14$), and a combination of these two techniques (40.2%, $n = 39$). Among the 57 participants from this sample who were successfully mood induced, 47.4% ($n = 27$) reported using autobiographical

memories, 15.8% ($n = 9$) reported using repetition/concentration, and 36.8% ($n = 21$) reported using a combination of the two. Among the 40 participants from this sample who were not mood induced, 42.5% ($n = 17$) reported using autobiographical memories, 12.5% ($n = 5$) reported using repetition/concentration, and 45% ($n = 18$) reported using a combination of the two.

These results indicate that among all participants, and among those who were mood induced in particular, autobiographical memory was the most commonly employed approach. Further, while autobiographical memory was more common among those who were mood induced, the combination of memory and repetition/concentration was more common among those who were not. However, a Chi-square analysis performed on these two variables did not reach statistical significance, indicating that method employed was not significantly associated with success of mood induction, $\chi^2 (2, N = 97) = 0.69, ns$.

Discussion

In an effort to understand the individual difference factors that are associated with susceptibility and resilience to negative mood states, the present study examined the relationship between a range of predictors and individual response to Velten negative MIP, in a student sample of 100 participants. It also investigated the relationship among these same factors and the extent, or severity, of individual response. Fifty-eight percent of the participants experienced a significant negative shift in mood following mood induction. Participants who were successfully mood induced reported a higher frequency of recent negative events and lower social desirability than those who were not. Further, the variable that best predicted occurrence of induction was greater occurrence of recent negative life events.

In terms of extent of mood induction, increased response to the MIP was significantly associated with greater self-reported anxiety prior to induction, and greater occurrence and

perceived unpleasantness of recent negative life events. The variable that most strongly predicted increased response was increased occurrence of recent negative life events. Thus, the occurrence of recent negative events was found to most strongly predict both occurrence and extent of negative mood induction. In addition, while the use of autobiographical memory was the method most commonly employed among all participants, and among those who were successfully induced in particular, the relationship between method and success of induction did not reach statistical significance.

The results provide mixed support for the hypotheses concerning the individual predictors and their relationship with response to MIP. It was hypothesized that those individuals who displayed more maladaptive cognitions would also be more susceptible to mood induction than those who did not. Based on participant DAS-A scores, however, the findings did not support this hypothesis. While cognitive theorists have posited that MIPs such as the Velten technique offer a means to directly test the proposed central role of dysfunctional cognition in depressive symptomatology, past empirical findings have been mixed. For example, although some studies employing the Automatic Thoughts Questionnaire (ATQ) to assess dysfunctional cognition have found scores on this measure to predict response to MIP (e.g., Blackburn et al., 1990, McHugh & Wierzbicki, 1998), others have not (e.g., Rexford & Wierzbicki, 1989). Further, research that has employed the DAS-A as a measure of dysfunctional cognitions has not found it to predict response to negative mood induction (e.g., McHugh & Wierzbicki, 1998; Rexford & Wierzbicki, 1989).

Given the findings from past research and the current study, it is unclear whether cognition plays a role in individual response to mood induction. The current finding may to some extent be attributable to measurement issues, in that the DAS-A may not provide the most

appropriate measure of dysfunctional cognition. Given that the DAS-A was designed to assess Beck's "negative cognitive triad" related to major depression, it may be more suited for use with clinical than non-clinical populations. The DAS-A may also assess more trait-like dysfunctional cognitive styles, while the ATQ may represent a more precise measure of state-like cognition, a distinction that may in part explain the ability of the ATQ to predict response to MIP found in prior research.

Further, and in line with the "mood state hypothesis" (e.g., Miranda, 1992; Miranda & Persons, 1988; Miranda, Persons, & Byers, 1990; Miranda, Gross, Persons, & Hahn, 1998), it may be that the ability to report underlying dysfunctional cognition depends on current mood state. Thus, somewhat tautologically, it has been suggested that it may be necessary to prime dysfunctional cognitions using, for example, a depressive MIP in order for them to be reported (Miranda, et al, 1990). In line with this hypothesis, participant DAS scores were significantly correlated with the mood measures used in the current study, including the PANAS, BDI-II, and BAI, which indicates that current mood may be related to DAS scores. Given the centrality of dysfunctional cognition to the cognitive model of depression, further work examining their role in the development of depressive mood states, particularly with clinical populations, is clearly warranted.

Next, it was hypothesized that a history of depression would be associated with an increased response to the mood induction procedure. While a link between history of depression and increased dysfunctional attitudes has been reported in the literature (e.g., Persons & Miranda, 1992), the findings from the current study indicate that as with DAS-A scores, self-reported history of depression was not associated with response to MIP. It may be that the power to detect an association was limited by the use of a student sample. Of 100 participants, only 13

reported a history of depression, 9 of whom were successfully induced and 4 who were not, a difference that did not reach statistical significance. In addition to self-report, however, scores on the DID-symptom were also not found to be associated with response to induction. Finally, while some research has found history of depression to be unrelated to effect of MIP (e.g., Brosse et al., 1999), other results suggest that individuals with a history of depression may in fact be more *resistant* to the effects of negative mood induction, due perhaps to a reluctance to become involved in the procedure or being less sensitive to minor mood changes (Blackburn & Smyth, 1985).

The hypothesis that a history of psychotherapy, and in particular cognitive-behavior therapy (CBT), would be associated with less susceptibility to mood induction was also not supported. As with history of depression, the relatively small number of participants who reported a history of psychotherapy ($n = 21$) reduced statistical power. Further, while past research has found that a history of CBT is associated with decreased endorsement of dysfunctional cognitions compared to pharmacotherapy patients over the course of a mood induction procedure, among the current sample, of the 21 participants who reported a history of psychological therapy, none identified CBT as the specific form of treatment they received.

It was hypothesized that low self-esteem/concept would predict increased, while high self-esteem would predict decreased, response to mood induction. Cognitive theory postulates a negative self-view as one of the three components of the proposed negative “cognitive triad” and there is evidence, for example, that individuals with low self-esteem tend to lower their self-evaluations when experiencing negative moods that arise naturally and/or as a result of a mood induction (Brown & Mankowski, 1993). Past research has failed to identify a link between self-esteem and response to negative mood induction (e.g., Lewis & Harder, 1988), however, and this

result was also not found in the present study. Similarly, although satisfaction with interpersonal relationships was hypothesized to be related to response to MIP based on the cognitive model of depression, the current results did not support this association.

It was hypothesized that current mood state just prior to mood induction would influence participants' response to the MIP in a number of ways. Specifically, it was expected that increased negative affect, decreased positive affect, and increased symptoms of depression and anxiety would predict increased susceptibility to negative mood induction. These hypotheses, however, were generally not supported by the results, with the exception of the finding that increased anxiety was significantly correlated with increased extent of mood shift. Past research examining the influence of mood state on effect of mood induction has been mixed. For example, while a link between increased symptoms of depression and increased response to mood induction has been reported (Blackburn et al., 1990), others have not found depressive symptoms to predict response (Van der Does, 2002). While BAI scores were significantly correlated with both BDI-II ($r = .49$) and PANAS-N ($r = .50$) scores in the current study, the results indicate that anxiety alone may contribute to extent of mood induction. This finding is limited to some extent, in that BAI scores did not predict the occurrence of induction and, further, this variable was not included in the final model predicting extent of induction. Nonetheless, the role of anxiety in the development of depressive mood states warrants further attention, particularly with alternative populations.

It was further predicted that increased occurrence and perceived aversiveness of recent negative life events would predict response to negative mood induction. The predictions were supported by the results. Indeed, the occurrence of recent negative events was found to be the strongest predictor of both whether induction occurred and the extent of induction, whereas the

perceived aversiveness of recent negative events was significantly correlated with extent of mood shift, but not whether induction occurred. The finding that occurrence of negative events was a stronger predictor of response to mood induction than rated unpleasantness of such events may be attributable the fact that scores on the UES-A and UES-B were significantly correlated ($r = .48$). As such, the ability of unpleasantness to predict above and beyond occurrence of negative events would have been decreased.

The role of stressors in the onset and maintenance of depressive symptoms has been emphasized by life event, interpersonal, and cognitive models of the disorder. For example, the cognitive model posits that vulnerable individuals possess latent dysfunctional cognitions, which may be activated or primed by proximal negative life stressors or daily hassles (Clark et al., 1999). The precise role of cognition in the relationship between negative events and depressive symptoms, however, remains unclear. Further, while depressed individuals appear to experience more unpleasant events and see such events as more aversive (Lewinsohn & Amenson, 1978), the direction of any possible causal relationship between negative events and depressive symptoms has not been established. For example, it has been argued through the “stress-generation hypothesis” that depressed individuals do not simply experience more stressful events than others, but more stressful events to which they have contributed. It is argued that at least in some forms of recurrent or chronic depression, the depressed individual, through a combination of personal and contextual factors, contributes to their own experiencing of increased stressful events, which in turn results in further depression (Hammen, 1991).

Studies that have examined recent negative events as a possible predictor of individual response to negative mood inductions have produced mixed results. For example, Blackburn et al. (1990) found recent exposure to negative life events predicted response to a modified Velten

MIP. However, this finding is somewhat limited in that recent events were assessed by having participants report “traumatic or unusual” events, and thus was not standardized. In contrast, however, Rexford and Wierzbicki (1989) found that UES scores did not predict response to a Velten-like MIP that employed statements that were based on Lewinsohn’s reinforcement model of depression. Similarly, McHugh and Wierzbicki (1998) found that UES scores did not predict response to a behavioral MIP involving insoluble discrimination problems.

The present study differed from prior ones, in that it employed the UES in order to assess the possible impact of negative events on response to the Velten negative mood induction. As such, the current study most directly extends the Blackburn et al (1990) study. That occurrence of recent negative events was the sole predictor included in the final models predicting occurrence and extent of mood induction indicates the importance of this variable, yet UES-A scores were also significantly correlated with scores on the BDI-II, PANAS-N, DAS, DID-symptom and DID-psychosocial, RSES, and BAI. The specific nature of the contribution of UES-A scores above and beyond other predictors in response to mood induction remains unclear. One possibility is that those individuals who experienced recent negative events had at their disposal recent examples on which to focus and concentrate while reading the mood induction statements themselves. While the method employed by participants was not significantly associated with susceptibility to mood induction in the current study, autobiographical memory was the most commonly used approach, particularly among those who were successfully mood induced, compared to the combination of memory and repetition/concentration which was more common among those who were not. The precise role of recent negative events in susceptibility warrants further attention. However, the results do suggest that a lack of recent negative events may constitute a protective factor against the development of depressed mood states.

Finally, it was further hypothesized that increased social desirability would be associated with increased response to the MIP. The potential impact of social desirability or demand effects on observed effects of MIPs has been discussed in the literature (cf. Martin, 1990; Westermann et al., 1996). With the Velten procedure in particular, social desirability might influence reported mood change, in that the statements themselves may provide information to participants in order to simulate the desired mood (Martin, 1990). However, several extensive reviews of the mood induction literature argue against demand effects playing a significant role in MIPs in general (e.g., Clark, 1983; Goodwin & Williams, 1982; Martin, 1990; Westermann et al., 1996) and the Velten MIP in particular (Velten, 1968; Finegan & Seligman, 1995).

A number of studies have specifically considered the role of social desirability, assessed through the MCSDS, with mixed results. For example, while Blackburn et al. (1990) found a weak but significant relationship between MCSDS score and one self-report measure of mood shift following a modified Velten MIP, Bates et al. (1999) found that MCSDS scores were unrelated to individual and group response to a Velten plus music MIP. Although MCSDS scores did not emerge as a significant predictor of the extent of induction, the present findings run contrary to prior ones, in that a significant difference was observed for mean MCSDS scores between those who were successfully mood induced and those who were not. Contrary to hypotheses, however, mood induced participants reported lower social desirability.

This difference in mean scores between induced and not induced participants was an unexpected finding and may suggest that at least among this sample, those reporting higher social desirability may have been less likely to report experiencing a shift in mood following the MIP. The reasons for this finding are not clear, particularly given its relation to past findings. It may be that the social desirability assessed through the MCSDS, which measures the need to

respond in culturally sanctioned ways, did not directly transmit to the experimental situation and in particular to the Velten mood induction procedure. While the reporting of a depressive shift in mood is a “culturally sanctioned” response in the context of the psychological laboratory, it may be less so in terms of the general cultural context beyond it and, as suggested by the results, particularly among males. Such an explanation of the current findings is of course speculative, and warrants further research attention.

In summary, the primary findings of this study were that first, in terms of whether a significant mood induction occurred, decreased social desirability and increased occurrence of recent negative events were associated with successful mood induction, and increased recent occurrence of negative events was identified as the strongest predictor of successful induction. Second, in terms of extent of mood induction, increased anxiety, and the occurrence and perceived aversiveness of recent negative events were all associated with increased negative shift in mood, although an increased recent occurrence of negative events was found to most strongly predict extent of negative mood shift. Thus, of the possible predictors assessed in the current study, increased recent negative events best predicted both occurrence and extent of negative mood induction using the Velten mood induction procedure.

The present study was designed not only to address a range of factors that might predict increased response to the induction of a depressive mood state, but also aimed to identify those that may be associated with resistance to the development of such mood. It is possible to conceptualize the identified risk factors as indicators of resilience by viewing them in the opposite-keyed direction. From this perspective, decreased occurrence of recent negative events may be seen as the strongest resilience factor in terms of both occurrence and extent of a depressive mood induction procedure, while decreased anxiety and perceived unpleasantness of

such aversive life events represent protective factors in terms of extent of negative mood shift. The specific mechanism(s) through which a lack of recent negative events may protect from the development of negative mood states and the potential implications of these findings, particularly in terms of naturally occurring mood states and clinical depression, warrant further research attention.

A number of limitations of the current study should be taken into consideration. First, though this study was comparable to much of the available mood induction literature in that it employed a student sample, this sample does limit the generalizability of the findings. It may well be that different variables would emerge as important predictors of response to mood induction among, for example, clinical populations such as those with Major Depressive Disorder. Also, though the effects of the Velten MIP have been described as a good “analogue” of mild, naturally occurring depression (Clark, 1983), the extent to which predictors of depressive mood states created in the laboratory also apply to depressive mood states that arise in the context of naturally occurring events remains questionable.

The generalizability of the current findings may also be limited by the fact that the Velten technique is but one of many such procedures available. Among MIPs, the Velten alone is also not the most effective procedure in terms of reported success rates (e.g., Westermann et al., 1995). As such, further research is needed to determine if the predictors of response identified in the current study would also apply to other mood induction techniques.

The current study relied solely on a visual analogue measure (VAMS) as the index of mood shift experienced by participants. The VAMS has demonstrated adequate psychometric properties in past research, correspondence with behavioral tasks (e.g., Clark, 1983; Goodwin & Williams, 1982) and it is commonly used for this purpose in mood induction literature (Martin,

1990). The use of behavioral measures of mood induction in the current study would have validated the VAMS reports, and provided additional information concerning extent of mood shift. Another measurement issue involves the MCSDS which, though it continues to be used by researchers (e.g., Bates et al., 1999; Blackburn et al., 1990), may be somewhat dated in that the indicators of social desirability that it employs were developed over 40 years ago and might be less relevant today.

The fact that all measures employed in the current study were self-report also opens the possibility that social desirability or demand effects influenced participant response. Though social desirability did not appear to play a role in response to the mood induction, at least in the manner that might be expected, the possible impact of demand effects cannot be completely discounted in mood induction research such as that employing the Velten technique. Finally, it is possible that due to the nature of the sample employed, issues such as restriction of range, or limited number of participants with certain predictors (e.g. history of depression) suppressed the relationships among predictors and outcomes that might have been observed in other samples. It would be premature to conclude that no relationship exists among a number of the studied variables and response to mood induction in the absence of further research, particularly with vulnerable groups such as previously depressed participants.

These limitations notwithstanding, the results from the present study have a number of implications for research in the area of mood induction. The present study addressed the dearth of research attention given to individual differences in susceptibility to mood induction, and it identified a number of factors that differentiated those participants who were more prone to be successfully mood induced from those who were less prone. In that many of the hypothesized predictors failed to significantly predict individual response, it would appear that researchers

employing MIPs need not be overly concerned that the procedures will be successful only with certain participants, as few of the assessed variables were found to be associated with increased occurrence or extent of induction. Of course, further research is warranted before the possible impact of any of the variables assessed in the present study on response to mood induction can be ruled out. Finally, the finding that 42% of participants did not experience a significant shift in mood following the MIP further emphasizes the importance that researchers employing these techniques not assume that all participants will respond to them. Rather, including some measure of the success of the MIP used is clearly warranted.

Future research on individual susceptibility to mood induction might build on the present results in order to more thoroughly examine and identify predictors of response. For example, future studies might employ additional measures of response to mood induction, consider possible differences in predictors of alternative MIPs, and/or more fully explore techniques employed by participants and their possible relationship to success of the MIP. Finally, in order to extend the implications of such research beyond the laboratory, future research might employ clinical samples in order to more fully examine the “anatomy” of the development of depressed mood states. Such investigations may result in the detection of specific factors associated with both the development of depressive mood states, and resilience to such mood states, in a clinical context. As such, this research could have significant potential implications for the prevention of relapse in depression.

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Appendix A

Participant ID#: _____

Time: _____

VAMS

Please rate your current mood by placing a dash on the following scale, where 0 represents “Very Sad” and 100 represents “Very Happy”:

0]-----[100
Very Very
Sad Happy

Appendix B

Background Information Form

Please provide the following information in the spaces provided:

Part I: Background Information: Age: _____ Gender: _____

Please indicate which racial/ethnic category you identify yourself with:

- ☐ Black
☐ Southeast Asian/Oriental
☐ Hispanic
☐ First Nations
☐ Caucasian/ White
☐ Other: please indicate _____

Part II: History of Mental Health Issues

1. Have you ever been clinically depressed or treated for depression? Yes ___ No ___

If yes, when was this (indicate all appropriate times)? _____

If yes, what form of treatment(s) did you receive, if any? _____

2. Have you ever received psychological therapy for any reason? Yes ___ No ___

If yes, what was the reason? _____

If yes, what specific form of treatment(s) did you receive, if any? _____

Appendix C

Velten Mood Induction Procedure: Instructions

Please read each of the following statements to yourself, then read each of them out loud. Concentrate on each of the statements as they appear before you, and make an effort to continue to do so until you move on to the next statement. Following these statements, you will have an opportunity to talk about your feelings.

In the first part of this experiment, I will be reading a series of statements. These statements represent a certain mood. My success will be largely a question of my willingness to be receptive and responsive to the idea in each statement, and to allow each idea to act upon me without interference. These ideas are called suggestions.

First, as each statement appears before me, I will simply read it to myself, and then I will read it once out loud in a manner appropriate to its intended seriousness. Then I'll go over each statement again and again in my head with the determination and willingness to really believe it. I will experience each idea. I will concentrate my full attention on it, and I will exclude other ideas which are unrelated to the mood.

I will attempt to respond to the feeling suggested by each item. I will then try to think of myself with as much clarity and realism as possible as definitely being and moving into that mood state. I am letting myself be receptive to these feelings. Different people move into moods in different ways. Whatever induces the mood in me fastest and most deeply is the best way for me. Some people simply repeat the statements over and over again to themselves with the intention of experiencing them.

Some people find it natural and easy to visualize a scene in which they had or would have had such a feeling or thought. Or, perhaps some easy combination of repeating the statements and imagining scenes will come to me. Very likely, I will begin to feel the way I do when I'm in that mood. I will continue to concentrate my full consciousness on experiencing and retaining the mood as each suggestion is presented. A certain amount of time will be devoted to each suggestion. I will continue to discipline and train myself in inducing a mood in myself by concentrating my full attention on the mood statements during any time interval.

To sum up: the whole purpose of this experiment is to see whether a person can talk him/herself into a mood. Some of these mood-statements may have no relation to anything I have ever thought, said, or done. Yet, exactly in the manner of hypnosis, I will find it quite easy to accept and feel these emotions. I will be concentrating on doing so, rather than comparing each single statement to my life experience and then deciding whether it applies to me. I will let and strive to let them apply to me. I can do this.

I experience each statement as if it were written especially for me. At first I may experience the impulse to compare a single mood-statement to my life experience, or to resist statements which seem to be or are contradictory to what I feel myself to be. But, most people feel this at first. It will become apparent to me that if I am able to talk myself into a mood, then obviously I know

how to talk myself out of one. If I find that I can do these things, then I have learned something about myself; I can control my moods to an extent.

If I feel the urge to laugh, it will probably be because humor is a good way to counteract unwanted feelings . . . or, it may be because I am surprised that I really am going into the mood. I will try to avoid these reactions, however, by keeping in mind that I have a chance of acquiring extremely useful information about myself and how to keep myself out of undesirable moods that occur in everyday life. IF FOR ANY REASON I FEEL I CANNOT CONTINUE, I WILL SO INDICATE.

The next card will begin the series of statements. I will read each to myself, then I will read it out loud. Then I will try to experience the mood as well as I can and continue to do so as the statements continue to be presented and I move further into the mood. After that I will have an opportunity to talk about my feelings.

Velten Negative Mood Induction Statements:

1. Today is neither better nor worse than any other day.
2. However, I feel a little blue today.
3. I feel rather sluggish now.
4. Sometimes I wonder whether life is all that worthwhile.
5. Every now and then I feel so tired and gloomy that I'd rather sit than do anything.
6. I can remember times when everybody but me seemed full of energy.
7. I've had important decisions to make in the past, and I've sometimes made the wrong ones.
8. I just don't seem to be able to get going as fast as I used to.
9. Just a little bit of effort tires me out.
10. I'm not very alert; I feel listless and vaguely sad.
11. I'm uncertain about my future.
12. Some very important decisions are almost impossible for me to make.
13. I feel terribly tired and indifferent to things today.
14. I just can't make up my mind; it's so hard to make simple decisions.
15. I'm getting tired out. I can feel my body getting exhausted and heavy.
16. My life is so tiresome ---- the same old thing day after day depresses me.
17. I've doubted that I'm a worthwhile person.
18. It often seems that no matter how hard I try, things still go wrong.
19. I've noticed that no one seems to really understand or care when I complain or feel unhappy.
20. I'm discouraged and unhappy about myself.
21. I feel tired and depressed; I don't feel like working on the things I know I must get done.
22. I have the feeling that I just can't reach people.
23. It's so discouraging the way people don't really listen to me.
24. I fail in communicating with people about my problems.
25. I've felt so alone before, that I could have cried.
26. I'm so tired.
27. Everything seems utterly futile and empty.
28. All of the unhappiness of my past life is taking possession of me.
29. I don't want to do anything.
30. I just don't care about anything. Life just isn't any fun.

Velten Positive Mood Induction Statements:

1. Today is neither better nor worse than any other day.
2. I do feel pretty good today, though.
3. This might turn out to have been one of my good days.
4. I feel light-hearted.
5. I've certainly got energy and self-confidence to spare.
6. I feel cheerful and lively.
7. My parents are pretty proud of me most of the time.
8. For the rest of the day, I bet things will go really well.
9. I'm pleased that most people are so friendly to me.
10. My judgment about most things is sound.
11. This is one of those days when I can grind out work with practically no effort at all.
12. I feel enthusiastic and confident now.
13. I'm full of energy, and am really getting to like the things I'm doing.
14. I'm able to do things accurately and efficiently.
15. I know good and well that I can achieve the goals I set.
16. In the long run, it's obvious that things have gotten better and better during my life.
17. I'm optimistic that I can get along very well with most of the people I meet.
18. I'm feeling amazingly good today!
19. I feel that many of my friendships will stick with me in the future.
20. I can find the good in almost anything.
21. I feel highly perceptive and refreshed.
22. In a buoyant mood like this one, I can work fast and do it right the first time.
23. I can concentrate hard on anything I do.
24. My thinking is clear and rapid.
25. Life is so much fun; it seems to offer so many sources of fulfillment.
26. Things will be better and better today.
27. Life is firmly in my control.
28. I'm really feeling sharp now.
29. I'm full of energy.
30. I feel great!

Appendix D

UNIVERSITY OF
CALGARY

Department of Psychology

Research Project Title: Risk and resilience to negative moods

Investigator: Martin C. Scherrer

This consent form, a copy of which has been given to you, is only part of the process of informed consent. It should give you the basic idea of what the research is about and what your participation will involve. If you would like more detail about something mentioned here, or information not included here, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

The purpose of this study is to investigate the factors associated with resilience or resistance to negative moods. In so doing, this study will examine the way that different people respond to a commonly employed mood-induction procedure. This technique is called the Velten self-statement technique, and it involves having participants read a series of negative self-statements (e.g., "I'm discouraged and unhappy about myself") and trying to feel the mood that these statements suggest. In this study, participants will complete a series of questionnaires before undergoing the Velten mood induction technique. Responses to these questionnaires will then be compared between those individuals who do and do not experience a mood shift as a result of the mood induction technique. Through this comparison, we will determine which of a series of variables, either alone or in combination, best predicts response to mood induction.

Typically, researchers using the Velten technique have reported success rates ranging from approximately 50-75%. As such, it is important to realize that you may experience some discomfort as a result of participating in this study in the form of a period of sad or depressed mood following the mood induction procedure. Generally, this depressed mood state is brief in duration, and should improve on its own. In addition, you will complete a positive mood induction procedure, which has been shown to be effective in ameliorating the effects of negative mood induction. Also, the questionnaires that you will be asked to complete contain some items that address personal experiences that may indicate that you are experiencing negative thoughts or emotional problems. If, as a result of your participation in this study, you decide that you would like to talk to someone about these experiences, we advise you that the university offers a free, confidential counseling service for all students. The Counseling and Student Development Centre is located on the second floor of the MacEwan Student Centre and will accept either walk-in appointments or telephone calls at 220-5893 to make an appointment with a counselor.

Participating in this study will require approximately one hour, and in return for your

participation, you will receive one credit in the Department of Psychology Bonus Credit System. All of the information that you provide will be kept anonymous and confidential. This consent form will be kept separate from the questionnaires that you complete, which will be identified with only a code number. The information contained on the questionnaires will be analyzed by group and you will not be identified by name. All information and data from this study will be kept in a locked, secure area under the control of the investigator for a period of five years after publication. Following this period, the data will be destroyed.

If you agree to participate in this study, you will undergo a mood induction procedure that involves your reading and attending to a series of negative self-referent statements such as “I’m discouraged and unhappy about myself” and “I feel tired and depressed.” You will be asked to concentrate on these statements and will likely experience a sad mood as a result. Further, you will complete a series of questionnaires that assess negative thoughts and emotional problems, including questions such as “During the past week, have you been feeling sad or depressed” and rating of feelings such as sadness and pessimism. If you do not feel up to the task of participating in this study, you are free to withdraw now or at any point during the study, and will still receive bonus credit should you withdraw.

In signing this form I fully understand that I am participating in this study as part of my educational experience in the Psychology Department. In exchange for my time I expect to gain some understanding of research and some of the ideas currently being explored in psychology. If, after the study, I feel that I have not gained sufficient educational benefit, or have other concerns regarding this experience, I may register my concerns with Dr. Mike Boyes, Chair: Psychology Department Ethics Committee (Human Participants). He will ensure that my comments are acted upon with no fear that I will be identified personally. Dr. Boyes can be reached at: 220-7724, boyes@ucalgary.ca.

Your signature on this form indicates that you have understood to your satisfaction the information regarding participation in the research project and agree to participate as a subject. In no way does this waive your legal rights nor release the investigators, sponsors, or involved institutions from their legal and professional responsibilities. You are free to withdraw from the study at any time. Your continued participation should be as informed as your initial consent, so you should feel free to ask for clarification or new information throughout your participation. If you have further questions concerning matters related to this research, please contact Martin Scherrer at 220-3697 or his research supervisor, Dr. Keith Dobson at 220-5096. If you have any questions or issues concerning this project that are not related to the specifics of the research, you may also contact the Research Services Office at 220-3782 and ask for Mrs. Patricia Evans.

Participant’s Signature

Date

Investigator’s Signature

Date

A copy of this form has been given to you to keep for your records and your reference.

Appendix E



Department of Psychology

Research Project Title: Risk and resilience to negative moods

Investigator: Martin C. Scherrer

This debriefing form is intended to supplement the consent form you have been provided with. If you would like more detail about something mentioned, or information not included, here or in the consent form, you should feel free to ask. Please take the time to read this carefully and to understand any accompanying information.

As previously explained to you, the purpose of this study is to investigate the factors associated with resilience or resistance to negative moods through examining the way that different people respond to a commonly employed mood-induction procedure. In this study, individual participants' responses on the series of questionnaires you completed will be compared between those individuals who do and do not experience a mood shift as a result of the mood induction technique. Through this comparison, we will determine which of a series of variables, either alone or in combination, best predicts response to mood induction.

Research indicates that approximately 50-75% of individuals who undergo the mood induction procedure that you have completed do experience a shift in mood. Thus, it is quite common to experience a sad mood following the negative mood induction. Generally, this depressed mood state is brief in duration, and research has also indicated that the positive mood induction you also experienced is effective in ameliorating the effects of the negative mood induction. If, as a result of your participation in this study, you decide that you would like to talk to someone for any reason, including your experiencing negative thoughts or emotional problems, we once again advise you that the university offers a free, confidential counseling service for all students. The Counseling and Student Development Centre is located on the second floor of the MacEwan Student Centre and will accept either walk-in appointments or telephone calls at 220-5893 to make an appointment with a counselor.

If you have further questions concerning matters related to this research, please contact Martin Scherrer at 220-3697 or his research supervisor, Dr. Keith Dobson at 220-5096. If you have any questions or issues concerning this project that are not related to the specifics of the research, you may also contact the Research Services Office at 220-3782 and ask for Mrs. Patricia Evans.

Once again, thank you for your participation in this study.

A copy of this form has been given to you to keep for your records and your reference.

Appendix F

Correlations among Predictors and Pre-Post Negative MIP VAMS difference scores.

Predictor	Pearson Correlation	Exact Probability
Dysfunctional Attitude Scale, Form A (DAS-A)	-.01	.924
Rosenberg Self-Esteem Scale (RSES)	-.01	.893
Diagnostic Inventory for Depression, Symptom (DID-1)	-.11	.285
Diagnostic Inventory for Depression, Psychosocial (DID-2)	.03	.737
Positive and Negative Affect Scale, Positive (PANAS-P)	.06	.568
Positive and Negative Affect Scales, Negative (PANAS-N)	-.10	.311
Beck Depression Inventory-II (BDI-II)	-.10	.330
Beck Anxiety Inventory (BAI)	-.27	.006
Unpleasant Events Schedule, Occurrence (UES-A)	-.31	.002
Unpleasant Events Schedule, Unpleasantness (UES-B)	-.23	.023
Marlowe-Crowne Social Desirability Scale (MCSDS)	-.01	.893